OREGON HUNTERS ASSOCIATION

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July 22, 2015

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Subject: Comments- RMPs for Western Oregon, Draft EIS

The Oregon Hunters Association (OHA) is submitting comments regarding the Draft Environmental Impact Statement (DEIS) for revision of Western Oregon Resource Management Plans. This document will provide management direction for over 2.4 million acres of public lands in Oregon.

The OHA is a statewide non-profit organization, with over 10,000 members and 27 chapters across Oregon. OHA is dedicated to protecting and improving wildlife habitat and access for hunters. We are very concerned about the future direction of BLM lands in western Oregon, and the impact of these decisions on deer and elk populations. The dramatic decline in timber harvest over the past 30 years has greatly reduced early succession habitat necessary to support healthy deer and elk populations.

The Plan states "There are 46,249 acres of high-quality forage habitat for deer and elk in the decision area (**Figure 3-159**), which is 2 percent of the 2,161,690 habitat-capable acres." It is no wonder that deer and elk numbers in western Oregon are declining due to a lack of active forest management by BLM and others.

We believe it is very important for BLM to act in accordance with Executive Order 13443 (Facilitation of Hunting Heritage and Wildlife Conservation; 72 FR 46537) which provides, in part, that Federal agencies shall, consistent with agency missions evaluate the effects of agency actions on game species and their habitats; manage wildlife and wildlife habitats on public lands in a manner that expands and enhances hunting opportunities; work collaboratively with State governments to manage and conserve game species and their habitats; and seek the advice of State fish and wildlife agencies.

One of the aims of this planning process is to increase timber harvest on a sustained yield basis from O&C lands which are managed by BLM. Increased harvest and subsequent reforestation provides the early succession vegetation that benefits many kinds of wildlife, including deer and elk. However, we are very concerned with the amount of "reserves" taken out of the harvest land base in all of the alternatives.

We believe that increasing timber harvest will benefit local communities through jobs and additional tax revenue for O&C counties. At the same time, it will increase early succession which is vital to

sustained-yield forest management and wildlife habitat. This early stage is the most biologically rich stage in forest succession, but it depends on timber harvest.

The DEIS shows that early successional forest is currently well below its average historical range. Further, it acknowledges that deer and elk populations are below Oregon Department of Fish and Wildlife management objectives due, at least in part, to the lack of high quality forage on BLM lands.

OHA has reviewed the four Action Alternatives and the No Action alternative, and the impact of these alternatives on outdoor recreation, hunting, wildlife habitat and the things that matter most to us. Of these, Alternative C is the best option. However, we feel that BLM should take another look at the amount of land put into various "reserves".

Since O&C lands are to be managed "for permanent forest production, and the timber thereon shall be sold, cut, and removed in conformity with the principal of sustained yield", we are concerned that the "harvest land base" in the best alternative C is only 30 percent of the decision area. Putting less than one-third of the lands into a class where they can be managed for forest production appears to be an arbitrary action inconsistent with the O&C mandate set forth by Congress.

We would strongly recommend that the final EIS develop a new action alternative that maximizes the Harvest Land Base. This could be achieved by reducing the Late Successional Reserve allocation to the minimum necessary for protection of the Northern Spotted Owl and Marbled Murrelet (29% - Alt D). In addition, "Other" reserves could be reduced (7% - Alt A). This would boost the Harvest Land Base to 43 percent of the planning area, still less than half the land in possible timber production. As a result, the objective for O&C lands could be better achieved, while benefitting early successional habitat.

We do not support the management of additional BLM O&C lands "as wilderness" when they have not been so designated by Congress (p. 17 DEIS). BLM should not create or manage their own "wilderness" out of Late Successional Reserves or other reserves without an Act of Congress.

Additional comments are included in Attachment 1.

Thank you for the opportunity to comment on this DEIS. OHA would like to be informed of future actions in this important planning effort.

Fred Craig

Fred Craig, President
Oregon Hunters Association

Attachment 1: Oregon Hunters Association Additional Comments on DEIS
BLM Resource Management Plan for Western Oregon

The Oregon Hunters Association would like to add these comments to the DEIS:

1. Executive Order 13443 (Facilitation of Hunting Heritage and Wildlife Conservation; 72 FR 46537 needs to be incorporated into the final EIS to better address the effect of the final action(s) on game species and habitats, specifically how it will "expand and enhance" hunting opportunities. Analyze the impact of limiting the "harvest reserve base" on hunting and habitat.

2. EO 13443 also calls for working collaboratively with State governments. We urge BLM to actively consult with the Oregon Department of Fish and Wildlife to meet management objectives for deer and elk in western Oregon. Currently BLM has Deer and Elk Management Areas in 3 of the 6 Districts. It should determine if additional management areas are needed in all districts, and if so, provide them in consultation with ODFW.

3. Provide better public access to blocks of isolated BLM lands. BLM should identify large blocks of lands that lack access and seek ROW agreements or land exchanges to allow public access for recreational use.

4. Several alternatives look to increase OHV use, create special recreation areas and trail systems. The final EIS should provide management direction to districts requiring consultation with ODFW in the location and/or creation of any new OHV areas to ensure they avoid disturbance of critical big game habitat. Seasonal closures of OHV areas should be considered to reduce stress on big game during critical times of the year.

5. BLM should consider other additional actions that can protect and improve early seral habitat for deer and elk. It should consider meadows, grass lands and open oak savanna as areas for protection. Thinning and other treatments as appropriate should be considered to avoid encroachment on these open areas.

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Sent: Thursday, August 20, 2015 8:43 AM
To: RMP-Comments@heg-inc.com
Subject: Fwd: Comments on the BLM RMP for Western Forests
Attachments: BLM Draft Submission.docx

---------- Forwarded message ----------
From: **Alan Journet** <alanjournet@gmail.com>
Date: Thu, Aug 20, 2015 at 12:30 AM
Subject: Comments on the BLM RMP for Western Forests
To: blm_or_rmpwo_comments@blm.gov

Please find attached comments submitted by Alan Journet on behalf of Southern Oregon Climate Action Now.

Thank you.

Alan

--
Alan Journet Ph.D.

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Colleagues:

I write to offer comments on the Draft BLM RMP for Western Forests available at: http://www.blm.gov/or/plans/rmpswesternoregon/deis.php. Since the organization which I co-facilitate is primarily concerned about climate change issues, I will focus my attention on that component.

My first concern relates to the expressed purposes of the RMP. While I appreciate that the entire focus is not simply on maximizing timber harvest but also involves providing clean watersheds and recreational opportunities, it is disappointing not to find 'addressing climate change' present as one of the highest priorities.

This is troubling for two reasons:

The first is that the White House Council on Environmental Quality issued draft guidelines to Federal Agencies in December 2014 specifically directing them to take climate change and greenhouse gas emissions into consideration (https://www.whitehouse.gov/sites/default/files/docs/nepa_revised_draft_ghg_guidance_searchable.pdf).

p.2; "Overall, this guidance is designed to provide for better and more informed Federal decisions regarding GHG emissions and effects of climate change consistent with existing NEPA principles."

p.3: "Agencies should consider the following when addressing climate change: (1) the potential effects of a proposed action on climate change as indicated by its GHG emissions; and (2) the implications of climate change for the environmental effects of a proposed action."

The second reason concerns the seriousness of the climate change problem. Although the BLM draft briefly discusses greenhouse gas emissions under the proposed Alternatives in the section on Climate Change, the discussion is somewhat perfunctory and essentially dismisses the emissions problem on the basis that these forests represent a small percentage of the total emissions of the U.S. Such a dismissive judgment is typical of what we are seeing repeatedly from federal agencies when the question of greenhouse gas emissions is addressed (e.g. FERC 2014 DEIS in connection with the Pacific Connector Pipeline / Coos Bay Natural Gas Liquefaction Facility https://www.ferc.gov/industries/gas/enviro/eis/2014/11-07-14-eis.asp); this is unacceptable. If we as a nation are serious about protecting this planet for future generations we must assess these emissions and respond accordingly. For example, if we have 100 actions each only contributing 1% to the national problem, we have reached 100% of the problem, but have failed to address it because the actors in each case declined to address their contribution. The message is that we must each, individually, institutionally, and governmentally, take this issue seriously. We must make reducing emissions of, or promoting storage of, greenhouse gases a top priority in everything we do. If we fail to do this, we will undoubtedly consign future generations to an unlivable planet with climatic conditions that support none of the natural, agricultural, and forestry systems that currently occupy our planet and support us. And we will do it under the guise that our contribution really was insignificant. It is time for us all to accept that there is no 'insignificant' contribution to the climate change problem.

The best evidence suggests forestry and land use modifications are still responsible for some 17% of emissions globally (http://www.epa.gov/climatechange/ghgemissions/global.html#two even though recent reports suggest that emissions from forest management have dropped (http://www.fao.org/news/story/en/item/281182/icode/). Globally, our forest systems are critical in terms of their carbon storage capacity with fully 80% of stored biomass carbon residing in our forests. Conserving the carbon storage capacity of those forests is a critical component of any meaningful strategy to reduce our atmospheric carbon concentration. When the carbon composition of the soil is included in the equation the importance of healthy forest systems to our greenhouse gas emissions reduction efforts becomes even more evident. (http://icp.giss.nasa.gov/education/modules/carbon/projects/investigate2.html),

One component of a management plan that incorporates carbon storage as a goal will be an assessment of carbon emissions and carbon storage resulting from alternative management options and subsequent selection of that option with the best combination of maximizing storage and minimizing emissions.

An additional issue of importance is assessing the carbon cost of management versus the carbon cost of non-management. It is interesting to note (RMP p. 138) that currently annual emissions of carbon due to managed prescribed fire are higher than those due to wildfire. I presume the argument is that these losses are insurance against even greater losses should

severe wildfire occur. While the intuitively reasonable conventional wisdom is that thinning overly dense stands will reduce the likelihood of carbon losses due to wildfire (e.g. Wiedinmyer and Hurteau 2010), there is an important counter consideration that seems often to be overlooked. From a carbon storage perspective, the critical question is how much carbon is emitted through management to prevent wildfire compared to that which would be lost by wildfire in relation not to the assumption of its occurrence but to the probability of its occurrence (Ryan et al 2010).

In this context, it is also important to acknowledge the social cost of carbon emissions, i.e. the negative socio-economic impacts of each additional ton of carbon dioxide equivalent emitted. The EPA has computed these economic costs http://www.epa.gov/climatechange/EPAactivities/economics/scc.html) which are discussed also by Howard (2014) If the white House CEQ guidelines, and our individual personal responsibilities to future generations are to be taken seriously, assessment of alternatives in draft proposals such as this should clearly identify the relative social cost of each alternative. In this way, those making choices will know exactly what the costs are when they develop recommendations. If these social costs are not incorporated into the draft RMP such an evaluation will be impossible. Simply put: without assessment of the social cost of carbon emissions, alternatives will be judged and selected in ignorance of their real cost.

I am also concerned about the impacts of climate change on the individual tree species and concerned that the consideration of Alternatives should adequately take this into account. While the draft RMP effectively explores the potential impact of climate change on critical tree species, there is no effort to link this information to the various proposed alternatives. It is, therefore, difficult to know what is being done with this information to promote resistance, resilience or adaptation to the changing climate, and thus which alternative best meets the societal need for minimizing carbon emissions while maximizing carbon storage over the coming decades.

If we wish to maintain healthy forests as temperatures and other variable shift from historic norms, the RMP suggests (p. 158) that we must manage them for resistance (*i.e*. the ability to retain the current state when confronted by a disturbance) and resilience (*i.e.* the ability to return to their original state following a disturbance that perturbs that state). As Thompson *et al*. (2009) suggest, this means promoting complex forests exhibiting genetic and species diversity, and ecosystem diversity across the landscape. However, they also note that: "even high species diversity is no guarantee of resilience once climate conditions move beyond those experienced by most of the component species."

Although the projections of Rehfeldt (http://forest.moscowfsl.wsu.edu/climate/species/) and Shafer et al (2010) provide somewhat contradictory pictures for the future of our forest and component species under the business as usual scenario, the conclusion is that the composition

by the end of the century will likely be very different from what it is today. It would be valuable if the RMP took these analyses under advisement and proposed what would be expected for the forests of Southern Oregon under the various management alternatives. Given recognition in the RMP (p. 157) that historical tree migration rates since the depths of the last Ice Age are slower than the anticipated adjustment in climate conditions, it would be valuable to know how the various alternatives will handle such realities and what kind of forests they would likely produce by mid-century and late century.

In closing, I am aware that the Southern Oregon Forest Restoration Collaborative is submitting comments. I would like to encourage your examination of those comments also.

Howard, P. 2014 Flammable Planet: Wildfires and the social cost of carbon, Environmental Defense Fund, Institute for Policy Integrity, National Resources Defense Council 46pp http://costofcarbon.org/files/Flammable_Planet__Wildfires_and_Social_Cost_of_Carbon.pdf

Ryan et al 2010 A Synthesis of the Science on Forests and Carbon for U.S. Forests, Frontiers of Ecology 15 pp. http://www.fs.fed.us/rm/pubs_other/rmrs_2010_ryan_m002.pdf

Shafer, S., Harmon, M., Neilson, R., Seidl, R., St. Clair, B., Yost A. 2010 The Potential Effects of Climate Change on Oregon's Vegetation. In Dello, K and Mote, P. [Eds] Oregon Climate Assessment Report, Oregon Climate Change Research Institute, Oregon State University, Corvallis, OR.

Wiedinmyer, C., Hurteau, M 2010: Prescribed fire as a means of reducing forest carbon emissions in the Western United States. *Environmental Science & Technology*, **44**, 1926-1932

Jasmine Benjamin

From: m1allen@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Thursday, August 20, 2015 8:28 AM
To: RMP-Comments@heg-inc.com
Subject: Fwd: Comments RMP/d.e.i.s. from Umpqua Watersheds, Inc.
Attachments: d.e.i.s. comments, etc.zip

---------- Forwarded message ----------
From: **Joseph Patrick Quinn** <jquinn@mydfn.net>
Date: Wed, Aug 19, 2015 at 10:35 AM
Subject: Comments RMP/d.e.i.s. from Umpqua Watersheds, Inc.
To: blm_or_rmpwo_comments@blm.gov

Dear BLM:

Attached, please find comments on the Draft RMP/E.I.S. from Umpqua Watersheds, Inc. For your convenience, supporting documents are included in the same attached folder.

Please acknowledge timely receipt of these comments, et al to me at jquinn@mydfn.net

Sincerely,

Joseph Patrick Quinn
Conservation Chair, Umpqua Watersheds, Inc.

Federal Forest Carbon Report Card

An Urgent Call to the Obama Administration to Modernize Federal Forest Management to Mitigate and Prepare for Climate Disruption

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Federal Forest Carbon Report Card

An Urgent Call to the Obama Administration to Modernize Federal Forest Management to Mitigate and Prepare for Climate Disruption

The U.S. National Academy of Sciences, Intergovernmental Panel on Climate Change, and many other science organizations have recently said that large and rapid reductions in greenhouse gas emissions are urgently needed to prevent uncontrollable climate disruption. *This means that carbon dioxide is now a civilization-changing resource*.

Federal forests can and must play an important role in responding to the imperative of reducing atmospheric concentrations of carbon emissions. However, research by the Federal Forest Carbon Coalition, a national consortium of organizations concerned about the management of forest carbon, found that the U.S. Forest Service, Bureau of Land Management, and other federal forest management agencies lack clear policy and field direction about how to manage forest carbon. Furthermore, optimizing carbon storage is not an explicit decision criterion. As a result, most planning processes, Environmental Assessments and Environmental Impact Statements, and on-the ground projects fail to adequately consider the impacts of forest management on the Earth's climate.

This document offers an assessment of how federal agencies are currently managing forest carbon. It also offers a set of recommendations for how federal agencies can manage forest carbon in a scientifically credible manner. Finally, it includes a checklist that can be used by conservationists and federal agency personnel alike to ensure that of all of the key issues related to sound forest carbon management have been addressed.

Federal Forest Carbon Report Card

An Urgent Call to the Obama Administration to Modernize Federal Forest Management to Mitigate and Prepare for Climate Disruption

I. Federal Forests Must Play a Critical Role in Reducing the Climate Crisis

Forests are the lungs of the Earth and have helped regulate global carbon for millennia. Excessive logging, road building, and other development activity have reduced the amount of carbon stored in America's forests. Most of that carbon has been released into the Earth's atmosphere where it contributes to global climate change. If forests are not managed to maintain their existing stocks of carbon and optimize additional carbon stores, climate change will grow much worse.

However, with careful science-based management, U.S. forests can help mitigate climate change, become more resilient to its affects, and generate numerous economic, social and ecological benefits.

Federal forests, in particular, must play a leading role. The annual carbon emissions of the U.S. were 6.5 billion metric tonnes in 2012. National Forests in the U.S. hold more than 10 billion metric tonnes of carbon, which means they store about 50 percent more carbon than annual U.S. emissions.[1] Every possible action must be taken to prevent these existing stocks of carbon from being released into the atmosphere. If the right policies and practices are adopted, federal forests can store even more carbon. These actions will help minimize the likelihood of uncontrollable climate change. They will also offer a much-needed exemplary model that state and private forest in the U.S., and forests managers worldwide can emulate to manage forest carbon.

To protect the climate and serve as a role model, federal agencies must grasp how urgent it is to act now to maintain existing stores of carbon and increase the amount of carbon stored in federal forests. Atmospheric carbon dioxide increased by 25 percent in the last 50 years to over 400 parts per million, and it continues to rise. The world's top climate scientists have issued urgent warnings that we are fast approaching a point of no return—where climate change will become uncontrollable. If this occurs, we can expect devastating social, economic, and environmental consequences for centuries to come. This means that carbon can no longer be ignored or even looked at as merely one of many resources to manage. *We are compelled to say this again*: *carbon is now a civilization-changing resource*.

Federal forest management agencies have taken some positive steps to address this need by, for example, quantifying some carbon stocks and analyzing changes in carbon held in federal forests. However, assessing carbon is by no means sufficient. The agencies must quickly and definitively elevate their efforts to the scale of the climate crisis by adopting clear policies and direction to field staff on how forest carbon should be managed. The policies must lead to amendments to existing policies, regulations, planning processes, and practices as well as to the enactment of new directives to reduce the sources of climate change and increase resilience to climate and other natural disturbances, as President

Obama's Executive Order 13653 *Preparing the United States for the Impacts of Climate Change* and Executive Order 13514 *Federal Leadership in Environmental, Energy and Economic Performance* require.

The necessity for new policy directives for federal forests is great because most of the current policies, programs, and management practices were instituted well before the risks of runaway climate change were understood. Consequently, many current policies and programs either offer little direction for how federal agencies should manage forests to minimize the release of carbon emissions and prepare for climate impacts or promote activities that produce the opposite effects.

In addition, many of the tools used by, as well as the training and expertise of most of the personnel of federal forest management agencies, reflect conditions that existed prior to today's understanding of great risks of runaway climate disruption. This has led many federal agencies to apply timber management principles and practices to carbon management, when in fact they are very different issues that require a different mindset, goals, policies, regulations, programs, and management tools.

Similarly, many current commercial, recreational, and other uses of federal forests were established before the risks of runaway climate disruption were understood. Consequently, many ongoing uses and practices often cause the release of carbon into the atmosphere. For the sake of current and future generations, it is essential to rapidly modernize the way federal forests are managed and utilized to reduce the profound ecological, economic, and social risks associated with uncontrolled climate disruption.

II. Three Case Studies Reveal the Failure of Federal Agencies to Manage Forest Carbon to Reduce the Risks of Uncontrollable Climate Disruption

In response to a request from federal officials for examples of how carbon is being managed in the field, in 2014 FFCC Senior Policy Advisor and Retired Deputy Chief of the Forest Service, Jim Furnish, with assistance from FFCC staff, completed a brief survey of National Forests. We found that, contrary to the urgency of responding to the climate crisis, the U.S. Forest Service is taking few, if any, meaningful on-the-ground actions to maintain existing stocks and increase the carbon stored in the nation's 155 National Forests. We believe this failure is systemic.

Our research found that the National Forest system has not:

- Established an explicit goal of maintaining and increasing forest carbon on each forest.
- Analyzed the quantity of carbon in specific forest locations or the implications for those stocks of different management options when completing environmental assessments, forest plans, or proposals for field projects.
- Required that the effects on existing and future stores of carbon be considered in all decision-making; to the contrary, often carbon is not even mentioned as a consideration.

Three National Forests in diverse locations illustrate the status of forest carbon management on the national forests. They generally show the Forest Service's failure to give forest carbon the consideration it now requires. However, the case studies also show that past forest-management decisions that have lengthened harvest rotations or prohibit timber cutting altogether are having an unplanned positive impact on the amount of forest carbon. This should not be a surprise. Forests absorb carbon as they grow. But this unintended benefit should not be confused with purposeful forest carbon management.

<u>The Siuslaw (Oregon) and National Forest in the Pacific Northwest</u>

Situated in Oregon's Coast Range, this forest has undergone dramatic changes following the necessary reduction of industrial logging on public lands due to concerns about impacts to fish, wildlife, and water. The Siuslaw once had the highest levels of timber productivity in the US (on a per acre basis), producing 300-500 million board feet of wood products per year for decades. It also had the highest levels of carbon depletion. Adverse impacts on Pacific salmon, spotted owls, and other species led to President Clinton's 1994 Northwest Forest Plan, which brought much-needed change. For the last 20 years, the Siuslaw forest has followed a common-sense vision of protecting mature forests and thinning dense forests, while reducing the road system to better match current priorities. Through natural processes, the forest has been persistently restoring itself and increasing in carbon density. Yet, this has occurred absent any intentional actions to increase carbon.

Until the last few years, forest managers gave little thought to the effects of forest-management policy on carbon and climate change. The remaining mature and old-growth forests in the Pacific Northwest are among the most carbon dense forests in the world. Research has shown that clearcutting these forests can release up to 85 percent of the carbon in the trees, *with as little as 15 percent retained long-term in wood products*. Thus, former logging policies resulted in these forests being a very *large source of atmospheric carbon* during the latter 20th century. With the dramatic reduction in logging, the last 20 years have seen these same forests return to functioning as a *carbon sink*.

Clearcutting big trees was abandoned on the Siuslaw in 1994 in favor of thinning remnant logging plantations–but for the purpose of accelerating *creation of old-growth forest* rather than producing more timber. This policy was primarily driven by concerns for wildlife and fish habitat and water quality. Carbon was never a consideration.

Today, though, these mature coastal forests store vast amounts of carbon, and the amount is increasing every year. Fish habitat has improved, as has water quality. These outcomes demonstrate *a powerful relationship between carbon and water* in mature forests. Other important environmental services that closely correlated to increasing forest carbon include air quality, diverse wildlife habitats, recreation and solitude.

Thinning of the plantation stands occupying past clearcuts now provides a stable, sustainable flow of about 40 million board feet per year, while retaining forests that will continue to sequester and store carbon indefinitely as they age to maturity. But since this has occurred without an explicit focus on maintaining and increasing forest carbon, the Siuslaw's approach raises the question of *how much additional carbon the forest could store if it adopted an explicit goal of maintaining and increasing carbon*?

This question applies to national forests—and forests administered by the Bureau of Land Management as well—throughout the Pacific Northwest. Although the rate of carbon losses on PNW federal forests has been reduced as the total timber harvest on public lands has declined from a high of 11 billion board feet (1988) to about 2.5 billion today, *standard forest management practices regionwide still do not prioritize retaining and/or increasing forest carbon*. Thus, *the biggest trees* – highly valued for wood products but even more valuable for the carbon they keep from the atmosphere – continue to fall on many forests, triggering the loss of thousands of tons of carbon.

As mentioned, it is important to note that *research has found that the claim that cutting trees and converting them into lumber sequesters most of the carbon in wood products is false*. Because of the fossil fuels used and wood waste that is generated throughout the entire value-chain, including the process of cutting trees, transporting, milling the logs, and delivering them to end users, studies have shown that *only 15-30% of the carbon stored in trees becomes sequestered in wood products fifteen years after harvest*. The other 70-85% is released into the atmosphere.[2]

As the gravity of the climate crisis becomes evident, the Siuslaw demonstrates some increased carbon gains, even though *this has occurred inadvertently*. The adoption of

specific goals, policies, regulations, assessment procedures and management practices intended to maintain and increase carbon stores would enhance the Siuslaw's approach and likely lead to even more carbon storage. Not only would this reduce the risks of uncontrollable climate change, it would also produce a suite of natural co-benefits for water, wildlife, fish, air, biotic diversity, scenic beauty, recreation opportunities, and jobs.

<u>The Black Hills National Forest (S. Dakota and NE Wyoming)</u>

This island of ponderosa pine forest sits in the midst of America's Great Plains. This forest exhibits a *fire-adapted character*, with studies showing that they characteristically burned every 5-10 years due to abundant lightning-ignited fires in dry summer seasons. Under natural conditions, ponderosa forests have an open, park-like structure, with big old, thick-barked trees capable of surviving ground fires that then act as a seed source for new saplings.

Extensive, persistent logging of this highly valuable wood resulted in removal of the prized big, dominant trees that were the keystone for ecological resilience, and, as we now know, forest carbon storage. Also, aggressive firefighting throughout the 20th century deprived these forests of the benefits of frequent "cool" fires that sustained forest health. By 1980, after much of the Black Hills had been logged two and even three times, the predictable result was a homogenous, relatively young forest largely devoid of fire's influence and most of the big trees. Longer, dryer summers are leading to large-scale, catastrophic, all-consuming conflagrations when efforts to extinguish small fires fail (such as the 100,000 acre Jasper Fire of 2000, the largest in Black Hills' history). Things are slowly changing. Policy has shifted a bit, some of the more egregious practices have changed, and timber production is no longer the sole consideration, but there is no evidence that forest managers explicitly consider maintaining and increasing forest carbon as an objective in any management plan or decision. Current management seeks to reduce the density of live trees to decrease the likelihood of wildfire mortality, and reintroduces fire through prescription burning to mimic natural fire regimes. This management regime, however, does not reflect any analysis to determine its impacts on the amount of carbon stored on the forest, *despite a growing number of studies that suggest that many fuel treatment activities can result in the release of more, not less carbon.*

The Forest Service estimates that the Black Hills currently contains more than 55 million tons of carbon. Soil organic matter represents the largest forest ecosystem carbon stock, at more than 24 million tons, followed by trees (including roots) at more than 18 million tons. The majority of forest carbon is in 60-100 year-old stands.[3] Early in stand development, most carbon is below ground but as the forest grows more and more is found above ground.

In sum, our assessment found that the Black Hills has reduced some (but not all) of the practices that were counterproductive for forest ecosystems, wildlife habitat, water resources, and the climate. *However, maintaining and increasing forest carbon is not an explicit goal and consequently the forest is failing to optimize forest carbon.* The as yet unrealized benefits of increasing and sustaining below ground and above ground carbon

including the abundance of old, big, mature trees to boost carbon storage and anchor ecosystem health is a regrettable oversight.

<u>The Idaho Panhandle National Forest</u>

As the name suggests, this large, 2.5 million-acre area encompasses all national forest land in the Panhandle area of northern Idaho. Moist, relatively carbon-dense forests characterize this landscape. Aggressive timber harvesting following WWII produced about 300 million board feet per year, although the level has fallen over the past 25 years to about 50 mmbf today. The IPNF is heavily roaded, with about 11,000 miles.

The IPNF in 2010 released a more than 100-page report on climate change issues associated with its revised forest plan, but the FFCC found in it *no mention* of the role this 2.5 million-acre forest plays in sequestering and storing carbon and the effects on climate change.[4] In planning documents released in August 2013, the IPNF reveals a concern about current "thick" forest conditions exacerbating fire risk, both from decades of regeneration harvesting (yielding a large acreage of dense, young trees) and fire suppression leading to exclusion of fire's natural role in the ecosystem. The documents briefly discuss the relationship between forest carbon and climate change, but without any statement related to the goal of maintaining and increasing carbon stores.

The Forest Service estimates the IPNF contains 177 million metric tons of forest carbon, and sequesters 27-31 metric tons/acre/year, making the forest a carbon sink. These numbers raise questions about their validity, though, insofar as sequestration of 30 metric tons/ac/yr would yield 75 million metric tons per year, or 42 percent of the IPNF's estimated total carbon. This projection appears to be off by at least a factor of ten. A comprehensive rate of carbon sequestration in Oregon and Washington National Forests was recently calculated at only 0.37 metric tons/ac/yr (0.91 Mg/ha/year), and results produced by the Carbon Online Estimator (COLE) for forested areas in the Idaho Panhandle show rates for the uptake of carbon in all forest types that are less than 1 metric ton of Carbon/ac/yr.[5] Although the IPNF highlights wood products for their capacity to store carbon, it makes no mention of the associated carbon losses from logging and the loss of carbon through the entire economic value chain leading to the use of lumber (as previously stated, research indicates that 70-85% or more of forest carbon is released into the atmosphere and only 15-30% is retained in wood products after 15 years—which also continues to degrade over time). This position displays a limited awareness of and concern for forest carbon, and a failure to investigate the full literature regarding the relationship between timer harvest and the storage of forest carbon.

It is clear that a pervasive bias exists in the Idaho Panhandle NF: the belief that carbon must be <u>*removed*</u> in order to <u>*save*</u> carbon. *This perception points to what the FFCC has found to be a fundamental tenet within many federal forest management agencies*: federal forest policy is to remove live trees through thinning, or dead trees through salvage logging, in order to reduce risk of *potential loss* of forests. But the <u>*real loss*</u> of carbon from removing live trees, as well as the carbon held in the roots and soil, is not accounted for as the agency focuses on addressing a *possible loss* in the future.

IPNF management is being conducted today without proper goals or analysis of forest carbon and consideration of research that conflicts with this tenet. It may be true that the IPNF functions as a carbon sink today but that is the result of totally unplanned measures–and even then the FFCC questions the Forest Service's estimates. Forest managers have demonstrated that they have not asked and answered the question: "*How much more carbon could be stored if management focused on this objective?"*

Case Study Conclusions

These case studies lead us to conclude the following:

- Senior officials and field staff in federal forest agencies have limited awareness of the importance of forest carbon in reducing the likelihood of uncontrollable climate change.
- No evidence exists of intentional policies issued by the Chief's Office or Regional Offices to conserve existing stocks of forest carbon and increase carbon stores.
- No procedures exist to assess the effect of plans or projects on forest carbon.
- In many cases a mindset and set of assumptions exist that timber harvest and other activities are scientifically sound methods of managing forest carbon, when in reality they are not.
- Forest managers do not yet provide a thorough, transparent analysis of the effects on carbon, nor do they utilize decision criteria that recognize the importance of carbon in planning processes, environmental assessments, or project proposals.
- No recognition exists of the benefits of managing forest carbon for other strongly correlated values, such as water quality, habitat diversity, and job creation.
- No recognition exists of the need to assess the social costs of carbon—the costs of the damage to people, infrastructure, and society as a whole now and in the future— in planning documents, timber harvest, road building, or other development projects.

In sum, the Forest Service has failed to explicitly manage forests in ways that address the urgency of the climate crisis. *As previously stated, carbon is now a civilization changing resource*, but these case studies illustrate that the Forest Service has not yet recognized this. The FFCC believes *these failings are systemic and exist in most other federal forest management agencies as well.*

III. Recommendations for Modernizing Federal Forest Management to Mitigate and Prepare for Climate Change

Based on our analysis of the current state of the science of forest carbon management, the FFCC believes that federal forests should modernize their policies, regulations, planning processes, management programs and practices in accordance with the following six goals:

> Goal I: Recognize Carbon as a Significant Public Resource and Establish Carbon and Climate Change-Centered Goals for All Decisions Affecting Federal Forest Management.
>
> Goal II: Maintain the Existing Stocks of Carbon on Federal Forests, Including Carbon in Live and Dead Materials, Above and Below Ground.
>
> Goal III: Increase the Amount of Carbon Stored in Federal Forests.
>
> Goal IV: Enhance, Consistent with Goals I, II, and III, the Resilience of Federal Forests to Climate Change-Related and Other Natural Disturbances.
>
> Goal V: Generate Social, Economic, and Ecological Benefits Consistent with Goals I, II, III, and IV.
>
> Goal VI: Fully Account for the Benefits and Costs of Any Decreases or Increases in Atmospheric Carbon and Other Greenhouse Gasses in All Forest-Related Policies, Programs, Regulations and Development Proposals.

Detailed Recommendations

This section describes the details embedded within each of the six goals.

Goal I: Recognize Carbon as a Significant Public Resource and Establish Carbon and Climate Change-Centered Goals for All Decisions Affecting Federal Forest Management.

Recent reports by the National Academy of Science, Intergovernmental Panel on Climate Change, and the U.S. Global Change Research Program make clear that climate change is already having significant impacts in the U.S., and that major rapid changes are needed to reduce the risks of runaway climate change. Because federal forests store large amounts of carbon, and managerial decisions for these forests can determine how well they continue to play this vital role, all federal forest management agencies should be required to recognize carbon as a significant public resource and adopt clear carbon and climate change-centered goals.

The FFCC therefore recommends that The White House issue clear directives to the Departments of Interior and Agriculture and all other federal forest management agencies

to adopt goals to maintain existing carbon stocks while also increasing carbon stored, especially where it is harmonious with other multiple-use objectives, such as clean water, high quality habitat for fish and wildlife, recreation, and scenic values. These goals should direct forest management agencies to do whatever is possible to harmonize carbon storage and climate resilience, resolving conflict in favor of carbon storage because uncontrollable climate change will overwhelm many resilience measures that can be taken today while causing devastating impacts for all of humanity, now and in the future.

<u>Goal II</u>: Maintain the Existing Stocks of Carbon on Federal Forests, Including Carbon in Live and Dead Materials, Above and Below Ground.

A. Permanently Withdraw High-Biomass Forested Areas Nationwide from Further Commercial Timber Harvest and Other Development Activities.

Runaway climate change will devastate the U.S. and global economy and diminish the resilience of federal forests. To reduce these risks, quick and decisive action is needed to prevent, whenever feasible, the release of carbon into the atmosphere. Federal forests must be a core role in reducing emissions. The annual carbon emissions of the U.S. were 6.5 billion metric tonnes in 2012. Research suggests that, if managed appropriately, the nation's terrestrial ecosystems could offset as much as 40% of these emissions.[6] While this total includes agricultural and other lands, the FFCC will limit its recommendations to federal forests.

A vital early action needed to reduce carbon emissions is to prevent, whenever feasible, the release of stored carbon on federal forests. The largest amount of carbon on federal forests is found in high-biomass forests, as defined by Krankina et al.[7] Protecting high-biomass forest areas is an essential starting point for any scientifically credible forest response to the President's Executive Order 13653.

The FFCC specifically recommends that all federal forest management agencies immediately withdraw all high-biomass forests on federal lands and place a moratorium on further commercial timber harvest, road building, post-fire logging, oil and gas drilling, mining, and other development activities. Agencies should use the definition and process described by Krankina et al. to identify these areas.[8] After these areas are withdrawn, thorough scientific analysis should be completed to develop plans to reduce the risks of these forests to climate change-related and other natural and human disturbances.

B. Authorize Commercial Timber Harvest and Other Development Activities in Other Mature Forests Only When Analysis Shows the Carbon Benefits Exceed the Full Costs over the Mid-Term (i.e. 20-40 years).

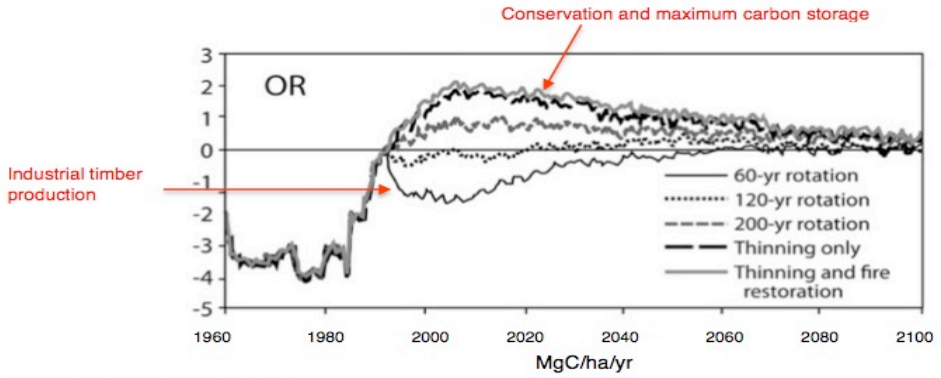
Mature forested areas, as defined by federal forest management agencies, also provide opportunities for maintaining carbon stocks on federal lands. The release of carbon from these areas must also be avoided. The FFCC therefore recommends that commercial harvest, road building, and other development activities should be authorized in mature forests only after federal agencies have completed scientific, comprehensive, transparent

analysis that shows that the carbon benefits of the activities substantially outweigh the costs.

Two recent publications illustrate an approach for estimating the economic value of the carbon stored or emitted under forest-management alternatives. One publication estimates the social cost of carbon, i.e., the value of the economic damage that will result from the emission of one metric tonne of carbon dioxide or, conversely, the value of the damage that will be prevented by sequestering the same amount.[9] The mid-level estimates range from about $33 in 2015 to $71 in 2050 (2007 dollars).

The second publication, by forest scientists at Oregon State University, estimates the amount of carbon dioxide that would be emitted or sequestered under forest-management alternatives for federal lands managed by the Northwest Forest Plan (NWFP).[10] This research traced carbon stores on these lands from 1960 until the adoption of the NWFP in 1993, and then projected carbon stores under five alternatives: industrial logging with 60-year rotations, logging with 120-year rotations, logging with 200-year rotations, conservation with the thinning and fire-management currently allowed by the NWFP, and conservation with current level of thinning and restoration of historical fire regimes. The researchers did not assess an alternative with no thinning. The modeling found that, through 2100, the first of the alternatives (60-year rotations) would convert the greatest amount of forest carbon to atmospheric carbon dioxide, and the last of the alternatives (thinning and fire restoration) would store the most carbon.

The graph below shows the annual results for lands in Oregon, measured in Mg of carbon per hectare per year. These results, converted to the equivalent annual metric tonnes of carbon dioxide emitted or sequestered and multiplied by the social cost of carbon for each year, can support a comparison of the carbon-related social costs, or benefits, of one alternative versus another.



Source: Krankina, et al. (2012 p. 176).

Such a comparison would provide only an initial estimate of the carbon-related costs or benefits of one alternative relative to another. Additional consideration should be given to accounting for, even if qualitatively, major sources of uncertainty in the analysis. The analysis also should transparently account for other effects, such as the value of each alternative's effects on clean water, habitat, and other co-benefits of carbon stored by

federal forests, as well as effects not included in the estimates of the social cost of carbon. These include effects, like those associated with the acidification of freshwater and seawater resulting from rising atmospheric carbon dioxide levels, that cannot be monetized with currently available information.

C. In Planning Rules, Establish a Process to Classify, Designate, and Conserve Forested Areas with High Carbon Stocks.

The growing risks of runaway climate change mean that the long-term conservation of forested areas with high carbon stocks must become a top priority for federal forest management agencies.

FFCC therefore recommends that a process be initiated to incorporate into planning rules a new land-use classification that leads to the designation and permanent conservation of forested areas with high carbon stocks. The FFCC also recommends that a formal process be established to define the criteria that will be used to determine such classifications and to nominate forest areas that satisfy these criteria. While the criteria are being established, the FFCC recommends using levels above regional forest biomass averages for specific forest types to determine relative significance of carbon stores because similar techniques have been used in the literature. [11]

Establishing a new classification for the conservation of forested areas with high carbon stocks is consistent with both the National Forest Management Act (NFMA) and the Federal Land Policy and Management Act (FLPMA). The NFMA language (16 U.S.C. § 1603) states, for example, that "the Secretary of Agriculture shall develop and maintain on a continuing basis a comprehensive and appropriately detailed inventory of all National Forest System lands and renewable resources. This inventory shall be kept current so as to *reflect changes in conditions and identify new and emerging resources and values*" (italics added). The emergence of climate change certainly reflects new conditions and scientists have identified high-biomass forests as an incredibly important emerging resource and value.

<u>Goal III</u>: Increase the Amount of Carbon Stored in Federal Forests.

A. Prevent Management Activities, Including but Not Limited to Timber Harvests That Would Reduce Increases in Carbon Stocks on a Federal Forest.

The FFCC strongly believes that federal forest management agencies must adopt policies, programs, regulations, and practices to increase carbon sequestration on federal forests through practices that *also* maintain the existing stocks of carbon. In other words, actions to accelerate the sequestration of carbon from the atmosphere must not lead to the loss of carbon already stored in the trees and soils of federal forests.

A starting point for achieving this goal is to prevent deforestation from clearcutting, road building, oil and gas development and other actions that would degrade a forest's ability to maintain existing stores and increase the sequestration of carbon. The FFCC therefore recommends that policies, programs, and regulations be adopted to prevent deforestation

resulting from road building, energy production, and other development activities as well as the conversion of forests to pasture, or scrub lands. The FFCC opposes policies and projects that would reduce a forest's capacity to sequester and store carbon.

B. Increase the Carbon Stored on Federal Forests by Reducing Human Disturbances.

Older forests sequester and store additional carbon as they age. Thus, increasing rotation ages and lengthening the interval between commercial timber harvests will, over time, increase carbon stored in forests. By contrast, harvesting trees in short rotations generally reduces the amount of carbon held in a forest, especially when fully accounting for the damage to soils and biodiversity often created by heavy equipment and the emissions generated by the equipment and other practices associated with commercial timber harvest. [12]

The FFCC therefore recommends that federal forest management agencies increase forest growth by reducing both the frequency and intensity of human disturbances. This will also increase the resilience of federal forests to climate and other natural disturbances by increasing the diversity of vegetation and age classifications. In addition, longer rotations will significantly enhance ecological co-benefits such as habitat diversity and cleaner supplies of water and reduced risk of landslides and flooding for downstream agricultural and urban uses.

<u>Goal IV</u>: Enhance, Consistent with Goals I, II, and III, the Resilience of Federal Forests to Climate Change-Related and Other Natural Disturbances.

A. Use Principles of Conservation Biology, Including Restoration of More Natural Fire Regimes in Mesic and Xeric Forests, as the Basis for Building the Resilience of Federal Forests

> *Conservation biology is a "mission-oriented crisis" multidisciplinary science that has developed to address the loss of biological diversity (Soulé 1986)*

Climate change presents a new set of challenges for federal forests that traditional forest-management principles and practices do not adequately address. For example, respected conservation biologist Reed Noss states:

> *Among the land-use and management practices likely to maintain forest biodiversity and ecological functions during climate change are (1) representing forest types across environmental gradients in reserves; (2) protecting climatic refugia at multiple scales; (3) protecting primary forests; (4) avoiding fragmentation and providing connectivity, especially parallel to climatic gradients; (5) providing buffer zones for adjustment of reserve boundaries; (6) practicing low-intensity forestry and preventing conversion of natural forests to plantations; (7) maintaining natural fire regimes; (8) maintaining diverse gene pools; and (9) identifying and protecting functional groups and keystone species. Good forest management in a time of rapidly changing climate differs little from good forest management under more*

static conditions, but there is increased emphasis on protecting climatic refugia and providing connectivity. [13]

Similarly, recommendations made by the Climate Leadership Initiative at the University of Oregon in its 2008 *Framework for Integrative Preparation Planning* include [14]:

- *Reduce anthropogenic stress in anticipation of increased climate stress, which means less logging, less roads, less weeds, and etc.*
- *In the face of uncertainty, "no regrets" decisions are preferable.*
- *Maintain diversity of native species, genes, and ecosystem composition and structure.*
- *Maintain self-organized ecosystem resilience and resistance.*
- *Maintain natural disturbance regimes such as recurrent wild fire and flood plain inundation.*
- *Maintain connectivity for wildlife interaction with food supply and migration to more suitable habitat under new climate conditions.*
- *Complementarity – this concept captures the co-benefits that climate change preparation strategies will create by improving wildlife habitat, biodiversity, water quality, carbon storage, scenic values, and other "ecosystem services."*
- *Equity should be adhered to across generations, among human communities and between human and natural systems.*
- *Humility requires recognizing that interventions to prepare ecosystems for climate change should be informed, limited, and strategic.*
- *Abundance and redundancy will spread the risks of habitat loss due to climate change spatially across landscapes.*

In many cases these principles conflict with existing approaches to federal forest management. However, the risks of uncontrollable climate change are large and growing. The FFCC therefore recommends that all federal forest-management agencies use the principles stated above, and other principles and strategies of conservation biology, as the basis for efforts to build the resilience of federal forests nationwide to climate change-related and other natural disturbances.

B. Where Needed, Focus Fire-Related Forest Thinning in the Immediate Vicinity of Human Habitation and Infrastructure and Avoid Thinning Elsewhere Unless Careful Analysis Shows Net Carbon Benefits over the Mid-Term (20-40 years).

The FFCC recognizes that on-going and expected future changes in climate will continue to increase the risk of disturbances, such as fire and insect infestation, or as more intense droughts and other changes in growing conditions retard the growth of or kill trees. Species distribution shifts are also likely in response to climate change over decades to centuries. In addition, the FFCC recognizes the hazards of wildfires for communities and essential built infrastructure and that members of the public often have a visceral reaction to wildfire, especially when a fire threatens their lives or property.

However, it is important to remember that fire has in the past and continues today to play a major role in maintaining forest health, diversity, and resilience. While recent studies have shown an increase in the onset and length of the fire season, and in the extent of wildfires

in certain places, some research suggests that in most locations *there is an overall deficit in wildfire compared to historical conditions*.[15] In addition, as climate becomes more of a top-down driver of fire behavior, *thinning will become less effective and will require increasing effort over large landscapes,* thereby i*ncreasing carbon emissions above the level released by even severe fire*.

In addition, a growing body of research has raised significant questions about the need for, and the carbon implications of, thinning treatments. A good summary of some of these questions is provided below. It is excerpted from "Wildland fire emissions, carbon, and climate: Seeing the forest and the trees – A cross-scale assessment of wildfire and carbon dynamics in fire-prone, forested ecosystems" recently published in the *Journal Forest Ecology and Management* [16]:

> The stochastic and variable nature of fires, the relatively fine scale over which fuels treatments are implemented, and potentially high carbon costs to implement them suggest that fuel treatments are not an effective method for protecting carbon stocks at a stand level (Reinhardt et al., 2008; Reinhardt and Holsinger, 2010). For example, in fire-prone forests of the western US, because of the relative rarity of large wildfires and limited spatial scale of treatments, most treated areas will not be exposed to wildfire within the 10–25 year life expectancy of the treatment (Rhodes and Baker, 2008; Campbell et al., 2012; North et al., 2012). Further, some studies show that the difference in carbon emissions between low-severity and high-severity fire is small when scaled across an entire wildfire because consumption of fine surface fuels associated with low-severity fire occurs across broad spatial extents, while consumption of standing fuels associated with high-severity fires occurs in small patches within the larger wildfire perimeter (Campbell et al., 2012). Fuel treatments designed to reduce wildfire severity and wildfire-related carbon emissions have carbon costs in the form of fossil fuel emissions from harvesting activities, transportation of removed material, and milling waste (North et al., 2009). In addition, because probability of fire increases with time since fire, fires cannot be excluded indefinitely from fire-prone forests, and large surface and ladder fuel loads associated with long-unburned stands are more likely to result in high-severity wildfires and large carbon releases (Peterson et al., 2005; Stephens et al., 2009a). High carbon stocks resulting from fire exclusion and in-growth, particularly in forests adapted to frequent fire, are unlikely to be sustainable (Hurteau et al., 2011).
>
> Fires confer ecological benefits that may (e.g., nutrient release and redistribution and stimulation of plant growth, increased productivity in soil systems from decomposition of burned material, initiation of vegetation succession and forest regeneration, increased availability of resources for surviving trees) or may not (e.g., increased plant species richness, creation of critical wildlife habitat, biodiversity and heterogeneity) be directly measurable in units of carbon (Habeck and Mutch, 1973; Boerner, 1982; Delong and Tanner, 1996; Hirsch et al., 2001; Saab et al., 2004; Turner et al., 2004; Hutto, 2008; Keane et al., 2009; Schoennagel et al., 2009). In addition, suppression of wildfires in fire-prone landscapes, while initially increasing forest carbon density (Canadell and Raupach, 2008), may increase vulnerability of systems to transformation; i.e., reduce resistance (Walker et al., 2004; Briske et al., 2006; Pausas and Keeley, 2009). Because of inherent difficulties in tracking long-term benefits of treatments, recent papers have suggested that we should question not *how* forests can be managed for carbon, but *whether* they can be managed for carbon, especially using current management practices (Mitchell et al., 2009; Campbell et al., 2012; Bowman et al., 2013).

Because scientific questions that have been raised about the degree to which forests in many regions of the nation are actually outside of their natural fire regime, and because questions have been raised about efficacy of forest thinning as a tool to reduce the risks of wildfire and associated loss of carbon, the FFCC recommends that federal forest management agencies should adopt a goal to avoid interfering with the return of more natural forest fire regimes.

If thinning for wildfire-related reasons is considered, the FFCC recommends that it should be approved only under the following conditions: a) There is high risk of damage due to wildfire in the immediate vicinity of structures inhabited by people and/or critical built infrastructure; b) Analysis shows that reduced fuel loads will increase the survival of those structures and infrastructure; c) Thinning treatments can be readily maintained over time; d) Careful analysis indicates that thinning is clearly needed to preserve critical habitats or ecosystem structure and function; and e) Rather than being applied to broad areas without understanding how it will affect fire dynamics, thinning projects are strategically designed to function within the context of the local landscape and seek to direct fire in specific directions.

C. Prohibit the Burning and Salvage Logging of Dead Wood in High Biomass and Mature Forests.

While it is often assumed that salvage logging provides ecological benefits, significant scientific questions have been raised about the efficacy of this practice. For example, it is often assumed that salvage logging focuses only on dead trees. In practice, however, salvage logging typically includes harvesting live green trees as well, which reduces carbon stored on federal lands. It is often wrongly assumed that burned or other dead trees do not store significant carbon for long periods of time. In addition, carbon emissions are generated from harvesting equipment, transportation of material, milling, and wood waste.[17] Due to the heavy equipment used, salvage logging also often damages or kills native seedlings, compacts and disturbs soils, releases sediment into streams, and produces other impacts that reduce the resilience of forests.[18]

The replanting and establishment of forest monocultures also typically follow salvage logging. This results in conditions that are less resilient to climate change-related and other natural disturbances. Complex native forests that develop naturally after disturbance are more resilient to climate change and much more biodiverse than simplified plantations.[19]

In addition, scientific questions have been raised about the effectiveness of salvage logging as a fuel reduction strategy because evidence indicates that it often makes forests more prone to damage in subsequent fires. [20] For example, the 2014 report by the Intergovernmental Panel on Climate Change states that [21]:

> ... [*R*]*educing emissions from deforestation and degradation may also yield co-benefits for adaptation by maintaining biodiversity and other ecosystem goods and services, while plantations, if they reduce biological diversity may diminish adaptive capacity to climate change (e.g., (Chum et al., 2011). Primary forests tend to be more resilient to climate change*

> *and other human-induced environmental changes than secondary forests and plantations (Thompson et al., 2009). The impact of plantations on the carbon balance is dependent on the land-use system they replace, while plantation forests are often monospecies stands, they may be more vulnerable to climatic change (see IPCC WGII Chapter 4) ... Adaptation measures in return may help maintain the mitigation potential of land-use systems. For example, projects that prevent fires and restore degraded forest ecosystems also prevent release of GHGs and enhance carbon stocks (CBD and GiZ, 2011). ... Forest and biodiversity conservation, protected area formation, and mixed-species forestry-based afforestation are practices that can help to maintain or enhance carbon stocks, while also providing adaptation options to enhance resilience of forest ecosystems to climate change* (Ravindranath, 2007)...

For these reasons, the FFCC recommends that salvage logging be prohibited in high-biomass forest areas, and allowed in other forests only after a comprehensive, transparent assessment shows a high likelihood that the carbon benefits of the proposed project substantially outweigh the costs. Such an outcome might be possible, for example, where salvage logging can be accomplished using horse logging or other reduced-impact techniques with low carbon emissions, and short hauls to a mill. In addition, the FFCC recommends prohibiting the purposeful combustion of dead wood (slash burning) in high-biomass areas of federal forests.

D. Place a 5-Year Moratorium on New Leases for Fracking for Oil and Natural Gas on Federal Forests to Allow for an Assessment of Hydrofracking Consequences and the Values at Risk on Our National Forests.

The FFCC recommends that a 5-year moratorium be established on new leases and renewal of dormant leases for the purpose of fracking for oil and natural gas on federal forests to allow for an assessment of hydrofracking consequences and the values at risk on our national forests. When a lease has already been executed the FFCC recommends that every possible method be used to monitor the project and to minimize the ecological impacts to the extent possible.

Existing laws and policies provide sufficient foundation for this recommendation. U.S. Forest Service policy states that withdrawing lands from mineral leasing shall be requested only in circumstances where there are *sensitive, unique surface resources that cannot be adequately protected under current public laws and federal regulations.* For example, areas within limits of incorporated cities or wilderness areas are closed to leasing. The Federal Government's Mining and Minerals Policy of 1970 states that the Forest Service is directed to provide commodities for current and future generations while continuing to *sustain the long-term health and biodiversity of ecosystems.* The Federal Land Policy and Management Act of October 21, 1976 requires that public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and *atmospheric, water resource*, and archeological values; that, where appropriate, *will preserve and protect certain public lands in their natural condition*; that will provide food and habitat for fish and wildlife and domestic animals; and that will provide for outdoor recreation and human occupancy and use.

The FFCC believes these requirements provide sufficient cause—and authority—to prohibit future leases for fossil fuel extraction on federal forests.

In addition, the natural gas and oil generated by fracking on federal forests constitutes only a tiny fraction of the energy used in the U.S. However, the risks to the climate, ecosystems, and biodiversity as well as the resilience of federal forests to climate related and other natural disturbances resulting from fracking are great. The Obama Administration will demonstrate its commitment to maintaining the health and resilience of federal forests and addressing the climate crisis by prohibiting new leases and the renewal of dormant leases for fracking for natural gas.

E. Deny Proposals to Extract Biomass for Energy or to Harvest Timber for Wood Products Unless Analysis Shows Net Carbon Benefits over the Mid-Term (20-40 years).

The Obama Administration has voiced a great deal of support for the idea of forest biomass as a source of energy that generates fewer greenhouse gas emissions than fossil fuels while also providing jobs and income. Similarly, claims have been made that the use of wood for construction materials leads to lower carbon emissions than the use of aluminum and steel. However, many scientific questions have been raised about the validity of both claims and both run the risk of reducing the resilience of federal forests.

The FFCC therefore recommends that scientific, comprehensive, transparent analysis of proposed biomass energy development and timber harvest projects intended to provide wood for construction be completed before any such proposals are approved. The assessments should unequivocally show that the carbon benefits of the proposed projects substantially outweigh the costs over the mid-term (i.e. 20-40 years).

In concept, harvesting and burning wood derived from certain forests as a source of energy could reduce fossil fuel emissions. Similarly, in concept, using wood in construction could lead to increased carbon stores. However, research has not substantiated these claims. To the contrary, a synthesis of research concluded that the benefits of logging forests for biomass energy or to substitute for other construction materials could be more than offset by reductions in stored forest carbon.[22]

In addition, the carbon benefits of biomass energy would accrue only if it actually substitutes for fossil fuels. When the regional electrical grid already contains substantial amounts of clean renewable energy (e.g. wind, solar), or when biomass energy is merely added on to energy generated by fossil fuels rather than substituting for it, the carbon benefits would be small to none. [23] In addition, incentives for and investment in current, inherently inefficient wood burning technologies detract from development of much-needed advanced clean energy sources.

The risks of runaway climate change are now so great that the White House and federal forest management agencies should take a precautionary approach and make every effort

to avoid mistakes that lead to the release of more carbon from federal forests. For this reason the FFCC recommends that biomass energy proposals and timber harvest for wood product proposals be approved only if compelling evidence is provided on a case-by-case basis through comprehensive verifiable scientific assessments that the projects generate net climate and ecological benefits over 20-40 years.

F. Significantly Reduce Emissions Generated by the Use of Fossil Fuels in Forest Related Activities.

The FFCC recommends that fossil fuels used by federal forest managers, timber operators, recreational users, tourists, and others in conjunction with commercial and non-commercial activities on federal forests be substantially reduced. The combustion of fossil fuels associated with management, commercial, and noncommercial activities on federal lands contributes to climate disruption that increases the risk of large scale natural disturbances that undermine the resilience of federal forests. In addition, the greenhouse gas emissions generated by long transportation distances often associated with wood and pulp industries contribute to climate disruption and thus add greater risks to federal forests.[24] The FFCC therefore believes that the social costs of carbon resulting from management, commercial, and noncommercial activities on federal forests should be assessed through scientific, comprehensive, transparent analysis. Emissions should then be minimized by policies requiring a reduction in the use of vehicles and heavy equipment, a shift to clean, renewable fuels, the use of public transportation for recreation and other noncommercial purposes, and other similar strategies.

<u>Goal V</u>: Generate Social, Economic, and Ecological Benefits Consistent with Goals I, II, III, and IV.

A. Increase the Supply of Ecosystem Services Compatible with Storing Carbon on Federal Forests.

> *Healthy forest ecosystems are ecological life-support systems. Forests provide a full suite of goods and services that are vital to human health and livelihood, natural assets we call* ***ecosystem services.***[25]

The FFCC recommends that federal forest-management agencies acknowledge that the storage of carbon on federal forests provides multiple ecosystem services vital to human health and livelihood and use their efforts to conserve and increase carbon stores to optimize the supply of compatible ecosystem services. Maintaining existing stocks of carbon, increasing carbon sequestration, and maintaining or enhancing the resilience of federal forests will have positive social and economic co-benefits by increasing the supply of the many critical ecosystem services associated mainly with federal forests. For example, conserving forests and forested areas with high carbon values can generate numerous co-benefits, such as habitat for wildlife, soil productivity, pollination, and clean water. [26] Improvements in the quality of river water by protecting high biomass watersheds, for instance, can increase the value of water flowing from federal lands to communities downstream. Reforesting areas that were at one time naturally covered with trees but can

be proven to not be naturally regenerating on their own can prevent erosion and reduce the risk of floods that affect ecosystems and communities downstream.

B. Promote Carbon-Conservation and Restoration Jobs Consistent with Climate and Ecological Goals.

The FFCC recommends that rural economic and community development policies and programs be amended or adopted to expand and capitalize on opportunities to generate jobs and other economic benefits associated with conserving and restoring the carbon stored by federal forests. Most of these opportunities stem from the need to restore the ability of federal forests to generate the ecological, social, and economic co-benefits associated with carbon stores. These opportunities include, but are not limited to jobs associated with outdoor recreation, wildlife-viewing, fishing, tourism, stream restoration, and fisheries restoration on federal forests. The FFCC suggests that the Small Business Administration, the Economic Development Administration, and other rural development agencies investigate the possibility of using programs like the Business and Industry Guaranteed Loan Program and the Rural Economic Development Loan and Grant Program, and others to achieve these ends.

In some cases activities that maintain existing pools of carbon, increase stored carbon, and build the resilience of federal forests to climate and other disturbances might reduce timber harvest jobs. If this occurs, rather than continuing to support activities that increase the risk of uncontrollable climate change, programs should be established to temporarily support timber workers and their families financially (e.g. retraining assistance) and in other ways help them make the transition to industries and jobs that are consistent with the goals of the President's Executive Order, the recommendations in this document, and the need to reduce the risks of uncontrollable climate change.

C. Realign Forest-Related Payments to Local Governments to Reflect the Direct Value of Storing Carbon and the Value of the Co-Benefits of Other Ecosystem Services Provided by Forests.

Local governments containing or adjacent to federal forests have, in recent years, received payments of about $400-600 million through three programs. One entails the sharing of revenue derived from the sale of timber and other resources. The Secure Rural Schools and Community Self-Determination Act (SRS) provides money to rural counties and schools affected by declines in timber-sale revenues. Payments in Lieu of Taxes (PILT) help offset losses in property taxes due to non-taxable Federal lands within their boundaries. These payments provide a significant portion of the budget resources for many local governments, but high variability in the levels of payment, and uncertainty about whether or not they will materialize at all, can disrupt the provision of local services. The structure of the payments to counties also creates incentives for local governments and residents to call for a commodity-based approach for managing federal forests, even if the overall costs to Americans as a whole outweigh the benefits.

The FFCC therefore recommends that, if forest-related payments to counties continue, they

should reflect the new emphasis on storing carbon on federal forests as well as the provision of other ecological services generated by forests. Specifically, the FFCC recommends that the Executive Branch draft and work diligently to secure the passage of legislation that would modify forest-related payments to local governments so they reflect the value of the services federal forests provide all Americans by storing carbon that if released into the atmosphere would cause harm locally, nationally (and globally) for centuries to come, and by generating the numerous other ecological co-benefits that accompany carbon storage such as habitat improvements for fisheries and other forms of biodiversity, enhanced water quality and quantity for downstream users, reduced risks of landslides and siltation, and more.

This value is large. For example, the mid-level estimate by the Interagency Working Group on the Social Cost of Carbon of the monetizable damage from the emission of carbon dioxide is about $50 (in current dollars) per metric tonne over the next few years. This amount suggests that, if the 10 billion metric tonnes of carbon currently stored on national forests were emitted to the atmosphere, the monetizable damage would total about $2 trillion. If even one percent of the carbon stored on federal forests were released into the atmosphere each year the annual monetizable damage would be around $20 billion. Managing federal forests to hold onto the stored carbon helps prevent this damage. Further advantages would materialize from managing them to store additional amounts of carbon. Moreover, this number does not reflect many types of damage from carbon dioxide emissions, such as those associated with acidification of freshwater and seawater, nor does it incorporate the value of co-benefits, such as improvements in water quality, habitat, and recreational opportunities in mature and old-growth forests.

Basing forest-related payments to counties on the value of the services all Americans receive from stored carbon and its co-benefits would have several advantages over the current system. It would better reflect the true value of the federal forests and the importance of managing them to optimize their value. It also would provide more stable payments, insofar as the value of stored carbon and its co-benefits likely will not experience the fluctuations associated with the commodities underlying current payments.

<u>Goal VI</u>: Fully Account for the Benefits and Costs of Any Decreases or Increases in Atmospheric Carbon and Other Greenhouse Gasses in All Forest-Related Policies, Programs, Regulations and Development Proposals.

A. Publicly and Consistently Highlight the Need to Alter Federal Forest Policies and Management to Reduce The Risks of Climate Change.

The President's Executive Order 13653 states that the federal government must focus on program and policy adjustments that promote the interlinked goals of greater climate resilience and reductions to the sources of climate change. At present, achieving these goals will be difficult because few members of the general public, community leaders, forest users, or elected officials understand the critical role that forests in general, and U.S. federal forest in particular, can and must play in regulating the climate. Even many federal forest management agencies today believe they are responsible for developing alternatives that

address goals for timber, listed species, water supplies, and recreation, while only "analyzing" the effects on climate change. Many agencies do not believe they have a responsibility to reduce the sources of climate change by protecting existing stocks of carbon, or manage for other goals described in this document.

To meet the twin goals to reduce the sources of climate change and improve the nation's resilience to climate change described in President Obama's Executive Order, the FFCC therefore recommends that CEQ and all federal forest management agencies make it a top priority to continually apprise forest users, communities, elected officials, and all federal forest management agency personnel about the need to fully account for the social costs of carbon in all practices, programs, regulations and policies. In addition, a relentless education program should be instituted to let the public, commercial, and recreational interests know that many long-standing federal forest policies, programs, regulations, policies and uses must be altered to address the recommendations described in this report and respond to the climate crisis by leaving as much carbon as possible in the ground and in the foliage.

B. Invest in and Build the Capacity of Federal Forest Management Agencies to Understand the Science and Manage for Carbon Storage and Climate Resilience.

For over a century scientists have known that additional atmospheric greenhouse gasses would alter the Earth's climate. However, definitive evidence of serious human-induced climate change has emerged in just the past few decades. Consequently, the Departments of Interior and Agriculture and other federal forest management agencies are in steep learning curves about how to manage for carbon and climate disturbances. The agencies have a few scientists that truly understand carbon management. However, most agency scientists as well as management and field personnel do not have the training or expertise in this field. As a result, many federal forest management agencies are applying knowledge and practices applicable for timber production to carbon management, as if they were the same thing. They are not, and the failure to grasp this and do what is needed to change the situation is likely to produce very serious ecological, social, and economic consequences.

The FFCC recommends that the White House make a concerted effort to build the capacity of all federal forest management agencies to thoroughly understand the issues and develop tools to conserve existing carbon stocks while increasing carbon storage and achieve the other goals described in this document.

An immediate step the Obama Administration can take is to organize scientific symposiums where federal agency scientists join with scientists from academic and non-profit organizations with expertise in forest carbon to present and debate research with the goal of ensuring that the best and most recent science drives federal forest management. This action is urgently needed because major discrepancies exist between the science used by many federal forest agencies—as well as much of the science described in the forest chapter of the National Climate Assessment—and the scientific research on forest carbon management emerging from academic and non-profit researchers. In addition, in response

to the risks of wildfire, some federal agencies are proposing large-scale forest thinning projects, even though emerging scientific research indicates they are likely to be counterproductive. The Obama Administration can demonstrate its commitment to using sound science to respond to the climate crisis by rapidly convening symposiums to close the gap between the best-available science and ongoing forest management.

In the middle and longer term, in addition to new policies, programs, and regulations, building capacity will require significant investments in new tools, substantial education and retraining to help existing agency personnel become carbon literate, and the hiring of many new employees with expertise in forest carbon conservation and management.

C. Require Scientific, Comprehensive, Transparent Analysis of the Carbon Costs of Management Activities Before Approval.

Many of the recommendations described in this document include a call for comprehensive, transparent assessments of the full carbon costs and benefits of policies, programs, regulations and practices. Too often, commercial timber harvest, road building, and other development proposals as well as ill-informed restoration projects are approved because they are assumed to have little to no effect on forest carbon.

The FFCC therefore recommends that the White House, Departments of Interior and Agriculture, and other agencies adopt a precautionary policy and require, as part of NEPA and other policies, that comprehensive, transparent analysis of the full carbon costs and benefits of forest-related policies, programs, regulations, and development proposals be completed before they are approved. This analysis should compare the proposed action against others, including another without it, comprehensively account for the action's annual net effects on atmospheric carbon dioxide (or other greenhouse gases), and describe the social costs (benefits) associated with any annual increase (decrease) in atmospheric carbon dioxide. This description should estimate the present value of the monetizable social costs and benefits of each scenario using the estimates of the Interagency Working Group on Social Cost of Carbon,[27] provide detailed, qualitative descriptions of costs and benefits that cannot be monetized, and clearly assess the risks if costs turn out to be higher than expected.

Each analysis should reflect the best available science regarding the ecological, social, and economic effects of carbon emitted from or sequestered by federal forests, select proper baseline and systems boundaries, include the social costs of carbon as determined by the Office of Management and Budget or other sources, and compare the effects "with and without" management activities such as timber harvest rather than "before or after" they are implemented (i.e. quantify not only how much carbon currently exists, but also include how much additional carbon could be added in the absence of timber harvest and other management activities).

The economic values at stake are large. For example, the mid-level estimate of the monetizable damage from the emission of carbon dioxide is about $50 per metric tonne over the next few years. This amount suggests that, if the 10 billion metric tonnes of

carbon currently stored on national forests were emitted to the atmosphere, the monetizable damage would total about $2 trillion. If even one tenth of the carbon held on federal forests is released into the atmosphere that damage would be in the range of $200 billion. Managing federal forests to hold onto the stored carbon helps prevent this damage. Further advantages would materialize from managing them to store additional amounts of carbon. Moreover, this number does not reflect many types of damage from carbon dioxide emissions, such as those associated with acidification of freshwater and seawater, nor does it incorporate the value of co-benefits, such as improvements in water quality, habitat, and recreational opportunities in mature and old-growth forests.

Estimates of the monetizable social costs of carbon are available from the Interagency Working Group on Social Cost of Carbon, United States Government. 2013. *Technical Support Document: -Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis - Under Executive Order 12866*.[28] Assessments should also acknowledge the importance of social costs of carbon dioxide emissions that have not yet been monetized, such as the costs associated with acidification of freshwater and seawater.

Federal Forest Carbon Coalition

Checklist for Managing Federal Forest Carbon

Issues Federal Agencies Should Address to Comply with Presidential Executive Orders and Optimize Each Forest's Capacity to Mitigate and Prepare for Climate Change

The U.S. National Academies of Sciences, Intergovernmental Panel on Climate Change and many other national and international scientific organizations have warned that, without rapid dramatic reductions in atmospheric carbon, uncontrollable climate change is now a real possibility. Federal forests must play a key role in preventing this because they hold millions of tons of carbon and have the potential to sequester much more. Forest managers must act quickly and decisively to maintain and increase forest carbon. Doing so will also strengthen ecosystem services, conserve biodiversity, protect water quality and quantity, and provide jobs and other economic benefits for communities. Federal agencies are required to take appropriate actions to manage federal forests in a manner that optimizes their ability to maintain and increase forest carbon, while producing other ecosystem services, such as providing clean water and habitat in forest streams.[1]

This document offers a checklist of the issues federal forest management agencies should address to manage forest carbon in a scientifically credible manner. Forest managers, conservationists, and others can use it to identify shortcomings in Environmental Assessments, Environmental Impact Statements, Forest Plan Amendments, Scoping Documents, and other policy and management procedures. It can also be used as tool to educate forest management personnel, forest users, elected officials, and others about the need and means of managing forest carbon in a scientifically credible way.

The checklist is organized around a set of goals for conserving and adding to existing stocks of carbon on federal lands. For more information about these goals, the underlying science, and the relevant policies, procedures, and practices, please visit http://www.forestcc.org.

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1 See for example, Executive Orders 13514 *Federal Leadership in Environmental Energy, and, Economic Performance*, 13653 *Preparing the United States for the Impacts of Climate Change*, and 13563 *Improving Regulation and Regulatory Review*; and the *Updated Principles, Requirements and Guidelines for Water and Land Related Resources Implementation Studies* from the Council on Environmental Quality.

Checklist for Managing Federal Forest Carbon

How to Use This Checklist

- Complete the checklist for any forest-management policy, planning process, regulation, or project that you are concerned might affect the maintenance of carbon currently stored in federal forests or the rate of carbon sequestered from or emitted to the atmosphere.
- "Agency" refers to a federal forest management agency as a whole—e.g. U.S. Forest Service, Bureau of Land Management, Fish and Wildlife—or to a subunit, such as a forest region, national forest, BLM state office, or local forest.
- Check the category that best represents the status of the agency's actions regarding each question.
- "Yes" means there exists appropriate documentation showing that the agency has competed the action, or is fully implementing it on an on-going basis.
- "In Process" means that documentation is available showing when it began, the percent already completed, and an expected completion date. If this information is available it should be included in "Clarifying Comments."
- "No" means that available documentation does not demonstrate that the agency has initiated or completed implementation of the action.
- "Clarifying Comments" should be as thorough as possible, to substantiate your findings regarding each question.
- Please use the checklist primarily to accomplish your own objectives, e.g., to clarify the extent to which your local forest is taking all the steps existing science indicates are necessary to optimize its contributions to combating climate change. We would appreciate it if you also would send us a copy of your completed checklist, to assist our efforts to document the performance of federal forest managers within different regions and across the U.S.

Goal I: Recognize Carbon as a Significant Public Resource and Establish Carbon and Climate Change-Centered Goals for All Decisions Affecting Federal Forest Management.	Yes	In Process	No	Unsure
A. Has the agency developed formal policies that recognize forest carbon is a natural resource that is as important as timber, water, biodiversity, recreation, and other multiple uses, consistent with the carbon emphasis in the Forest Service's 2012 planning rule, President Obama's 2013 Climate Action Plan[2], and other relevant requirements and guidance? Clarifying Comments:				
B. Has the agency defined carbon stocks as including carbon existing in live and dead materials, as well as above and below ground in soils and roots? Clarifying Comments:				

2 Available here: http://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf

Checklist for Managing Federal Forest Carbon

Yes	In Process	No	Unsure

C. Has the agency measured the existing stocks of carbon in live and dead materials as well as above and below ground for the all the lands in its jurisdiction and for the subunits used in forest planning and management decisions?
Clarifying Comments:

D. Has the agency evaluated the ways in which past forest management activities have affected the current stocks of carbon?
Clarifying Comments:

E. Has the agency evaluated the likely increases or decreases in forest carbon stocks that would result from each proposed policy, plan, or management activity?

→ If yes, does the evaluation use a full life-cycle analysis that includes project-related carbon emissions associated from management activities all the way through the carbon emissions associated with wood processing, manufacturing and delivery to end users?

Clarifying Comments:

F. Has the agency defined, identified, & mapped the location of high-biomass (i.e. high carbon) forested areas (e.g., stands or entire forests where carbon is highly concentrated)?[3]

→ If yes, indicate in "Clarifying Comments" the criteria the agency used to delineate high-biomass areas and describe the extent to which the criteria are based on peer-reviewed science.

Clarifying Comments:

Goal II: Maintain the Existing Stocks of Carbon in Forests, Including Carbon in Live and Dead Materials, Above and Below Ground.

A. Has the agency adopted policies, rules, regulations, or other guidance to protect high-biomass (i.e. high carbon) forested areas from activities that would reduce carbon stores or limit the potential for future carbon sequestration?

→ If yes, has the agency described the level of protection and the level of future sequestration, i.e., the percentage of carbon stocks protected and the amount of future sequestration relative to the maximum possible?

Clarifying Comments:

3 For a discussion of high-biomass forested areas, *see* Krankina, O., D.A. DellaSala, J. Leonard, and M. Yatskov. 2014. "High biomass forests of the Pacific Northwest: who manages them and how much is protected?" *Environmental Management*. 54(1): 112-21.

Checklist for Managing Federal Forest Carbon

Yes	In Process	No	Unsure

B. Has the agency developed a formal policy that places a moratorium on development activities, such as logging, road building, and oil and gas development in areas having the ability to establish high-biomass forests in the future?

→ If yes, has a plan been established to reduce the risks of these forests to climate-related and other natural disturbances?

Clarifying Comments:

C. Has the agency prohibited the burning and salvage logging of dead or live trees in high-biomass forests regenerating from disturbance except when a transparent scientific analysis determines that the practices would yield net carbon benefits?

Clarifying Comments:

Goal III: Increase the Amount of Carbon Stored in the Forest.

A. Has the agency adopted a specific goal to increase the stores of carbon on the forest in the mid- (20-30 years) and long- (100 years) term?

Clarifying Comments:

B. Has the agency explicitly identified and adopted the type of policies, regulations, and practices that would increase the stores of forest carbon, consistent with the Forest Service's 2012 planning rule, President Obama's 2013 Climate Action Plan, and other relevant requirements or guidance?

Clarifying Comments:

C. Has the agency explicitly identified the type of analysis required to determine if management activities, such as timber harvest, road building, forest thinning, oil and gas drilling, and others would increase or decrease carbon stocks in the forest over time?

Clarifying Comments:

Goal IV: Consistent with Goals I, II, and III, Enhance the Resilience of the Forest to Human-Induced Climate Disruption and Other Natural Disturbances.

A. Has the agency adopted an explicit policy to complete a thorough and transparent scientific analysis of the full life-cycle effects on carbon of forest thinning activities before approving this activity?

→ If yes, does it use the results of the analyses to select among thinning options (including the no-action alternative) the one that would yield the smallest increase (or largest reduction) in atmospheric carbon?

Clarifying Comments:

Checklist for Managing Federal Forest Carbon

	Yes	In Process	No	Unsure
B. Has the agency adopted an explicit policy that prohibits landscape level forest thinning proposals and instead require that any forest thinning proposal that is approved be strategically designed to function within the context of the local landscape with the purpose of directing fire in specific directions? Clarifying Comments:				
C. Has the agency completed a thorough transparent scientific assessment of the ecological pros and cons of hydraulic fracturing, including the social costs of carbon from fracking-related increases in atmospheric carbon? Clarifying Comments:				
D. Has the agency completed a comprehensive transparent life-cycle analysis of carbon emissions resulting from proposals to extract woody biomass for energy production or to harvest timber for wood products before approving these activities? Clarifying Comments:				
E. Has the agency integrated forest-carbon-management strategies with climate-change-resilience strategies—e.g. minimizing land-management stressors, providing connectivity important for wildlife dispersal, and maintaining ecological integrity? Clarifying Comments:				

Goal V: Generate Social, Economic, and Ecological Co-Benefits Consistent with Goals I, II, III, and IV.

A. Has the agency adopted an explicit goal of and policies to increase the quantity and quality of the supply of ecosystem services on the forest in ways that maintain and increase forest carbon? (e.g. soil enhancement, water quality and flows, habitat, and other services that help maintain and increase the carbon stored on the forest.) Clarifying Comments:				
B. Has the agency investigated opportunities for stimulating the creation of jobs consistent with goals for optimizing forest carbon and related benefits? → If yes, has it incorporated those opportunities in its forest-management plans and policies? Clarifying Comments:				

Checklist for Managing Federal Forest Carbon

Yes	In Process	No	Unsure

<u>Goal VI</u>: Fully Account for the Social Costs and Benefits of Any Decreases or Increases in Atmospheric Carbon and Other Greenhouse Gases in All Forest-Related Policies, Programs, Regulations, and Practices.

A. Has the agency adopted a policy requiring a comprehensive, transparent analysis of the social costs and benefits of changes in carbon stores using the values developed by the Office of Management and Budget or other credible source resulting from management activities before any plan or project is approved?

<u>Clarifying Comments:</u>

B. Has the agency estimated the economic value of carbon stores, especially within high-biomass forested areas, using estimates of the social value of carbon developed by the Office of Management and Budget or other credible sources?

<u>Clarifying Comments:</u>

C. Has the agency explicitly described the economic costs of the carbon that would be released into the atmosphere, or the economic benefits of the carbon that would be removed from the atmosphere, as a result of its forest-management actions using comprehensive carbon life-cycle analyses?

→ If yes, has it integrated these economic costs and benefits into its evaluation of forest-management alternatives and its selection of preferred alternatives?

<u>Clarifying Comments:</u>

D. Has the agency measured the carbon dioxide emissions generated by the use of fossil fuels in forest-related management activities?

<u>Clarifying Comments:</u>

E. Has the agency adopted an explicit plan to significantly reduce carbon emissions generated by the use of fossil fuels in forest-related management and recreational activities (e.g. vehicles, heavy equipment, office buildings, machine shops)?

<u>Clarifying Comments:</u>

V. Conclusion

If the policies, regulations, and practices recommended is this report are adopted by the Obama Administration, federal forest management will be modernized to address the urgent need to reduce the release of carbon into the atmosphere while enhancing ecological resilience to climate-related and other disturbances. Managing federal forests to hold onto the stored carbon helps prevent this damage. The FFCC urges prompt action by the Administration to modernize federal forest management.

Endnotes

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Forest Thinning in Pacific Northwest Riparian Areas: Rationale, Risks, and Policy Calibration

Chris Frissell
Mary Scurlock
Kelly Crispen
Pacific Rivers Council

American Fisheries Society Symposium, Seattle, WA, Sept. 2011

Riparian Reserves in the NW Forest Plan

- The Northwest Forest Plan:
  - Established wide, function-based Riparian Reserves
  - Established a new burden of proof such that *timber harvest is prohibited* in Riparian Reserves unless demonstrably *necessary to attain Aquatic Conservation Strategy Objectives*
  - Actions that could potentially meet this criterion:
    - *Control tree stocking, reestablish and manage stands, acquire desired vegetation characteristics, fuels treatment and fire suppression activities*

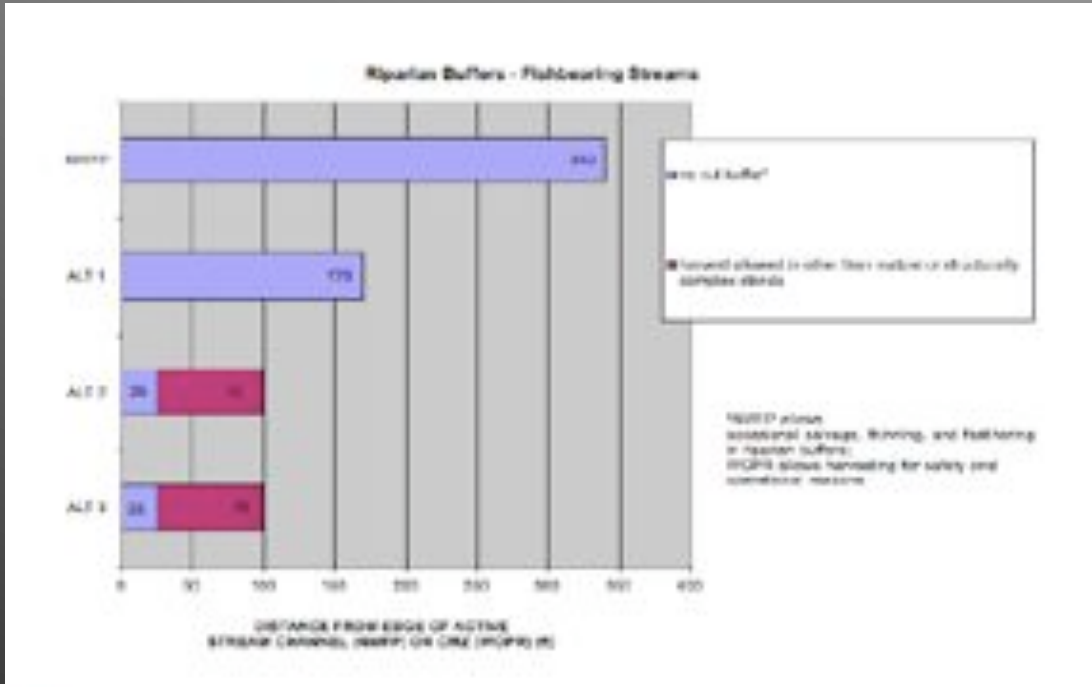
- BLM's Western Oregon Plan Revisions, and
- Timber sale projects of the BLM and the Forest Service

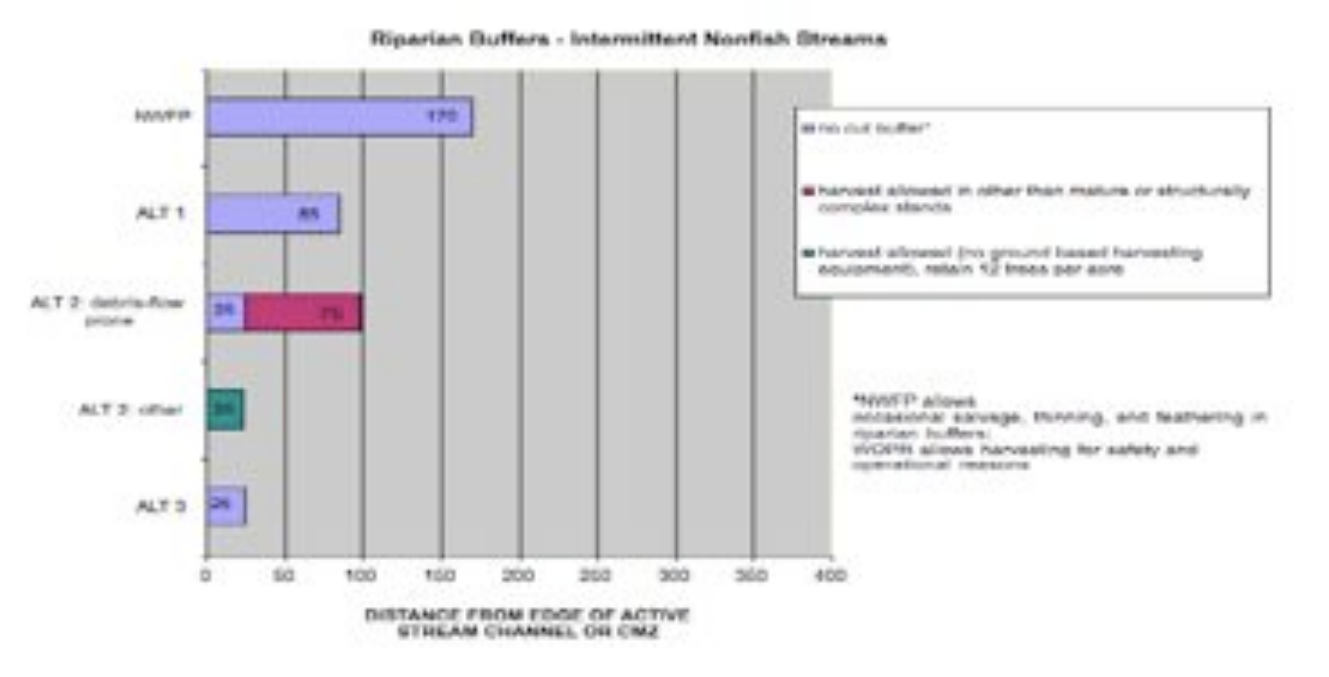
…have proposed or implemented stepped-up programmatic logging within NWFP RRs, contending that thinning is useful or necessary under a wide variety of prevailing forest conditions to hasten growth of some trees or meet fuels objectives

- NMFS/USFS/BLM Aquatic Restoration Biological Opinion 2008; reinitiated consultations on RR thinning in 2008 (kicked upstairs by Streamlining Team)
- PRC letter to USFS R6 + OR BLM 14 Sep. 2010) nudging.
- The Elevation: Interagency science panel

Besides influencing water quality and habitat for freshwater species including fish and amphibians, riparian forests provide late-successional habitat for a variety of bird, mammal and other species

Riparian Protection: NW Forest Plan v. BLM WOPR





The BLM WOPR eliminates NWFP riparian guidance.

Outside of 25ft no cut zone, harvest allowed "if the stands are not mature or structurally complex."

Common Rationales for Thinning in Riparian Reserves

- *Density reduction*
  - Hasten or rejuvenate growth of selected "leave" trees
  - "Prepare" forests for future, presumed drier climates
    - Reduce moisture competition around large trees
    - Propagate residual dry-site species
- *Fuels management*
  - Remove ladder fuels around residual large trees
  - Break up "fuels continuity" (inhibit "wicking")

Riparian thinning trades off postulated long-term benefits against likely adverse effects

Evidence for net ecological benefit of riparian thinning is sparse and speculative, while evidence of known adverse effects is ample and growing.

Cascades Frog, Umpqua NF, OR

- Near-stream soil disturbance and sediment delivery
- Depletion of near- and medium-term recruitment of woody debris
- Risk of thermal and microclimate stress from canopy removal
- Intensified fire effects in some circumstances
- Impact of road networks
- Risk of pathogen dispersal (e.g., Port-Orford-cedar root disease).
- Depletion of green tree diversity

Dwire et al. 2010. **Potential Effects of Fuel Management Activities on Riparian Areas.** USDA Forest Service RMRS-GTR-231.

Near-stream erosion and sediment delivery

Post-thin burned pilesMalheur NF, OR

Metolius R, Deschutes NF, OR

Short-term disturbance from felling and yarding, sustained erosion from altered soils and roads

• Rhodes JJ (2007) The watershed impacts of forest treatments to reduce fuels and modify fire behavior. Pacific Rivers Council, Eugene, 103 pp

• Rashin, E. B.et al. 2006. Effectiveness of timber harvest practices for controlling sediment related water quality impacts. J.Am.Water Resour. Ass. 42:1309-1327.

Riparian Area Disturbance Processes

Blowdown
Umpqua
NF, OR

Herbivory
Porcupine, BC
(K. Colburn)

Landslide and
fluvial erosion
Cape Cr, OR

Riparian Disturbances and Successional Pathways are Diverse and Abundant

- *Diversity of species and natural disturbance processes, coupled with good growing conditions, commonly leads to complex, robust riparian forests without thinning.*

- Natural <u>Disturbances:</u>
  - Fire
  - Floods
  - Fluvial channel migration
  - Root throw/ blowdown
  - Slope erosion and landslide deposition
  - Herbivory
  - Disease

Yes, even in plantations
Toketee RD, Umpqua NF

Wildfire in Riparian Areas: *Variable Effects*

Malheur NF, OR

North Umpqua R, OR

Most Often: Low-Impact Thinning

Biscuit Fire, Rogue R-Siskiyou F, OR

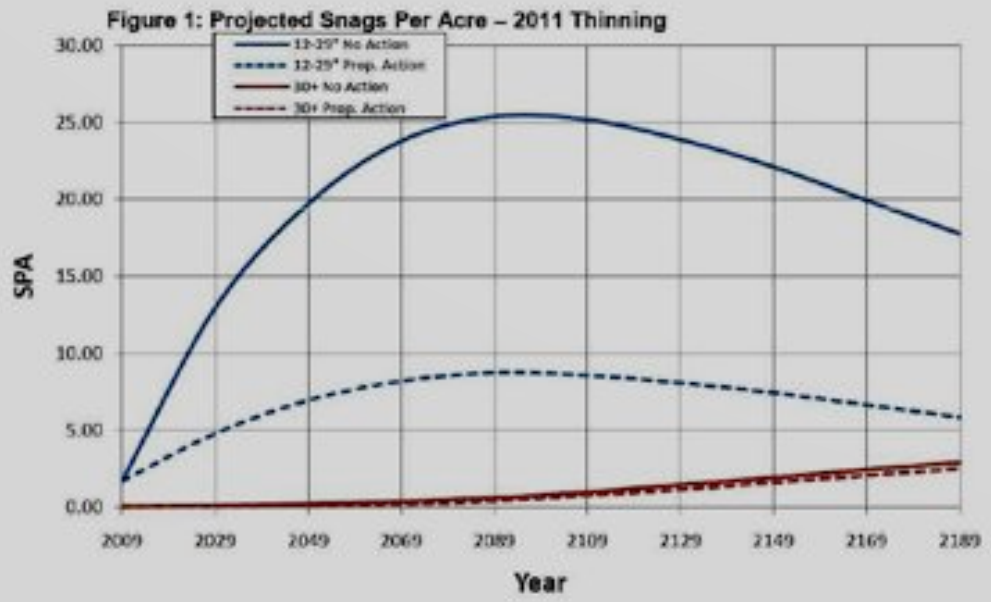
B. K. Jackson and S. M. P. Sullivan. 2009. Influence of wildfire severity on riparian plant community heterogeneity in an Idaho, USA wilderness. Forest Ecology and Management 259: 24–32.

Heiken (2010) compiled dead wood recruitment data and model projections from FS, BLM EIS & EA records

DEAD WOOD RESPONSE TO THINNING:
SOME EXAMPLES FROM MODELING WORK

2011 Thinning EA, Eugene BLM, Oregon

- Stands 30-70 years old
- Thinned to 60 to 120 trees per acre, and
- 120 to 160 square feet of basal area per acre
- 400 acres located in riparian reserves

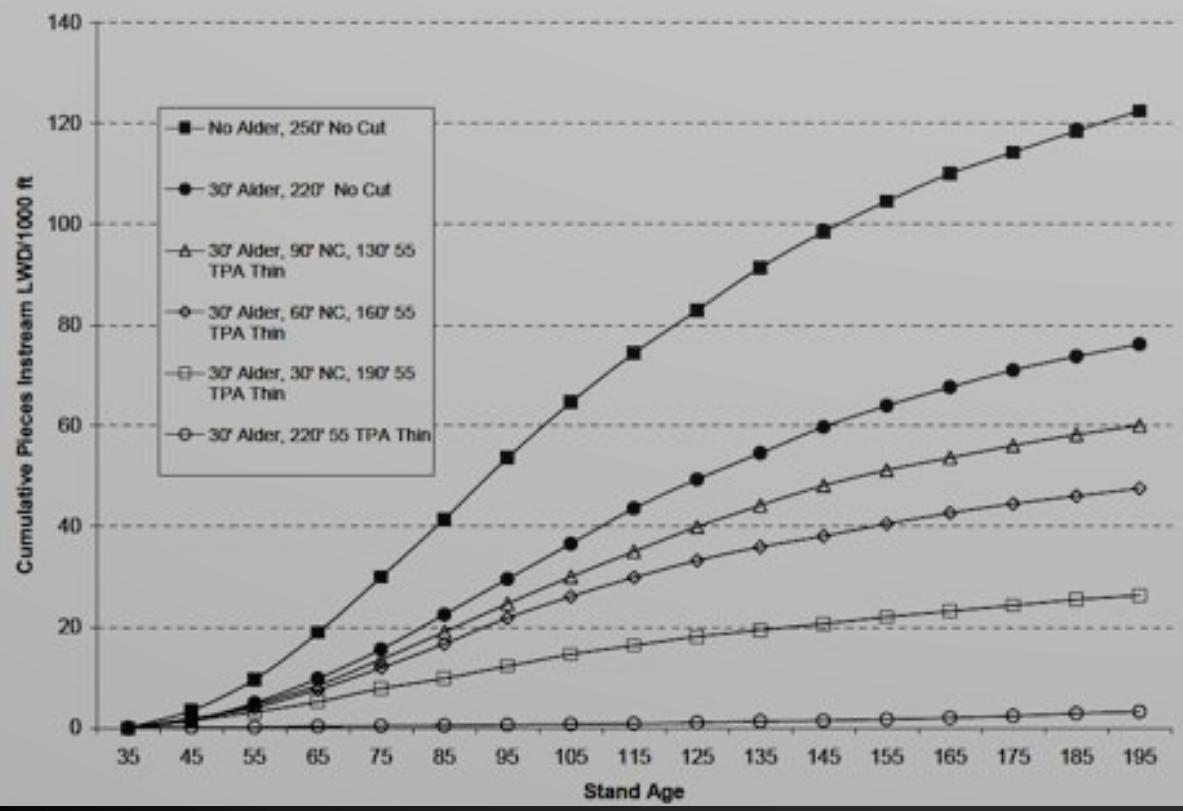


- *"In this study, treatments providing rapid development of live, late-successional attributes generally produced relatively lower densities of shade-tolerant stems, lower amounts of Douglas-fir basal area, and fewer snags and logs over a rotation compared to other treatments."*
- Garman, Steven L.; Cissel, John H.; Mayo, James H. 2003. Accelerating development of late successional conditions in young managed Douglas-fir stands: a simulation study. PNW-GTR-557.

Pollock (2010, 2011) NWFSC study:

Modeled Riparian Thinning and Projected LWD Recruitment to streams

Figure 4. Cumulative pieces instream lwd/1000 ft delivered to a stream under different thinning scenarios, assuming 30 foot wide alder forest at edge of stream, then a df riparian forest from 30-250 ft.



NMFS to Interagency Coordinating Subgroup (ICS):
On February 23 (2010), the Northwest Oregon Level 2 consultation streamlining team elevated two issues pertaining to implementation of the Northwest Forest Plan to the Regional Executive Team for resolution. The first issue concerns the effects of thinning in riparian reserves with respect to wood recruitment, shade and water temperature…

Stand Dynamics: Thinning Sacrifices Tree Diversity to favor Density

Survival
+
Growth

=

f (Microhabitat
+ Genetics
+ Density)

1) *Microhabitat* and *Genetic Diversity* are **directly** proportional to Abundance

2) *Density* effects are **inversely** proportional to Abundance

Conditions Under Which Riparian Reserve Thinning can be Justified?

Minimum Risk:

- Moderate and gentle slopes, outside of inner gorge slope breaks and erosion-prone soils
- Outside of 100-foot zone where most shade and woody debris recruitment is generated
- "Lop and drop" (boles remain on site)
- Near-stream or permanent roads not required

AND

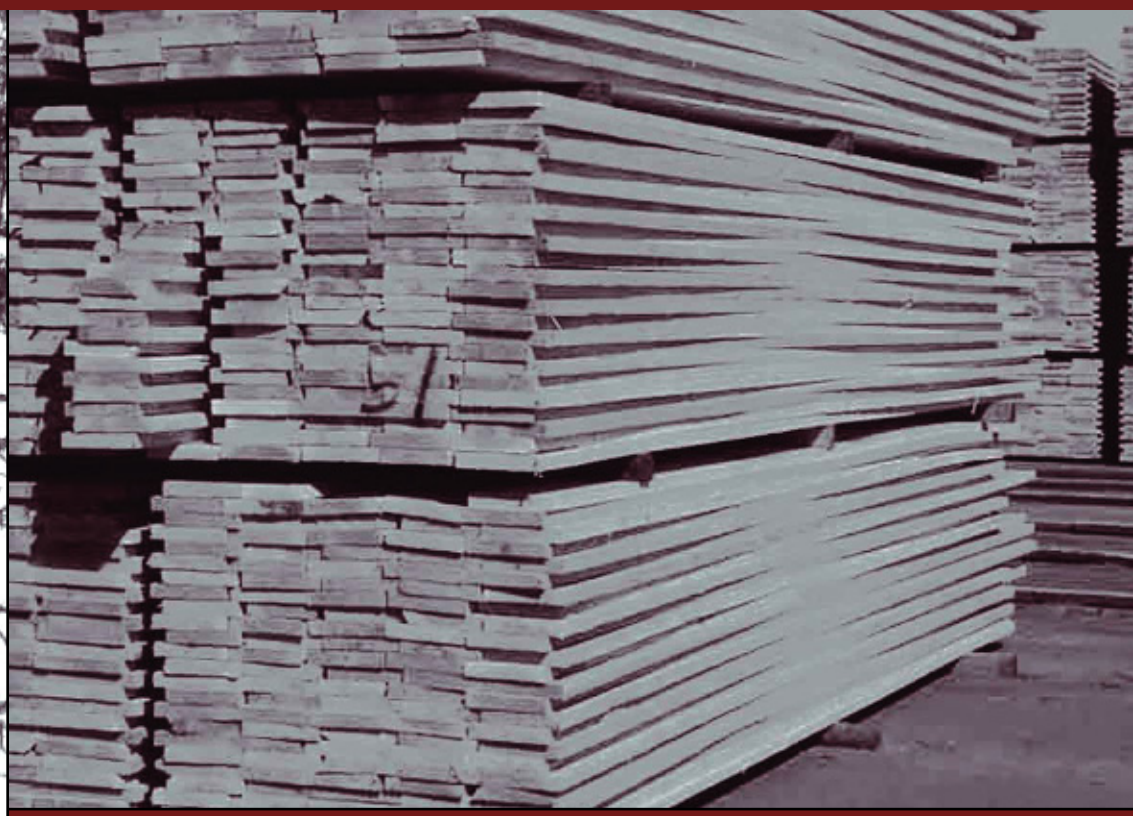
Specific Benefit:

- Where thinning is necessary to remove planted, off-site or exotic trees.
- Where thinning is needed to preserve hardwoods or dry-site species under rapidly closing canopy
- Ladder fuel reduction to increase fire resistance of largest trees
- (treatments to alter large-scale fuels continuity and fire behavior are dubious and unproven)

Policy Recommendations for Riparian Reserve Thinning:

- 1) Field inventory and analysis of forest and aquatic conditions justifies a site-specific objective & treatment
- 2) Canopy reduction will not cause warming of streams or wetlands
- 3) All larger woody material is retained on site
- 4) Treatment can be accomplished from existing roads
- 5) Cumulative area of Riparian Reserves impacted by silvicultural treatment, yarding & transportation does not exceed 10% within any 10-yr period in any sixth-field subwatershed
- 6) Firm agency commitment exists to monitor & report silvicultural and environmental outcomes

Well-designed monitoring… .is needed to provide a scientifically-defensible basis for the continued and growing implementation of these treatments.
Stone et al. (2010) Env. Mgmt. 46:91



Wood Products and Carbon Storage:

Can Increased Production Help Solve the Climate Crisis?

Economic Analysis

SCIENCE FROM

THE WILDERNESS SOCIETY

About the Wilderness Society

The Wilderness Society's mission is to protect wilderness and inspire Americans to care for wild places. Founded by prominent naturalists and biologists, including Robert Marshall and Aldo Leopold, the organization played an important role in helping pioneer science-based conservation advocacy and policy making. The Society remains dedicated to the concept that careful, credible science, combined with bold advocacy, and unswerving vision is the key to conservation success.

Headquartered in Washington, D.C., The Wilderness Society maintains twelve regional offices where our staff address on-the-ground conservation issues linked to local communities. Since spearheading passage of the seminal Wilderness Act in 1964, we have been a leading advocate for every major piece of Wilderness legislation enacted by Congress. Our effectiveness stems not only from our passion for protecting America's most special places, but also from the sound scientific research that underpins every aspect of our work.

About the Ecology and Economics Research Department

The Wilderness Society's Ecology and Economics Research Department (EERD) consists of experts in economics, ecology, and landscape analysis, including 12 Ph.D.-level scientists. This outstanding team provides the science to answer pressing questions about mineral exploration and development, forest and fire management, climate change, and many other issues affecting public lands. This information is key to understanding often complicated environmental issues, and ultimately making the right choices toward achieving lasting protection for the resources and places that sustain us and our ways of life. EERD provides science to inform not only The Wilderness Society's own conservation campaigns, but also the decisions being made by communities, land managers, legislators, and others about the future of America's wild places.

The Wilderness Society is a national non-profit organization and was founded in 1935.

Wood Products and Carbon Storage:

Can Increased Production Help Solve the Climate Crisis?

by
Ann Ingerson

April 2009

THE WILDERNESS SOCIETY

Acknowledgments

Many thanks to several reviewers who helped clarify (some repeatedly) the purpose of this report and the presentation of information: Tom DeLuca and Pete Morton of The Wilderness Society, Ken Skog of the USDA Forest Service, ecological economist Paula Swedeen of the Pacific Forest Trust, Christopher Galik of the Nicholas Institute at Duke University, Jerry Jenkins of the Wildlife Conservation Society Adirondack Program, and Adam Sherman of the Biomass Energy Resource Center. These reviewers do not necessarily endorse any conclusions in this report, and any remaining errors are solely the responsibility of the author. Sarah DeWeerdt and Mitchelle Stephenson worked their usual magic with editing and graphic design and I thank them for their clear vision and long hours. Many thanks to Christine Soliva for shepherding this report through to completion. Thanks also to the Merck Family Fund for their generous financial support.

Citation

Ingerson, A. 2009 Wood Products and Carbon Storage: Can Increased Production Help Solve the Climate Crisis? Washington, D.C.: The Wilderness Society.

This science report is one of a series that stems from conservation research studies conducted by The Wilderness Society's Ecology and Economics Research Department. Other reports in the series that focus on similar issues include:

U.S. Forest Carbon and Climate Change: Controversies and Win-Win Policy Approaches; Economic Analysis, July 2007, Ingerson.

Measuring Forest Carbon: Strengths and Weaknesses of Available Tools; Science and Policy Brief, April 2008, Ingerson and Loya.

Environmental Benefits and Consequences of Biofuel Development in the United States; Science and Policy Brief, May 2007, DeLuca.

To get copies of these reports, visit wilderness.org or contact the Ecology and Economics Research Department at 202-833-2300.

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Foreword

Global discussions around climate change recognize the critical importance of maintaining land-based carbon sinks as part of a comprehensive policy to address this burgeoning crisis. Internationally, the first priority is to protect the tropical rainforests that are the true champions of carbon sequestration. Within the United States, the temperate rainforests of the Pacific Northwest and southeast Alaska serve as our own carbon storage champions. But other forests found across the country also play a significant role in the climate equation.

Experts predict, however, that without further protection, up to one million acres of U.S. forestland per year—along with much of their carbon—may be lost to development over the next fifty years. Yet rather than prioritize forest protection, much attention has been focused on the potential for wood products and wood fuels to store carbon or reduce fossil emissions. At its most extreme, this approach suggests that cutting down forests is the best preemptive move to prevent carbon losses due to fires or insect infestations. The tactic might work if 1) carbon was transferred, intact, and without any energy use, from the forest to its final resting place, 2) the carbon remained indefinitely locked away, and 3) a new forest immediately sprung up to replace the old one. The reality is, of course, a much more complex and very different scenario.

In The Wilderness Society's report, *Wood Products and Carbon Storage: Can Increased Production Help Solve the Climate Crisis?* author Ann Ingerson draws on a variety of sources to illuminate the greenhouse gas impacts of wood products and wood biomass fuels throughout their life-cycles. While detailed analyses are rare, the picture is complete enough to show the variability of the processing path followed by different types of trees in various parts of the country. Taking the entire life-cycle of these products into account, it becomes clear that an increased use of wood fuels and lumber will have very little net effect on climate change. To the contrary, the impact is as likely to be negative as positive.

Our report also takes a closer look at one particular policy mechanism, which could reward wood products carbon storage: the use of forest-carbon offsets in voluntary (market-based) or regulatory programs. Because such offsets are expected to balance emissions from other sources, it is important that the additional carbon sequestration be real. This document outlines several criteria for carbon offset standards to account for the full effects of harvested wood carbon.

Regardless of whether the greenhouse gas impacts of wood products and wood fuels are positive or negative, continuing to focus on these minor effects only distracts us from the larger task at hand. Our nation must transform an economy based on centuries of inexpensive fossil energy into one that will operate on a truly sustainable, renewable basis. The wood products industry can contribute to this goal by increasing processing efficiency, reducing energy use, extending product life, reusing and recycling wood materials, and promoting wood energy that is clean, efficient, and based on sound forest practices.

By implementing such transformative strategies and keeping America's forests as forests, the U.S. forestry community will make an invaluable contribution to mitigating climate change.

William H. Meadows
President

Spencer Phillips, Ph.D.
Vice President
Ecology & Economics Research Department

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"What's the use of a fine house if you haven't got
a tolerable planet to put it on?"

— Henry David Thoreau, 1860

Key Points

1. When wood is removed from the forest, most of it is lost during processing. The amount lost varies tremendously by region, tree species and size, and local infrastructure.
2. The majority of long-term off-site wood carbon storage occurs in landfills, where decomposing wood gives off significant amounts of methane, a gas with high global warming potential.
3. In addition to wood processing losses, fossil fuels are required to turn raw logs into finished products and ship them from forest to mill to construction site to landfill.
4. Once wood losses and fossil emissions are accounted for, the process of harvesting wood and turning it into products may release more greenhouse gases than the emissions saved by storing carbon in products and landfills.
5. Biomass is often considered a "carbon-neutral" fuel, but its true climate impact depends upon management of the source forest and efficiency of use.
6. Under cap-and-trade programs designed to reduce greenhouse gas emissions, forest offsets are often proposed as a low-cost option for reducing atmospheric carbon dioxide, while providing abundant collateral benefits.
7. Wood products in use and especially in landfills do keep carbon out of the atmosphere, but proposals to assign credit for that carbon through offset projects require first solving a whole host of conundrums.
8. If wood products are credited in offset projects, project carbon accounting must reflect the characteristics of the unique processing chain followed by that project's logs.
9. Properly managed, wood can be a renewable source of building materials and fuels, but solving the climate crisis will require reducing the use of all materials and energy.

PHOTO BY EBBETS PASS FOREST WATCH

Removal of trees for processing into wood products affects carbon storage at every step — from the forest through processing to final disposal.

The Role of Forests in Addressing the Climate Crisis

Forest protection is a critical component of climate policy, both globally and within the United States. Forested ecosystems, including soils, store more carbon than is currently present in the atmosphere. In many places, these important reserves of carbon are threatened by forestland conversion or degradation. Globally, about 20% of recent anthropogenic greenhouse gas emissions can be traced to deforestation, a larger percentage of emissions than originates from the transportation sector. Continuing conversion of forests to other uses represents a significant climate threat that is well recognized by the public, the scientific community, and policy makers.

PHOTO BY BOB KEEFER PHOTOGRAPHY/WWW.BKPIX.COM

Forested ecosystems, including soils, store more carbon than is currently present in the atmosphere. Old growth forests, like Willamette National Forest's Delta Grove shown above, are especially rich in carbon reserves.

Beyond the broad consensus in favor of keeping forests as forests, however, when it comes to considering the best way to manage those forests, opinions diverge. The treatment of harvested wood as a carbon reservoir is particularly controversial. This report outlines the major issues surrounding carbon storage in harvested wood products, summarizing data from multiple sources. It also discusses the climate impacts of woody biomass fuels as an additional use for harvested wood. Because of intense interest in these topics, new research is constantly emerging that could modify the tentative conclusions reached here, but our hope is that the general framework will contribute to understanding of these complex issues.

Forest and wood product carbon accounting might be used to answer two related but distinct questions. First, what are the overall greenhouse gas (GHG) impacts of harvesting trees and converting them to wood products or burning them for fuel? Second, should climate policies encourage *increasing* timber harvest and wood products production to help *reduce* GHG emissions? Much controversy over the role of wood product carbon storage arises when these two distinct questions are tangled together, so we present them sequentially here.

The first question can be answered through life-cycle analysis, which is the subject of the first section of this report. This type of analysis seeks to understand the impacts of an activity "from cradle to grave," or in this case "from stump to dump." Life-cycle analysis raises inevitable questions about appropriate system boundaries and what effects are significant enough to measure. In addition, while tracking wood losses at each step is fairly simple, tracking fossil energy use and other GHG emissions associated with those steps is more complex. Moreover, tracking the indirect effects of wood use on the

source forest and on markets for end-use products and alternative materials can twist the analyst in knots. Despite this complexity, however, the questions are essentially factual—what are the GHG flows associated with decisions to harvest timber for conversion to wood products or for burning to produce energy?

The second major question asked by this paper is more about policy choices than facts alone. Would increased wood products manufacturing be an effective and otherwise desirable approach to help mitigate global warming? Here the facts about whether GHG reductions *could* be achieved provide only a partial answer. Would changes have occurred anyway, without special incentives? What alternative actions might also achieve reductions? What secondary effects make each option more or less desirable? Choices about how to treat wood products and biomass as part of a GHG reduction strategy will ultimately affect land owners, loggers, nonhuman forest species from salamanders to redwoods, backcountry recreationists, wood product manufacturers and their employees, makers of wood substitutes, wood product consumers, etc. Policy choices require a complex balancing of interests to set public priorities.

Currently, a great deal of attention centers on carbon offsets as one policy mechanism that could influence carbon storage in forests and harvested wood. Under a cap-and-trade system, society chooses which sectors must comply with an emissions cap. In climate change mitigation policy, uncapped sectors often include agriculture and forestry, since their emissions are difficult to monitor and their lands often sequester more greenhouse gases than they release. Entities in these sectors may market GHG reductions or sequestration that are beyond "business as usual" to capped sectors as substitutes for required emissions reductions, or offsets. Since offsets under a cap-and-trade system derive their value from public policy, questions about the definition of "business as usual" and what counts as a saleable offset go beyond the technical and touch on public values, property rights, and equity. These complex issues associated with accounting for wood products carbon stores as part of forestry offset projects under a cap-and-trade climate policy are discussed in the second section of this report.

Carbon Losses and Energy Emissions Associated with Wood Products

Before following carbon through a wood products life cycle, it is important to understand the distinction between a greenhouse gas *inventory* and a *life-cycle analysis*. Inventories, like the U.S. Environmental Protection Agency (EPA) annual Inventory of U.S. Greenhouse Gas Emissions and Sinks, provide comprehensive measures of net greenhouse gas emissions across the economy as a whole, and may be useful to gauge the overall success of national or regional GHG-reduction efforts. Inventories are not particularly useful, however, in determining the GHG impacts of distinct parts of the economic system, because inventory information is divided into sectors with no indication of how one sector affects another. For example, carbon stored in wooden houses and landfilled wood is reported in the Land Use, Land Use Change, and Forestry sector of the EPA Inventory, while emissions from fossil fuels used to make, move, and dispose of those products are reported in the Energy sector, and emissions from decomposition at the landfill are reported in the Waste sector. For the same reasons, an inventory cannot assess the potential for one product to reduce overall emissions by substituting for a higher-emissions alternative. (One example of this type of question, the potential for wood products to lower GHG emissions by replacing concrete or steel, is treated later in this paper.) A life-cycle analysis, on the other hand, can illuminate the critical connections between sectors to predict the overall GHG impacts of a particular activity or policy.

A life-cycle analysis for wood products begins with the decision to harvest trees and ends with the disposal of wood products made from those trees. Two parallel and related streams of GHG impacts result *directly* from the harvesting, processing, use, and disposal of wood products. First, carbon is lost at each step of the processing chain due to the physical breakdown of wood, releasing carbon dioxide, methane, and other byproducts.[1] Second, the transportation of wood to mills, transformation into a variety of products, and delivery to customers and eventually to landfills requires energy, a large proportion of which is derived from fossil fuels. Gower (2003) clearly describes the importance of including these GHG fluxes in a wood products analysis:

> It is extremely important to note that almost all the forest product sequestration estimates are based on gross C accumulation. That is to say, GHG emissions from harvest, transportation of the roundwood or chips to processing plants (i.e., pulp and paper mills, sawmills), mill emissions, and transportation of the forest products to regional distributors and

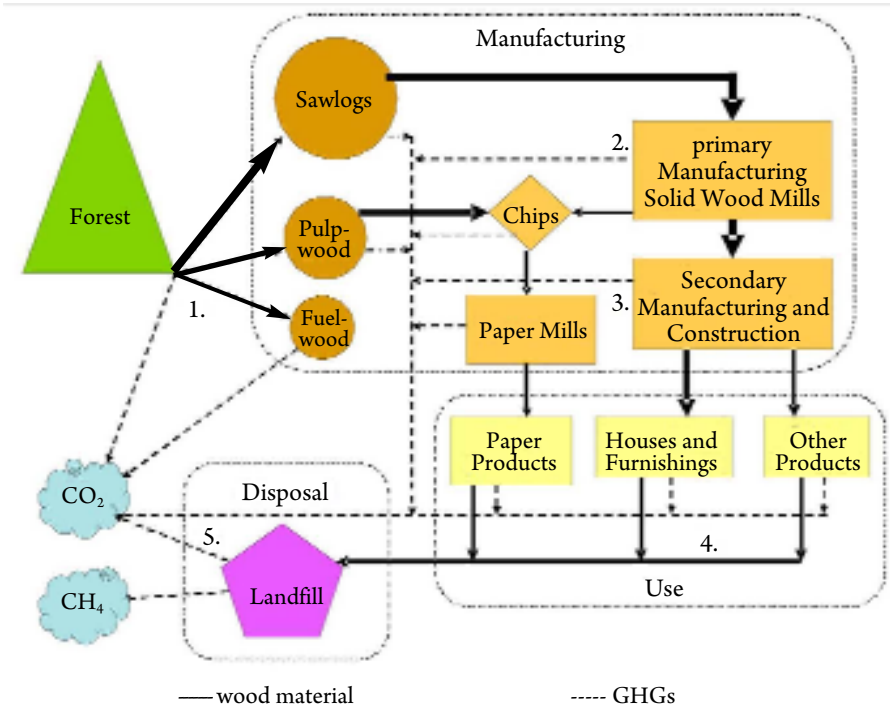
[1] In the life-cycle analysis context, the wood products stream results in the release of a variety of different greenhouse gases in addition to carbon dioxide (CO_2) and they have varying effects on the climate. Methane, for instance, is produced from the anaerobic decomposition of landfilled wood. According to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (Forster et al. 2007), methane (CH_4) is 25 times more potent than CO_2 as a greenhouse gas. (Many applications still use a global warming potential of 21, as suggested in the Second Assessment Report.) Climate policy makers have settled on "carbon dioxide-equivalents" (CO_2e) as a uniform unit for measuring the global warming potential of emissions—so, for example, 1 ton of methane would be measured as 25 tons of CO_2e.

consumers are ignored... Life cycle analysis (LCA)... can be used to quantify total GHG emissions for a forest product from cradle (i.e., forest establishment) to grave (i.e., final fate). Scientists have yet to demonstrate that there is a net C storage in forest products if a complete LCA, from cradle to grave, is completed.

Figure 1 illustrates the flows of materials and energy through the wood products processing chain. Table 1 summarizes the activities at each step that result in GHG emissions from either wood loss or fossil energy use. In addition to the direct effects of wood products production on greenhouse gas emissions, there are less well-defined, indirect effects on both the forest ecosystem and on economic activity that influence the overall GHG benefits of wood products. These are sketched out under the section on Broader System Effects below. Biomass fuel is a special type of wood product, the climate benefits of which depend upon replacing fossil fuels rather than increasing carbon storage. Because of this fundamental difference, the greenhouse gas implications of increasing biomass fuel use are also treated in a separate section.

FIGURE 1.

The Wood Products Processing Chain



Wood Carbon Losses Through the Processing Chain

This section outlines how carbon stored in wood is lost through decomposition or combustion during five stages of processing

TABLE 1.

Wood Harvesting and Processing Steps

Step	Activities
1. Harvest	Road construction; felling, limbing, cutting trees to length; transport to landing and mill
2. Primary processing	Sorting out material used for fuelwood and paper; sawing into lumber, planing; manufacture of plywood and other panels
3. Secondary processing and construction	Manufacture of primary products into end products (furniture, cabinets, flooring, windows and doors); building construction
4. Use	Maintenance and repairs
5. Disposal	Landfilling, dumping, burning; recovery for re-use

as illustrated by the dotted lines in Figure 1: (1) harvest site losses, (2) primary processing mill residues, (3) secondary processing and construction waste, (4) product use and maintenance, and (5) ultimate disposal.[2]

Studies present wood losses and GHG emissions in varying units, and percentages use different bases. Since the alternative to harvesting trees would be to leave them standing, in this report we express losses at each step in the processing chain as a percentage of carbon in the standing tree. We assume that carbon density in wood products is similar to that in the live tree, so that losses in wood volume provide rough estimates of carbon losses at each step.

Timber harvests usually produce a mix of roundwood types (logs, pulp, fuelwood, etc.), and a GHG accounting of the effects of harvest decisions should reflect the impacts of the entire bundle of products. However, since carbon storage benefits rest with long-lived wood products, and paper is widely acknowledged to be a net emitter of greenhouse gases,[3] we focus here primarily on solid wood products.

Due to the complexity of wood markets, with multiple end products and variable recapture of byproducts and raw materials, generalizations about carbon losses are risky. Nonetheless, broad guidelines for estimating the loss of wood carbon during timber processing are provided by the U.S. Forest Service, in a reference (Smith et al. 2006) used for the U.S. Department of Energy's voluntary GHG registry known as the 1605(b) program. This reference uses available data from mill surveys, forest inventories, forest products research, and data on landfills and housing stock, among other sources, to estimate wood product carbon and predict losses over time as products are disposed of and decomposed. Due to data limitations, these estimates are necessarily based on broad regional averages and extrapolation from knowns to unknowns.

To supplement this general information, some additional research results are summarized below. Our analysis finds losses of similar magnitude to the estimates in Smith et al. (2006). The data that we synthesized from multiple studies indicate that as little as 1% of the carbon present in the standing tree may remain in solid wood products in use after 100 years. Interestingly, landfills make a much larger contribution to long-term carbon storage, sequestering perhaps 13% of the carbon originally present in the standing tree. Table 2 and Figure 2 illustrate the range of wood losses through the processing chain and after 100 years in use, with detailed explanations to follow.

As little as 1% of the carbon present in the standing tree may remain in solid wood products in use after 100 years. Interestingly, landfills make a much larger contribution to long-term carbon storage.

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[2] This system boundary excludes several less direct effects of wood harvesting activities, including the longer-term impacts of wood harvest on forest carbon, the impacts of wood fuels on fossil fuel consumption, and possible substitution of wood for materials that have different manufacturing emissions. These effects are treated, albeit briefly, in the Broader System Effects and Biomass sections below. Our approach also assumes that impacts will be similar for wood products utilized within the U.S. and those that are exported, so that the location of the impacts is irrelevant to GHG assessments.

[3] High-lignin papers may remain in landfills for considerable time, but the methane released from the breakdown of landfilled paper and the energy required for paper production outweigh any carbon storage benefit. The assumption that paper production contributes little on balance to mitigating GHG emissions could change if a greater percentage of paper were recycled or if more of the methane generated by landfilled paper were captured for energy generation.

TABLE 2.

Reductions in Wood Available for Long-Lived Wood Products

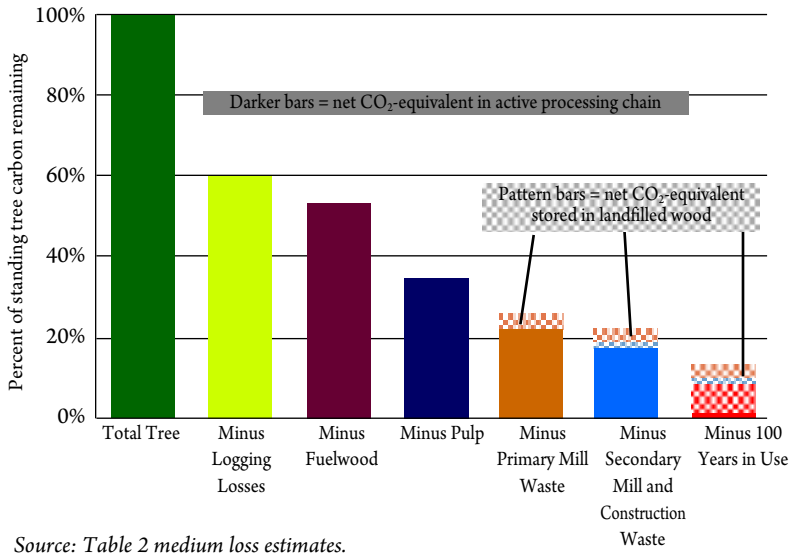
(% of Live-Tree Volume)

Processing Step	Low	Medium	High
1. Harvest	22%	40%	59%
2. Primary processing – fuelwood portion	2%	5%	33%
2. Primary processing – pulp portion	3%	19%	30%
2. Primary processing – mill	4%	13%	22%
3. Secondary processing	6%	5%[4]	18%
3. Construction	1%		5%
4. 100 years in use	14%	17%	19%
Cumulative losses		99%	

Sources: See text.[5]

FIGURE 2.

Carbon Storage Through the Wood Products Chain



Source: Table 2 medium loss estimates.

It is important to recognize that the wood from a single tree may experience high losses at one stage and very low losses at another. The variety of processing paths a log may follow, as well as the variation in losses at each processing step, illustrates why direct sampling of wood flows would be important to understand GHG emissions from wood losses. Still, the fact remains that even the most efficient processing chain will result in the loss and emission of a significant portion of the carbon present in the standing tree.

1. Harvest

Significant amounts of carbon are lost during timber harvest when the un-merchantable portion of the tree is piled and burned, left in the woods or at a landing to decompose, or collected and burned as biomass energy. Both the amount and the rate of this loss affect accounting for carbon emissions. Zhang et al. (2008) surveyed data from 110 research sites and found median litter decomposition half-lives between 2 and 3 years.[6]* Given such rapid decomposition rates, many studies make a simplifying assumption that logging residue is lost immediately, whether burned or left to decompose.

The U.S. Forest Service (2008) estimates logging residue at 30% of roundwood volume for the United States as a whole. State-level percentages range from 3% to 84% (U.S. Forest Service 2007).[7] These percentages fail to capture the total carbon losses during

[4] Secondary processing and construction losses are not cumulative—the highest secondary processing losses occur in industries like furniture, where construction losses are zero. The estimate for medium losses from secondary processing and construction combined assumes 76% of solid wood is used in construction and 24% in finished products, based on data from Smith et al. 2006, Table D2 (see Data Appendix for further details).

[5] Low and high estimates are from different analyses or regions. Medium estimate is national average (for harvest losses, fuelwood, and pulp), simple average of low and high estimates (for primary processing – mill and in-use), or weighted average (for secondary processing and construction, based on national proportion of wood used for construction and other long-lived uses).

[6] *Many of the factors reported here required combining multiple sources of data, using different units or a different base for percentages. To avoid cluttering the text with computational details, we have explained all these computations in a Data Appendix. Items explained in the Data Appendix are marked * in text.

logging, as reported logging residue volumes exclude roots, stumps, and small limbs.[8] Including stumps and small limbs would increase logging residue volumes by an average of 14% for softwoods and 24% for hardwoods (McKeever and Falk 2004), which would increase overall national average residue to about 36%* of roundwood volume. Large roots range from 5% to 51% of total tree biomass, with a mean of 19%, in cold temperate and boreal forests in the United States (Li et al. 2003). Taking all these factors together, approximately 40%* of the original tree volume, with a range from 22%* to 59%* for individual states, might be left behind at harvest, and its stored carbon lost.

Actual losses would vary significantly depending on the type of harvest (whole-tree or bole-only, commercial thinning or diameter-limit or clearcut) and the type and quality of timber (hardwoods generally produce more residue than softwoods, and higher-quality trees produce proportionally less residue). A portion of in-forest decomposition losses due to logging might occur even without harvest activity, due to natural tree mortality. An increase in the commercially used portion of the tree would lower logging residue losses, but might also ultimately reduce site productivity.

2. Primary Processing

As we have seen in the discussion above, logs removed from a harvest site represent approximately 60% of the volume—and hence, stored carbon—of the trees from which they came. Harvested logs may be destined for pulp, fuelwood, sawlogs, or other specialized uses, but long-term carbon storage benefits come mainly from the sawlog portion. The portion of wood going to each use varies widely by region, and will also differ among harvest operations within a region, but the following calculations provide a general indication of processing losses:

- According to figures in a recent Resources Planning Act assessment (U.S. Forest Service 2008), fuelwood removals in 2007 ranged from 3% (in the South Central region) to 51% (Rocky Mountain region) of total roundwood removals by volume, with a national average of 9%.[9] This national average amounts to about 5%* of the original standing

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[7] Roundwood is the volume of material loaded onto a truck for processing into lumber, pulp, fuelwood, or other uses. Timber Product Output data are from mill surveys and field sampling at logging sites. Data are imputed for years between surveys and could fail to reflect recent changes in technology.

[8] Logging residue also excludes wood lost during pre-commercial thinning or land clearing, about 8% of total material removed from forests nationwide, but since these losses are not directly related to a harvest decision we consider them outside the boundary of our life-cycle analysis.

[9] Most of the Forest Service data cited in this report groups U.S. states into nine regions as follows: Northeast (Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and West Virginia); North Central (Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin); Southeast (Florida, Georgia, North Carolina, South Carolina, and Virginia); South Central (Alabama, Arkansas, Kentucky, Louisiana, Mississippi, Oklahoma, Tennessee, and Texas); Great Plains (Kansas, Nebraska, North Dakota, and South Dakota); Intermountain (Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming); Alaska; Pacific Northwest (Oregon and Washington, further split into Westside and Eastside in some reports); and Pacific Southwest (California and Hawaii).

tree volume burned as fuelwood, leaving 55% (60% minus 5%) available for other uses.[10]

- The portion of total roundwood volume used for pulp ranges from 6% for hardwood sawlogs in the North Central region to 50% for softwood pulp in the Pacific Northwest Westside, with a national average of about 31%* (Smith et al. 2006, Table D6).[11] These pulp diversions amount to another 3%* to 30%* by region of original standing tree volume lost from the long-lived products stream, with a national average of 19%*. This leaves about 36% (55% minus 19%) of the original tree volume available for processing into long-lived products.
- Bark accounts for about 15% to 18% of roundwood volume (Smith et al. 2006, Table 5). Most is burned for fuel, with small amounts used for mulch, other short-term uses, or discarded. The bark portion of the 36% of original tree volume remaining after fuelwood and pulp are sorted out would amount to another 6%* of original tree volume. However, making a conservative assumption that sawmill waste percentages, as well as fuelwood and pulp diverted, include this bark waste, we will not consider bark as an additional loss in the volume of wood available for processing into long-lived products.

Once wood destined for short-lived uses (fuel and pulp) has been removed from the solid wood stream, further losses during primary processing will vary considerably depending on the product and the equipment used. Standard circular sawmills may convert only 50% of a log into lumber, while thin-kerf bandsaw mills may approach 70% conversion efficiency. Oriented strandboard (OSB), medium-density fiberboard (MDF), and particleboard may approach 90% conversion of non-bark wood to panels (at the cost of increased use of energy and resins—see the section on fossil energy emissions below). Northeastern sawmills producing hardwood lumber averaged 56% loss of wood from log to planed lumber (Bergman and Bowe 2008). The Consortium for Research on Renewable Industrial Materials (CORRIM) estimated wood waste losses during primary solid wood

PHOTO COURTESY OF THE MANNING AND AREA ECONOMIC DEVELOPMENT SOCIETY, ALBERTA, CANADA

Either at the harvest site landing or at the mill, logs are sorted by quality and diameter into smaller material used for fuelwood or pulp (relatively short-lived uses) and large material suitable for sawing into lumber.

[10] Wood fuels are often considered "carbon-neutral," but when evaluating the potential for long-term carbon storage in harvested wood, burning must be treated like any other wood loss because it definitely accelerates the release of carbon. However, see the Biomass section below for a discussion of possible carbon benefits of fuel substitution. Processing byproducts used for fuel are not included in these fuelwood percentages, however, since carbon losses from this source would be included as part of processing waste.

[11] Additional waste material from solid wood processing may also be recovered to make paper, but because of paper's emissions profile this recovery would not make a significant contribution to carbon storage.

processing ranging from 26%* (for Southeast OSB) to 58%* (for Southeast softwood lumber) of the raw log (Kline 2005; Milota et al. 2005; Wilson and Sakimoto 2005). A study from Finland estimated 56% losses for softwood lumber and 62% for plywood (Liski et al. 2001).[12] With about 36% of original standing tree volume available for processing into long-lived products, primary mill losses amount to about 4%* to 22%* (average of 13%) of the standing tree volume, leaving about 23% of the original volume to be incorporated into long-lived wood products such as lumber or panels.

3. Secondary Processing and Construction

Once primary products leave the mill, many undergo further processing into finished products, sometimes in multiple stages. For instance, lumber might be shaped for molding or flooring, then further trimmed at the construction site. Systematic studies of wood waste during secondary processing are hard to come by, but a few examples indicate the general magnitude of waste at this step.

Losses in furniture and cabinetry are particularly high due to trimming of knots and other defects. A North Carolina study (Wood Waste and Furniture Emissions Task Force 1998) assumed wood waste in furniture manufacturing at 55% to 65% of lumber. A Georgia furniture manufacturer scrapped approximately 40% of all hardwood lumber purchased due to cracks and other defects (Crumpler 1996). A British study (BFM, Ltd. 2003) found secondary manufacturing waste at 20% of raw material purchased for "board" products (MDF, OSB, plywood), 27% for softwood lumber, 37% for hardwood lumber, and 50% to 80% for veneer. This range of secondary processing losses (expressed above as percentages of lumber or panel volume) translates to losses of 6%* to 18%* of original standing tree volume lost at the secondary manufacturing stage.

Wood destined for furniture, cabinetry, windows, and doors experiences most losses at the secondary manufacturing plant. By contrast, framing lumber, flooring, paneling, and siding undergo further trimming at the construction site. Using wood waste amounts reported by the National Association of Home Builders (NAHB) Research Center (1995) and total wood materials required for construction of a 2,082-square-foot single-family house (NAHB, cited in Wilson and Boehland 2005) we estimate that construction-site waste in home building ranges from 4% for solid wood to 10% for engineered wood components. The general magnitude of construction wastes according to NAHB data is similar to the 10%-12% range found in several other studies (Cornell University Cooperative Extension 1996; James et al. 2007; McKeever and Falk 2004). Particular construction applications will naturally diverge from these overall national averages. A Cornell University study of the construction of seven homes (Cornell University Cooperative Extension 1996) found wood waste per square foot of home varied from one-half to twice the NAHB estimates cited above. A Texas study found that construction wood waste from large, custom-built homes was approximately three times the NAHB amounts recorded for

[12] Mill residues from primary mills may be burned on-site for energy, used to make pelleted wood fuel, converted to structural panels or paper, or dumped or landfilled. Other than structural panels and discards in an anaerobic landfill, the other possible uses for mill residues would store carbon for very short time periods so they are considered direct losses here.

smaller homes (Houston Advanced Research Center 2005). This range of construction site losses (expressed above as percentages of lumber volume) translates to losses of 1%* to 5%* of original standing tree volume.

Generally the same wood material will not be subject to secondary processing losses and construction site losses, as most construction materials undergo primary processing only. Assuming that 76%* of wood volume in long-lived products is construction lumber, with the remaining 24% in furniture, cabinetry, and other products, total secondary processing and construction losses might be about 5%* of original standing tree volume. If 23% of the tree remains after primary processing, this leaves about 18% of original live tree volume actually incorporated into long-lived products.

4. Use

Even when mills turn out a product like lumber that is capable of storing carbon for long periods, actual long-term carbon storage will depend upon its final use and expected lifetime in that use.

Once products are placed in service, carbon losses begin to occur as products, or portions of them, are disposed of. Even when mills turn out a product like lumber that is capable of storing carbon for long periods, actual long-term carbon storage will depend upon its final use and expected lifetime in that use, as well as whether it is discarded prematurely due to renovations and repairs. Lifetimes in use vary widely among solid wood products. The longest-lived uses are for buildings or furniture, and about 60%* of all primary solid wood products (lumber and paneling) find their way into these uses (Smith et al. 2006). Shorter-lived uses include pallets and other shipping containers and miscellaneous manufacturing (e.g., matches, popsicle sticks, toothpicks).

Half-lives are generally used to indicate the rate at which wood products will be discarded over time.[13] The latest WoodCarbII model, used for the 2007 Inventory of U.S. Greenhouse Gas Emissions and Sinks, assumes half-lives of 86 years for single-family and 52 years for multi-family homes built recently (these half-lives are shorter for earlier construction years), 26 years for residential repairs, 38 years for "other" solid wood uses, and 2.5 years for paper (Skog 2008). These half-lives were calibrated so that the WoodCarbII model estimates of discards to landfills match EPA solid waste estimates for 1990 to 2001, and estimates of wood carbon in housing in 2001 fit with Census of Housing data.

Beyond half-lives, estimates of wood carbon remaining in use also depend upon the equation used to describe the disposal path. Researchers make various assumptions about whether the disposal path is linear, logarithmic, or follows some other pattern. Miner (2006) provides examples from Europe (European Forest Institute - EFI), Japan (National Institute of Environmental Studies - NIES), Canada (Kurtz), and alternative U.S. approaches, that can be compared to the first-order functions used in tables developed for Smith et al. (2006) and the 1605(b) program. Figure 3 compares different curves describing the percentage of original tree carbon that remains stored in wood products over time (initial stores begin at 18% since that is the approximate amount of the carbon in the standing tree that would be incorporated in solid wood products). This figure shows that, depending on the underlying assumptions about curve

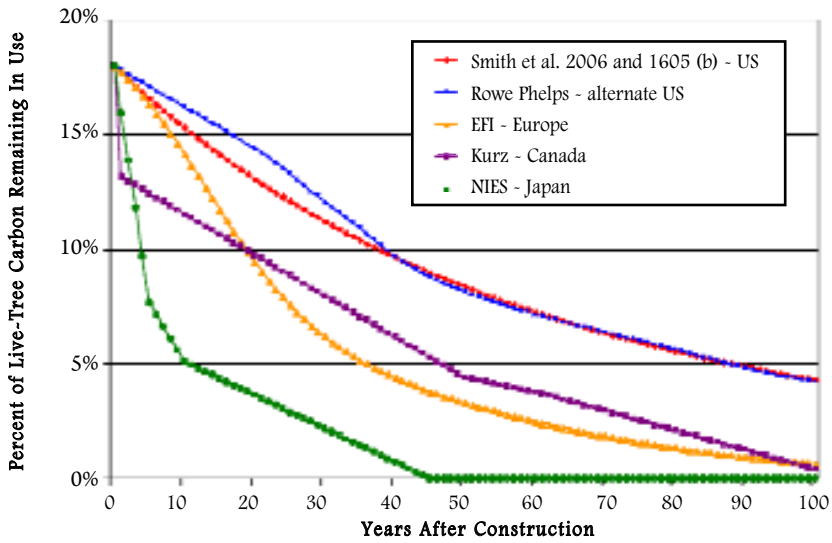
[13] For 1,000 tons of lumber used to construct homes in the year 2000, a 100-year half-life implies that 500 tons will remain in use in the year 2100.

formulas and use lives, estimates of carbon still in use in year 100 range from 0% to 4.6% of the carbon originally present in the standing tree. Based on this comparison, the assumptions behind U.S. use curves appear to be less conservative (i.e., result in a higher estimate of 100-year carbon) than those of some other countries.

FIGURE 3.

Estimates of Carbon Stored in Wood Products Over Time

(% of Total Carbon in Standing Tree)



Sources: McKeever 2002; Miner 2006; Smith et al. 2006; Skog 2008.

***Renovations*:** Even before long-lived products reach the end of their expected lifetime, users will discard portions as they repair and renovate homes and furniture. Systematic data are lacking on the percentage of wood products that are discarded before the end of their useful lives, but a few statistics indicate that this is likely to be a significant source of wood carbon losses. Residential repairs and renovations utilized 61% as much lumber, 42% as many square feet of structural panels, and 60% as many square feet of nonstructural panels, as new construction in the United States in 1998 (McKeever 2002). Renovations generate about 20% of all wood waste, more than the percentage of wood waste from new construction (McKeever and Falk 2004).

In the WoodCarbII model, half-lives for houses and wood used for repairs are calibrated so that model estimates of wood discarded to landfills match EPA data on discards from 1990 to 2001. Hence, in a general sense the calibrated half-lives for houses incorporate the effects of wood discarded during renovations, but additional analysis would be needed to sort out the separate effects of renovation waste and expected house lifetimes.

5. Disposal

The percentage of harvested wood in use as long-lived products does not tell the whole story of wood products carbon sequestration. In fact, discarded wood in landfills actually stores much more carbon than the wood in long-lived products in use. In addition to discarded products, some of the wood waste from mills and construction sites will also be disposed of in landfills (checkered bars in Figure 2). Wood carbon in landfills can persist for some time, as anaerobic conditions inhibit the fungi that specialize in breaking down lignin (the substance that makes wood "woody"), but landfill decomposition rates vary considerably with environmental and management factors. Predicted decomposition rates are often extrapolated from laboratory experiments (Barlaz 1997) that were designed to calculate maximum methane emissions under anaerobic conditions. These studies may overstate total decomposition under

PHOTO BY PHILIP ARAMAN, USDA FOREST SERVICE

Wood discarded in landfills continues to store carbon for some time once it is buried and cut off from an oxygen supply. The portion that does decompose releases significant quantities of methane, however, which has a much higher global warming effect than carbon dioxide.

field conditions, but they are also short in duration which makes extrapolation to 100 years quite speculative.

Field tests near Sydney, Australia, confirm that solid wood may last for a significant time in landfills (Ximenes et al. 2008). Researchers estimated carbon losses based on the proportion of lignin in excavated wood that was buried for 19, 29, and 46 years (assuming lignin totally resists decomposition under anaerobic conditions). Wood buried for shorter periods appeared to decompose very little, while an estimated 17%-18% of initial wood carbon had been released from the 46-year sample. Results from these three sample sites raise as many questions as they answer. After year 46, would decomposition continue at an accelerated rate due to removal of some initial deterrent to bacterial activity? Or would decomposition slow as lignin constitutes a larger proportion of the residual material? Similar to the case discussed above regarding wood products in use, the form of the equation that is chosen to describe landfill decay also has significant implications for stored carbon estimates at any given time (Pingoud and Wagner 2006). Various studies have assumed that anywhere between 20% and 80% of landfilled wood is subject to decay (Borjesson and Gustavsson 2000). Only further research can answer these questions, and variable landfill conditions mean that estimates will always remain uncertain.

The WoodCarbII model assumes that only 56% of paper and 23% of solid wood are subject to decay in landfills, with decay half-lives of 14.5 years for paper and 29 years for wood (Skog 2008). These numbers were calibrated to match solid waste estimates from the EPA and to meet IPCC guidelines. WoodCarbII also makes assumptions about how much of the waste at each stage will be landfilled, burned, dumped, or recycled and how quickly its carbon will be released as a greenhouse gas (Skog 2008). Based on this model, the 1605(b) tables (Smith et al. 2006, Table 6) indicate that about 9% of North Central region softwood pulp volume (or about 5%* of standing tree volume) would remain in use or in landfills at 100 years, with over 91% of that in landfills. At the other end of the scale, the tables estimate that 41% of Pacific Northwest Westside softwood sawlog volume (or about 25%* of standing tree volume) would remain in use or in landfills at 100 years, with two-thirds of that in landfills. Clearly, what happens in landfills is an important part of wood carbon accounting.

***Methane*:** Many carbon accounting schemes address only the *rate* at which carbon is released from decomposing products, without accounting for the *form* in which it is released, but the global warming potential of methane (CH_4) is 25 times that of CO_2. Due to the anaerobic conditions, over half the carbon released from decomposing wood in landfills will be in the form of methane, or about 20% once flaring or burning for energy use (which converts CH_4 to CO_2) is accounted for (U.S. EPA 2006). A Swedish study (Borjesson and Gustavson 2000) found that if all wood from the demolition of a four-story wood-frame

apartment building is landfilled at the end of useful life, rather than being burned or re-used, the consequent methane emissions are large enough to make the overall structure a strong net emitter of greenhouse gases over its complete life cycle.

If 23% of the mass of landfilled solid wood products eventually decomposes, and 20% of the carbon thus emitted is released as methane, the global warming potential of these emissions would be about 60%* of the CO_2e originally stored in the discarded wood. The 1605(b) tables, based on carbon alone, do not reflect this methane effect. Because of methane's climate impacts, landfilled wood waste from mills, construction sites, and house demolition stores only about 13% of the CO_2e present in the standing-tree (checkered bars in Figure 2). Including the carbon remaining in wood products in use (solid bars in Figure 2), total harvested wood CO_2e at 100 years is about 14% of that present in the standing tree.

Fossil Fuel and Other GHG Emissions Associated with Wood Products

In addition to the carbon lost through decomposition or combustion of wood waste, the processing and transport of wood products also requires energy, much of it provided by fossil fuels that emit greenhouse gases when burned. Returning to Figure 1 (page 4), energy emissions are associated with transformations that occur within the solid shapes in the diagram, as well as with the transportation represented by solid lines. Few full life-cycle assessments have been made of energy use and carbon emissions associated with wood products from harvest to disposal. Nonetheless, several sources indicate that energy use and other emissions associated with these stages can be substantial, perhaps even greater than the CO_2-equivalent stored in the finished wood products.

Since paper is known to be an energy-intensive net emitter of greenhouses gases, we concentrate here, as above, on the solid wood products chain. Carbon losses from combustion of wood as fuel (both wood sorted as fuelwood and processing byproducts burned for energy) have already been included as losses to the long-lived products stream in the previous section, so this section considers only fossil fuel energy emissions. Again, we use wood carbon remaining in use or in landfills at 100 years after harvest as the metric to represent the carbon storage benefits of wood products. The emissions associated with producing those benefits are the GHG cost of that activity. Therefore, this section expresses GHG emissions from energy use during processing, transport, use, and disposal of wood products as a ratio to 1 metric ton CO_2e of 100-year wood carbon.[14]

1. Harvest

Harvest-related activities at the source forest emit a relatively small amount of greenhouse gases. A CORRIM study (Johnson et al. 2005) found emissions from

[14] This section assumes that 100-year wood carbon (including landfilled wood) would be approximately 14% of standing tree carbon. See Data Appendix for computations marked by * in text.

fossil fuels used in harvest, replanting, and fertilization—plus methane and nitrous oxide (N_2O, a greenhouse gas more than 300 times more potent then CO_2)—of about 0.9%* to 1.3%* of CO_2e in the raw log. In a life-cycle analysis for Chetwynd Forest in British Columbia, Gower et al. (2006) estimated that harvest-related emissions (including road-building, reforestation, and transport to the sawmill) were about 2%* of the CO_2e stored in the roundwood removed. When compared to long-term carbon storage rather than raw logs, the ratio of harvest-related emissions to 100-year carbon ranges from about 0.04* to 0.07*.

2. Primary Processing

CORRIM studies found fossil fuel-related emissions for processing of four primary wood products ranging from 2%* (softwood lumber, including only on-site emissions) to 18%* (oriented strandboard, including off-site emissions) of the CO_2e in the raw log (Kline 2005; Milota et al. 2005; Wilson and Sakimoto 2005). Data from Finland indicate primary processing emissions range from 3% to 7% of log CO_2e content (Liski et al. 2001). Gower et al. (2006) found sawmill emissions from nonrenewable energy to be 2%* of the CO_2e in the raw log for softwood lumber. Bergman and Bowe (2008) found that processing of hardwood logs resulted in fossil fuel-based GHG emissions equivalent to 2%* of the initial log carbon (for on-site emissions only) or 7%* (including off-site). Skog et al. (2008) estimate that GHG emissions associated with resins and other non-wood components of panels are as high as 20%* of the CO_2e stored in the panel (a factor that likely accounts for some of the high off-site emissions for oriented strandboard above).

Beyond on-site process energy and transport of raw materials to the manufacturing facility, transport from mill to retail outlet can contribute significant emissions.

Beyond on-site process energy and transport of raw materials to the manufacturing facility, transport from mill to retail outlet can contribute significant emissions. The U.S. EPA (2006) provides life-cycle data that combine manufacturing and transport emissions for selected wood-based products. Emissions from burning of biomass to produce process energy are not included. The EPA's transport emissions include only the shipping of raw materials to the place of manufacture (assumed to be 20 miles) and from there to the retailer; they exclude transport to the final consumer and do not account for any CH_4 or N_2O emissions from transport. Raw material acquisition and manufacturing and transport emissions (in metric tons of carbon equivalent per wet ton of material arriving at the landfill) amount to 0.05 for lumber and 0.10 for medium-density fiberboard (U.S. EPA 2006). This translates to emissions of 12%* to 24%* of the CO_2e content of these raw materials.

Gower et al. (2006) tracked transport emissions as wood products moved from sawmill to retail store, and found that this stage by far dominated the overall emissions picture at about 70% of the CO_2e stored in the lumber. The market chain for this lumber included transport to Home Depot wholesale warehouses, with redistribution across the continent; the significance of transport emissions for this processing chain illustrates the importance of sampling emissions flows for each individual offset project. At the other end of the transport spectrum, analysis by CORRIM of two sample wood-framed houses, a 2,062-square-foot house in Minneapolis and a 2,153-square-foot house in Atlanta, found transport

from manufacturing facility to construction site to be an insignificant source of emissions (Meil et al. 2004).

Based on the studies above, the ratio of primary processing emissions to 100-year carbon stores varies from about 0.02* to 0.77* for processing and related raw material transport. If transportation of the finished product to outlets is included, the ratio varies from 0.16* (EPA 2006) to 1.19* (Gower et al. 2006; 1.12 for transport and 0.07 for primary processing). Since finished product transport emissions are so variable (from 0 for products that are used very close to the manufacturing site, to the dominant element of the emissions picture for those with continent-wide transport networks), we have reported this emissions source separately in Table 3 and Figure 4 below.

PHOTO BY DAVID BRIGGS, PROVIDED BY RURAL TECHNOLOGY INSTITUTE

Construction emissions are typically calculated for the building frame only, without factoring in the GHG costs of turning raw wood material into paneling, cabinets, finished flooring, and other components.

3. Secondary Processing and Construction

Manufacturing of lumber or panels into secondary products (windows, doors, cabinets, furniture) and/or construction into buildings requires additional energy. The studies cited above provide emissions data only through primary processing. With very little comprehensive data available, our accounting for wood products emissions includes a potentially large gap for energy emissions from secondary processing.

CORRIM studies calculated construction emissions for the two sample wood-framed houses described above. These homes stored a total of 22.4 and 17.1 metric tons of CO_2e, respectively, in their wood components (Perez-Garcia et al. 2005) over an expected lifetime of 75 years. These studies included only basic framing, and therefore did not account for secondary processing or construction emissions associated with components such as finished flooring, cabinets, wood paneling, wooden doors, and so on. Thus, total emissions from actual home construction would be much higher than those reported here. In the CORRIM studies, fossil fuel GHG emissions from construction were 1.3 and 1.1 metric tons CO_2e, respectively (Meil et al. 2004), but only a portion of those emissions were directly associated with wood components. With wood at 15% of materials for the Minneapolis house and 10% for the Atlanta house, the ratios of construction emissions to 100-year carbon stores associated with wood products might be about 0.011* and 0.008*.

It is important to recognize that total manufacturing and construction emissions for these sample homes far exceed the CO_2e stored in the wood, even without considering secondary processing of the wood components. For the Minneapolis house, emissions are 1.65 times the CO_2e content of the wood components, and for the Atlanta house 1.25 times. The entire home must be built in order to store the wood long-term, but it is not clear what portion of total emissions should be considered a direct cost of wood carbon storage.

4. Use (Maintenance)

Since wood products would not be long-lived without maintenance and heating of the homes and furniture that store the wood, some accounting for maintenance energy is appropriate. Heating and cooling for the two CORRIM model houses emitted 5,174 kg of CO_2e (Minneapolis) and 3,032 kg of CO_2e (Atlanta) per year (Winistorfer et al. 2005), but only a small portion of these emissions might be required to slow the decay of wood components so that they remain an effective carbon sink. In addition to heating and cooling, some house components need to be repaired or replaced periodically, and these activities are more directly attributable to wood carbon storage. The greenhouse gas emissions associated with maintenance of the wooden portions of CORRIM's model houses over a 75-year lifespan were 1,066 and 890 kg CO_2e respectively (Winistorfer et al. 2005)—a ratio to 100-year wood carbon of about 0.06*.

TABLE 3.

Greenhouse Gas Emissions from Solid Wood Products Processing

Processing Step	Ratio of non-wood energy GHG emissions to wood storage in year 100 (CO_2e basis) *Low*	*Medium*	*High*
1. Harvest and transport to mill	0.04	0.05	0.07
2. Primary processing	0.02	0.10	0.77
3. Secondary processing			
Construction	0.008	0.009	0.011
Transport to end use	0.00	0.56	1.12
4. Use/maintenance	0.06	0.06	0.06
5. Demolition and disposal	0.003	0.003	0.003
Total	**0.13**	**0.78**	**2.03**

Sources: See text.

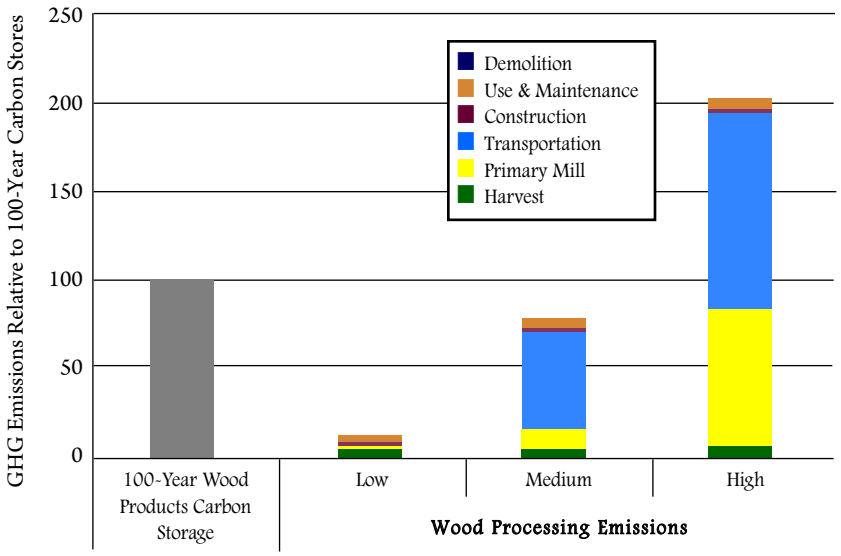
5. Disposal

Again in the CORRIM model homes study, demolition and transport to the landfill of the wood materials in the two houses released another 65* kg CO_2e (Minneapolis) and 49* kg CO_2e (Atlanta) (Winistorfer et al. 2005), for a ratio to 100-year wood carbon of less than 0.01. Additional expenditures of fossil fuel energy would occur at the landfill itself to move and bury wastes, but these were not included.

Thus, as indicated in Table 3 and Figure 4, the entire process of transforming wood into a form suitable for carbon storage causes substantial GHG emissions, and in some cases long-distance transport may cause emissions to exceed the CO_2e storage value.

FIGURE 4.

Energy and Other Process-Related Greenhouse Gas Emissions Associated with Wood Products



Source: Table 3.
Note – excludes secondary processing emissions.

Broader System Effects

The stump-to-dump analyses outlined above track wood carbon losses and fossil fuel energy use throughout the life cycle of a wood product, but timber harvest also has broader system effects, on forest ecosystems as a whole as well as on markets and the larger economy.

The effect of timber harvest for wood products on the broader forest ecosystem depends on the assumptions of a particular study. At one extreme, some studies assume that without a wood products market, no forests would exist; hence wood products should be credited for all carbon sequestered by the source forest. At the other extreme are studies assuming that without a wood products market, natural forests would remain undisturbed and would continue to fix carbon at a slowing but still significant rate for centuries; hence any harvest activity reduces carbon stores, at least temporarily. The typical situation lies somewhere in the middle.

PHOTO BY JOHN ZAPEL, HOLLY MOUNTAIN RESOURCES, LTD., PROVIDED BY RURAL TECHNOLOGY INSTITUTE

The effect of a particular forest management regime on greenhouse gases depends upon the volume of standing trees maintained over time, as well as on soil and forest floor impacts, including road building.

A key determinant of the broader ecosystem effect of wood products is the particular management system that is applied to the source forest. Multiple studies have compared the carbon storage implications of different forest management systems, accounting for carbon stored in the forest, in wood products in use, and in landfills. Some sources assume that sustained yield guarantees the carbon-neutrality of wood, but sustainability of harvest volumes is actually a poor indicator of overall GHG benefits of the management regime. For example, a management regime that involves periodic light harvests and maintains high forest stand volumes, and a regime using clearcuts with short rotations and low average stand volumes, will both produce "sustainable" harvest flows, but they have very different carbon implications.

The volume of live and dead wood maintained on the site over time is a better indicator than the sustainability of harvest flow to assess the carbon sequestration contributions of a particular forest management system. Management regimes that reduce the standing stock of timber, even if they produce a sustainable flow of timber over time, will have smaller GHG benefits than regimes that maintain high stand volumes (Liski et al. 2001; Hoover and Stout 2007; Ray et al. 2007; Depro et al. 2008;). Even very old stands continue to build carbon reserves, particularly in the soil (Luyssaert et al. 2008). For young secondary managed forests, the carbon balance depends upon multiple factors, including the effect of harvest on stand regeneration, the proportion of wood converted to long-lived versus short-lived products, the rate of decomposition and amount of methane emitted by discarded products and the extent of reuse, and the growth dynamics of the particular forest type. For older forests with a low risk of major disturbances, conversion to young, fast-growing forest will cause large amounts of GHG emissions as the old stand is removed (Harmon et al. 1990), and it may take decades or even centuries for a sustainable harvest regime to work off this initial carbon debt.

In addition to readily observable effects on standing timber and carbon volumes, harvest operations can affect soil and forest floor carbon stores through physical disturbance. Surprisingly little is known about these effects, but in general, logging can be expected to reduce forest floor carbon. Early research by Covington (1981) indicated that forest floor biomass decreased by half during the 15 years following clear-cutting of northern hardwood stands, presumably due to faster decomposition and reduced deposition of litter. Harmon et al. (1990)

estimated that fine woody debris and forest floor carbon would decrease from 26 to 7 metric tons per hectare if an old-growth Douglas fir stand were converted to a 60-year rotation. Removal of whole trees appears to decrease forest floor carbon as compared to removal of sawlogs only (Johnson et al. 2002). A recent review of studies relating forest management practices to soil carbon stores indicated that thinning generally leads to lower forest floor carbon due to faster decomposition and less litterfall, despite the pulse of carbon from harvest residues (Jandl et al. 2007). Effects on mineral soil are less pronounced, and depend on the degree of disturbance, but clearcutting can lead to overall carbon deficits for up to 20 years as immediate losses of carbon from the soil and forest floor outweigh new growth and litterfall. Yanai et al. (2003) paint a more complex picture, citing studies that show *slower* litter decomposition after clearcuts (due to a less favorable environment for decomposer organisms), combined with possible accelerated losses of carbon within the soil organic horizon, and mixing of some litter into mineral soil by logging disturbance. Forestland managed for timber may also lose soil and forest floor carbon due to clearing for logging roads. And finally, loss of cover in wet boreal forests with deep peat soils could trigger release of the vast amounts of carbon stored in those soils.

Even the best forest growth models cannot predict future conditions, disturbance events, or forest responses with much certainty. Forest climate strategies will need to adapt to a shifting reality.

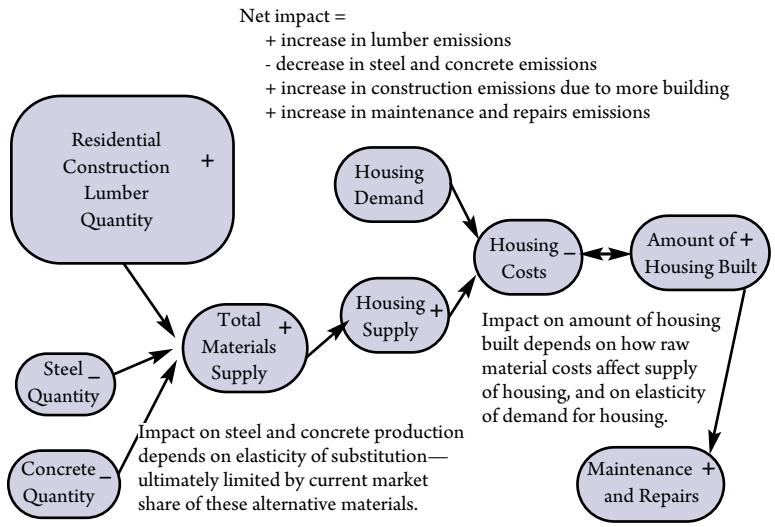
Beyond the relatively short-term effects on standing trees and the longer-term effects on the forest floor and soils, timber harvest can also affect the resilience of forests to disturbances over time. In fire-prone forests, thinnings that reduce excess fuel loads may reduce the frequency or severity of fire, protecting forest carbon reservoirs into the future (Oneil et al. 2007). However, thinning in moist forests may make forests more vulnerable to ice damage or wind throw. Timber operations that remove invasive exotic species can produce more diverse stands that better resist stresses from droughts to pest outbreaks; by the same token, disturbance from harvest activities can also help spread invasives that inhibit regeneration of tree species with high carbon storage potential. Single-age, single-species plantations may grow rapidly during intermediate stand ages, but can be more vulnerable to future disturbances and consequent carbon losses. Even the best forest growth models cannot predict future conditions, disturbance events, or forest responses with much certainty. Forest climate strategies will need to adapt to a shifting reality, with the state of scientific knowledge continuously scrambling to keep up as forests and management methods change and develop.

In addition to ecosystem effects, changes in wood products volume may also reduce GHG emissions as markets substitute wood for more GHG-intensive materials. However, the actual degree of substitution is extremely difficult to document. Simply producing more wood products will not do the trick. The ultimate impact of expanded lumber production on GHG emissions depends on a) the elasticity of substitution of wood for alternative materials, b) the impact of materials availability on housing supplies, and c) the elasticity of demand for housing (Figure 5). The first factor, the elasticity of substitution for alternative building materials, is likely to be low, because wood is already the "business as usual" technology for home construction and residential furniture in the U.S. (used for 90% to 94% of one- and two-family homes, Gustavson et al. 2006) and it is difficult to build wooden high-rises (usually framed with steel) or foundations (usually concrete). Considering the other two factors, if abundant lumber drives down housing costs (b),[15] and if people respond by building more or larger houses or renovating existing ones (c), expanding the lumber supply

could well result in *more* overall GHG emissions as fossil fuels are burned to construct and maintain those homes. Overall, then, it would seem that the possible GHG benefits of substitution are relatively low for long-lived wood products.

FIGURE 5.

Greenhouse Gas Emissions Impact of Expanded Lumber Production



Biomass

The discussion above traces the greenhouse gas emissions associated with wood products flows. An analysis of the greenhouse gas emissions associated with wood fuels is closely related, because woody biomass that is burned to generate heat or electricity is often a byproduct of both timber cutting operations and the processing of wood products. Unlike wood products, wood fuels lack any carbon storage benefit, so substitution effects comprise the entire climate benefit of these fuels. Fossil fuels are currently the dominant source of energy, so there is much greater substitution opportunity for biomass than there is for wood in construction. As for wood products, however, the benefits depend upon wood fuels actually reducing fossil fuel use, and not simply on expanded woody biomass use.

As a fuel, wood unquestionably has a smaller atmospheric carbon impact than coal, oil, or natural gas. Yet wood fuels are definitely not, literally speaking, "carbon neutral." First, an analysis of the GHG benefits of wood fuels must reflect the fact that they, like wood products, require fossil fuel energy to produce and transport. In the case of wood-chip fuel, the fossil fuels used to harvest, chip, and transport wood release about 5% of the CO_2e contained in the fuelwood portion of the tree (Mann and Spath 1997).[16] This figure may underestimate actual transport energy, as it assumes haul distances of only 17 miles and does not account for truck idling time while loading and unloading, which one source estimated could be as high as 60% of total truck run time (Hakkila and Aarniala 2002). Small-scale biomass projects with a localized "woodshed" can minimize the fossil fuels used to transport bulky solid wood fuels.

Wood pellets require more processing than wood chips. One Wisconsin study found that wood pellets used 6% to 9% as much fossil fuel energy in processing as the energy contained the pellets, compared to wood chips at 2% to 3% (Katers and Kaurich 2006).[17] Fossil energy used to transport and process heating oil, by comparison, was 16% to 25% of the energy contained in the

[15] This effect of abundant lumber is likely small, since wood is typically only about 10% of overall building costs.

[16] When comparing fossil fuel consumption associated with various energy sources, it is important to consider how each study treats the energy embedded in equipment as well as upstream and downstream energy use—fossil fuels themselves also require energy for extraction, processing, and transport.

[17] Because wood fuels contain more water (and otherwise burn less efficiently) than heating oil (see below), fossil fuel energy as a percentage of useful heat will be slightly higher than these percentages.

fuel (Katers and Kaurich 2006). Wood fuels clearly have much lower GHG emissions from processing and transport than fossil fuels, but their fossil-based emissions are not zero.

Liquid biofuels require even more energy to produce than solid fuels. Pimentel and Patzek (2005) estimate that harvest, transport, and processing of wood for cellulosic ethanol uses 57% *more* energy from fossil fuels than the energy contained in the ethanol itself. Even if cellulosic ethanol is produced using steam heat generated by wood, this study estimated that its production still requires 73% as much fossil fuel energy as the ethanol itself contains. A study by Argonne National Laboratory for the U.S. Department of Energy (Wu et al. 2006), in contrast, estimates that cellulosic ethanol will use only 16% as much fossil fuel energy as the energy contained in the ethanol and could reduce GHG emissions by 85% compared to burning gasoline.[18]

In addition to fossil fuels used to process wood fuels, combustion and conversion are generally less efficient for wood than for fossil fuels, so more units of heat (BTUs) must be generated to produce a given amount of useful energy. Solid biomass fuels like wood are used primarily for heat (in traditional wood stoves and furnaces that burn cordwood, wood gasification plants that use chips, and stoves or boilers that burn wood pellets) or to generate electricity (over 80 wood-fueled power plants nationwide have a combined output of nearly 1,700 megawatts). The most efficient wood use is for heat alone (about 65% of the potential BTUs in wood burned in a typical home wood stove are converted to useful heat, and up to 75% in gasification systems according to Biomass Energy Resource Center 2009), or for combined-cycle heat and power, also known as co-generation (60% to 80% efficient at converting wood energy to useful energy). Wood-fueled electric utility plants, on the other hand, may be only 18% to 24% efficient (U.S. Forest Service Forest Products Lab 2004). In comparison, modern oil or gas furnaces may be up to 97% efficient, electricity generated from oil or coal is about 30% to 35% efficient, and coal for space heat has about the same conversion efficiency as wood.[19]

When evaluating the potential GHG benefits of substituting wood fuels for fossil fuels, the relative carbon content of alternative fuels must also be considered. Wood has a lower hydrogen content than fossil fuels, which causes it to release more carbon per unit of heat. Wood releases 21% more CO_2 per BTU than fuel oil, and 67% more than natural gas, but 14% less than anthracite coal (U.S. Energy Information Administration 2008a).[20] So replacing oil or natural gas with wood actually increases greenhouse gases released per BTU, even if the boiler burns with equal efficiency. Replacing coal with wood, on the other hand, potentially reduces emissions per BTU if the wood is burned efficiently. In sum, because of efficiency and chemistry differences, wood fuel may generate up to twice the CO_2 per unit of useful heat or electricity as fossil fuels, with the substitution most favorable for coal.

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[18] Differences are due to contrasting assumptions. Wu et al. use much lower values for energy embodied in equipment, assume no fertilization for woody biomass, incorporate the energy content of byproducts, and assume increasing yields over time as technology improves.

[19] Wood stoves and furnaces may be close to oil and gas in efficiency at peak output, but wood equipment is more difficult to start and stop on demand, and hence often runs with incomplete combustion (producing charcoal and ash and increased emissions rather than heat) for part of the season as it operates at lower temperatures and with limited oxygen supply.

Since wood actually releases more greenhouse gases per unit of useful energy than fossil fuels, the climate benefits of a switch to wood depend heavily on the assumption that the source forest continues to take up carbon as rapidly as it is released by burning, and even then there will inevitably be some delay between emissions and reabsorption. Hence, an assessment of the GHG impacts of biomass use on the source forest must also account for the full ecosystem effects of intensified management needed to increase biomass supplies. It is true that burning fossil fuels releases carbon that had been removed from the atmosphere hundreds of millions of years ago, while growing trees and burning their wood cycles carbon in and out of the atmosphere over a scale of a few decades. But timing still matters. If the source forest regenerated instantly, biomass would earn its "carbon-neutral" label, but the longer it takes to regenerate forest carbon after a biomass harvest, the longer that carbon dioxide remains in the atmosphere exerting its heating effect.

Waste wood burned for energy comes closest to true carbon neutrality, as it has already been removed from the forest and would otherwise decompose without energy benefits. New wood fuel plants are often promoted as running on wood waste, but unfortunately there is very little true waste remaining in the wood processing system. Perlack et al. (2005) calculated the amount of additional biomass fuel that could feasibly be used in the United States each year, and estimated that there are only 8 million tons of unused mill waste and 28 million tons of urban and consumer wood waste that could be captured for this purpose. The remainder of the woody biomass documented in the report, a total of 190 million tons, would come from the forest—41 million tons of logging residues, 60 million tons from forest fuels reduction treatments, and 89 million tons from all sources generated as byproducts of potential *increased* harvest and wood products consumption.

Removing 190 million more tons of woody biomass from U.S. forests annually (plus harvesting sufficient additional roundwood to generate enough new logging residue and wood waste) would reduce forest carbon stores in the short term, and could also affect carbon sequestration capacity in the longer term through its effects on site productivity and soil carbon. Increased use of whole-tree harvest technology and collection of widely scattered and bulky residues could create unintended impacts on soils and the forest floor as well as increasing fossil fuel consumption associated with harvest. In special cases, removal of excess woody material can increase forest carbon stores by reducing losses from catastrophic wildfire. But in general, there is a trade-off between burning wood and storing its carbon on the stump. As economists, the "dismal scientists," like to say, "There is no such thing as a free lunch."

Because of fossil fuel energy required to produce wood fuels, differences in combustion efficiency and fuel chemistry, and possible impacts on source forests, woody biomass cannot be considered a truly carbon-neutral energy source. Harvested judiciously, however, with care for long-term forest health, and with an emphasis on small-scale space heating applications, it can help reduce greenhouse gas emissions and help us through the transition to truly renewable energy sources. Incentives and regulations designed to boost use of wood fuels need to minimize the negative effects and promote uses with the greatest net benefit.

Because of fossil fuels required to produce wood fuels, differences in combustion efficiency and fuel chemistry, and possible impacts on source forests, woody biomass cannot be considered a truly carbon-neutral energy source.

[20] These comparisons assume kiln-dried wood with complete energy capture, so typical fuelwood in a typical home stove would burn much less efficiently.

Policy Implications

The analyses above revealed that wood losses along the production chain, release of methane from landfills, and GHG emissions from fossil fuel energy used to produce and transport wood products are significant. As a result, long-lived wood products ultimately store only a small portion of the carbon removed from the forest by logging. Moreover, the most significant of these stores are in landfills, rather than in wood products in use. When process energy emissions are included, the U.S. forest products industry as a whole, including paper, releases nearly twice the greenhouse gases (measured in CO_2e) that it stores in products and landfills, even excluding the effects of harvest on forest carbon (Skog et al. 2008).

Despite these broad patterns, the emissions associated with different wood products streams are extremely variable and complex, making it difficult to recommend any uniform policy to enhance greenhouse gas reduction through increased wood products flow. Only life-cycle analysis of specific products and regions can determine whether a particular wood product stream has GHG benefits. For any region or product mix, however, shifting use toward longer-lived products, reducing wood waste at all stages, recovering used wood for new products or energy, reducing processing and transport energy, and capturing more landfill methane could all lower the carbon footprint of wood products.

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Processing recovered materials into new long-lived products can extend the storage life of wood carbon already removed from the forest. For instance, discarded pallets may be remanufactured into hardwood paneling.

The clearest climate benefits of wood use, for either products or fuel, come from substitution effects—that is, consequent reduced use of alternative fossil-fuel-intensive materials. This is obvious in the case of biomass fuel, but it is true of wood products as well. In the case of wood products, the opportunities for substitution may be limited, but when substitution does occur it reduces fossil fuel emissions "forever." Unfortunately, simply expanding production will not guarantee that substitution actually occurs. Several policy options could tie wood use directly to reduced dependence on fossil fuels: 1) impose full environmental costs on fossil fuel-based and wood-based products alike, hence giving wood a competitive advantage (a carbon tax or cap-and-trade program would do this by increasing the cost of fossil-fuel-intensive alternatives, as long as similar policies applied for trading partners); 2) encourage voluntary choices that favor wood (provided the advantages are thoroughly documented), through approaches like green building standards or renewable energy certificates; 3) offer temporary subsidies or tax breaks to switch fossil-fuel furnaces to clean-burning wood furnaces where sustainable supplies are available; 4) encourage community-scale wood heat projects that use locally sourced wood and are likely to have fewer environmental and fossil energy impacts than larger-scale projects.

Increased demand for wood products resulting from such policies will ultimately reward wood producers through higher prices, with no need to subsidize wood production directly. Climate policies should not directly reward "second-best"

strategies (like building with or burning wood) without reliable proof that they replace a "third-best" alternative. The "first-best" strategy remains a reduction in the overall use of resources, and direct subsidies for wood use could lead to excess capacity, excessive energy use, and unintended harm to forest health. Since the climate benefits of wood fuels and wood products alike depend upon maintenance of high carbon stores in source forests over time, any temporary subsidies must be accompanied by rigorous forest sustainability standards.

A clear and accurate picture of the climate effects of wood use is critical to the development of effective greenhouse gas reduction strategies. With tightening international and national commitments to reduce GHG emissions, accounting for forest and harvested wood carbon has received increasing attention. The treatment of these carbon pools in national GHG inventories and under cap-and-trade systems will ultimately influence the success of climate change mitigation efforts. The last section of this report provides a brief overview of how wood products have been treated under climate policy to date. A topic of current interest and controversy is whether and how wood products carbon should be credited as part of offset projects, so we also discuss some key issues that must be resolved if this is to be done effectively—that is, if wood products carbon is to help reduce greenhouse gas emissions.

The Role of Harvested Wood Products in Climate Policy: A Short History

Nations that signed the United Nations Framework Convention on Climate Change (Kyoto Agreement) in 1992 agreed to report emissions and sequestration of greenhouse gases. The guidelines developed for these inventories initially omitted wood products carbon, under the assumption that new wood products would simply replace discarded ones with no net change in this carbon pool (IPCC 1996, Chapter 5, Box 5, p. 5.17). Countries could include harvested wood products in their reporting, however, if they could clearly demonstrate that stocks of products in use and in landfills were increasing over time.

As countries gained experience with GHG reporting and as the start of the first 2008-2012 Kyoto commitment period approached, interest grew in crediting carbon stored in wood products and in landfills as part of national inventories to help balance emissions from other sectors. In 2003, the Intergovernmental Panel on Climate Change (IPCC) issued Good Practice Guidance for Land Use, Land Use Change, and Forestry, which included methodologies for measuring carbon in wood products in use and in landfills (IPCC 2003, Appendix 3.a.1), and the most recent Guidelines for National Greenhouse Gas Inventories (IPCC 2006) now incorporate these recommendations.

Beyond simply measuring greenhouse gases, Kyoto Agreement signatories made commitments to meet emissions reduction targets and it took several follow-up meetings to agree on how to treat the forest sector for these targets. The final rules for the 2008-2012 commitment period require countries to report the GHG impacts of land use changes (deforestation and afforestation), and allow countries to choose whether or not to include emissions from and sequestration by managed forestlands that remain forested (with individual-country limits on use of sequestration by managed forests to balance their

industrial emissions).[21] At this time, increased carbon in wood product pools cannot be credited toward emissions reduction commitments, though negotiations are ongoing about the inclusion of forest products carbon in future commitment periods.

In both international and U.S. contexts, cap-and-trade mechanisms are gaining acceptance as an approach to reducing GHG emissions. Theoretically, market-based trading may be used within a nation or between nations to allocate emissions reduction efforts to least-cost options under a defined emissions cap. Through allowance trading, parties with surplus emissions reductions can market them to those with higher compliance costs. Allowance trading systems have gained acceptance through programs like the U.S. EPA's cap-and-trade program for sulfur dioxide.

Initial cap-and-trade proposals treat forests and agriculture as uncapped sectors. One way to encourage emissions reductions or GHG removals by uncapped sectors is to allow them to sell documented GHG reductions—that is, increased sequestration or emissions reductions beyond "business as usual"—as "offsets" to entities in capped sectors. These offsets can serve as a substitute for direct emissions reductions by those entities. When forestry projects are used to offset emissions from regulated sources, questions about what counts as a GHG reduction can become complex. In general, the U.S. has taken a more favorable attitude toward forest offsets than many other countries. The European Union Emission Trading Scheme, for instance, currently excludes forestry offset projects.

U.S. forests currently capture about 10% of national GHG emissions, thanks to regrowth of forests on abandoned agricultural land and intensively cut timberland. Receiving credit for this sink, at the national accounting level or through individual offset projects, would reduce compliance costs for other sectors. Crediting wood products carbon storage would further expand the range of forest-based offsets. Of course, only changes in practice that supplement "business as usual" sequestration in these sinks will actually contribute to GHG reductions. Emerging regulatory schemes in California, the Northeast (Regional Greenhouse Gas Initiative), and the West (Western Climate Initiative) include forest offset options, and each of these arenas is considering inclusion of wood products pools. Crediting wood products carbon storage would further expand the range of forest-based offsets. Emerging regulatory schemes in California, the Northeast (Regional Greenhouse Gas Initiative), and the West (Western Climate Initiative) include forest offset options, and each of these arenas is considering inclusion of wood products pools. The U.S. Department of Energy's voluntary 1605(b) greenhouse gas registry and the Chicago Climate Exchange also credit wood products carbon for projects registered or offsets traded.

[21] Canada, for instance, chose to exclude managed forests from its 2008-2012 Kyoto Agreement-mandated reporting, as scientists estimated that there would be a high chance of managed forests acting as a source rather than a sink during this period, due to increasing fire and insect outbreaks.

Accounting for Wood Products in Forest Offsets

Harvesting timber as part of an offset project introduces a complex series of greenhouse gas impacts that spread back to the source forest and outward through the economy. Though many of the issues can be addressed by the life-cycle assessment approach outlined in the first sections of this report, the offsets context introduces new questions about what impacts should be credited or debited to the offset project provider. Incomplete accounting could fail to properly reward significant emissions reductions, whereas crediting activities of questionable climate benefit could inadvertently encourage GHG-emitting activities.

Because the U.S. is somewhat unique in its emphasis on offsets from forest carbon sinks, particularly in proposing to credit wood product pools, it is critical to get the accounting right in order to maintain credibility as our nation begins to play a role in global GHG reduction efforts. A good project accounting system will: 1) define a system boundary that captures major effects; 2) include significant GHG pools and fluxes; 3) set additionality criteria that ensure that "business as usual" activities are not credited (including defining accurate baselines); 4) account for significant leakage (emissions outside the project boundary that are affected by the project); 5) ensure that carbon is stored "permanently;" and 6) address uncertainties and risks by discounting credits and/or pooling risk across multiple projects. The discussion below indicates how each of these criteria applies to wood product pools as part of forest offsets.

Because the U.S. is somewhat unique in its emphasis on offsets from forest carbon sinks, particularly in proposing to credit wood product pools, it is critical to get the accounting right.

1. Project Boundary

One boundary question arises for wood products projects operating in isolation from source forests. It is forests that actually remove carbon from the atmosphere, and production of wood products merely slows the rate of release back into the atmosphere when some of that carbon is removed from the forest site. Because sequestration on the source forest and in harvested wood are so intertwined, stand-alone wood products offset projects would exclude many significant project impacts. Wood products should only be considered as a possible carbon pool within the context of forest management projects, and then only if full accounting of GHG impacts is required.

The second critical boundary question is the treatment of emissions beyond the geographic boundary of the forested property. The following principles for project accounting from the IPCC Good Practice Guidance for Land Use, Land Use Change, and Forestry (2003) provide guidance for defining system boundaries in offset projects:

> In a general sense, project boundaries can be thought of in terms of geographical area, temporal limits (project duration), and in terms of the project activities and practices responsible for greenhouse gas emissions and removals that are significant and reasonably attributable to the project activities (Section 4.3.2, p. 4.90).
>
> Project operators need to determine and report the greenhouse gas emissions from direct fossil fuel and electricity use in mobile and stationary equipment (Section 4.3.3.7, p. 4.109).

PHOTO BY DAVID COHEN, UBC

Long-distance shipping is an important source of fossil fuel emissions that should be reflected in harvested wood carbon offset accounting. Exports of logs and lumber to China have grown in recent years, and emissions from this source would fall outside of Kyoto commitments (Zhang Jiagang, China, 2001).

Emissions associated with processing, transport, use, and disposal of wood products are certainly "reasonably attributable" to the wood carbon storage function, as without these steps a tree removed from the forest would decompose much more rapidly. However, projects that claim offset credits for wood stored off-site depend on capped sector entities to perform these services. It is not at all clear how to handle this anomaly since capped sectors themselves are not eligible to sell offsets.

In an offsets context, accounting for energy emissions matters because forest project developers will choose between strategies that accumulate more carbon in the forest ecosystem and strategies that remove more carbon for storage in products and landfills. Projects that include timber harvest will have a competitive advantage because timber revenues help cover project costs. Crediting these projects for the full amount of carbon stored in wood products, without accounting for associated emissions, would skew the offsets mix toward timber harvest projects, and would increase pressure on limited fossil fuels and raise costs elsewhere in the economy. Considering only the sequestration aspect would be like a cost/benefit analysis that considers only benefits. Some wood products clearly result in more processing emissions than the carbon they store, and these activities should not be subsidized by valuing the carbon stored in final products and landfills without accounting for GHG emissions along the production path.

Some claim that under an economy-wide program offset projects should not be responsible for fossil fuel-related emissions outside the forest, since those emissions are already capped. By this line of argument, allowance costs associated with processing and transport will affect offset providers through a lower value for raw harvested wood. But allowance costs will also raise prices for finished wood products and lower profits for wood businesses, among other effects, so raw wood values will not reflect the entire cost. Lower timber prices will also apply equally to all forest landowners, not just offset providers. Hence the burden is on regulators to ensure equal treatment for forest offset strategies through project accounting that reflects net carbon storage, rather than gross storage. A requirement that offset projects maintain pre-project forest carbon stores throughout the project period would also help guard against unintended intensification of harvest.

2. Carbon Pools

Most carbon accounting protocols call for periodic sampling of all significant carbon pools, with offset providers credited or debited based on stock changes.

This system would adequately reflect forest carbon reductions directly caused by timber harvest, as well as losses occurring from natural processes in the absence of harvest activity. The volume of standing live and dead trees would decrease after harvest; forest floor and down dead wood pools would briefly increase and then decrease as material rots over several years. Carbon losses from the stumps and roots of harvested trees would also be accounted for if below-ground carbon is estimated from above-ground tree biomass, as a missing tree would lower the post-harvest below-ground estimate. Long-term losses of soil and litter carbon due to harvest disturbance are less likely to be captured through periodic inventories due to the difficulty of sampling soils adequately. Because soils commonly hold one-third to one-half of forest carbon, a small percentage change in soil carbon can significantly affect total forest carbon. When soil-carbon impacts are underestimated, this can make short-rotation, intensive-production forestry look more favorable from a carbon perspective than it really is.

Measurement of wood product carbon stocks and flows is a bit trickier. Documentation of carbon storage in wood products for offset projects would probably concentrate on the portion converted to solid lumber, plywood, or panels, and perhaps the portion remaining intact in landfills. Because of the complexities of tracking these pools over time, the U.S. Department of Energy introduced the 100-year method into its voluntary 1605(b) program. This approach allows project developers to report carbon stocks expected to remain in wood products and landfills 100 years after harvest. Projects relinquish claims to shorter-term carbon stores, in exchange for receiving permanent credit for stores present in year 100. Registry participants are provided with a set of tables developed by the USDA Forest Service (based on Smith et al. 2006), which are sufficiently accurate for a voluntary registry.

In an offset context, however, this simple approach is inadequate. Regional data in the 1605(b) tables blend results from very diverse operations—with different management styles and land use histories; harvesting logs of various species, sizes, and qualities; and shipping to mills with different product mixes and equipment—all of which creates extremely variable patterns of carbon storage over time. Without direct sampling of a particular wood products stream, adequate discounting of offset credits to reflect the substantial uncertainty of model estimates would likely eliminate creditable wood products carbon altogether. Tracking the wood processing path of an individual project would encourage efficiency, recycling, and channeling of wood to long-lived products to improve retention of wood carbon over time. Some 1605(b) parameters, such as the carbon density of various finished products, apply across all projects and can be combined with project-specific data to develop estimates of carbon stored in wood products. Changes in wood product technology and consumer behavior also demand periodic adjustments in estimation parameters.

3. Additionality

After establishing appropriate project boundaries and defining carbon pools, an offset project claiming wood product credits would compare the flow of wood products under planned project management to the flow under a "business as usual" scenario. The *difference* in GHG emissions would comprise the wood

products component of project carbon credits. Developers of offset standards are just beginning to consider how to define a wood products baseline, against which an offset must measure its carbon storing activities. Should the baseline be the historical flow from this property, the projected future flow, or the average from similar properties? Additionality questions are an important but unresolved issue that all offset protocol developers are still wrestling with.

4. Leakage

Additionality is further complicated by market leakage and substitution effects, both outside the direct control of the offset developer. At its most extreme, leakage seems to confound any attempt to change "business as usual" practices, as project actions may be undone by non-project *re*actions. If a project lowers historic levels of timber harvest in order to accumulate forest carbon, but nearby properties respond with increased cutting that depletes their carbon stocks, leakage adjustments would reduce creditable project carbon. If a project increases harvest to store more carbon in wood products, and nearby properties respond with reduced cutting, this would likewise undercut wood carbon gains. Work to estimate and compensate for leakage in forest offset projects is ongoing (see Willey and Chameides 2007 for one suggested method).

Substitution is really a type of leakage with effects extending to substitute products. For the harvest-reducing project example, inclusion of substitution effects might penalize the project if the harvest reduction indirectly causes increased use of concrete, steel, or plastics. Conversely, a project that increases timber harvest might claim greenhouse gas reductions from reduced use of concrete or steel framing. As explained in the Broader System Effects section above, data are lacking to actually demonstrate substitution effects in the economy, and crediting such an uncertain outcome would be out of place in an offset project.

An analogy might help provide context for interpreting substitution claims. The owner of a hybrid vehicle might claim that every mile driven in that vehicle reduces GHG emissions, and is worthy of a climate subsidy, because the owner *could* have chosen to drive a conventional sport utility vehicle instead. For the individual driver faced with a choice of vehicles, the hybrid is undoubtedly a more climate-friendly choice, just as for a builder use of wood might be more climate-friendly than concrete. Yet a superior GHG-reducing strategy would be to stop driving altogether or to reduce building size, extend building life, and reuse waste wood. If this driver never owned a sport utility vehicle nor had plans to purchase one, or if the hybrid was driven more miles due to lower driving costs, then the benefits would be entirely fictional. Moreover, if hybrid vehicles or wood construction are already the "business as usual" technologies, no credit may be claimed for their use. Even where they are not dominant, actual substitution must still be demonstrated.

Because these indirect market effects are beyond the control of an offset provider and are mind-bendingly complex, some protocols exclude them from project carbon accounting. Climate policies that directly support efficiency, conservation, and GHG-reducing technologies (e.g., by subsidizing research or

setting appliance standards) are better suited than offset projects to address these economy-wide factors.

5. Permanence

Wood products do not store carbon permanently, though landfills apparently can store it for decades or even centuries (our experience with landfills is too short to know this for certain). Since offsets enable continued GHG emissions above the cap set by public policy, and since those emissions permanently shift carbon from the lithosphere to the biosphere, it is important to use conservative assumptions about the longevity of carbon storage through terrestrial offset projects, particularly for wood products and landfills that do not sequester additional carbon over time as forests do. IPCC's Good Practice Guidance for Land Use, Land Use Change, and Forestry (2003) uses very conservative default half-lives in use of 30 years for all solid wood products and 2 years for paper. Use lives change over time as new technologies extend product life or introduce more disposable products or as consumer habits change, so parameters would need to be updated frequently.

Since it would be impossible to track wood flows from an offset project to particular landfills, regional or national average decomposition rates would be the only option for tracking the fate of landfilled wood carbon. Ongoing monitoring will be critical to improve data on landfill releases, and to update GHG emissions estimates as waste management practices change over time. If the longevity of products and waste are tracked as part of wood pools in offset projects, practices that increase product life or boost waste recovery would be rewarded.

6. Uncertainty and Risk

The wood products life-cycle summary in the first section of this report illustrated the variability of wood processing pathways in terms of their carbon losses and energy requirements. Due to diverse sources and processing methods, it is impossible to develop a single reliable error estimate for wood products carbon measurements. In the face of substantial uncertainty, wood carbon estimates should use conservative estimation methods and should be discounted for uncertainty if credited to an offset project.

Conclusions

The limited role of forests and wood products in sequestering and storing carbon can be understood through information about basic biology and technology, but choices about how forests and wood products and wastes are treated under climate policy are ultimately a matter of public values. Forest and agricultural operations will likely be excluded from a regulatory cap on greenhouse gases, because their land base often sequesters more carbon than it releases and because their carbon flows are so difficult to measure. Nonetheless, management practices of these operations can reduce as well as increase carbon stores, and the distinction between these entities and regulated ones is a matter of degree rather than kind. The ability to market offsets, should it be incorporated in U.S. cap-and-trade legislation, must be understood as a public policy choice and not a right. Offset standards should be designed to support broad public policy outcomes.

Setting public goals for forests will require weighing the advantages of accumulating more carbon in forests versus the advantages of accumulating it in furniture, homes, and landfills or burning to generate energy. In most cases, boosting forest carbon stores will create stable, self-sustaining carbon reserves at no fossil-fuel emissions cost. Protecting and enhancing forest carbon reserves can also help maintain undisturbed, late-successional forests that are currently rare across the landscape. These forests could provide a refuge for species stressed by a changing climate and provide valuable lessons about how natural systems adapt to new conditions. In contrast, carbon storage in wood products and landfills depends upon continuing fossil fuel use and requires space for housing and landfills that displace carbon-fixing vegetation. At the same time, however, wood products and fuels generate revenue for landowners (an incentive to keep forests as forests), provide material comforts for consumers, and may indirectly reduce GHG emissions by substituting for more fossil-fuel-intensive alternatives.

Wood products and wood fuels have a role to play in a carbon-friendly future. An emphasis on increased wood production, however, can distract from the ultimate goal of reducing use of energy and materials. The U.S. economy currently uses over 2.3 times more energy and 1.5 times more materials per capita than Europe (Rogich et al. 2008; U.S. Energy Information Administration 2008b), yet quality of life indicators are lower in the U.S. than in many European countries. There is clearly room for reducing consumption without harming basic human welfare, and the best climate change strategies will keep that goal clearly in sight.

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Data Appendix – Conversions and Calculations

Item	Original Data and Source	Assumptions	Computed Estimate
Wood Losses			
Rate of decomposition of forest floor litter	Zhang et al. (2008). Decomposition rate (k value) for first-order decay = 0.3.	k = ln(2) / HL, where HL = half-life.	Convert rate of decomposition by first-order decay to half-lives. 0.3 = In (2) / HL; HL = 2.3.
Above-ground logging waste including logging residue plus stumps and small limbs	Logging residue and roundwood volume nationwide (30%) and by region: South Central (28%), Rocky Mountain (22%), North Central (40%), Pacific Northwest (28%), Northeast (47%) (U.S. Forest Service 2008, Table 40). Logging residue and roundwood volume at state level: NV (3%), NH (84%) (Timber Product Output data online at http://ncrs2.fs.fed.us/4801/fiadb/rpa_tpo/wc_rpa_tpo.ASP). Stumps and branches add 14% to softwood logging residue and 24% to hardwood logging residue (McKeever and Falk 2004).	Stumps and branches add ~19% to logging residue on average (mean value between 14% for softwoods and 24% for hardwoods).	Above-ground logging waste as % of roundwood is 19% more than logging residue. National = 0.3 * 1.19 = 36%. Nevada 0.03 * 1.19 = 4%. New Hampshire = 0.84 * 1.19 = 100%. South Central 0.28 * 1.19 = 33%. Rocky Mountain 0.22 * 1.19 = 26%. North Central 0.40 * 1.19 = 48%. Pacific Northwest 0.28 * 1.19 = 33%. Northeast 0.47 * 1.19 = 56%.
Total logging waste including logging residue plus stumps and small limbs and roots	Large roots are 5% to 51%, mean 19%, of total tree biomass in cold temperate and boreal forests (Li et al. 2003).	Apply mean root value of 19% of total tree biomass across United States (omits small roots). Assume all tree parts have same density so that biomass proportions and volume proportions are similar.	If roots are 19% of total tree volume, then 81% of total tree volume is above-ground. A tree with total tree volume = 1 would have above-ground volume of 0.81. If roundwood volume = x and above-ground logging waste including stumps and branches is 0.36x (national), then x + 0.36x = 0.81 and x = 0.81 / 1.36 = 60%. Total tree losses including above-ground logging residue and large roots = 1 - 0.60 = 0.40, or 40% of total tree volume. Computations for states and regions use same stumps/branches/roots percentages but substitute logging residue percentages by state or region. Total logging losses including above-ground logging residue and large roots are 22% for NV, 59% for NH, 39% for South Central, 36% for Rocky Mountain, 45% for North Central, 39% for Pacific Northwest.
Fuelwood as percent of standing tree volume	Fuel as percent of roundwood nationwide (9%) and by region: South Central (3%), Rocky Mountain (51%) (U.S. Forest Service 2008, Table 39).	Multiply fuelwood as percent of roundwood times roundwood as percent of standing tree volume to estimate fuelwood as percent of total standing tree volume.	See above for calculation of roundwood as percent of standing tree volume. Fuelwood as percent of standing tree volume: Nationally, 0.09 * 0.60 = 5%. For South Central, 0.03 * 0.61= 2%. For Rocky Mountains, 0.51 * 0.64 = 33%.
Pulpwood as percent of standing tree volume	Pulp as percent of roundwood for hardwood sawlogs in the North Central region (6%) and softwood pulp in the Pacific Northwest Westside (50%) (Smith et al. 2006, GTR-NE-343, Table D6). 2002 roundwood volumes from Adams et al. (2006, PNW-GTR-659, Table 13).	This source is used because it includes pulp sourced from sawlogs. Multiply pulpwood as percent of roundwood times roundwood as percent of standing tree volume to estimate pulpwood as percent of total standing tree volume.	Estimate national pulp as percent of roundwood (31%) from weighted average based on regional pulp percent of roundwood for hardwood/softwood and sawlog/pulp, weighted by 2002 roundwood volumes from Adams et al. (2006). See above for calculation of roundwood as percent of standing tree volume. Pulpwood as percent of standing tree volume: Nationally, 0.31 * 0.60 = 19%. North Central, 0.06 * 0.55 = 3%. Pacific Northwest, 0.50 * 0.61 = 30%.

Data Appendix – Conversions and Calculations (continued)

Item	Original Data and Source	Assumptions	Computed Estimate
Bark as percent of standing tree volume	15% to 18% of roundwood volume (Smith et al. 2006, Table 5).	Portion of roundwood volume remaining after fuelwood and pulp sorted out = 1 - 0.40 - 0.05 - 0.19 = 0.36. Assume that bark is included in primary processing losses as calculated below, so not deducted separately.	Portion of roundwood volume available for long-lived products that is bark is 0.36 * 0.165 = 6%.
Primary processing losses	General primary processing conversion efficiencies: http://www.borealforest.org/world/innova/processing.htm for circular vs. bandsaw conversion efficiency; Structural Board Association http://osbguide.tecotested.com/faqs/faq_singlepage.html for OSB efficiency.		
Primary processing losses	Log and product masses: PNW lumber: log 1,538 kg, lumber 774 kg (Milota et al. 2005, Table 5); South lumber: log 2,093 kg, lumber 883 kg (Milota et al 2005, Table 5); PNW softwood plywood: log 504 kg, plywood 241 kg (Wilson and Sakimoto 2005, Table 13); South softwood plywood: log 625 kg, plywood 290 kg (Wilson and Sakimoto, 2005, Table 13); South oriented strandboard: log 772 kg, OSB 574 kg (Kline 2005, Tables 1 & 2).		PNW lumber: (1,538 - 774) / 1538 = 50%. South lumber: (2,093 - 883) / 2093 = 58%. PNW plywood: (504 - 241) / 241 = 52%. South plywood: (625 - 290) / 625 = 54%. South OSB: (772 - 574) / 772 = 26%. Primary mill losses range from 26% (OSB) to 58% (South lumber) of log mass.
Primary processing losses	Percentage losses from various studies: 10% (theoretical OSB) to 62% (plywood in Finland).	To get percent of standing tree, multiply mill losses by percent of standing tree volume remaining after logging losses, fuelwood and pulp are removed (36%).	Convert to percent of standing tree by multiplying by 0.36. Range from 0.10 * 0.36 = 4% to 0.62 * 0.36 = 22%. Average loss = 13%, so remaining portion of standing tree in primary products is 36% - 13% = 23%.
Secondary processing losses	Secondary processing losses as percent of lumber or panel volume (Crumpler 1996; Wood Waste and Furniture Emissions Task Force 1998; BFM, Ltd. 2003).	Multiply mill losses by percent of standing tree remaining after primary processing (23%—see above).	Secondary losses range from 27% to 80% of lumber/panels. Secondary processing losses as percent of standing tree volume: 0.27 * 0.23 = 6% and 0.80 * 0.23 = 18%.
Construction losses	Construction losses as percent of lumber or panel volume, (National Association of Home Builders Research Center 1995; Cornell University Cooperative Extension 1996; Houston Advanced Research Center 2005; NAHB, cited in Wilson and Boehland 2005; James et al. 2007; McKeever and Falk 2004;). Conversion factors for lumber and panels: 33 lbs./cubic foot for softwood lumber and 40 lbs./cubic foot (1.25 lbs./square foot 3/8 inch thick) for sheathing (Smith et al. 2006, GTR NE-343, Table D1).	Calculate weight of wood in standard home from volumes using conversion factors. Then apply construction losses to percent of standing tree remaining after primary processing (23%—see above).	Construction losses range from 4% to 21% of lumber/panels. Construction losses as percent of standing tree volume: 0.04 * 0.23 = 1% and 0.21 * 0.23 = 5%.

Data Appendix – Conversions and Calculations (continued)

Item	Original Data and Source	Assumptions	Computed Estimate
Secondary and construction losses combined	Percentages in long-lived uses by primary product; total volume of each primary product produced in United States (Smith et al. 2006, GTR-NE-343, Table D2; and McKeever 2002, PNW-GTR-524, Tables 18, 20, 22).	Secondary processing losses 6% to 18% and construction losses 1% to 5% (see above). Use average losses for construction (3%) and secondary processing (12%). Assume primary products represented in GTR-343 and GTR-524 tables are representative of all primary solid wood products for U.S.	Multiply percent of softwood lumber used in construction and for furniture (Smith et al. 2006, Table D2) times volume of softwood lumber produced in 1998 (McKeever 2002, Table 18) to estimate total volume of softwood lumber used for construction and for furniture. Repeat for hardwood lumber, softwood plywood, OSB, and nonstructural panels. Sum estimated amounts of all primary products used for construction. Repeat for furniture. Estimated proportions as weighted average for all primary products in long-lived uses are 76% used in construction and 24% in furniture. To get weighted average combine secondary processing and construction losses, multiply proportion in use times wood loss as percent of standing tree for construction and for furniture and sum. 0.76 * 0.03 + 0.24 * 0.12 = 5%. Volume remaining in end uses 23% - 5% = 18%.
Long-lived uses	Percentages in long-lived uses by primary product; total volume of each primary product produced in U.S. (McKeever 2002, PNW-GTR-524, Tables 18, 20, 22; Smith et al. 2006, GTR-NE-343, Table D2).	Primary products represented in GTR-343 and GTR-524 tables are representative of all primary solid wood products for United States, and same percentages in long-lived uses apply for exports/imports.	Multiply percent of softwood lumber used in construction or furniture (Smith et al. 2006, Table D2) times volume of softwood lumber produced in 1998 (McKeever 2002, Table 18). Repeat for hardwood lumber, softwood plywood, OSB, and nonstructural panels to derive amount in long-lived uses. Sum and divide by sum of total production to get weighted average percent in long-lived uses, 60%.
Use losses	Amount of U.S. production for each primary product for 1998 (McKeever 2002); percent of each primary product in each end use: single-family, multi-family, residential upkeep, and all other (Skog 2008); alternative in-use formulas (first-order for Smith et al. 2006, GTR-NE-343, and other examples from Miner 2006).		Alternative formulas were applied for a period of 100 years. Amount remaining is weighted average based on solid wood products in each end use in the United States from McKeever 2002, proportions of residential wood use in single-family and multi-family construction by primary product from Skog 2008, and unit conversions from Smith et al. 2006, Table D1. Table 2 reports lowest and highest losses over 100 years from alternative formulas. Medium loss listed in Table 2 is weighted average loss.
Comparison with 1605(b) loss estimates	North Central fraction of softwood pulp roundwood in use 0.008, in landfills 0.084. Pacific Northwest Westside fraction of softwood sawlog roundwood in use 0.130, in landfills 0.279 (Smith et al. 2006, Table 6).	See above for regional roundwood as percent of standing tree volume.	North Central softwood pulp fraction in use or landfills = 0.008 + 0.084 = 0.092. 0.084 / 0.092 = 91% in landfills. Percent of standing tree volume = 0.092 * 0.55 = 5%. Pacific Northwest Westside softwood sawlog fraction in use or landfills = 0.130 + 0.279 = 0.409. 0.279 / 0.409 = 68% in landfills. Percent of standing tree volume = 0.409 * 0.61 = 25%.
Methane emissions	23% of solid wood and 56% of paper decomposes in landfills (Skog et al. 2008). About 80% of carbon released from U.S. landfills is in the form of CO_2 — about 50% of C is released as methane but about 40% of methane is flared or burned for energy, which converts it to CO_2 (U.S. EPA 2006). GWP of methane is 25 (Forster et al. 2007).	Assume that portion of wood waste from mills and construction that is subject to decay (23%) completely decomposes by year 100.	Calculate net CO_2e emissions per ton of solid wood CO_2e deposited in landfills: 0.8 * 0.23 = 0.184 tons CO_2 and 0.2 * 0.23 * 12 / 44 * 16 / 12 = 0.0167 tons CH_4. CH_4 measured as CO_2e is 0.0167 * 25 GWP = 0.418. Total CO_2e released per ton solid wood landfilled is 0.184 tons CO_2 plus 0.418 tons CH_4 measured as CO_2e = 0.60 tons, so net long-term CO_2e storage is 40% of CO_2e deposited in landfill.

Data Appendix – Conversions and Calculations (continued)

Item	Original Data and Source	Assumptions	Computed Estimate
CO_2e from solid wood wastes remaining in use and in landfills at 100 years	Use medium range of wood losses from previous sections of this report. 67% of solid wood waste is disposed of in landfills and 77% of solid wood waste remains in landfills at 100 years (Skog et al. 2008). Net GHG emissions avoided are 40% of CO_2e in wood waste, due to methane effects (see methane calculations above).	Primary and secondary mill and construction waste is landfilled at typical rates (67%) and 23% of it decomposes by 100 years after tree is cut. House demolition waste is landfilled at a similar rate, but only 11.5% decomposes by year 100 since disposal occurs gradually over time.	Primary mill waste is about 13% of standing tree volume. Net CO_2e in landfilled mill waste at year 100 would be 0.13 * 0.67 * 0.40 = 3% of CO_2e in standing tree. Secondary mill/construction waste is about 4% of standing tree volume. Net CO_2e in landfilled secondary mill/construction waste would be 0.04 * 0.67 * 0.40 = 1%. House demolition waste is about 17% of standing tree volume. Net CO_2e in house demolition waste (assuming 1/2 of decay-prone portion decomposes by year 100) would be 0.17 * 0.67 * 0.70 = 8%.
Fossil Energy and Other Process Emissions			

Ratios of logs:100-year C, lumber:100-year C, house wood: 100-year C	Wood remaining as percent of standing tree from previous section of this report using medium range estimates. Logs = 60%, Lumber = 23%, End products = 18%. 100-year wood (in use and landfilled) = 14%.	These ratios are used to convert emissions per mass of raw material to emissions per CO_2e of wood remaining in Year 100 (see rows below).	Ratios:
			logs:100-year wood = 60 / 14 = 4.3;
			lumber:100-year wood = 23 / 14 = 1.6;
			end products:100-year wood = 18 / 14 = 1.3.
			For CORRIM houses with 75-year life, all materials to landfill in year 75, 25 years decomposition in landfill leaves 81.75% of wood material remaining in year 100. So ratio is 18 / (18 * 0.8175) = 1.22.

Harvest	Fossil fuel emissions for site preparation and harvest operations for Southeast and PNW low- and high-intensity management range from 8.02 to 9.71 kg of CO_2 plus 0.00171 to 0.0127 kg CH_4 plus 0.00019 to 0.00554 kg N_2O per m^3 of log (Johnson et al. 2005).	1 m^3 of logs weighs about 525 kg. Multiply by 0.5 to estimate carbon content, multiply by 3.6667 to estimate CO_2 content. Hence logs contain 962 kg CO_2e per m^3.	Convert CH_4 to CO_2e by multiplying by 25, and N_2O to CO_2e by multiplying by 310 and total all GHGs per m^3 of log. Convert CO_2e per m^3 to CO_2e per kg by dividing by 962 kg/m^3. Totals range from 0.0085 to 0.0132 kg CO_2e of emissions per kg of CO_2e in log. Calculate ratios to 100-year carbon by multiplying by 4.3. Range from 0.04 to 0.06.
Harvest	Harvest emissions 11,411 CO_2e for 193,170 metric tons of C in logs (Gower et al. 2006).		Convert log C content to CO_2e content by multiplying by 3.6667 = 708,296 metric tons. Divide harvest emissions by log CO_2e = 0.02. Calculate ratio to 100-year carbon by multiplying by 4.3. Result is 0.07.
Primary manufacturing	Carbon content in raw logs and CO_2 and CH_4 emissions by product (Kline 2005, Tables 2 and 7; Milota et al. 2005, Tables 5 and 8; Wilson and Sakimoto 2005, Tables 12 and 13; Bergman and Bowe 2008, Tables 2 and 5).	Assume logs are 50% carbon.	Convert methane (minor emissions) to CO_2 equivalent by multiplying by 25. Sum fossil CO_2 and CH_4 as CO_2e. Estimate C in log by multiplying mass by 0.5, then multiply by 3.6667 to derive CO_2e in log. Divide emissions by raw log CO_2e to get ratios of 0.02 (softwood lumber South or Northeast hardwood), 0.04 (softwood lumber West), 0.03 (OSB), 0.005 (plywood). Including off-site emissions, 0.07 Northeast lumber, 0.18 OSB, 0.11 plywood. Calculate ratio to 100-year carbon by multiplying by 4.3. Range 0.02 to 0.77.
Primary manufacturing	Source reports fossil C emissions as percent of C in primary product (Liski et al. 2001).		0.032 sawmill, 0.069 plywood mill. Calculate ratio to 100-year carbon by multiplying by 1.6. Results 0.05 and 0.11.
Primary manufacturing	Sawmill nonrenewable emissions (lumber portion only) 4,708 metric tons. C stored in lumber = 31,705 (Home Depot) plus 50,477 (other) total tons (Gower et al. 2006).		Convert lumber C to CO_2e by multiplying by 3.6667 = 301,366. Divide sawmill emissions by log CO_2e = 0.02. Calculate ratio to 100-year carbon by multiplying by 4.3. Result is 0.07.

Data Appendix – Conversions and Calculations (continued)

Item	Original Data and Source	Assumptions	Computed Estimate
Primary manufacturing	200 kg CO_2e emissions per metric ton of panels (Skog 2008, p. 16).	1 metric ton panels contains 0.48 metric tons C (Smith et al. 2006, GTR-NE-343, Table D1 panel average).	1 * 0.48 * 3.6667 = 0.88 metric tons CO_2e in 1 metric ton of panels. 200kg = 0.2 metric tons CO_2e of emissions/metric ton panels. 0.2 / 0.88 = 0.23. Calculate ratio to 100-year carbon by multiplying by 1.6. Result is 0.36.
Primary manufacturing, construction, transportation	4-story wood-framed apartment building—wood content has 1,400 GJ embedded energy and primary manufacturing emissions are 117 tons CO_2e. Wood contains 15.8 MJ/kg energy content (Borjesson and Gustavson 2000).	Lumber is 50% carbon. Assume all wood embodied in house remains at 100 years.	1,400 GJ = 1,400,000 MJ. 1,400,000 / 15.8 = 88,608 kg of wood in building. 88,608 * 0.5 = 44,304 kg C in wood in building. 44,304 * 3.6667 = 162,449 kg CO_2e or 162 metric tons CO_2e in building wood. Fossil fuels used to produce and transport building materials emit 117 metric tons CO_2e. 117 / 162 = 0.72.
Primary manufacturing and transport	Average combined process and transportation energy and process non-energy emissions, virgin inputs (U.S. EPA 2006, Exhibit 2-2). Conversion factors by product for wet to dry tons (Exhibit 6-4) and carbon content as percent of dry matter (Exhibit 6-2).	Original units are metric tons carbon equivalent per wet (as delivered) short ton of product.	Convert wet tons of product to dry tons. Convert short dry tons to metric dry tons. Calculate carbon content. Calculate ratio of C in emissions to C in discarded material, 0.12 for lumber, 0.24 for fiberboard. Calculate ratio to 100-year carbon by multiplying by 1.3. Results 0.16 to 0.31.
Construction	Construction emissions for Minneapolis and Atlanta model houses converted to CO_2e 1,271 and 1,121 kg (Meil et al. 2004, Table 3-4). Wood as percent of materials 15% and 10% (Miel et al. 2004, Table 10). CO_2e content of homes at 22.4 and 17.1 metric tons (Perez-Garcia et al. 2005).	Estimate construction emissions for wood based on wood as portion of total materials. House life is assumed to be 75 years, so CO_2e remaining at 100 years reflects 25 years decomposition in landfill (82% remains in year 100).	Convert total construction emissions to GWP. Minneapolis house = 1.27 metric tons, Atlanta house = 1.12 metric tons. Proportionally, construction emissions would be 0.15 * 1.3 = 0.19 for Minneapolis and 0.1 * 1.1 = 0.11 for Atlanta. 82% of CO_2e remains at 100 years: 18 metric tons CO_2e for Minneapolis house and 14 for Atlanta house. Calculate ratio of construction emissions to 100-year CO_2e. 0.19 / 18 = 0.011 for the Minneapolis house and 0.11 / 14 = 0.008 for the Atlanta house.
Transport to construction site	Construction transport emissions converted to CO_2e 37 and 21 kg (Meil et al. 2004, Table 3-4). See above for other data.	Estimate transport emissions for wood based on wood as portion of total materials. House life is assumed to be 75 years, so CO_2e remaining at 100 years reflects 25 years decomposition in landfill (82% remains in year 100).	Convert total transport emissions from manufacturing to construction site to GWP. Minneapolis house = 0.037 metric tons CO_2e; Atlanta house = 0.021 metric tons CO_2e. Estimated wood transport for Minneapolis = 0.15 * 0.037 = 0.006; Atlanta = 0.10 * 0.021 = 0.002. Construction wood transport emissions as percent of 100-year wood carbon storage is insignificant.
Transport to end use	128,199 (Home Depot) + 83,396 (other) total tons CO_2e transport emissions (Gower et al. 2006).	Logs are 50% carbon.	Total carbon stored in lumber 31,705 + 50,477 = 82,182. 82,182 * 3.6667 = 301,337 tons CO_2e in lumber . Total transport emissions = 128,199 + 83,396 = 211,595. Divide transport emissions by lumber CO_2e 211,595 / 301,337 = 0.70. Calculate ratio to 100-year carbon by multiplying by 1.6. Result is 1.12.
House maintenance	Emissions associated with maintenance of wood components 1,066 and 890 kg CO_2e (Winistorfer et al. 2005, Tables 8 and 9). For total wood CO_2e in house see above.		Divide maintenance CO_2e by 100-year CO_2e (see above). 1.066 / 18 = 0.06 and 0.890 / 14 = 0.06.
Demolition	435 and 491 kg CO_2e demolition energy emissions (Winistorfer et al. 2005, Table 11). For total wood CO_2e in house see above.		Multiply total demolition CO_2e by fraction of landfilled material that is wood. 435 * 0.15 = 65 kg. 491 * 0.10 = 49 kg. Divide estimated wood demolition CO_2e by house content CO_2e. 65 / 22,400 = 0.003 and 49 / 17,400 = 0.003.

COVER PHOTOS:
Top: Photo courtesy of Terry Brown, Oregon State University

Left: Photo by Ann Ingerson

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ISBN 978-1-935371-16-6
90000
9 781935 371165

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From: m1allen@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Thursday, August 20, 2015 8:28 AM
To: RMP-Comments@heg-inc.com
Subject: Fwd: Public Comment for RMP
Attachments: Applegate Valley OHV Monitoring Project.docx

---------- Forwarded message ----------
From: **Luke Ruediger** <siskiyoucrest@gmail.com>
Date: Wed, Aug 19, 2015 at 8:38 AM
Subject: Public Comment for RMP
To: blm_or_rmpwo_comments@blm.gov

Hello, I am submitting two separate documents for public comment for the proposed RMP. One is attached, the other can be found at the link listed at the end of this email. The link provides access to the Applegate Valley OHV Monitoring Report. Please download the report and make it part of my public comment for the RMP. The report and attached document are being submitted as a public comment in the RMP comment period. Please send me email confirmation that both documents have been received, the link is working, and the attachment downloaded without problems. Thanks, Luke Ruediger

Link to OHV Monitoring Report:
https://www.dropbox.com/s/w2uuawkizo9pf67/BLM%20OHV%20Monitoring%20Report.pdf?dl=0

Jerome E. Perez
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ATTN: Mark Brown
Submitted via Email: <blm_or_rmpwo_comments@blm.gov>

Applegate Valley OHV Monitoring Project:
August 19, 2015
Public Comment: Draft Resource Management Plan.
Draft Environmental Impacts Statement.

Comment for Recreational Management in the Applegate Valley

Flawed Assumptions for Analysis in DEIS:

Throughout the RMP DEIS document, the BLM demonstrates that one of its main assumptions for analysis is that OHV users will comply with and operate their vehicles in a way that is consistent with BLM decisions and management direction. The agency has very little real documentation that validates this assumption and a long history of illegal and unauthorized OHV use across BLM lands demonstrating otherwise. The problem is especially pronounced in the Medford District. Given the stark reality that the Medford District has very few officially designated OHV trails, but hundreds and hundred of miles of unauthorized, user-created trails, the use of this assumption is clearly arbitrary and capricious. The recently submitted Applegate Valley OHV Monitoring Report highlights dozens of unauthorized trails, rampant illegal OHV use, and the heavy use of closed or decommissioned roads throughout the Applegate Valley. The situation is similar across the Medford District. OHV riders simply drive where they want, when they want, through locked gates, over berms and tank traps, past carsonite and other closure signs, into roadless areas and wilderness, on non-motorized hiking trails and cross-country across meadows, streams, wetlands, oak woodlands, conifer forests, brushfields, and grasslands. User-created trails are abundant and are currently entirely unmanaged on the Medford District. The assumption that OHV riders will behave themselves and abide by OHV regulations is simply false. The use of this assumption demonstrates bias and is clearly unsubstantiated. Numerous studies have shown that large portions of the OHV community show a strong tendency towards illegal and unauthorized use. The history on-the-ground also shows a tendency in the OHV community towards illegal, unauthorized, and environmentally damaging OHV use in the RMP area.

In fact, the opposite assumption could be made and validated with historic evidence, that OHV users are unlikely to abide by regulations and will continue creating unauthorized trails unless meaningful enforcement can be provided. Given the current enforcement capacity, OHV use should be limited to designated roads where it can be easily monitored by BLM law enforcement officials. Clear and enforceable regulations

are needed to reign in rogue elements within the OHV community, while reducing environmental impacts and user conflicts. Utilizing only designated roads would allow law enforcement to confidently and effectively monitor OHV activities. Remote OHV trails by their very nature are difficult to monitor and maintain. History has shown that if the agency fails to have a significant presence, legally enforceable closures, and the will to actually ticket and investigate illegal OHV activities, the OHV community with continue engaging in blatantly illegal OHV use and user-created routes will continue to proliferate. Such unauthorized use, should not be rewarded, by designating unauthorized, user-created trails for motorized use. Likewise the assumption that OHV riders will abide by proposed designations and regulations is flawed. This assumption serves only to encourage unauthorized use by refusing to acknowledge the extent of the current problem.

The studies listed below should be incorporated into the NEPA analysis for the RMP.

- Monaghan and Associates, 2001 Status and Summary Report; OHV Responsible Riding Campaign. Researchers surveyed Colorado off-road vehicle riders through a series of three focus groups.

- Fisher, Andrea L., Dale J. Blahna, and Rosalind Bahr, 2001; Off Highway Vehicle Uses and Owner Preferences in Utah. Logan, Utah. Utah State University, at iv,

- Lewis, M.S., and R. Paige. 2006: Selected Results From a 2006 Survey of Registered Off-Highway Vehicle (OHV) Owners in Montana. Responsive Management Unit Research Summary No. 21. Prepared for Montana Fish, Wildlife and Parks.

- Public Employees for Ethich and Environment (PEER) "Rangers for Responsible Recreation: Off-Road Vehicle Issues Survey of SW Law Enforcement Professionals - Bureau of Land Management (BLM) & Forest Service (FS), 2007

<u>The current situation:</u>

Current OHV management on Medford District BLM lands includes 825,843 acres open to OHV use, but "limited to designated roads and trails." Only 60,508 acres are closed to OHV use with the majority of these acres being Areas of Critical Environmental Concern (ACEC) and Research Natural Areas (RNA). These areas are closed due to standards and guidelines for ACEC and RNA management prohibiting OHV use. Other areas closed to OHV use include Wilderness Areas, Wilderness Study Areas, the Pacific Crest Trail (PCT) and a few other non-motorized trails (1995 RMP p. 57).

On the Medford District the majority of the landscape has been managed as "open" to OHV use. The official policy is that OHV use is "limited to designated trails

and roads." In reality the policy has been implemented as an "open" policy in which the development of unauthorized use-created trails and cross-country travel are the norm. The Medford District BLM policy of "limited to designated trails and roads" means very little when the agency has encouraged OHV use, designated OHV Areas, grandfathered in damaging user-created OHV trails, shown an inability to enforce road and trail closures and perhaps most significantly failed to designate "trails and roads" for OHV use, creating the current free-for-all mentality.

Since the 1995 "limited to designated trails and roads" policy has been enacted, innumerable miles of user-created trails have been developed inside OHV based Recreational Management Areas (RMA) and outside OHV based RMAs. One OHV Area was designated in the Applegate Valley at the John's Peak/Timber Mountain OHV Emphasis Area. In the 20 years since designation, the BLM has not approved a legal management plan for these areas or designated "trails and roads" for OHV use. Instead, the agency has allowed OHV enthusiasts and groups to create OHV trails without authorization, engineering, adequate design features or environmental review.

It is these same poorly designed and excessively impactful trails and routes that the BLM has consistently tried to "grandfather" into use through Categorical Exclusion or in agency NEPA documents. In this situation it is the "tail that is wagging the dog" as OHV enthusiasts are essentially being allowed to shape management decisions simply by creating unauthorized, illegal trails. The BLM must address this issue in the upcoming RMP and put a halt on all user-created trails. The agency should also document the unauthorized OHV trail network and refuse to analyze or designate trails created after the survey is completed. These surveys should be implements as soon as possible before more routes are developed. Designation of existing unauthorized routes should be very stringent as not to encourage further OHV use or designate sub-standard trails with design flaws and significant associated impacts.

By designating or proposing for designation unauthorized user-created routes the agency is providing the OHV community with incentives to continue unauthorized route creation. The OHV community has benefited from creating unauthorized trails because the history of unauthorized and often very damaging use in these areas is often cited by the BLM as reason to consider approving these routes. They often call it "existing" or "historic" use, when in reality it is unauthorized and potentially illegal use that should not be encouraged.

The agency has also encourage continued unauthorized route creation by designating OHV Areas, but failing to enact legal management plans, 20 years after designation. This has created a designated area with little to no real regulatory authority or direction. It has created a sense of entitlement in the OHV community by designating the area for OHV use and allowing unauthorized trails to proliferate, be grandfathered into the current trail system, proposed for designation, and by failing to adequately enforce and maintain trail/road closures. OHV users have been allowed to develop the area as they choose, utilizing public land and often trespassing on adjacent private land to create unauthorized trails and routes. The lack of a legal management plan has made enforcement difficult and problematic leaving the situation to develop without real oversight, agency review, or adequate public comment.

In particular the John's Peak/Timber Mountain OHV Area has been publicized and promoted by both the BLM and Oregon State Parks, yet currently has no official

management plan or legal route designation. The agencies have advertised the John's Peak/Timber Mountain OHV Area to state, regional and national audiences. The area is officially part of the state OHV system promoted by Oregon State Parks, yet has no official management standards, guidelines, designation, etc and very little active management to mitigate environmental or social concerns. The BLM has created a lawless, unregulated situation that is promoting and encouraging unauthorized, user created trail development, excessive environmental impacts, user conflicts, and private land trespass.

A similar situation has been allowed to develop in the Anderson Butte and Little Applegate area, the Thompson Creek/Ferris Gulch area, and throughout the district.

Only in the John's Peak/Timber Mountain OHV Area has the BLM even tried to manage, analyze, allow public comment, and submit to environmental review the areas network of OHV trails. Thus far, the agency has not approved a management plan or designated a trail system for OHV use anywhere on the Ashland Resource Area. Past attempts include an Environmental Analysis that was litigated by environmental interests and effected landowners and a mediation process initiated between residents of the John's Peak area, environmental interests, the BLM, and OHV interests such as the Medford Motorcycle Riders Association (MRA). The mediation process failed to achieve positive results and the agency has yet to find a solution. Recently, the agency tried to "solve" the problem by cutting the public out of the process and utilizing a "categorical exclusion" to avoid public comment on the highly controversial decision The categorical exclusion would have allowed the BLM to avoid environmental analysis and approved 92 miles of unauthorized, user-created trails, claiming they represented very minimal environmental impact. Environmentalist and local residents disagree and have contested this decision, putting the Categorical Exclusion in legal limbo. Meanwhile, the impacts on the landscape are mounting and BLM management/enforcement has proven inadequate to address the scope and scale of the problem they have allowed to develop.

<u>The conflict between motorized and non-motorized recreational users:</u>

According to BLM statistics over 1.2 million public land users participate in non-motorized travel (hiking, biking, and horseback riding), they also identify 2.5 million participants who enjoy wildlife viewing, interpretation, and study, nearly 1.3 million who participate in camping and picnicking, 50,000 non-motorized winter participants, almost 460,000 non-motorized event participants, and almost 225,000 non-motorized boating participants. The combined total is 5,783,314 participants for non-motorized activities, this is over half of the total projected number of participants in 2012 (54%). It is relatively well acknowledge that nearly all these non-motorized activities are harmed by OHV use. It could also be stated that a certain number of other forest users are harmed, either directly or indirectly by OHV use. These could include driving for pleasure (along designated BLM roadways), hunting, fishing, swimming and other water based activities. If these groups were included the number of non-motorized participants would be 9,829,629 or 91% of participants. If only half these additional participants were added the total would be 7,806,472 or 73% of BLM recreation participants (DRMP-EIS p. 448).

In contrast, BLM statistics identify 826,256 OHV participants or 8% of total participants. The BLM also identified 97,622 motorized boat participants, and 6,903 motorized winter activity participants. The total motorized recreational participants equals 930,781 or 9% of all BLM recreational participants. Given the very low representation of OHV users and the high percentage of the total recreational participants potentially impacted by OHV use, it appears that the OHV community has undue political influence.

OHV use has the potential to impact other forest users in a variety of ways including direct and indirect impacts. Direct impacts to other forest users include noise disturbance, the loss of wilderness characteristics, vegetation impacts, reductions in viewable wildlife, reductions in remoteness and the potential for solitude and impacts to the recreational setting including a loss of primitive and back country type experiences and settings. Equestrians are particularly impacted by OHV use due to the noise disturbance and effects OHV users have on horses, mules, llama, and other pack animals. Forest users including hikers, equestrians, and mountain bikers are all physically threatened on steep, winding and narrow mountain trails by collision with a high-speed motorcyclist. Many campers and picnickers come to public lands to relax and enjoy the peaceful atmosphere of our local forest and can also be directly impacted by OHV use.

Indirect impacts include; impacts to vegetation or wildlife that limit the experience of other forest users, impacts to water quality which can effect fishing, swimming, and non-motorized boating activities. Botanists and plant enthusiasts are impacted by the loss of native plant communities and/or rare plant species and impacts to native habitats associated with OHV use. Hunters can be impacted by noise disturbance when stalking or quietly waiting for game. Other participants driving for pleasure on BLM land could also be impacted or injured by OHV users on BLM road systems.

OHV use in the Applegate Valley has also had a heavy impact on adjacent landowners and residents. Noise disturbance from OHV use has significant impacts on ones quality of life and the enjoyment of ones property. Trespass by OHV users onto private land has become routine in the Applegate Valley. Most of this trespass is facilitated by unauthorized user-created trails starting on BLM lands. User-created OHV trails have also attracted garbage, tannerite explosions, all night alcohol parties, and the development of shooting areas in far too close a proximity to residential properties and trailheads. Local Applegate Valley residents often associate an increase in these undesirable developments with OHV use and the access OHV users create. Many residents also see an association between BLM timber sale and fuel reduction projects and user-created trails. The opening of forest stands, development of skid trails, and both "temporary" and permanent roads has encouraged OHV use and increased substantially the scope and scale of OHV use in the area. The Applegate Valley OHV Monitoring Report has documented evidence to substantiate those claims.

The potential impacts to other public lands users are significant and have already create significant conflict on the Medford District and beyond. The Applegate Valley OHV Monitoring Project would ask that the agency manage recreation for the majority of public land users, not a minority of users that impact the rest. We would also ask the agency to consider the local residents and local economy when designating OHV areas and trails. The Applegate Valley is known for it scenic beauty, non-motorized recreation, wineries, organic farms, high value real estate, and tourist based economy. The clientele

comes to the area for the quiet, rural atmosphere, as do many of the residents. The area is highly desirable and sustains high real estate values in part due to the natural, quiet scenery, the surrounding relatively intact BLM lands and access to wild beautiful places.

OHV use should not be allowed to impact other public land users or uses. OHV use should also not be located in areas that will impact nearby landowners or contain high quality native habitats. The use is inherently damaging to other users and natural resources, thus it should be discouraged, minimized, and allowed only in areas that are substantially disturbed such as designated BLM roads and quarry sites.

The Current Situation for non-motorized trail groups:

Two main non-motorized trail groups are operating in the Applegate Valley, the Applegate Trails Association (ATA) and the Siskiyou Uplands Trail Association (SUTA). Together these groups have proposed a non-motorized trail system on the high ridges dividing the Applegate River from the Rogue River or Bear Creek Valley. The trail would connect the towns of Ashland, Jacksonville, and Grant Pass, Oregon with one contiguous non-motorized trail system. The Applegate Ridge Trail (ART) is proposed between Grants Pass and Jacksonville and the Jack-Ash Trail would connect the towns of Jacksonville and Ashland. Both proposed trails would require significant new trail creation. The trails also need to undergo environmental analysis and public comment in a valid NEPA document. Archeological, botanical, and wildlife surveys are required to document and disclose the potential impacts of trail development.

The BLM has required that ATA and SUTA fund the NEPA work, on-the-ground surveys, and Environmental Analysis for the project. ATA and SUTA will also have to fund trail building efforts utilizing volunteers and contract crews. Insurance and other technical matters must be attended to and paid for by SUTA and/or ATA. The proposed trails must be fully analyzed and approved before any amount of trail creation can begin. This is, as it should be, and non-motorized trail groups have cooperated, providing volunteer hours and funds along with quite a bit of patience. Yet, motorized trail users have not been held to the same standard and have been able to build unauthorized trails at their will across the district. The groups then benefit from building the unauthorized trails when the BLM in turn often proposes to designate these trails for motorized use. All of this is done without the Medford Motorcycle Riders Association (MRA) or other motorized trail groups having to fund surveys, NEPA work, and Environmental Analysis. Contract crews are not hired and volunteer hours need not be patiently poured into the bureaucratic process. Trails are simply built without authorization, used by the OHV community, than identified as “existing” or “historic” trails that should be validated through BLM route designation. The process is corrupt and provides the OHV community with all the wrong incentives.

Another area where the treatment of trail groups and the MRA differ is trail standards or specifications. The BLM has required non-motorized trail groups to adhere to strict trail standards in terms of design and layout. Trails must be built with switchbacks, clean outs, erosion control structures, at grades of 8% or less, and in areas that will not impact rare plant species, archeological sites, or sensitive wildlife. Motorized trails users on the other hand build trails straight up slopes with no switchbacks or water bars, on grades as steep as 30% or more and right through rare plant buffers and/or in sensitive wildlife habitat. These trails are then labeled “existing” trails

and often approved by the BLM despite the lack of erosion control measures, unsustainable grades, and avoidance of sensitive species.

Consistent trail standards are needed for both motorized and non-motorized trails. Consistency in standards and requirements should begin in the conceptual stage and extend through the design, layout, NEPA, and implementation stages. Trail standards for motorized and non-motorized use should also reflect the nature of that use with more stringent standards placed on motorized trails in regards to erosion control measures, design, grade, and avoidance of sensitive species.

The impact of OHV use:

OHV use and especially, unmanaged OHV use that includes unauthorized, poorly designed, user-created trails is associated with significant environmental impacts. These impacts include wildlife harassment and displacement, erosion and sedimentation, impacts to native vegetation and native plant communities, riparian impacts and many more. A few major impacts are address below:

Sedimentation/Erosion: According to the Timber Mountain Recreation Area Management Plan Draft EIS, "OHV use removes protective vegetative cover, disrupts chemical crusts, and alters many soil properties. Compacted by repeated OHV passes soil becomes less permeable, which increases run-off. Devoid of protective cover, soil is exposed to the direct impact of raindrops and mechanical abrasion of OHV tires. In addition unprotected soils are more vulnerable to erosion by raindrop impact, overland flow of water and by wind drifting." (Timber Mountain DEIS p. 73)

The agency continues stating that "Soils can be severely impacted by OHV's through disturbance and compaction…natural soil protective elements are highly vulnerable to vehicle use. The force of rolling wheels on soil displaces the protective elements and causes compaction which results in log lasting negative effects…with continual widening of roads and trails, as riders avoid ruts and potholes, combined with riders driving straight up slopes and across the streams, the amount of soil erosion caused by OHV's can become enormous" (Timber Mountain EIS p.73). In the 20 years since designation of the Timber Mountain OHV Area, soil erosion has reached unsustainable levels and is significantly impacting local ecosystems.

The concept is simple and irrefutable. When soil compaction and vegetation loss are combined the cumulative effects are soil erosion. A study in California documented a 10 to 25-fold increase in sediment yield in three State Vehicular Recreation Areas when compared to nearby undisturbed basins (Tuttle 1987). Compaction and tire created incisions/ruts combine to create increased channelization of run-off, especially in high rainfall events. The concentrated flow of run-off can create rill and gully erosion (Heede 1987), this sort of erosion is very hard to stabilize and creates excessive rates of erosion. According to the BLM "roads and vehicle trails are the major source of soil compaction within the analysis area" (Timber Mountain EIS p.96). According to the findings of the Applegate Valley OHV Monitoring Project rill and gully erosion is relatively common in the area's unauthorized OHV trails.

The implication of this soil compaction and erosion is a loss of soil productivity and increase sedimentation rates into nearby streams. The current density of user-created trails and the unauthorized use of OHVs in riparian areas has the potential to impact the

agency's ability to attain Aquatic Conservation Strategy (ACS) standards in numerous watersheds. The agency has been directed to facilitate attainment of ACS standards. RM-1 directs the agency to manage and design new recreational facilities including trails and dispersed sites to meet ACS standards now and into the future. RM-2 directs the agency to "adjust dispersed or developed recreational practices that retard or prevent attainment of ACS objectives" (1994 NWFP ROD, p. C-31 to C-39).

Fisheries Impacts:

The impact of OHV use to fisheries resources is closely tied to erosion rates, soil compaction, and vegetation loss on trails and upland sites that drain into local fish bearing streams. According to the BLM, the proliferation of user-created trails and trail densities has created direct degradation of aquatic habitats in all major catchments in the John's Peak/Timber Mountain OHV Area. The agency also identifies trails that parallel large streams and cross many tributary streams as "hydrologically connected" and have a "high probability of impacting aquatic habitat." They also state that class III motorcycle trails have the tendency to create the most erosion due to lack of design, steep gradients and lack of water run-off prevention structures (Timber Mountain DEIS p. 133).

Fine sediment delivery associated with OHV use is the impact of most concern to aquatic resources and fisheries, yet the compaction, erosion, and vegetation loss can also impact peak flows, destabilize stream banks, create channel widening, the loss of appropriate spawning gravels, and loss of riparian cover due to down cutting, bank erosion, and lowering water tables. Riparian function and stream morphology can be negatively affected leading to losses in fisheries habitat and increases in fish mortality.

For example, Forest Creek within the John's Peak/Timber Mountain OHV Area had in 2009, an estimated 52.5 miles of OHV trails that are not located on roads and 15 miles within riparian reserves. The trail network includes 89 crossings of active stream channels (intermittent and perennial). These crossings are point sources for sediment input into local aquatic habitats. Similar situations are beginning to effect many drainages in the Applegate Watershed due to increased user-created route development and inadequate agency management.

Another issue of concern is OHV use during wet weather conditions, which compounds hydrological and aquatic impacts. According to the agency "OHV use, and especially use during the wet season, would allow for chronic contributions of sediment to aquatic habitats" (Timber Mountain DEIS p.161). Seasonal wet weather restrictions on all OHV use (even on designated routes) should be put in place to mitigate and reduce the impact of OHV use to aquatic systems and fisheries. Wet weather closures should extend from November to March of each season.

Botany:

OHV use impacts native plant communities in a variety of ways including by spreading and introducing noxious weeds, denuding native vegetation, crushing, killing, destroying, or damaging rare plant populations, and removing woody vegetation to develop unauthorized OHV trails.

Unfortunately, OHV use in the Applegate Valley is currently being conducted in sensitive watersheds with significant botanical diversity and rare/sensitive plant species.

The Anderson Butte area in particular, is known for its exceptional botanical diversity and unusual plant communities. Due to its location on the higher slopes and adjacent to road 38-2-24, unusual western juniper stands are being significantly impacted by OHV use. Juniper trees are being cut and removed from user-created trail corridors and at OHV camps. Some are being girdled by gunshot wounds. Understory herbaceous habitats are also being compromised by the denuding of vegetation, the development of user-created trails, and the spread/introduction of noxious weeds associated with OHV use. Relatively intact oak woodlands, chaparral stands and conifer forests are all being impacted in this manner. The Anderson Butte area also sustains a very significant population of Fritillaria gentneri and the potential for impacts to this threatened species should be avoided by closing OHV trails that impact habitat.

Fritillaria gentneri is also found in the Forest Creek area, Wellington Butte Roadless Area, and other RMA's in the Applegate Valley. Often these populations are very small and susceptible to mortality from a single irresponsible OHV rider. In the John's Peak/Timber Mountain OHV Area the agency has disclosed that 14 populations are found within 100' of an existing unauthorized OHV trails, these 14 populations average 4 individual plants per population, 126 sites are documented across the Medford District and 86% of these sites contain less than 20 individuals. Given the small population size entire populations could easily be lost due to OHV use and unauthorized, user-created trail development. In fact, populations have no doubt already been lost due to unauthorized trail development.

In numerous locations other rare plant populations are locate directly adjacent to OHV trails or are being crush, killed, and displaced by OHV use in the Applegate Valley. Species affected include Sedum oblanceolatum, Cicimifuga elata, Cyripedium fasciculatum, and others.

An unknown number of exotic species have been introduced into the area through OHV use and the number is growing. OHV's disturb native plant communities and soils, remove litter and duff layer exposing bare mineral seed beds, they also introduce exotic species into this disturbed habitat, essentially preparing the site for weed introduction and spread. In a study conducted in Montana a single OHV driven through a few feet of spotted knapweed can pick up 2,000 spotted knapweed seeds, 1,800 of which will be deposited after ten miles of driving (Lacey 1992). The nature of OHV use, especially during wet periods accumulates soil and dirt on the body of the motorcycle and tires, the vast distances covered by OHV riders creates a landscape scale risk of noxious weed spread. Finally, the tendency of OHV riders to utilize heavily impacted areas such as staging areas, roadsides, timber harvest areas, large meadows, user-created trails, etc. creates a high probability of carrying significant numbers of noxious or exotic species. The tendency for riders to then drive through unroaded and/or generally inaccessible areas compounds the problem and creates a risk of noxious weed spread throughout the landscape. The ability of the agency to address this problem with sufficient noxious weed removal and control, especially in remote, unroaded or inaccessible areas is minimal and should be taken into account when designating OHV areas. Simply put, prevention of these impacts by limiting OHV activities is the most responsible and realistic way to limit the spread of noxious weeds.

Proposed OHV management in the RMP:

Specific recommendations for OHV's are made for Recreational Management Areas (RMA) in the Draft Resource Management Plan EIS. Areas outside RMAs will be considered "limited to existing" routes for OHV use, meaning the BLM will be validating and codify unauthorized and damaging user created trails in all areas outside RMA's.

The proposed Recreational Management Areas:

The Draft Resource Management Plan EIS proposes the designation of RMA's, mostly in Alternatives C and D. These RMA's consist of two separate designations; Special Recreational Management Areas (SRMA) and Extensive Recreational Management Areas. The two areas differ in management objectives and outcomes.

The approach taken in the RMP is quite different from the approach historically used to manage recreation on BLM lands. In the 1995 RMP the BLM identified SRMA's (29 areas, 168,968 acres) where significant recreational use was occurring or where BLM planners proposed making large investments in staff, funding, facilities, or time to support recreational opportunities. In these areas recreational activities could be actively pursued, promoted and managed for. Other forest uses such as timber, grazing, etc. would be managed in a way that is consistent with and does not degrade the recreational opportunities or experience.

In 1995, the rest of BLM administered lands were listed as ERMA's (2,397,460 acres). In ERMA's the BLM would allow recreational activities, provide access to the activities via BLM roads, but would predominantly manage for other resources including timber, mining, grazing, etc (RMP DEIS p.446).

In the proposed RMP the agency would be de-emphasizing recreation on the vast majority of BLM lands by eliminating the ERMA designation, and declaring these areas "not designated" for recreational use. This means management actions such as timber sales would not need to consider impacts to recreational activities in the area unless it is designated SRMA and only very minimally in ERMA's. Under Alternative D, which proposes the most recreational protections, a total of 141 SRMA's on 86,693 acres and 143 ERMA's on 580,458 acres. This represents an over 50% loss of SRMA acres throughout the state. Thus, although more areas will be designated as SRMA's and proposed for management that does not degrade or damage the recreational setting and experience, a large loss in acres will limit the ability of the public to benefit from and enjoy these recreational lands. Total acreage of ERMA's will drop by more than 75% (RMP DEIS p.457). The end result is a loss of recreational opportunities and a drastic reduction in the acres of BLM administered lands that would be managed to sustain and maintain the recreational experience.

Despite an acknowledgement that recreation is quickly out pacing resource extraction as a major use and despite the positive economic influences associated with outdoor recreation, the BLM is heading backwards

Special Recreational Management Areas are areas specially designated for recreation. These are areas in which the BLM will prioritize recreational opportunities and maintain the recreational setting and experience. The designation would minimize management actions that would degrade the recreational experience or setting. Most of the areas proposed, as SRMAs are very small and consist of trailheads and are not more than a few acres. If heavily industrialized forests and degraded habitats "not designated"

for recreation surround and isolate these areas, the recreational setting and experience will not be maintained over time. Many of the ERMA's should be designated as Special Management Areas, these would including the Anderson Additions RMA, Anderson-Little Applegate RMA, Thompson-Cantrall RMA, Jack-Ash RMA, East Applegate Ridge Trail, West Applegate Ridge Trail, Round Top RMA, Sterling Mine Ditch Trail RMA, etc.

Recreation Management Areas:

The following RMA's are proposed in the Applegate watershed. Specific recommendations for recreational management are located below.

Anderson Additions:

The proposed Anderson Additions ERMA is located in the vicinity of Anderson Butte and encompasses nearly all the BLM lands in the area. The area begins at the Little Applegate River and extends over the ridgeline into watersheds draining into the Bear Creek Valley. The area also includes nearly all the BLM lands east of Sterling Creek. The Dakubetede Roadless Area and LWC are located entirely within the RMA. The non-motorized, Sterling Mine Ditch Trail is also located within the area and has been designated an Oregon State Scenic Trail. The Jack-Ash Trail is also proposed to extend across the Anderson Additions ERMA.

The area was proposed as a central feature of the Dakubetede Primitive Back-Country Area in the Wyden O&C Bill. Non-motorized recreational opportunities in the area are very high, ecological values are enormous, and being located adjacent to private land the potential for social conflicts are also very high.

Important Recreational Values:

The Important Recreational Values (IRV) identified by the BLM in this area include "hiking, mountain biking, OHV, and equestrian trails with diverse botany and wilderness characteristics." I would content that all listed IRVs will be negatively impacted by the inclusion of OHV areas and trails in the Anderson Butte region.

The areas wilderness characteristics are currently being most heavily impacted by OHV use. The regions diverse botany is currently also being heavily impacted by OHV use. The current system of user-created OHV trails exist within and are currently expanding into areas identified as LWC. The current impacts of unauthorized OHV use are growing daily as more new routes are pioneered and developed by OHV users. Poorly designed, user-created routes are becoming more wide, erosive and incised impacting botanical values, hydrological values, wilderness values, and other forest users. Examples of botanical damage include cross-country travel, user-created trails, the spread of noxious weeds, the disruption of disjunct plant communities such as western juniper and damage to populations of the locally uncommon heart-leaf milkweed, a host plant for the Monarch butterfly. The Monarch is a candidate species for listing under the Endangered Species Act. Numerous species of rare plants including Sedum oblanceolatum and Fritillaria gentneri are also found within the Anderson Additions ERMA.

The area is proposed as a central portion of the Jack-Ash Trail and perhaps one of the trails scenic highlights. The area is already well known for non-motorized recreation, expressed by the popularity of the Sterling Ditch Trail and its numerous connector trails. The Sterling Ditch was recently designated an Oregon State Scenic Trail to acknowledge the areas beauty, popularity, and the important role it plays in the burgeoning recreational economy of SW Oregon. The designation of OHV trails in the vicinity would only bring about user conflict and sustained environmental impacts, hampering the development and use of this regionally important non-motorized trail system.

Visitor Activities, Experiences, and Allowable Use Restrictions :

The "Visitor Activities" and "Visitor Experiences" identified by the BLM include a variety of non-motorized recreational and environmental education type activities. Again, nearly all these activities either directly or indirectly conflict with OHV use.

The "Supporting management actions and allowable use decisions" include an allowance for Special Recreational Permits in the area. There are concerns about organized OHV events that might attract large crowds to the area, impacting many substantial resource values such as non-motorized recreation, wildlife habitat, diverse local botany, wilderness characteristics, and many others. Events planned by the MRA in the John's Peak/Timber Mountain OHV Area attract large numbers of riders and due significant damage to natural resources. Special Recreational Permits for OHV events should not be allowed due to the large potential impact and user conflicts such events would create.

Designated Deer Winter Range:

The designation of the area as an ERMA with allowances for OHV use is inconsistent with the RMP designation of the Anderson Butte Area as "Deer winter range habitat." This designation identifies roads and vehicle access as a potential impact on over-wintering deer populations. The designation of deer winter range is associated with the seasonal or permanent closure of existing BLM roads to benefit deer populations. The idea is to minimize the extent of open roads stating that "all roads except major connectors and arterial road would be closed Nov.15-April 1." The agency also recommends that activities be "restricted to avoid disturbance Nov.15-April 1" (1995 RMP ROD p.44). These two recommendations should also be extended to any OHV use within the area and seasonal closures for designated deer winter range, November 15 to April 1, should be implemented. This will reduce physical stress related to disturbance from OHV use. OHV use also has the potential to displace native ungulates from otherwise undisturbed habitats, minimizing available habitats for birthing, resting, and bedding. Many other species of wildlife from bear and cougars, to great grey owls and pacific fishers would benefit from seasonal and permanent limitations on access. The benefits of seasonal closure would extend to OHV use on roads and trails. All arterial roads should be considered for seasonal closure to protect winter range values.

Fire Restrictions:

Fire restrictions should be put in place to limit fire use by local campers and hikers from July to November or anytime that "extreme" fire conditions have been

declared. If motorized trail use is allowed anywhere within the Anderson Additions RMA, fire restrictions should be applied. The area is one of the driest watersheds west of the Cascade Mountains in the State of Oregon. Much of the area is adjacent to private residential property and supports heavy chaparral fuels as well as ample fine grassy fuels that are highly flammable and spread very quickly. OHV use should be limited to avoid accidental fire starts. Fire restrictions for OHV travel should be implemented from July to November or anytime "extreme" fire conditions have been declared.

OHV Limitations:

The area is identified by the BLM as "limited to designated for OHV" meaning the agency is considering the area closed unless OHV trails have been officially designated, a process proposed to take up to five years after approval of the revised RMP. The process of route designation should not encourage illegal OHV route creation, by grandfathering or analyzing and approving user-created OHV trails, nor should the agency drag their feet while OHV groups build more unauthorized, user-created trails in the interim period before designations and management plans are developed and approved. Continued user-created trail development should come with repercussions, appropriate enforcement actions, investigation, and prosecution of the guilty party's. This would set the stage for enforcement of trail and route designations identified in the RMA Management Plan. The agency needs to consider the development of user-created trails a series law enforcement problem with action taken accordingly.

Target Shooting:

The area is open to target shooting, with buffers around trail corridors and trailheads. Currently firearm use in the area has impacted nearly all trailheads, pull-outs and log landings in the Anderson Butte Area. Creating large volumes of trash, shot gun shells, beer bottles, broken glass, clay pigeons and shot up appliances, technology and furniture. Shooting adjacent to high use road corridors, trails, and trailheads should be prohibited. Currently firearm use in these areas is a public safety issue that the agency should address. Firearm use should be limited to designated sites away from trailheads and trail corridors. By designating sites the BLM would limit public safety hazards and minimize the trash and environmental damage associated with shooting. It would also limit the impacts of shooting on surrounding residences. Finally, by designating shooting areas the agency could more easily monitor and enforce shooting regulations on public lands by concentrating use.

The quarries at the top of Birch Creek should be closed to target shooting to protect recreationalist utilizing the Jack-Ash Trail and to protect wilderness characteristics on the slopes directly below. Quarry sites on the north and west side of the mountain could be considered. No more than two sites should be considered for designation in the RMA. No target shooting sites should be designated within 1/2 mile of a private residence.

General Recommendations:

The Anderson Additions ERMA should be closed to OHV use off designated roads. No motorized trail use should be allowed and currently decommissioned roadbeds should be closed to OHV use.

The Anderson Additions ERMA should be considered for a Special Recreation Management Area due to the unique non-motorized recreational opportunities and heavy non-motorized recreational use in the area. The recreational setting and values should be preserved. The LWC should be closed to OHV use, removed from the timber base and mineral entry. The LWC should also be designated as a "Wilderness Study Area" in the RMP to protect wilderness values until a permanent decision is made regarding wilderness designation. In the meantime activities that will degrade the wilderness resource should be precluded from the LWC including OHV use, commercial logging, post-fire logging, and road building.

Anderson-Little Applegate

The proposed Anderson-Little Applegate ERMA is located south of the Little Applegate River in the vicinity of Lick Gulch, Yale Creek, and Quartz Gulch. A portion of the area supports a small roadless area known locally as the "Trillium Mountain Roadless Area." This area supports relatively intact oak woodland, grasslands, mixed conifer forest and shrublands. The central feature of this roadless area is Trillium Mountain and the surrounding ridgeline dividing the Little Applegate River Canyon from Lick Gulch.

Important Recreational Values:

The agency did not identify OHV use in the "Important Recreational Values" for the ERMA. The agency did identify hiking, equestrian use, and mountain biking in a "back-country setting" as recreational values featured within the area. This identification of "back-country" values and settings should be acknowledged by emphasizing recreational uses that are consistent with back-country settings and experiences e.g. non-motorized uses.

The area was identified in the Wyden O&C Bill as a portion of the proposed Dakubetede Primitive Area. Primitive area values should be sustained by promoting more primitive forms of travel in the ERMA. The area should be closed to OHV use off designated roads and managed for non-motorized recreational activities and back-country experiences.

Visitor Activities, Experiences, and Allowable Use Restrictions:

The "Visitor Activities", or "Visitor Experience" for the ERMA does not identify OHV use as a targeted recreational activity. Yet, the "Trails and Travel Management" section limits OHV use to "designated trails and roads", none of which currently exist within the area.

The area is receiving very little OHV use with only one existing route on the ridgeline dividing Yale Creek from the Little Applegate River and Lick Gulch. The route known, as the "Skate Gulch Jeep Road" is a long decommissioned road that OHV users have accessed by driving around BLM road closure structures. Much of the trail is becoming brushed over and sustains significant erosion during high rainfall events. Sedimentation from this erosion ends up in Yale Creek a fish-bearing tributary of the Little Applegate River. The road should be closed to all motorized use.

The ERMA does including camping as a "Visitor Activity" and the area includes the old Little Applegate Campground. The campground could be re-opened for primitive walk in camping. A small footbridge could be built across the river to access the site nestled in canyon-bottom old-growth forest. A small trail system existed at one point around this long abandoned campground and could be recreated. In fact, non-motorized trails could possibly be developed from Little Applegate Campground over Trillium Mountain to Lick Gulch, providing access to this wonderful roadless area while protecting important natural resources and societal values.

The area is also the scenic backdrop for a designated Oregon State Scenic Trail, the Sterling Ditch Trail. This is quickly becoming one of the most heavily used recreational trail systems in the area. Thus, retention of scenic qualities and non-motorized recreational opportunities should be maximized while protecting important natural resources.

The Community Alternative for the Nedsbar Timber Sale included recommendations for recreational management in the area, including a non-motorized trail system utilizing the "Skate Gulch Jeep Road." The trail was proposed, along with non-commercial fuel reduction and forest restoration projects on the ridgeline to facilitate community fire safety and provide for recreational activities. Such projects would be consistent with RMA objectives and should be pursued by the BLM once designation of the RMA is complete.

Fire Restrictions:

Fire restrictions should be put in place to limit fire use by local campers and hikers from July to November or anytime that "extreme" fire conditions have been declared. If motorized trail use is allowed anywhere within the Anderson Additions RMA fire restrictions should be applied. The area is one of the driest watersheds west of the Cascade Mountains in the State of Oregon. Much of the area is adjacent to private residential property and supports heavy chaparral fuels as well as ample fine grassy fuels that are highly flammable and spread very quickly. OHV use should be limited to avoid accidental fire starts. Fire restrictions for OHV travel should be July to November or anytime "extreme" fire conditions have been declared.

OHV Limitations:

The area is identified as "limited to designated for OHV" meaning the agency is considering the area closed unless OHV trails have been officially designated, a process proposed to take up to five years after approval of the revised RMP. The process of route designation should not encourage illegal OHV route creation, by grandfathering or analyzing user-created OHV trails, nor should the agency drag their feet while OHV groups build more unauthorized, user-created trails in the interm period before designations and management plans are developed. No OHV trails should be designated off existing roadbeds and all decommissioned roads should be closed to OHV use. Any OHV use approved should be subjected to NEPA analysis within one year of designation of the RMA.

Target Shooting:

The area is listed as open to target shooting with buffers placed near recreational facilities, trails, and trailheads. The agency should close the area to shooting outside designated shooting sites at quarries where firearms can be shot away from roads and into gravel pits or quarry walls. This will reduce public safety hazards and trash associated with shooting such a clay pigeons, shot up appliances and other targets. No more than two target shooting areas should be designated. Quarry sites up Lick Gulch should be considered due to distance from residential properties and other user conflicts.

General Recommendations:

The BLM should consider designating the area a SRMA. Such a designation would allow the agency to focus energy and resources on developing recreational opportunities in this region, while sustaining important ecological and societal values. The Anderson-Little Applegate ERMA could be combined with the Anderson Additions ERMA, the Sterling Ditch SRMA and the Jack-Ash ERMA, creating one large non-motorized recreational area managed as a SRMA. The area could be called the Dakubetede SRMA.

The area should be closed to OHV use off designated roads to protect roadless area values, the back-country setting, and primitive recreational opportunities. No currently closed or decommissioned roads should ne considered for OHV use.

Enchanted-Timber:

The Enchanted Timber ERMA is proposed in Alternative D and would encompass both the Bald Wagon and Bell Forest ERMAs proposed in Alternative C. The Enchanted Timber ERMA also encompasses the proposed Timber Mountain ERMA identified in Alternative B. The Enchanted Timber ERMA is located predominantly within the Forest Creek watershed. Comments for all RMAs proposed within the Enchanted Timber ERMA are included below.

The Enchanted Timber RMA is located within the John's Peak/Timber Mountain OHV Area, identified in the 1995 RMP with no real analysis and only 40 characters to outline its designation, boundaries, and management. In the 20 years since this time no legally binding management plan has been approved and OHV users have continued the environmentally damaging development of unauthorized, user-created trails. Many are steep, erosive, and/or within sensitive areas such as riparian areas and owl cores. The results have been extreme environmental damage, user conflicts, extensive private land trespass by OHV users, and long-standing controversy.

Important Recreational Values:

The Important Recreational Values listed for the Enchanted Forest RMA are vague and non-specific stating, "The Enchanted-Timber ERMA provides an extensive trail network." This is an interesting statement in an area with no officially designated trails approved by a ROD or other NEPA process. Thus it would be more accurate to say that the area "provides an extensive network of unauthorized, user-created trails." A network of trails the BLM has neglected to adequately address, manage, or mitigate.

The agencies claim that an extensive trail network exists in the area, demonstrates two things: 1) That the BLM has allowed extensive unplanned trail networks to

proliferate despite controversy, conflict, and environmental degradation. 2) The BLM intends to "grandfather" many of these unauthorized routes in the RMP process by analyzing and potentially approving trails that were created without authorization by OHV users. This policy directly contradicts the standards used by the BLM to designate non-motorized hiking trails. Standards the Applegate Trails Association and the Siskiyou Upland Trails Association are required to abide by, while motorized trails are simply built illegally and "grandfathered" by the BLM as "historic" or "existing" uses. These uses and trails are in fact, "existing" illegal and environmentally damaging activities that should be treated as such and subjected to law enforcement actions and closure.

Currently, the BLM is analyzing scoping comments for the Jack-Ash Trail proposed by the Siskiyou Uplands Trail Association and the Applegate Ridge Trail proposed by the Applegate Trails Association, both non-motorized trail groups. These groups are being required to acquire grants and donations to fund the NEPA work for these projects. They are pouring volunteer hours into the process, and providing significant in-kind donations of time and expertise. They are also held to strict standards for trail sustainability influencing trail design, layout, and grades. No work on trail development is allowed until the project has been analyzed and approved by the BLM.

Meanwhile, OHV users simply create unauthorized, user created, and environmentally damaging trails. The BLM does not require OHV groups to fund the NEPA analysis or spend their precious time and expertise navigating the NEPA process. OHV groups do not need insurance, saw/trail maintenance certification, or funds to build trail on public lands. OHV groups need not wait in line for BLM approval to make trails. Members of the OHV community simply build unauthorized trails and the BLM simply embraces them at no expense to the OHV groups or individuals. In essence, the BLM has created ample incentives for OHV users to build unauthorized trails. OHV users have learned that building unauthorized trails benefits their use and has historically allowed them to avoid the expenses and volunteer hours associated with the NEPA process. It has also allowed them to avoid public comment and environmental review of specific user-created trails. The situation shows corruption and bias on behalf of the Medford District BLM and makes rogue elements within the OHV community the real land managers. The mantra seems to be "if we build it, the BLM will codify, validate, and approve its use." Currently, the BLM is managing OHV trail development and non-motorized trail development with two separate standards, requirements, and obligations. The situation is unacceptable and should be investigated by BLM officials at the state or national level.

Visitor Activities, Experiences, and Allowable Use Restrictions:

The BLM has identified the following visitor activities, experiences, and allowable uses in the Enchanted Timber RMA: mountain biking, hiking, equestrian, camping, picnicking, day use, driving for pleasure, environmental education, and wildlife viewing. It must be understood that all identified uses will be negatively impacted by OHV use and many should be segregated from OHV users. This segregation should allow a larger number of acres and recreational opportunities for other trail uses. This will allow for the broadest, most inclusive, and enjoyable experience for the largest number of public land users.

Interestingly, OHV is not listed in the allowable uses for this ERMA, only non-motorized trail users are mentioned. The BLM should provide a positive and enjoyable

recreational use for the largest number of individuals and user groups within the RMA. This objective can be facilitated by limiting OHV use to designated, unimproved roads. Other trail users, picnickers, wildlife viewers, and those seeking environmental education will appreciate the segregation of uses, allowing non-motorized areas to be enjoyed for the values these users have come to expect on public lands.

Fire Restrictions:

Fire restrictions should also be put in place if OHV use is allowed. Much of the area is adjacent to private residential property and supports heavy chaparral fuels as well as ample fine grassy fuels that are easily ignited and spread very quickly. OHV use should be limited during fire season to avoid accidental fire starts from July to November or anytime fire conditions have reached "extreme."

Fire use for campers and other public land users should be limited from July to November as well, to limit the potential for unplanned ignitions.

OHV Limitations:

It is unclear from information provided to the public during the RMP process what role OHV use will have in the Enchanted Timber ERMA? OHV use is listed in the Visitor Activities section and motorized users are listed as public members targeted with this ERMA, yet no designation whatsoever was listed in the Transportation and Travel Management section for OHV use.

OHV use should clearly be limited to mitigate the currently high levels of environmental damage and user conflicts in the area. Unauthorized user-created trails should not be condoned, incentivized, or encouraged by designating or analyzing such poorly designed and unauthorized trails. OHV users should be subject to the same standards as non-motorized trail groups. All trails proposed for designation by OHV enthusiasts must be analyzed through NEPA, subject to public comment, and paid for by OHV groups. This would include paying for NEPA work, required surveys, and trail creation/building, etc. These limitations exist for non-motorized groups and users and should be extended to OHV users as well. It is not only the fair thing to do, but is also the legal thing to do. The historic free-for-all regarding OHV management must come to a close and renegade OHV users seen for what they are criminals, damaging pubic land for cheap thrills and selfish desires.

Target Shooting:

The area is listed as open to target shooting with buffers placed near recreational facilities, trails, and trailheads. The agency should close the area to shooting outside designated shooting sites at quarry sites where firearms can be shot away from roads and into gravel pits or quarry walls. This will reduce public safety hazards, trash associated with shooting such a clay pigeons, shot up appliances and other targets and user conflicts. It will also limit the impact of shooting on nearby residential properties. All areas within 1/2 mile of private residences should be closed to target shooting.

General Recommendations:

General recommendations would include an emphasis on user-created trail closures, rehabilitation, and restoration. Much of this ERMA has been heavily impacted by the development of user-created OHV trails degrading water quality, fisheries habitat, botanical values, wildlife habitat, non-motorized recreational values, and other public land users. OHV use should be limited to designated, unimproved roads where they do not conflict with other users or resources. Routes outlined in the Applegate Valley OHV Monitoring Report should be closed to motorized use, obliterated and rehabilitated.

Private land trespass is also a major issue in this area and all trails crossing or private land without official easement or agreements for access should be immediately closed. It is time for BLM to be a responsible neighbor to the many residents impacted by OHV use in the Forest Creek watershed. Many years ago the BLM gave OHV users an unofficial "green light" on user-created trail development. The BLM also designated a large OHV area within a checkerboard of ownership, hoping that private landowners would grant OHV users access. By and large this has not happened and the OHV area originally envisioned by the BLM with large loop trails and expansive trail networks is simply not possible. The idea of a large OHV area in the John's Peak/Timber Mountain area should be abandoned. The project has been a failure and has only created extreme environmental impacts and public controversy.

Enchanted-Wellington ERMA:

The Enchanted Wellington ERMA is located north of Highway 238, extending from nearly Ruch, Oregon over to the Humbug Creek drainage. The area consists of a relatively large block of public lands and the Wellington Butte Roadless Area, recently identified by the BLM as a LWC.

Important Recreational Values:

The Important Recreational Values identified by the BLM for the Enchanted-Wellington ERMA are as follows: "The Enchanted Well ERMA provides opportunities for solitude in a back-country setting". The agency does not list any other recreational values for which this area should be managed, thus the emphasis placed on this ERMA would be the retention of back-country/wilderness values and non-motorized recreation.

The area includes the 5,711 acre Wellington Butte Roadless Area and LWC. A section of land to the east is currently proposed to be included Enchanted-Forest ERMA. The lands in question are traversed by the Oregon Belle Loop Road (38-3-21) on the eastern slope of China Gulch. Closure of roads 38-3-16.0 and 38-3-21 would allow the agency to include an estimated 700-1100 acres of wildland habitat within an expanded LWC. These long decommissioned jeep tracks are currently sustaining significant OHV usage, impacting botanical, scenic, wildlife and wilderness values. The use of road 38-3-21 and 38-3-16.0 by OHVs is also facilitating and encouraging vehicle trespass on adjacent private residential lands and constitutes a significant fire risk to local residents.

The protection and maintenance of "solitude in a back country setting" should be the main management strategy for this area as was clearly identified in the Important Recreational Values for the area. The protection of the "back-country setting" could be facilitated by allowing only non-motorized uses and expanding the LWC to the Oregon Bell Loop Road.

The entire Wellington Butte Roadless Area including the additional 700-1100 acres in eastern China Gulch should be designated a Wilderness Study Area and protected from non-compatible uses until Congress is allowed to weigh in on the issue.

Visitor Activities, Experiences, and Allowable Use Restrictions:

The visitor activities, experiences, and allowable use restrictions for the area include, hiking, equestrian, camping, wildlife viewing, and backpacking, all relatively primitive forms of use and transportation. These specific uses would all be negatively impacted by OHV use. Many Applegate and Rogue Valley residents support the BLMs intention to manage the RMA for non-motorized uses. These same residents would support your currently proposed "closed to motorized use" designation. The area is already well loved and very popular in the hiking, equestrian, and backpacking communities. Large numbers of local residents and hiking enthusiasts routinely attend Applegate Trails Association hikes in the area. The BLM should encourage this low impact use and manage the area for the non-motorized back-country experience.

Fire Restrictions:

The area should be closed to fire use during the summer months to protect adjacent homesteads and communities from the threat of human-caused fire. Backpackers should be limited to camp stoves with fire use allowed from November through May. No motorized use should be allowed, thus no seasonal use restrictions put in place.

OHV Limitations:

The BLM has proposed that the area be closed to OHV use. The position is fully supported by the Applegate Valley OHV Monitoring Project and consistent with other management designations affecting the area.

Target Shooting:

The area is listed as open to target shooting with buffers placed near recreational facilities, trails, and trailheads. The agency should close the area to shooting outside designated shooting areas at quarry sites where firearms can be shot away from roads and into gravel pits or quarry walls. This will reduce public safety hazards as well as user conflicts and trash associated with shooting such a clay pigeons and shot up appliances. It will also limit the impact of shooting on nearby residential properties. No shooting should be allowed for with ½ mile of private residences.

General Recommendations:

The Enchanted Wellington ERMA should be designated a SRMA to adequately protect the areas many important values including wilderness characteristics, wildlife habitat, botanical resources, and non-motorized recreational opportunities associated with the Applegate Ridge Trail.

The Wellington Butte Roadless Area and LWC should be officially designated as a Wilderness Study Area (WSA) and expanded by an estimated 700-1100 acres. In the

meantime, activities that will degrade the wilderness resource should be precluded from the LWC including OHV use, commercial logging, post-fire logging, and road building.

The expansion of the LWC could be facilitated by closing roads 38-3-16 and 38-3-21 to OHV use, both of which are already decommissioned and gated. This action would allow for expansion of the LWC onto the ridges east of China Gulch and adjacent to road 38-3-21. This area supports a naturally appearing landscape untrammeled by man with long vistas across the Applegate Valley. This action would expand non-motorized recreational opportunities in the area, an activity that is steadily increasing within the area and is consistent with the areas exceptional resource values. In fact, the Applegate Trails Association has proposed that road 38-3-21 be closed to motorized use and declared a non-motorized connector to the Applegate Ridge Trail. The designation of this area as a WSA and designated hiking trail would also segregate motorized and non-motorized trail users, reducing user conflict and curtail the degradation of available non-motorized experiences. Wilderness experiences and quiet forms of recreation are increasingly rare on public lands and would be emphasized south of the high ridgeline dividing Forest Creek from Humbug Creek, Long Gulch and China Gulch, while other perhaps motorized forms of recreation could occur north of the ridgeline in the Forest Creek drainage.

Currently, the China Gulch area (in which the expansion would occur) is being heavily impacted by unauthorized OHV use. This damaging motorized use could be curtailed by designating the area as a WSA and closed to OHVs.

Considerable investments in closure structures, monitoring, and law enforcement will be needed to maintain and enforce this proposed OHV closure. By linking the areas east of China Gulch with the Wellington LWC, we can create a significant and important wilderness quality landscape and non-motorized recreation area while hopefully eliminating OHV impacts. We can also protect the quiet, beautiful setting of the Ruch area, its wildlife habitat, native plant communities, and the quality of life it's human inhabitants enjoy. Funding for closure and enforcement could come from BLM recreational budgets and/or the Oregon State Parks OHV Grant Fund.

Woodrat ERMA:

Important Recreational Values:

The Woodrat ERMA is directly adjacent to the community of Ruch, Oregon and is already well established as a primer recreation site, namely for hang gliding activities and events. The Important Recreational Values identified by the BLM include offering "access to hiking and internationally recognized hang gliding opportunities." The BLM states that the "Woodrat ERMA has potential to draw local, regional, and national hang gliders and para-gliders as well as non-motorized trail users seeking close-to-home recreation opportunity."

These values are important to the nearby community of Ruch, Oregon as hang gliding events and activities significantly contribute to the local economy. They also contribute to the local sense of place and create a sense of pride that the Applegate Valley can provide an internationally recognized recreational experience to the hang-gliding community. The activity has come to be part of what defines Ruch, Oregon during the summer months. On many days you can look up to see numerous hang gliders floating above the valley. During events folks from surrounding communities often come to the area to watch hang gliders flying above town. The recreational pursuit offers many

benefits to the social and economic well being of the community. Hang gliding is also a quiet non-motorized recreational pursuit that has little impact on adjacent landowners.

Close to home hiking opportunities are also very important to Applegate and Rogue Valley residents and the Woodrat Mountain area provides high quality scenery and long vistas, as well as beautiful forests, woodlands, and grassland areas.

The driving factor behind this RMA should be the recreational enjoyment and experience the area provides to hang gliders. This is an internationally recognized recreational opportunity and the Ruch area provides perfect conditions for hang gliding. In fact, visitors already come from around the world to fly our skies and view the beautiful scenery of the valley and surrounding mountains. The hang gliding opportunities in the Woodrat area are unique and unparalleled. The BLM should manage the area to maintain, enhance and encourage this form of non-motorized recreation. Only other recreational uses that are compatible and will add to the recreational experience of visiting hang glide enthusiasts should be designated in this area.

Visitor Activities, Experiences, and Allowable Use Restrictions:

The BLM has identified mountain biking, hiking, equestrian, hang gliding, and OHV as Visitor Activities in the Woodrat ERMA. It is important to understand the all other identified uses are negatively impacted by OHV use. Mountain biking, hiking, equestrian, and hang gliding are all quiet, non-obtrusive and non-motorized recreational activities. OHV use on the other hand represents a potential noise disturbance that disrupts these other recreational pursuits. Non-motorized users are often also offended by the environmental and scenic impacts of OHV use.

The area is identified as “limited to designated for OHV”, this means currently means very little as no designated OHV trails are present. No user-created trails should be designated for use, analyzed by the BLM, or “grandfathered” into use. To do so will only reward unauthorized, inappropriate activities and create conflict with existing authorized uses such as hang gliding and hiking.

Fire Restrictions:

The area is closed to over night camping and thus should also be closed to fire use to protect the many nearby homesteads and the community of Ruch from the threat of human caused fire. OHV use should be limited due to generally high fire risks and the close proximity of nearby communities. No OHV should be allowed from July to November or when fire conditions reach “extreme.” This will reduce the risk of accidental fire starts associated with OHV use.

OHV Limitations:

The area should be closed to OHV use to protect the internationally recognized recreational resource currently occupying the site. The hang gliding community could be turned away from our area because of user conflict with OHV enthusiast, damaging the local economy and sense of place. Simply put, the recreational opportunities provided by the Woodrat RMA are already very beneficial to the community and economy and could be impacted by increased OHV use. They also provide a unique experience not available on most public lands. This recreational opportunity should be encouraged and facilitated

by providing top quality hang gliding opportunities and other compatible uses such as mountain biking, hiking, and equestrian use.

Target Shooting:

The internationally renowned hang gliding site and the surrounding facilities combined with the areas location directly adjacent to the community of Ruch, Oregon should require closure to target shooting. This will provide for public safety and encourage further hang gliding recreation.

General Recommendations:

The area should be closed to OHV use and closed to target shooting to protect the current recreational uses and provide for public safety. The unique opportunities provided by the Woodrat RMA, could be expanded upon by encouraging other compatible non-motorized uses.

To this end, the Woodrat RMA could be expanded to include the BLM lands north of Bishop Creek and proposed for non-motorized trail use on the East Applegate Ridge Trail. This use would be compatible and complimentary to hang gliding and would provide for a more interesting recreational visit to the area.

The lands north of Bishop Creek should be included in the area and together the lands should be designated as a Special Recreational Management Area (SRMA). This would provide for high quality recreational management and the retention of values the area is well known for. The Woodrat RMA is one of the only RMAs proposed outside the Wild Rogue region and the Pacific Crest Trail that can honestly claim to have an international and national clientele. Recreationalist, traveling long distances tend to provide more dollars to the local economy and should be encourage. They often spend money in our local communities on lodging, food, entertainment, and other amenities. The impact of the Woodrat hang gliding site is particularly important to the Ruch and Jacksonville areas, providing a needed economic boost in the localized region.

Thompson-Cantrall ERMA:

The Thompson-Cantrall ERMA is locate in the Middle and Upper Applegate watersheds including the ridges surrounding Thompson Creek to Tallowbox Mountain and east along the northern half of Star Gulch to nearly Upper Applegate Road. The area is unique in that it contains a large contiguous section of public land. It is also unique due to the location of a large roadless area and land with wilderness characteristics (LWC), known as Burton-Ninemile. The Burton-Ninemile area was identified as the largest roadless area on BLM lands in the Applegate watershed. The area also has room to expand into untrammeled forest and woodland at its northern flank.

Important Recreational Values:

The Thompson-Cantrall ERMA has been identified for its rugged, varied terrain, large contiguous block of BLM land, lands with wilderness characteristics, and a nearby county campground at Cantrall-Buckley State Park. The area is identified for its multi-use trails and back-country experiences.

Located within the Thompson-Cantrall ERMA is the Burton-Ninemile LWC and Roadless Area. At over 6,000 acres the area is a significant wildland with unique

primitive recreational values. The area is one of the largest contiguous blocks of BLM land in the Applegate watershed and contains exceptional biodiversity, wildlife habitat, and wilderness characteristics. Being a large block of public land the opportunity for conservation is high.

Giant death camas (Toxicorsordian exaltatus) is found within the area and is particularly dense in the LWC area. This is the only population in Oregon and at one time, was proposed to be listed as a new species, endemic to the Applegate Valley. More research may be needed to identify the taxonomic identity of this plant species and its habitat should be maintained.

The LWC and roadless area should be closed to OHV use and non-motorized trails designated on the now decommissioned roadbed of road 38-3-33-10.0. The decommissioned roadbed could be designated for non-motorized use, providing public access to the LWC. The decommissioned road could provide access across the Tallowbox ridgeline from Baldy Peak to Ladybug Saddle. Road 39-4-12.0 could also be officially decommissioned facilitating inclusion of the northern slope of Baldy Mountain down to road 38-3-33 within the LWC. Non-mechanized trails could also be developed on the decommissioned roadbed in Ladybug Gulch (formerly known as road 39-4-24.0). Designating the decommissioned road system as non-motorized trail would protect the areas back-country setting and emphasize the primitive recreational experience.

Another section that could be included in the LWC would include section 10 and portions of section 3 on the western slope of Tallowbox Mountain. These areas support wilderness characteristics and are divided from the current LWC boundary by only the decommissioned roadbed of 38-3-33-10.0.

Visitor Activities, Experiences, and Allowable Use Restrictions:

The BLM has identified numerous visitor activities for the Thompson-Cantrall ERMA, including mountain biking, hiking, equestrian, camping (developed and dispersed), day use, hang gliding, and OHV-dual sport (on unimproved roads).

These activities should all be able to co-exist in this large recreational area, but must be segregated to protect the experience of user groups that might conflict or impact each other. In particular, OHV use will conflict with other targeted visitors and should be minimized to allow for the most inclusive recreational opportunities available. This could be facilitated by allowing motorized use only on designated roads in the western and north-western portions of the ERMA. Existing road and OHV closures should be considered closed to OHV use, especially those closures in upper Thompson Creek, Ninemile Creek, the Tallowbox Mountain area, and other sensitive areas. Special attention should be paid to keeping, OHV use out of the decommissioned road that connects Thompson Creek and the East Fork of Williams Creek. OHV damage in the area has historically been significant and the road provides access to Port Orford Cedar populations on East Fork Williams Creek. These closures should be maintained in all alternatives or management options.

Fire Restrictions:

The area is very centrally located within the Applegate Valley. Residential homes surround the area in the Thompson Creek drainage, Upper Applegate Valley, Middle

Applegate Valley, and Williams Creek. The close proximity to homes and the dry summer conditions that affect the area should be acknowledged by instituting summer season closures on all OHV use off improved roadbeds. Closure should be considered from July to November and when fire risk levels have been identified as "extreme". Camp fires should also be limited during fire season unless developed campgrounds are created.

OHV Limitations:

The area is identified as "limited to designated for OHV" meaning the agency is considering the area closed unless OHV trails have been officially designated, a process proposed to take up to five years after approval of the revised RMP. The process of route designation should not encourage illegal OHV route creation, by grandfathering or analyzing user-created OHV trails, nor should the agency drag their feet while OHV groups build more unauthorized, user-created trails in the interim period before designations and management plans are developed. Any OHV use approved should be subjected to NEPA analysis within one year of designation of the ERMA. Currently no designated OHV trails exist within the ERMA.

OHV use should be precluded from the LWC as well as the steep erosive watersheds of Chapman Creek and Keeler Creek. The existing OHV closure on Ninemile Creek instituted to protect Coho salmon habitat should be maintained. Currently closed and decommissioned roads should be considered closed to OHV use to protect hydrological values, reduce sedimentation, and achieve the results desired by road closure.

OHV use in the area should be limited to designated, unimproved roads in the western and northwestern portion of the ERMA. No motorized trails should be approved for OHV use, this would include the unauthorized, user-created trails in the vicinity of Hinkle Gulch Road (38-4-28) and in Ferris Gulch.

Target Shooting:

The area is proposed to be open to target shooting with buffers around trailheads and trails to provide for public safety. The agency should take this a step further to protect public safety values, especially near residential properties. Target shooting areas should be designated and all other areas should be considered closed. No target shooting areas should be designated within ½ mile of private residences.This will reduce target shooting associated resource damage and greatly improve public safety. Damage associated with target shooting is particularly pronounced in the area around Hinkle Gulch Road and Ferris Gulch where OHV use is also the highest.

General Recommendations:

The BLM should consider designating the area a SRMA, especially the area identified as a LWC. Such a designation would allow the agency to focus energy and resources on developing recreational opportunities in this region, while sustaining important ecological and societal values. The LWC should be designated as a "Wilderness Study Area" in the RMP to protect wilderness values until a permanent decision is made regarding wilderness designation. In the meantime activities that will

degrade the wilderness resource should be precluded from the LWC including OHV use, commercial logging, post-fire logging, and road building.

The area should be closed to OHV use off open, designated roads to protect roadless area values, the back-country setting, and primitive recreational opportunities.

Munger Butte ERMA:

The Munger Butte RMA lies on the watershed divide between Williams Creek in the Applegate River drainage, and the Deer Creek watershed in the Illinois River drainage. The area supports stand of Port Orford Cedar (POC). POC are susceptible to Phytothera lateralis, a root rot that infects and kills trees. The main form of spread is associated with motorized vehicle use, especially during wet weather. The water born fungus is often spread via mud on vehicle tires. In fact, many areas on BLM and National Forest land and within the range of POC are closed to motorized use during wet weather periods to reduce the likelihood of spreading POC root rot. The presence of POC should preclude the area from OHV use. Unauthorized user-created trails are a common problem in OHV areas and unauthorized use could infect currently uninfected stands of POC in the Munger Butte area. The use of OHV's in infected portions of the Munger Butte RMA could also facilitate the spread of POC root rot to other areas as OHV riders drive through separate watersheds and road systems that may or may not have been infected.

Large portions of the POC's range have been infected with the root rot and very few healthy, uninfected populations remain. Most drainages in the Munger Butte area are infested with POC root rot, but the Munger Butte area still supports some uninfected stands. The potential for currently unimpacted areas to become infected through OHV use is very high, especially if the area is advertised as an RMA with OHV accessible tracks. The presence of POC should preclude this area from OHV use.

Instead, perhaps a non-motorized trail could be constructed from road 37-6-36 to the summit of Munger Butte. This would provide some recreational experience without a high risk of POC root rot spread.

The Munger Butte RMA should be designated as closed to all motorized use off existing BLM roads. Decommissioned and gate roads should not be included in areas designated for OHV use. Wet weather road closures should be considered from November to June. Gates should be locked and monitored during the wet weather season to ensure closures are not violated and POC root rot spread further throughout the area.

Wellington Mine Road ERMA:

The designation of the Wellington Mine Road as closed to OHV use is appropriate and consistent with LWC designation. The findings of the Applegate Valley OHV Monitoring Project support these designations. Closing the area to OHV will benefit the majority of public land users and allow for opportunities to experience a back-country setting in the LWC. This setting would be harmed by OHV use.

East Applegate Ridge Trail ERMA:

The designation of the East Applegate Ridge Trail as closed to OHV use is appropriate and consistent with management of a non-motorized trail. Closing the area to OHV use will benefit the majority of public land users and allow for a quiet, non-

motorized experience. This is the recreational setting those choosing to utilize the East Applegate Ridge Trail have come to enjoy.

It would be recommended that all public lands south and east of highway 238, north of Bishop Creek and west of Sterling Creek Road be included with the Woodrat RMA and designated a Special Recreational Management Area in the RMP. The entire area should be closed to OHV use off designated roads. This would protect the exceptional recreational opportunities provided in the Woodrat RMA and the adjacent public lands in the Bishop Creek area. This designation would also allow for the development of non-motorized connector trails in the East Applegate Ridge Area and would protect the values these trails would sustain.

West Applegate Ridge Trail ERMA:

The West Applegate Ridge Trail is a proposed non-motorized trail development located on the ridgeline divide between the Applegate and Rogue River Valley's. The trail would traverse the high ridge and link into the Cathedral Hills Trail system providing a long distance trail from Grants Pass to Jacksonville. The trail has been promoted as a non-motorized trail from its very inception and is widely supported by local and regional residents.

Important Recreational Values

The Important Recreational Values identified by the BLM include "an upland long-distance trail in a middle country setting with inspirational views." The visitors targeted are "local and regional visitors seeking a long-distance non-motorized trail experience." The West Applegate Ridge Trail has been proposed by the Applegate Trails Association as a strictly non-motorized trail. Yet, despite identifying the targeted visitor as non-motorized and contrary to public sentiment in the area, the BLM appears to be attempting to quietly codify OHV use on the West Applegate Ridge Trail. To do so will degrade the areas Important Recreational Values and the potential experience of non-motorized users. It has been clearly shown that in most situations, multi-use trails allowing motorized use become dominated by motorized users, pushing other public land users out. The nature of OHV use and non-motorized trail use is inherently one of user conflict. Hikers tend to avoid OHV trails and visit natural settings for an experience very different from those of motorized users. The same can be said for mountain biking and equestrian use, although OHV use represents further concerns for the safety of equestrians and their animals. Shared trail use by OHV enthusiasts and equestrians is entirely incompatible and should not be proposed on any trails inside RMA's. If such shared use was allowed, motorized users would dominate and exclude equestrians, hikers and mountain bikers in most all circumstances.

Visitor Activities, Experiences, and Allowable Use Restrictions:

The BLM has identified mountain biking, hiking, equestrian, camping, environmental education, wildlife viewing, and botanical viewing as Visitor Activities in the West Applegate Ridge Trail RMA. These uses are consistent and compatible with non-motorized trail uses and reflect the intent of the West Applegate Ridge Trail as identified by the Applegate Trails Association and their many supporters.

Despite no mention of motorized use in the Visitor Activities, Important Recreational Values, or Types of Visitors Targeted, the BLM has identified the West Applegate Ridge Trail as "limited to existing" for OHV. This means damaging OHV routes created by OHV users without authorization or adequate environmental design would be codified, validated, and approved in the RMP. These are routes that have never been subjected to environmental analysis or public comment.

The agency also identifies the "potential for shared motorized/non-motorized routes" in the Transportation and Travel Management section for this RMA. This will allow OHV users to continue degrading resource values in the area as well as degrade the experience of non-motorized trail users who have culminated around the proposed Applegate Ridge Trail. The questions must be asked: How many non-motorized trail users would actually appreciate and enjoy sharing the trail with dirt bikes or OHV's? How does this proposal provide for a decrease in user conflict? The two separate uses are inherently in conflict with one another and OHV use, being the most dominant and obtrusive use, usually pushes non-motorized users away from shared, multi-use trails.

The proposal to "share" the West Applegate Ridge Trail demonstrates the agencies bias towards OHV use and takes the corruption and collusion with OHV groups a step further. In essence, the BLM is utilizing the vision, funds, and volunteer efforts of non-motorized trail groups (namely ATA) to officially designate, design, and envision the West Applegate Ridge Trail. The proposed trail has been heavily backed by ATA and the residents of the Applegate Valley and has always been proposed for non-motorized use. The designation of OHV routes adjacent to the West Applegate Ridge Trail will negatively impact the experience of non-motorized trail users who have proposed, designed and advocated for the proposed trail.

While ATA must work through and fund the official processes to gain NEPA approval and subject their trail to stringent trail standards that reduce social, historical, and environmental impacts. The OHV community will benefit from a "limiting to existing" designation that will codify their "existing" unauthorized use. The contradictions are rife with inequalities and political manipulation.

After non-motorized groups have envisioned, advocated for, patiently waded through the NEPA process, and built the trail at their own expense. OHV users will benefit and likely commandeer the West Applegate Ridge Trail. The "limited to existing" designation for OHV trails is nothing more than a hand out to OHV groups and enthusiasts. It is also a slap in the face to the trail groups and residents of the Applegate Valley who have worked tirelessly to promote the Applegate Ridge Trail.

The BLM proposal to share this trail system is offensive to many non-motorized users and will only lead to user conflict, resource damage, a degradation of the proposed recreational experience, and further mistrust towards the BLM in the non-motorized community. The West Applegate Ridge Trail has been championed by the non-motorized trail community who has asked to build trails and helped to facilitate the NEPA process. On the other hand OHV users routinely build unauthorized user-created trails and benefit from that use by seeing their unauthorized trails designated without nearly the investment required of non-motorized groups. The incentives the BLM has created are backwards, unfair, and tend to only benefit the OHV community. The West Applegate Ridge Trail should be designated as closed to OHV use.

Fire Restrictions:

The area should be closed to fire use during the summer months to protect adjacent homesteads and communities from the threat of human-caused fire. Backpackers should be limited to camp stoves with fire use allowed from November through May. No motorized use should be allowed, thus no seasonal use restrictions should be put in place.

OHV Limitations:

The West Applegate Ridge Trail should be closed to motorized use and managed for non-motorized trail uses. Existing OHV trails should be closed and rehabilitated to reduce environmental impacts. OHV users should not be allowed to benefit from the creation of unauthorized trails, existing OHV routes should not be analyzed, designated for use, or otherwise validate. To validate their use is to encourage further unauthorized behavior.

Target Shooting:

The RMA is a narrow designation existing adjacent to the public trail system, given the small size of the RMA and the concentrated presence of public land users no target shooting should be allowed along the West Applegate Ridge Trail or at traiheads and access points.

General Recommendations:

The West Applegate Ridge Trail should be designated as closed to OHV use and closed to target shooting. A 250' buffer on either side of the trail should be created to protect the scenic and natural resources that attract visitors. The buffer should preclude OHV use, commercial timber harvest, post-fire logging, and other forms of habitat manipulation that will degrade the trails scenic and recreational qualities.

Jack-Ash Trail ERMA:

The proposed Jack-Ash non-motorized trail is heavily supported and will provide an economic boost to the surrounding communities. Tourists and locals alike will find the trail inspiring and enjoyable, especially if adequately buffered from non-compatible uses such as OHV use and commercial timber harvest. The trail is identified by the BLM as non-motorized in the Important Recreational Values, Visitors being targeted, Visitor Activities, and Visitor Experiences sections of the RMA data sheet. Yet, no mention is made of OHV closure in the Transportation and Travel Management section of the RMA description. This is of concern to all those who support the trail, have helped fund its creation and have worked hard volunteering their efforts towards trail designation. The Jack-Ash Trail has always been promoted as non-motorized and OHV use should be clearly prohibited with the Jack-Ash RMA.

The public also strongly supports the "closed to shooting" designation. This designation is the only responsible option that will provide for public safety. The seasonal use closure on equestrian use is also necessary to protect trail tread during periods of significant precipitation.

The Jack-Ash Trail will connect Jacksonville to Ashland, Oregon by non-motorized trail and is poised to become a major recreational attraction, much as the

Sterling Mine Ditch Trail has. The Jack-Ash Trail will provide loop opportunities with the Sterling Mine Ditch Trail, a designated State Scenic Trail. The region should be designated a Special Recreation Management Area to protect and sustain the important recreational opportunities and experiences the Jack-Ash will offer the tourists and communities of southwestern Oregon.

A 250' buffer on either side of the trail should be created to protect the scenic and natural resources that attract visitors. The buffer should preclude OHV use, commercial timber harvest, post-fire logging, and other forms of habitat manipulation that will degrade the trails scenic and recreational qualities. Obviously, the portions of the Jack-Ash Trail that extend into the Dakubetede LWC should be withdrawn from mineral entry, removed from the timber harvest base, closed to OHV's and subjected to other closures that maintain wilderness values.

Wolf Gap Trailhead SRMA:

The Wolf Gap Trail is a non-motorized trail leading to the Sterling Mine Ditch Trail. The proposed SRMA consists of the trailhead parking area for the Wolf Gap Trail. The Dakubetede LWC and Roadless Area also surround the trailhead on three sides.

Important Recreational Values:

The Important Recreational Values identified by the BLM for the Wolf Gap Trailhead claims the trailhead provides "access to multi-use trail opportunities", this claim is very interesting because the only official designated trail accessible by the Wolf Gap Trailhead is the Wolf Gap Trail, a non-motorized connector trail leading to the Sterling Mine Ditch Trail. This trail is currently closed to mountain bikes because of steep, narrow tread and potential conflicts with other user groups. Unauthorized, user-created and extremely damaging OHV trails drop into the trailhead from the east and west. The trails are steep, erosive, and have created rill and gully erosion that will be nearly impossible in the future to stabilize. The trail to the west provides OHV access to private land and facilitates trespass and resource damage on adjacent private lands. The BLM has clearly proceeded to create defacto trail designations for these damaging motorized trails by giving these user-created trails the same credibility and values as the officially designated and non-motorized Wolf Gap Trail. OHV use in the area will disrupt non-motorized trail users with environmental damage and noise disturbance. OHV use in this location also creates a serious public safety hazard as OHV's race down very steep, erosive slopes at high speeds into a parking area and trailhead. The potential for cars, livestock, and/or individuals to be physically harmed by a high speed OHV is likely.

The BLM has identified visitors being targeted in the SRMA and discloses that OHV and mountain biking special events could utilize the Wolf Gap Trailhead and presumably the adjacent unauthorized OHV trails for large events drawing local and regional visitors. Such proposed use is unacceptable within the Dakubetede LWC and Roadless Area. The environmental impacts sustained would great and the user conflicts with non-motorized users on the Wolf Gap, Jack-Ash, and Sterling Mine Ditch Trails also very significant. The Siskiyou Uplands Trail Association (SUTA) has worked hard to designate non-motorized trails using the official NEPA process. The designation of Wolf Gap as an OHV staging area is inconsistent with the goals and objectives of SUTA

and will significantly degrade the recreational experience of non-motorized users on very popular recreation trails. The situation also highlights the inequalities inherit to BLM management of motorized and non-motorized trails. Once again the BLM has proposed to require non-motorized groups to conduct and fund NEPA analysis and design trails that minimize impacts. At the same time, OHV groups simply build unauthorized and extremely damaging trails then have them "grandfathered" into use with "limited to existing" designations.

The BLM's proposal to utilize this trailhead as multi-use is unworkable, and will create large volumes of conflict and controversy. The trailhead is also quite small and it is unclear if the room is available to develop an OHV staging area or to facilitate large special use events. The trailhead can only hold a few vehicles and trailers and would not be a safe, effective, or reasonable OHV staging area. The SRMA should be designated for non-motorized use and closed to all OHV use.

Visitor Activities, Experiences, and Allowable Use Restrictions:

The BLM has identified this currently designated non-motorized trail area as "access to multi-use trail opportunities." The BLM has also proposed to designate the area as "limited to existing" for OHV use." Currently no multi-use trails are designated or officially acknowledged in the area, thus this designation would codify and validate very damaging and unauthorized, user-created trails without public comment or environmental analysis. The "limited to existing" designation is simply a way of avoiding NEPA, public comment, and environmental analysis by codifying "existing" unauthorized trails. The true designation could be more accurately described as "limited to unauthorized, user-created trails." This designation will reward unauthorized behavior and promote further unauthorized trail creation.

Fire Restrictions:

The area should be closed to fire use during the summer months to protect adjacent homesteads and communities from the threat of human-caused fire. Backpackers should be limited to camp stoves with fire use allowed from November through May. No motorized use should be allowed, thus no seasonal use restrictions should be put in place.

OHV Limitations:

The Wolf Gap Trailhead SRMA should be closed to OHV use and managed for non-motorized use. Existing OHV trails should be closed and rehabilitated to reduce environmental impacts, user conflict, and private land trespass. The trails are far too steep to meet BLM trail standards.

OHV users should not be allowed to benefit from the creation of unauthorized trails, existing OHV routes should not be analyzed, designated for use, or otherwise validated. To validate their use is to encourage further unauthorized behavior.

The impact of unauthorized routes in the area was highlighted in the Applegate Valley OHV Monitoring Report submitted to the agency as a comment in the RMP process.

Target Shooting:

The area should be closed to target shooting to provide for public safety, reduce environmental impacts and user conflict. There is no compelling reason to allow target shooting in this RMA.

General Recommendations:

The Wolf Gap Trailhead is currently a non-motorized trail access and should remain that way. The area should be closed to OHV use, including unauthorized, user-created trails and managed for non-motorized use. The area should not be utilized to facilitate OHV special events, as this would create unnecessary and substantial impacts to other non-motorized trail users and surrounding landowners. Special events could also draw large crowds that create even larger environmental impacts. The Wolf Gap Trailhead is surrounded on three sides by the Dakubetede LWC, presumably OHV Special Events would ride through the LWC, directly impacting wilderness values and characteristics. This is also unacceptable. The area should be identified as "closed to OHV."

Areas outside Recreational Management Areas:

OHV management outside of Recreational Management Areas is proposed to be designated as "limited to existing" in the RMP. Meaning that current unauthorized, user-created trails will be codified for OHV use. The policy is essentially a shot in the arm to all OHV users who have been developing unauthorized, user-created trails. The message is "if you build them, the BLM will codify your unauthorized use." It is a green light for unauthorized trail development and a loophole big enough to drive an OHV through. It is very unclear how "existing" trails will be defined and if this policy is enforceable? The agency has no records for "existing" user created trails across the district or across the state, thus no baseline from which to enforce or implement this policy. If "existing" user-created trails cannot be defined, mapped, or identified, then clearly this policy can not be enforced.

In reality a single OHV tire track can be identified as an "existing route" and BLM lands will be managed and enforced as if they were an "open" policy. Law enforcement will have little ground to stand on, beyond their own personal feeling that a route did not exist and therefore an OHV users is illegally driving cross-country. We need enforceable policies that create meaningful regulations and are enforceable by BLM law enforcement. It has been this lack of enforceable regulations that has lead to the proliferation of user-created trails and the impacts associated with these trails. The "limited to existing" policy in unworkable and shows either political bias or naiveté on behalf of the BLM. I believe the proposed management strategy outside RMAs is more accurately portrayed as "limited to unauthorized routes", a clear reward to folks who have impacted public resources, other public land users, and acted outside existing regulations to build user created trails. It is also a slap in the face to non-motorized trail groups who are required by BLM to fund and facilitate NEPA analysis and meet strigent trail standards to build new trails, while the OHV community illegally creates vast trails systems with little red tape and even less financial investment. The situation is discriminatory, biased, and politically corrupt.

Another concern with this policy is that new user created trails, will continue to be created in areas outside RMA's and as these trails are developed, OHV users will begin pushing for their designation. This will generate more OHV trails and OHV areas outside currently proposed RMAs. This will expand the footprint and impact of OHV use outside those areas analyzed and included in the cumulative impact analysis of the DEIS.

Given the historic response of the BLM to nearly always validate unauthorized OHV routes, this policy will likely, over time expand the area available to OHV users, at the expense of local landowners, non-motorized users, wildlife, water quality, and botanical values. The BLM's management of lands outside RMA's will continue to maintain the currently very controversial and unsustainable status quo in OHV management. The policy amounts to and condones no management at all and encourages unauthorized use. This policy is unacceptable.

OHV use outside RMA's should be closed to OHV use off designated roads. No motorized trail use should be allowed unless specifically analyzed under the NEPA process. Existing unauthorized OHV trails should be closed, rehabilitated, and monitored for use. The closure and decommissioning process could be facilitated when other projects in the area, such as timber sales, recreational developments, travel management planning, and/or other projects are analyzed with a NEPA document. Road decommissioning and user-created trail obliteration could be incorporated into these projects and should be prioritized when planning efforts are initiated.

The BLM already has a long standing process by which they designate official trails. This process involves NEPA survey, public comment, and environmental analysis. All trails inside and outside RMA's should be required to comply with NEPA requirements. New trails and existing unauthorized routes alike. Motorized trails and non-motorized trails. To do otherwise is undemocratic, meet the arbitrary and capricious threshold, and is a violation of both the NEPA process and the law. The inequalities and extreme environmental impacts must stop here, within the RMP process. To continue another 20 plus years of the "limited to existing" status quo management will only compound the currently egregious impact of unmanaged OHV use. The policy is simply irresponsible, promotes damaging and unauthorized OHV use, continues discriminatory practices by the BLM and should be abandoned.

Thank you for the opportunity to comment,

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The Applegate Valley OHV Monitoring Project

The Siskiyou Crest Blog
www.thesiskiyoucrest.blogspot.com

July 2015

BLM OHV Monitoring Report
Medford District BLM, Ashland Resource Area

Applegate Valley OHV Monitoring Project
BLM Monitoring Report 2015

The Applegate Valley OHV Monitoring Project is a public land monitoring program run by Luke Ruediger and the Siskiyou Crest Blog. Local residents in the Applegate and Rogue Valley region funded the project through a Kickstarter campaign initiated by the Siskiyou Crest Blog. Hundreds of on-the-ground hours have been spent documenting OHV impacts in the foothills of the Applegate Valley on Medford District, BLM lands. Encompassing lands within the Ashland Resource Area, the project has emphasized monitoring within areas identified as Lands with Wilderness Characteristics (LWC) and Recreation Management Areas (RMA) in Alternatives for the proposed 2015 Resource Management Plan (RMP) for Western Oregon BLM lands. The project has also monitored OHV impacts and user-created trails in the John's Peak/Timber Mountain OHV Area and other locations in the Applegate Valley. The Applegate Valley OHV Monitoring Project has timed its efforts to coincide with the comment period for the Western Oregon Resource Management Plan to provide in-depth public comment and analysis of existing OHV impacts, user-created trails and OHV management in the Applegate Valley. The report is also being submitted to the Medford District BLM with a petition for emergency closure of damaging OHV routes pursuant to Executive order 11644 and 11989. The report is organized according to proposed RMP designations such as Lands with Wilderness Characteristics (LWC) and Recreation Management Areas (RMA).

Little Applegate River Watershed

Anderson Additions RMA

The proposed Anderson Additions RMA is located in the vicinity of Anderson Butte and encompasses nearly all the BLM lands in the area. The area begins at the Little Applegate River Canyon and extends over the ridge into watersheds that drain into the Bear Creek in the Rogue Valley. The area also encompasses nearly all BLM lands east of Sterling Creek. The Dakubetede Roadless Area and LWC are located entirely within the RMA. The non-motorized, Sterling Mine Ditch Trail is located within the area and has been designated an Oregon State Scenic Trail.

Much of the area was also proposed as a central feature of the Dakubetede Back Country Primitive Area in Senator Wyden's O&C Bill of 2014.

The area has experienced a significant proliferation of unauthorized, user-created trails in recent years, and OHV associated impacts have become widespread and chronic in nature; the area's wilderness characteristics are being heavily impacted by OHV use. The area's unique biological characteristics are also being heavily impacted with all local plant communities affected, from disjunct groves of western juniper on the ridgelines, to riparian habitats in the area's streams. The current system of user-created trails is expanding into lands identified as LWC. The current impacts from user-created trails are growing as new routes are pioneered and developed by OHV users. Existing routes are becoming wider, more erosive and more deeply incised, impacting botanical values, hydrological values, wilderness values, and other forest users.

Examples of botanical damage include cross-country travel and route development, the spread of noxious weeds, disruption of disjunct and unusual plant communities – such a western

juniper balds – and damage to the locally uncommon heartleaf milkweed (Asclepias cordifolia), a host plant for the monarch butterfly. The monarch butterfly is a candidate for protection under the Endangered Species Act (ESA) due to recent precipitous declines associated with the loss of milkweed throughout its range, and degraded overwintering habitat along the Southern California coast. Numerous species of rare and sensitive plants, such as the Applegate stonecrop (Sedum oblanceolatum) and Gentner's fritillaria (Fritillaria gentneri) are also found in the area.

Impacts to wildlife are also widespread, including disruption of critical deer winter range habitat. The BLM has designated much of the area Deer Winter Range, with mandates to reduce the level of habitat disruption in the winter months (e.g. reductions in road density and seasonal road closures), which would seem to apply to OHV trails as well. Below are reports for specific

The upper portion of the Goat Cabin Ridge Route is doing damage to the botanical values, scenic beauty, wildlife, and wilderness characteristics of the Dakubetede Roadless Area and LWC; BLM officials should close the route and strictly enforce it as a permanent closure.

OHV routes the Applegate Valley OHV Monitoring Project has surveyed in the region.

Goat Cabin Ridge OHV Route

Goat Cabin Ridge is a long, grassy spur ridge running south from Applegate/Bear Creek Divide between Anderson Butte and Point Mountain. The ridge lies within the eastern portion of the Dakubetede Roadless Area and the area identified as a LWC. The western face of Goat Cabin Ridge drains into Birch Creek (Muddy Gulch) and the eastern face into Rush Creek. The ridge is a very prominent and scenic feature within the Dakubetede LWC and highly visible from the

popular and non-motorized Sterling Mine Ditch Trail. Noise disturbance from this route is impacting the Sterling Mine Ditch Trail and adjacent private residences on Little Applegate Road.

The unauthorized OHV route across Goat Cabin Ridge begins by trespassing across private residential land on Rush Creek Road, extending 1.66 miles to road 38-2-24. The entire route is within the roadless area and LWC.

The upper portion of the route is currently recognized by the BLM as road 39-1-18.2. The inclusion of this route within the official agency road system is likely a violation of BLM regulations and safety standards. Developed by hunters and utilized as a hunting camp, the route began as an unauthorized, user-created route in the 1970s. The road was not created by the BLM, nor engineered for vehicle use. The grades in the upper portion likely do not meet agency road specifications, representing a public safety hazard and liability to the BLM. The road should be dropped from the agency road system and closed to all forms of vehicle use.

This upper portion of the route is a jeep trail, passable by all classes of off-road vehicle. Here, a large, old pine tree has been riddled in bullet holes, partially girdling the tree and badly damaging the cambium layer. Users of this OHV camp have cut down a large, old juniper tree (12" DBH), and other junipers have been damaged with a hatchet or axe. The site is covered in beer cans, shotgun shells, and numerous fire rings filled with broken glass. These fire rings are built adjacent to a large, dry, grassy slope filled with fine fuels each summer as the grass cures. The fire danger is extreme in the area and the risk posed by the OHV camp is entirely an unnecessary risk.

Hill climb on Blacksmith Gulch

Below this camp the OHV route drops steeply onto slopes exceeding 25% grade. The route is heavily eroded and beginning to become braided as OHVs avoid loose rock, ruts, and potholes. The track is between 12' and 20' wide. The route drops roughly 0.25 miles to a gentler ridgeline surrounded by large, old pines where multiple fire rings, piles of trash, beer cans, and mounds of shotgun shells litter the site. A large mattress is rotting on the ground. Trash and debris of this size can only be transported to this site by OHVs, in fact nearly all the trash and damage to vegetation on this site can be attributed solely to OHV use, as the site is only accessible by driving on roads and routes inaccessible without an OHV or 4X4 truck. The route leads to a flat ridgetop and creates a loop on the grassy knoll.

Beyond this loop OHV access is limited to single track motorcycle trails. The user-created route leads 1.42 miles down to Rush Creek Road, following Goat Cabin Ridge through pine/fir forest, oak woodland, and sweeping upland prairies. OHV use is mostly within the broad upland prairie that extends across the ridgeline. The open nature of this landscape poses very little natural limitations or barriers to unauthorized use-route creation, trail braiding, and continued route expansion. The potential for extreme impacts in this area is undisputable.

A very steep hill climb is impacting the grassy headwaters of Blacksmith Gulch. The hill climb is heavily rutted and hydrologically connected to the riparian reserve in Blacksmith Gulch. Portions of this damaging hill climb reach an excess of 30% grade. The heavily compacted and deeply incised routes are channelizing run-off and increasing peak flows in the headwaters of Blacksmith Gulch.

The lower end of the Goat Cabin Ridge Route is steep and erosive.

The Goat Cabin Ridge Route leads down the ridgeline beyond these hillclimbs through open grasslands and chaparral. The route is steep and heavily incised, reaching over 14” deep. The route then drops down the flank of a very steep chaparral slope. The trail is steep and wide, having been cleared through buckbrush thickets and across small grassy clearings. The trail drops 0.88 miles down this steep erosive slope. The route is 1’-10’ wide and supports deep ruts that are capturing run-off in heavy rainfall events. Numerous connected erosion gullies are forming in the incised tracks of OHVs. The gullies are now 14” to 30” deep and will be nearly impossible to stabilize. They will likely lead to significant point source pollution and turbidity in the adjacent streams for decades to come. Impacts will only be compounded with continued use. The route is visibly eroding into Rush Creek Road (Road 656). The slug of material building in Rush Creek Road at the junction of this OHV route will erode into roadside ditches and Rush Creek during high rainfall events, increasing turbidity in the Little Applegate River, which harbors habitat for salmon and steelhead.

The Goat Cabin Ridge Route should be closed to reduce erosion, vegetative damage, the spread of noxious weeds, impacts to wilderness character, wildlife, and other environmental impacts. Closure on the lower end should consist of rock rubble and tank trapping. The lower portion of the route, in particular the lower 0.88 miles, will need rehabilitation to reduce hydrological impacts. This will likely include using woody material, boulders, rock, geotextiles and waterbars to reduce run-off and erosion. The upper access will be difficult to effectively close due to the open nature of vegetation and the large area in which the route can be accessed. The upper access is two pronged and covers an area over 250’ long. The upper access would need to be fenced with split rail fencing, lined with strategically placed boulders and other forms of road closure measures. It might also be prudent to post game cameras to catch those violating the closure or defacing the rail fences. A regional example of OHV closure utilizing rail fencing on a large scale can be viewed on the lower end of Eight Dollar Mountain Road on the RR-SNF. This closure has been very effective, is fairly aesthetically pleasing, and has remained durable. Obviously enforcement, monitoring, and prosecution of those violating the closure would also be needed to change use patterns in the area.

Goat Cabin Ridge is an example of how OHV impacts expand, grow, and compound themselves due to lack of management, enforcement, and due to the general ethic of the OHV community. The site is heavily eroded, noxious weeds are spreading in the area, vegetation including grasses, wildflowers, trees, and shrubs are being damaged and destroyed, and trash, fire rings, and inappropriate shooting are also becoming more common due to increased access. The upland impacts are also directly impacting riparian values and are increasing sedimentation and turbidity in the Little Applegate River. Lands with wildland characteristics are also being

heavily degraded. The use of OHVs in this area has created lasting, irreversible impacts to public land resources and ecosystems. The Goat Cabin Ridge Route is one of the region's most egregious and must be closed to all OHV use.

Little Applegate Divide OHV Route

The Little Applegate/Bear Creek Divide extends for over 12 miles from the confluence of Sterling Creek east to Wagner Gap. Much of the ridgeline's south-facing slopes are included within the Dakubetede Roadless Area. Portions of the Dakubetede Roadless Area have been identified by the BLM as a Land with Wilderness Characteristics (LWC). The BLM identified 5,099 acres in the LWC, environmentalists have identified roughly 6,500 acres of wilderness quality lands. The agency has also identified the Sterling Mine Ditch Trail as an Area of Critical Environmental Concern (ACEC), and the state of Oregon has identified the Sterling Mine Ditch Trail as a State Scenic Trail. Portions of the area are also proposed as a central portion of the Jack-Ash Trail, a non-motorized trail leading from Jacksonville to Ashland. Conservation and non-motorized recreational values are very high in the area.

A single-track OHV trail follows the ridgeline for seven miles along the boundary of the Roadless Area and LWC. The trail is an unauthorized, user-created trail that has not been adequately designed or engineered to reduce erosion and other environmental impacts. The trail has also never been subject to Environmental Analysis or public comment despite its significant environmental impacts.

The trail begins at the end of road 39-2-17.0, on a landing currently being utilized for target shooting and littered in trash, shot-up appliances, and other debris. The track begins by immediately climbing a steep and rutted slope at over 20% grade. The track is wide and erosive as it climbs straight up the ridge through thickets of buckbrush. In roughly 0.25 miles the route reaches the boundary of the LWC. The trail climbs to a high, scrubby summit then drops to a low saddle and reaches an old logging road on Hancock Timber land, roughly one mile from road 39-2-17.0.

A steep hillclimb west of Wolf Gap

The route follows the ridgeline on the old logging road, than follows another private road to a steep single-track trail that climbs back to the ridgeline. From the ridgeline the trail enters public land on a steep hillclimb rising nearly 0.25 miles from Wolf Gap. The trail climbs straight up the slope, creating extensive erosion and soil loss. A straight, erosive incision, the width of a dirt bike tire, cuts into the 4' wide trail denuded of vegetation. The incision is 12"-18" deep and continuous for nearly 0.25 miles. The slope is very steep and the tread – far beyond BLM trail standards – is between 20% and 31% grade. Much of the trail on BLM land above Wolf Gap cuts through thickets of mountain mahogany with a diverse native herbaceous understory. The route follows the boundary of the LWC to Wolf Gap, where erosion and debris from the trail has begun piling up at the landing and Wolf Gap Trailhead. Wolf Gap Trail is a non-motorized trail connector to the Sterling Mine Ditch Trail and a proposed Special Recreation Management Area

(SRMA) in the RMP.

The Wolf Gap SRMA is proposed as allowing access to the nearby user-created, motorized trail and has also been proposed as an OHV staging area in the RMP. The extremely damaging user-created routes climbing out of Wolf Gap would be "grandfathered-in" with a "limited to existing" trail designation. The RMP also proposes that the area be utilized in OHV special events with large groups of riders. This will compound environmental impacts, user conflicts, and encourage large-scale trespass on Hancock Timber land, a company that has not been interested in allowing for trail easements, thus OHV use on their land is illegal trespass and the BLM should prohibit this illegal access.

The steep hill climb east of Wolf Gap.

The OHV route continues east of Wolf Gap, heading straight up the steep ridgeline at over 20% grade. The trail is steep and erosive as it follows the LWC boundary to a large grassy butte on the divide between Wolf Gulch and Bear Gulch. There are signs of cross-country travel in the vast grassy clearing and BLM signs stating that the grassy slopes are closed to OHV travel. Perhaps the agency should go one step further and close the OHV track, which provides access to this grassy knoll within the LWC and Roadless Area.

The trail drops quickly to Bear Gap on slopes exceeding 20% grade. The trail is dusty and erosive, cutting through mahogany thickets and groves of juniper. Bear Gap is about three miles from the beginning of the unauthorized, user created trail at road 39-2-17.0. The trail climbs steeply for about 0.5 miles through forested slopes of pine and fir, following the ridgeline and the LWC boundary towards Anderson Butte.

The trail enters large, grassy slopes at the headwaters of Birch Creek and signs of cross-country travel are apparent. No permanent routes have been developed, but OHV users have begun riding into the grasslands. The next 0.5 miles travels through relatively intact native plant communities on the southwest flank of Anderson Butte. This is one of the most scenic sections of the Dakubetede Roadless Area and its wilderness qualities are being greatly impacted by this unauthorized, user-created trail. The route becomes very steep and erosive as it climbs slopes at a 20%-28% grade to the Anderson Butte Lookout Road. This old road was decommissioned and the agency attempted to close the road to vehicle traffic in the past; however, OHV enthusiasts have breeched the berms and "tank traps," and have created more user-created trails, impacting the native rock gardens and juniper balds near the summit.

The main route follows the Anderson Butte Lookout Road east 0.15 miles to a large rock quarry. The quarry is heavily utilized by OHV enthusiasts and is also used for target shooting. Shotgun shells, trash, and OHV tracks mar the scenery as the trail reaches a prominent saddle, then travels east along a BLM road to a second quarry in 0.13 miles. Now about six miles from road 39-2-17.0, the road drops another 0.1 miles down a very broad, erosive track utilized by quads, dirt bikes and full sized trucks. The track has been denuded of vegetation for between 10' and 20' wide. Braided trails wind back and forth from the main track, expanding the already large footprint of this trail. The area is open and rocky, consisting of juniper woodland and punctuated by rock outcrops colonized by Sedum oblanceolatum, a rare and endemic stonecrop found only in the Applegate Valley. This species is listed as a sensitive species by BLM and is

being impacted by OHV use. The area is the within the largest population of western juniper in the Siskiyou Mountains and consists of a rare and unique plant community.

A Google earth image of the wide, braided, user-created OHV trail heading east from the quarries near Anderson Butte.
OHV use is doing great damage to the unique plant communities within the largest stand of western juniper in the Applegate Valley.

Dropping to road 39-2-24.0 the track continues to the east crossing a small section of private timberland, then back onto BLM land. The trail winds across the ridge, first as a 4X4 track 8'-12' wide, then as a single track dirt bike and quad track 4'-7' wide. The trail is braided and wide as it drops down a slope at over 20% grade. The track is 6'-8' wide, with incisions 16" deep.

The track continues east of a low saddle at the junction of roads 38-2-29 and 39-2-12. The route continues as a wide, dusty track on the north slope of the ridge above a section of clear-cut private timber, then into units thinned by the BLM in the Wagner-Anderson Timber Sale. The trail again drops to a saddle at road 38-2-29, climbs a low ridge through grassland and juniper balds, and back to the road around a section of private residential land to Section Line Gap. The trail is roughly 7 miles long from road 39-2-17.0 to Section Line Gap.

The entire length of this route should be closed to OHV use due to the excessive erosion, impacts to the area's roadless and wilderness character, botanical resources, wildlife and hydrology. The impacts associated with OHV use in the area also create conflicts with non-motorized users on the Sterling Mine Ditch Trail and the proposed Jack-Ash Trail.

Applegate stonecrop
(Sedum oblanceolatum)

Anderson Butte Lookout Road

The Anderson Butte Lookout Road has long been closed and decommissioned by the BLM, yet OHV users have breeched the closure and now routinely utilize the old road bed and the adjacent dirt bike trail to reach the mountain's summit and the old lookout site. The road begins at the rock quarry on road 38-2-24 and heads northwest. The road has four closure berms in the first 0.15 miles, all of which have been breeched by dirt bikes and quads. A single-track trail breaks off the road and travels 0.22 miles through fir forest back to the old lookout road. Quickly, an unauthorized, user-created trail breaks off the main track, traveling through diverse rock gardens and juniper barrens. A large population of Sedum oblanceolatum extends across these rock gardens to the summit and numerous colonies are being impacted by OHV use. The trail reaches the lookout road just below the summit. This route should be closed to protect rare and unique botanical resources. Closure should take place at the quarry and closure structures should strive to close the route to all classes of OHV.

The Grub Gulch User-Created OHV Trail

The Grub Gulch User-Created OHV Trail begins on road 38-2-26 on the slopes above Sterling Creek, and climbs 2.4 miles to Anderson Butte. The trail begins at an old log landing that has been turned into an illegal dumping and target shooting area. The OHV route climbs a steep road-cut and follows a gentle wooded ridge for 0.4 miles. The track begins to climb as the ridge steepens, reaching grades of between 15% and 19%. At 0.45 miles the trail meets a decommissioned road utilized for timber harvest in the Sterling Sweeper Timber Sale; the decommissioned road has become a new OHV route intersecting the Grub Gulch User-Created OHV Trail. Star thistle, bull thistle, and mullein grow adjacent to the trail as it climbs into buckbrush thickets and upland prairie, two ecosystems that are very susceptible to noxious weed spread. The presence of star thistle is particularly troubling, as it is not found on the surrounding slopes; it is clearly moving in on the OHV trail and was likely introduce by OHVs.

At 0.59 miles the route becomes increasingly steep, climbing open grassy slopes on 16%-22% grade. The trail rises nearly 0.2 miles to the ridgetop in a sustained up hill climb. At 0.78 miles the trail reaches a junction meeting the Dutch Divide User-Created OHV Trail. The Grub Gulch User-Created OHV Trail drops to the southeast, where the slope is at first relatively gentle, then again drops at a sustained grade of 16%-20%. The drop is straight down the ridge on a 4' wide and erosive track. The trail drops to road 39-2-8 at 1.06 miles and reaches a gated road closure. The closure has been breeched by OHV users with a user-created route on the grassy slope above the gate. The gate is shot full of bullet holes and has become an illegal dumping and target shooting area. Across the road is the continuation of the trail, navigating around a boulder structure clearly meant to close the OHV track. The trail is erosive and wide, and is also catching run-off, creating a gully that spills debris into the roadbed below. The trail climbs straight up the steep ridgeline beneath tall timber. The climb is steep and sustained at between 20% and 27% grade for nearly 0.3 miles. The grade lets up some as the OHV track approaches the ridgeline and intersects another trail in a small, open prairie. The intersection is at mile 1.67.

Beyond the intersection the trail is 12' wide and steep as it drops to a broad saddle north of Anderson Butte. The ridge is gentle, and then the OHV track makes a final climb to the summit of Anderson Butte at mile 2.4.

The Grub Gulch User-Created OHV Trail should be closed to OHV use to reduce erosion, impacts to native plant communities, wildlife, and scenic values. Large sections of trail are simply too steep for motorized use and are generating large amounts of erosion. A section of this OHV route has been proposed as part of the non-motorized Jack-Ash Trail, and OHV use in this area would constitute a significant user conflict. The trail should be closed on roads 38-2-26, 38-2-12.0 and 39-2-8, with additional boulders strategically placed to discourage OHV use. If OHV users should move these boulders, then additional measures should be taken to close the route.

The Dutch Divide User-Create OHV Trail

The Dutch Divide User-Created OHV Trail is an unauthorized, user-created trail extending for nearly one mile from road 38-2-26 to the summit of a grassy butte at the intersection of the Grub Gulch User-Created Trail. The trail climbs steeply, creating excessive erosion at its lower and upper ends. Some portions of the trail also traverse a relatively gentle forested ridgeline dividing Griffin Creek from Sterling Creek in the Little Applegate watershed.

The trail begins at a locked BLM gate on road 38-2-27. The road was gated and routes blocked with boulders to eliminate motorized use. The boulders have been pulled out of place, apparently by OHV users, and are now placed around a large campfire site as "chairs" and camp

"tables." The campsite is littered in trash and shotgun shells. It is clear that illegal dumping has been a problem at this site. User-created trails have been developed around the gate, providing access to decommissioned road 38-2-27 and providing access to the steep, eroded track leading up the Dutch Divide. The user-created trail is 6'-8' wide and incised by dirt bike tracks. The trail climbs straight up the slope on steep grades between 16% and 20%. The trail climbs through mixed woods to decommissioned road 38-2-35.1. After road 38-2-35.1, the terrain becomes less steep and rugged and the trail follows the ridge through mixed conifer groves to road 38-2-35.2. Climbing a road-cut, the trail climbs a steep slope on trail 4'-12' wide. The trail reaches the Grub Gulch Trail at a grassy summit dividing Grub Gulch from upper Dutch Creek.

The route should be closed due to unsustainable trail grades, erosion, and issues involving access to the trail. All routes leading to the more gentle portions of this trail include very steep, erosive and damaging sections or travel on decommissioned roadbeds. The trail creates excessive erosion and impacts to both wildlife and botanical resources.

Deming Ridge Jeep Trail

Trash and target shooting has impacted every pullout, log landing, and quarry in the Anderson Butte region. This photo is at the beginning of the Deming Ridge Jeep Trail.

The Deming Ridge Jeep Trail is a long decommissioned jeep road that was recently utilized in the Sterling Sweeper Timber Sale to access timber sale units on the Grub Gulch side of the ridge. The road was "closed" following the timber sale with a large tank trap/berm at its upper end where it intersects road 39-2-8, yet OHV users have worked their way around the berm, giving themselves access to the trail as it continues roughly one mile to road 38-2-26.

The route begins at a prominent saddle in Section 2 on road 39-2-8. The BLM re-built a "temporary road" from this saddle along the ridgeline to access timber sale units, presumably for the Sterling-Wolf Timber Sale. The road was closed with large boulders; however, OHV users removed the boulders, and now there is access for all class of motor vehicle. The track continues along the gentle ridge accessing a small camp and target-shooting site. The track then drops very steeply down a road-cut to road 39-2-8 at its intersection with the Deming Ridge Jeep Trail.

The Deming Ridge Jeep Trail begins at a log landing strewn in trash, shotgun shells and shattered clay pigeons. The area was recently logged in the Sterling Sweeper Timber Sale, and a berm was built to close off the recently graded jeep trail utilized for logging operations. OHV riders have worked their way around the berm and are accessing the "closed" roadbed. The jeep trail was graded and widened during the logging operations and appears to now be attracting motorcycle riders. The trail continues along the ridgeline, climbing, and then dropping steeply on 20%-25% grades to a low saddle surrounded by grassy prairie. The potential for cross-country travel and user-created trails to proliferate is high due to the open nature of the terrain. Star thistle has infested portions of the ridge and will likely be spread by OHV use. Roughly 0.6 miles from the start of the jeep trail, a 4,700' summit is reached. The road is faint and the roadbed covered in dry grassy fuels, creating a severe fire risk when OHVs travel the ridgeline during fire season.

The trail drops at 15%-20% grade to yet another road closure berm at the intersection of the jeep track and road 38-2-26. The berm and rock rubble used to "close" the jeep road has been circumvented by OHV trails, allowing access to the Deming Ridge Jeep Trail.

The Deming Ridge Jeep Trail is clearly intended to be decommissioned and closed to motorized traffic. The potential for continued user-created routes and cross-country travel is very high, as is the spread of noxious weeds. OHV use on this trail during summer months constitutes a serious fire risk. The trail, although technically already closed, should be prioritized for permanent closure by physically making access to the trail impossible. Berms, rock rubble, and boulders should be strategically placed at the upper and lower end of this unauthorized OHV route to facilitate an effective road closure.

Areas outside the proposed Anderson Additions RMA

Bald Mountain/ Historic Front Range Trail

The Bald Mountain area supports a small roadless area in the upper Little Applegate River Watershed. At roughly 1,500 acres the area is small, but it is located between the McDonald Peak Roadless Area on high-elevation Forest Service land, and the Dakubetede Roadless Area on low-elevation BLM lands in the Little Applegate Canyon. The Bald Mountain area provides connectivity between the two relatively intact habitats and supports a unique and interesting mixture of high- and low-elevation plant communities. The area also supports the only Oregon population of the Siskiyou mariposa lily (Calochortus persistens). The plant is extremely rare and protected as a threatened species. Only a handful of sites exist within this species' limited range, emanating north and west from Yreka, California. The Bald Mountain population is directly adjacent to the trail and could easily be impacted by OHV use. Other sensitive species directly adjacent to the trail include large populations of Applegate stonecrop (Sedum oblanceolatum), and on the forested north-facing slope, a large population – a rarity for southern Oregon – of tall bugbane (Cicimifuga elata).

The area is accessed by an unmaintained section of the Front Range Trail, a historic pack trail traversing the Anderson Butte ridgeline from Wagner Gap to Sterling Creek. Only small sections of the trail can still be followed. The Bald Mountain portion is proposed as a section of the Jack-Ash Trail leading from Jacksonville to Ashland, Oregon. Historically this trail has been non-motorized and should remain that way.

The area appears to be getting very little, if any OHV use. Being a vital link in the proposed Jack-Ash Trail, the region should be managed for non-motorized use and officially closed to motorized traffic.

Point Mountain User-Created OHV Trail

Point Mountain is a diverse and interesting summit located directly between the Dakubetede Roadless Area and the Holton RNA. The area provides connectivity between the two ecologically intact regions and offers outstanding scenery. The area is proposed as a section of the Jack-Ash Trail, a non-motorized trail proposed to connect Jacksonville and Ashland, Oregon. Given its proposed non-motorized trail designation and the proximity of the area to the Dakubetede Roadless Area and the Holton RNA, motorized use should be prohibited.

The area supports relatively intact forests of Douglas fir along with open, grassy slopes speckled in old-growth ponderosa pine, groves of western juniper, and healthy populations of many diverse wildflowers. The area is one of the region's best examples of western juniper

woodland, a plant community that is extremely uncommon west of the Cascade Mountains. The population on Point Mountain is part of the disjunct local population extending from Wolf Gap to Wagner Butte.

Relatively intact native plant communities are being impacted by OHV use on Point Mtn., between the Holton RNA and the Dakubetede Roadless Area.

The unauthorized, user-created OHV trails leading across the southern face of Point Mountain are doing significant environmental damage and could someday facilitate OHV use in the adjacent RNA. Motor vehicle use in RNAs is strictly prohibited.

The trail begins on road 39-1-18 on a 20%-25% grade. The trail is 18" wide and has become incised to 8" deep. It has become braided with use and is expanding out onto the grassy slopes, which represent very few physical barriers to cross-country travel and continued, unauthorized route creation. A very steep hill climb joins the trail and drops into road 39-1-18 below, at times the hill climb reaches over 30% grade. Above the hill climb, the trail rises at nearly 30% grade up a series of braided trails through rabbitbrush and grassland. Shortly, the trail levels out and heads west across a south-facing slope filled with wildflowers, a few old-growth pine and rocky juniper outcrops. The area is diverse and interesting, supporting some of the most impressive displays of wildflowers and flowering shrubs in the area. A large colony of showy milkweed (Asclepias speciosa) can be found below the OHV trail along road 38-2-24. Monarch butterflies abundantly utilize this milkweed colony, benefitting from the nearby nectar source of native flowering plants on Point Mountain's southern face. These plant communities are being negatively impacted by OHV use.

The trail drops into forests of late-seral fir on the mountain's western flank and through mostly undisturbed habitat to road 39-1-17 near Section Line Gap. The final drop to road 39-1-17 is straight downhill on an 18%-22% grade. The trail is erosive, 6'-8'wide and incised 16" deep.

The Point Mountain User-Created OHV Trail should be closed to all motorized use and a corridor designated for the non-motorized, Jack-Ash Trail to provide adequate and appropriate public access. Closing the user-created trails on Point Mountain should also discourage OHV access to the Holton RNA. Closure of the unauthorized trails and hill climbs will reduce erosion, impacts to botanical diversity, vegetation loss, the spread of noxious weeds, and the potential for OHV users to access the Holton RNA.

Local OHV Hill Climbs

Other significant OHV impacts in the area include very steep hill climbs on the area's open and grassy slopes. Numerous hill climbs are found in the area, including trails on over 30% grade that cross dry headwater stream channels and channelize run-off into headwater streams, increasing peak flows and erosion. The area is very susceptible to the proliferation of user-created trails due to the open nature of the terrain.

One specific hill climb drops down steep and erosive slopes from road 38-2-29 at a saddle near the intersection of road 39-2-12. The hill climb heads straight through a population of heartleaf milkweed (Asclepias cordifolia), a host plant for the monarch butterfly. Monarch

A monarch caterpillar eating heartleaf milkweed within three feet of an active hill climb. Plants, and no doubt monarch butterflies, chrysalises, and caterpillars have been killed by OHV use in the area.

populations have crashed in recent years due in part to habitat loss and declines in milkweed populations. The precipitous drop in monarch populations has made the butterfly a candidate for listing under the Endangered Species Act. Milkweed is the only food source for monarch caterpillars and is essential for the butterfly's complex lifecycle. Heartleaf milkweed is the main native milkweed found in the mountains and foothills of Southwest Oregon, providing a crucial link between the monarch's mountain/foothill habitat to the valley bottoms where the more common showy milkweed (Asclepias speciosa) and narrowleaf milkweed (Asclepias fascicularis) grow in abundance.

Local heartleaf milkweed populations are widely distributed and often very small in size. Noxious weeds and non-native grasses have overrun many of the native habitats capable of supporting heartleaf milkweed. The plant appears to be uncommon throughout Southwest Oregon, colonizing scattered rock outcrops and open, south-facing slopes.

The population of heartleaf milkweed scattered across the Dakubetede Roadless Area appears to be one of the region's largest; however, most of the population is widely dispersed and the population size is still relatively small, consisting of a few scattered plants here and a few scattered plants there. Large colonies of heartleaf milkweed are present in the Dakubetede Roadless Area, but are rare. Very little reproduction can be found and most of the population appears to be old, established plants. It is very likely that plants trampled and/or crushed by OHV use will be killed, especially in high use areas.

The hill climb in question cuts straight through a population of numerous mature heartleaf milkweed plants. One plant is being directly impacted by the hill climb and is being physically damaged by OHV use. At the time I visited, another plant had nine monarch caterpillars utilizing it, not more than three feet from the active hill climb. Monarch caterpillars are wildlife that cannot disperse away from the disturbance or find nearby habitat. These nine healthy caterpillars were living precariously on the edge, three feet from sure death with no way to escape. Active use of the hill climb could very easily crush and kill the defenseless caterpillars who cannot leave their host plant and are not able to flee from oncoming danger.

A Google earth image of the hillclimb where heartleaf milkweed and monarch butterfly habitat are being impacted by OHV use. The slopes are much steeper than they appear in this photo.

These are the real and sometimes subtle impacts of OHV use. Although less evident on the landscape then the raw, tire-churned earth and erosive, incised tire tracks of many OHV routes. The more subtle impacts include the loss of native vegetation and the disruption of native plant

communities, the spread of noxious weeds, the destruction of habitat for important native pollinators, and the potential for the localized extirpation of species.

The hill climb, beginning at the intersection of roads 39-2-29 and 39-2-12, represents a severe impact to the ecology of this unusually productive heartleaf milkweed colony. The hill climb is also steep and very erosive, including grades of more than 30%. The ruts from repeated OHV use have cut to 6" deep and are creating rill and gully erosion leading straight into the headwaters of Birch Creek (Muddy Gulch). The trail is beginning to become braided with multiple erosive routes meeting in the bottom of the dry gulch. No natural barriers to reduce expansion of these hill climbs exist and user-created trails and heavy trail braiding will no doubt develop over time. This hill climb is within the boundaries of the Anderson Additions RMA.

Left: The hillclimb impacting monarch butterfly and heartleaf milkweed habitat. Right: The hill climb dropping into Rush Creek from road 39-2-29. Both user-created trails impact wilderness quality landscapes in the Dakubetebede Roadless Area.

Another damaging hill climb can be found off road 39-2-29 near Section Line Gap in the open grasslands near the ridgeline. The route is a user-created trail that exceeds 30% grade and is incised to 8" in some portions of the trail. The trail drops from road 39-2-29 from a beautiful patch of native wildflowers into the headwaters of Rush Creek. The trail drops to the gulch and into a forest of oak, pine, and fir before reaching private land in upper Rush Creek. Environmentalists have identified this as a portion of the Dakubetede Roadless Area, while the BLM has left it out of both the Dakubetede LWC and the Anderson Additions RMA. Regardless, the BLM land in the area is of wilderness quality, except the unauthorized hill climb marring its beauty. The OHV trail extends through the trees as a wide and erosive track before reaching private road in section 18.

The local hill climbs should be closed to OHV use with an emergency closure order. As an initial act the routes should be posted closed, woody debris should be spread across the trails near where they intersect road 39-2-29, and the area should be closely monitored by law enforcement to discourage, prevent, or prosecute violations. If hill climbing persists on these sites more aggressive measures should be taken, such as fencing, trail camera surveillance, and

route obliteration. OHV users should also not be allowed to create new hill climbs to circumvent these closures. If new hill climbs are developed or use persists on these existing hill climbs, OHV use on road 39-2-29 should be officially closed. The erosion, soil loss and hydrological impacts created by hill climbs in this area will be irreversible if OHV use continues, creating steep, chronic, erosion gullies that will increase peak flows and sedimentation in the Rush Creek and Birch Creek watersheds.

Decommissioned and Closed Roads currently being utilized by OHV riders in the Anderson RMA

The following roads have been closed or decommissioned by the BLM to reduce environmental impacts associated with continued vehicle use. These roads have not been effectively closed and OHV users often negatively impact these roadbeds with deep tire incisions, capturing road run-off and increasing erosion. The environmental benefits of road closure cannot currently be realized due to rampant, unauthorized OHV use. OHV riders, creating significant impacts to important natural resources, are also likely utilizing many more decommissioned roads in the area. The list below is not exhaustive, nor does it represent all roads currently being impacted in this manner.

- 38-2-8-2.0
- 38-2-8-11.0
- 38-2-8-16.0
- 38-2-35.1
- 38-2-35.2
- 38-2-28-27.0
- 38-2-24-12.2

Recommendations

The BLM should inventory all unauthorized, user-created OHV trails in the Anderson Additions RMA and surrounding area. The BLM should institute a halt on all new, user-created trail development and monitor the area for violations. Routes identified in the inventory that are generating significant environmental impacts, that are within the Dakubetede Roadless Area and LWC, or are located within the designated Deer Winter Range Area should be permanently closed and prioritized for obliteration, rehabilitation, and monitoring. All user-created OHV trails facilitating trespass on nearby private lands or intersecting the proposed non-motorized Jack-Ash Trail should also be permanently closed. All trails identified in this report should be closed to motorized use pursuant to Executive Orders 11644 and 11989 due to resource damage, environmental impacts, and impacts to adjacent private land. The closure should be instituted with an official Closure Order and made legally enforceable. If continued resource damage, route creation, or OHV use on closed trails persists, the BLM should institute an area-wide closure including all BLM lands and roads in the area between the Rogue and Little Applegate Valleys, from Sterling Creek and Poormans Creek and east to Wagner Gap. Real environmental impacts and persistent illegal activities should be met with real ramifications. If closure measures are ineffective and prove unenforceable, then larger scale, area-wide closures will be needed.

Middle Applegate Valley

In the Western Oregon RMP DEIS numerous Recreational Management Areas are proposed in the Middle Applegate Valley:

- Enchanted Timber RMA, in the Forest Creek and China Gulch drainages.
- Thompson-Cantrall RMA, which extends from Ferris Gulch and Thompson Creek to Ruch and nearly the Upper Applegate Valley on Star Gulch.
- Enchanted Wellington RMA, located outside of Ruch, Oregon.
- West Applegate Ridge Trail RMA, along a proposed non-motorized trail corridor on the Applegate/Rogue River Divide.

Additionally, two roadless areas identified by the BLM as Lands with Wilderness Characteristics (LWC) exist within the Middle Applegate watershed, the Burton-Ninemile LWC and the Wellington Mountain LWC. The Burton-Ninemile extends from Ninemile Creek to Star Gulch near Tallowbox Mountain, Burton Butte, and Mount Baldy. This area is the largest LWC in the Applegate drainage and includes spectacular diversity. The Burton-Ninemile LWC is embedded within the proposed Thompson-Cantrall RMA.

The Wellington Butte LWC, inventoried at 5,711 acres, extends from Humbug Creek to Forest Creek across the arid slopes of Wellington Butte. Balls Branch Humbug Creek, Long Gulch, and portions of both Matney and China Gulch are included. The Wellington Mountain LWC is located within the Enchanted Wellington RMA.

A view across the Burton-Ninemile Roadless Area from the old Mount Baldy Jeep Road. This road should be closed to protect wilderness and ecological values.

The third large RMA is called Enchanted Timber and includes a large portion of Forest Creek and portions of China Gulch.

Thompson-Cantrall RMA

The Thompson-Cantrall RMA is a large, sprawling RMA extending from Ferris Gulch and Thompson Creek to Cantrall Buckley Park on the Applegate River near Ruch, Oregon and nearly to the Upper Applegate Valley on Star Gulch. The area includes a relatively large contiguous section of BLM land in the Thompson Creek, Star Gulch, Chapman Creek, and Keller Creek Areas. This large section of BLM land includes the Burton-Ninemile LWC, located mostly on the south-facing slopes of Star Gulch and the forested upper portions of Ninemile Creek. The area supports very diverse plant communities including chaparral, grassland, oak woodland, deciduous forest, and mixed conifer forest. Numerous rare plants can be found in the area, including the only population of giant death camas (Toxicoscordian exaltatum) in the state of Oregon. A decommissioned road system that heads across the northern boundary of the area and cuts into the heart of the LWC on

Ladybug Gulch, could be developed into a spectacular, relatively easy and accessible non-motorized trail. The Burton-Ninemile LWC is the largest LWC identified by the BLM in the Applegate drainage and has very high conservation value.

Other portions of the Thompson-Cantrall RMA extend into Ferris Gulch, the slopes and ridges surrounding Thompson Creek, as well as Chapman Creek, Keeler Creek, and Rock Creek near Ruch, Oregon. These areas border rural residential properties, ranches, vineyards, and homesteads.

Very little OHV use is currently encroaching upon the Burton-Ninemile Roadless Area and LWC and the BLM should actively work to keep it that way. The Applegate Valley OHV Monitoring Project surveyed the wildlands for OHV routes and impacts, including the decommissioned portions of road 39-4-23 and 39-4-10. No OHV encroachment was found on these routes. A few days were spent walking these routes and the boundaries of the LWC. One route adjacent to the LWC was identified as potentially sustaining OHV use. A description of this route and recommendations for closure are listed below:

The north slope of Mount Baldy was left out of the BLM's Land with Wilderness Characteristic (LWC) designation. The Mount Baldy Jeep Road has naturally rehabilitated itself and is no longer passable by any motorized vehicle. The road should be closed and the area included in the BLM's LWC designation.

Mount Baldy Jeep Road

The Baldy Mountain Jeep Road begins at a low saddle in section 12 adjacent to the closed portions of road 39-4-10. The area borders the Burton-Ninemile LWC to the south and road 39-4-12 extends east towards Baldy Mountain. Road 39-4-12 is currently identified as the boundary of the LWC and should be closed to motorized travel. The road continues roughly one mile to the summit of Mount Baldy in a spectacular wilderness setting. Proper road closure could be attained with rock rubble and berms. Currently the road is partially brushed over and is receiving little to no OHV use. Despite the current lack of OHV evidence, portions of the road have been recently cleared to provide OHV access on the lower quarter of the route. Active route development and clearing is taking place and should be addressed by creating effective physical closure of the jeep road. The area north of the jeep trail consists of intact, forested stands of Douglas fir and also sustains wilderness characteristics. The small section of land between roads 39-4-12 and 38-3-33 should be inventoried within the LWC and protected from OHV use that would degrade the area's wilderness character. Mount Baldy should be made accessible by a non-motorized trail linking together Tallowbox Mountain, Mount Baldy, and Ladybug Gulch.

Recommendations

Road 39-4-12 currently represents the boundary of the LWC and should be closed to vehicle traffic to protect wilderness characteristics and reduce the potential for user-created routes to encroach upon the area. The Burton-Ninemile Roadless Area and LWC should be expanded to include BLM lands between road 38-3-33 and 39-4-12. Other areas of potential expansion include lands north of road 39-4-23 on the northwest slope of Tallowbox Mountain in section 10.

The area supports mature forest and wilderness characteristics. The closure of road 39-4-23 provides an opportunity to identify more wildland in the area. The current OHV closure in Ninemile Creek should also continue to be implemented and enforced to protect watershed and wildland values.

Enchanted Wellington RMA

The Enchanted Wellington RMA is broken into two separate units, one east of Humbug Creek and another west of Humbug Creek and east of Slagle Creek. The eastern unit closely mirrors the boundaries of the Wellington Mountain LWC, while the western portion is centered around the Old Blue Mountain area on the ridgeline dividing Humbug Creek and Slagle Creek. The proposed West Applegate Ridge Trail extends through both units of the area and has been promoted as a long distance non-motorized trail.

Currently OHV use is impacting the area with unauthorized, user-created trails being crudely punched into otherwise mostly unroaded and relatively inaccessible BLM lands. Extensive user-created trail systems are badly impacting the eastern portion of the area, including impacts to riparian areas, botanical values, hydrological values, wildlife habitat and wilderness characteristics. The development of OHV trails in the area has been highly controversial with many in the Applegate Valley supporting the Applegate Trails Association's proposal for non-motorized use in the Wellington Mountain LWC. The Applegate Valley OHV Monitoring Project conducted extensive field surveys in the Wellington Butte Region. Below are reports for specific trails in the Enchanted Wellington RMA and Wellington Mountain LWC.

Wellington Mine Road

Erosion pouring off OHV trails during a heavy rain, near Long Gulch Saddle.

The Wellington Mine Road, also known in the non-motorized recreation community as "The Heart Trail," is an old mine road built to an isolated mine overlooking lower Humbug Creek.

The road starts at Long Gulch Saddle and heads west towards Humbug Creek. The road traverses the long, wild ridgeline dividing the Balls Branch of Humbug Creek from Long Gulch and the Applegate River in the Wellington Mountain LWC. The high point on the ridge is Wellington Butte. Numerous decommissioned OHV routes drop to the saddle and trailhead. This saddle was the site of small debris flows that poured down the steep OHV tracks, filling the road intersection with mud and debris during a heavy rain event on May 25, 2012. A local resident documented the debris flow and the BLM utilized an emergency trail closure, obliterating and stabilizing the existing user-created trails and posting them "closed" where they meet road 38-3-7.

In 500' the road reaches a barricade erected in November of 2012 by the local non-profit, Applegate Trails Association (ATA). On October 31, 2012, the road was "closed" to motorized use by BLM District Manager John Gerritsma. With broad-based community support, ATA raised funds to install two road closure devices and decommission the associated user-created

trail leading into the Wellington Butte Roadless Area. Volunteers facilitated through ATA completed work on November 8, 2012.

By November 26, 2012, District Manager John Gerritsma could not enforce or support the closure of the Wellington Mine Road because he had not followed proper road closure procedures, did not contact the Medford Motorcycle Riders Association (MRA) or the Association of O&C Counties regarding the closure, and had not provided an adequate alternative route for exclusive motorcycle use in exchange for the closure. He had also been receiving complaints from MRA members who wanted to ride OHVs through the wildlands.

The BLM moved one of the road closure devices in December of 2012, opening the road once again to OHVs, but not full sized vehicles. In August 2014, OHV enthusiasts, effectively reopening the Wellington Mine Road to all motorized traffic, physically moved the remaining road closure barriers, without authorization. This has left the "road" open by default and the issue has steadily become a major point of contention between motorized and non-motorized users in the area.

Beyond the barricade the road drops, collecting run-off in high rain events. The result is a 0.25-mile long, erosive and incised gully running down the center of the road. This gully is then captured by the beginning of the “Little Italy Trail,” an unauthorized user-created trail traveling northwest across the high ridgeline of the Wellington Wildlands and LWC. The Little Italy Trail drops directly into the headwaters of the Balls Branch Humbug Creek, hydrologically connecting this erosive roadbed to the riparian reserves below.

An OHV related landslide at the end of the Wellington Mine Road. Oversaturation and excessive road run-off channelized by OHV ruts caused this active landslide. Further OHV use will only compound the problem.

The road continues past two clustered lady slipper (Cyprepedium fasiculatum) sites, both adjacent to the road on the uphill side. The populations are very small and are currently undisturbed. A Fritillaria gentneri site is also posted directly adjacent to the road near a low saddle in Section 13.

At 2.14 miles from Long Gulch Saddle the road crosses private land. The road then begins to drop, leaving the ridgeline and winding down a steep erosive west-facing slope. The road, at times, exceeds 20% grade. Numerous sections include deep, incised gullies running up and down the hillside. The road winds through buckbrush, manzanita, and oak to a mine adit on the slopes above the Humbug Creek drainage. Having captured storm runoff, the road drops to a landing at the entrance of the mine adit, where oversaturation has triggered a small landslide directly above a number of residential homes on Humbug Creek. Continued OHV use will only further destabilize this active landslide. The roadbed should be rehabilitated to reduce erosion and closed to motorized use. The Applegate Trails Association has proposed the Wellington Mine Road be designated a non-motorized hiking trail. The designated hiking trail should also terminate on the ridgeline in Section 13, at a low saddle before the small piece of private land and before the road takes this steep drop on unsustainable and erosive tread to the mine site.

Wellington Ridge User-Created OHV Route

The steep, grassy slopes at the headwaters of Balls Branch Humbug Creek are not only a scenic highlight in the Wellington Butte Roadless Area and LWC, but they are also currently accessible by OHV trails. The potential for cross-country travel and new route creation in this open landscape is very high.

The Wellington Butte Roadless Area is currently subjected to unauthorized and inappropriate OHV use on the high ridgeline dividing Long Gulch and the Balls Branch of Humbug Creek from Forest Creek. This high divide creates much of the roadless area's northern boundary. OHV trails have penetrated the area, traveling roughly three miles across the ridgeline from the spectacular headwaters of the Balls Branch, over Long Gulch Saddle, to China Gulch Saddle. The route includes long stretches in open grassy slopes, very susceptible to cross-country travel. The route also includes portions that damage riparian areas in the upper portions of the Balls Branch Humbug Creek, and very steep erosive sections that are rutted up to 4' deep, impacting hydrology and soil stability on the ridgeline above China Gulch. This long ridgeline route overlaps very closely with the proposed West Applegate Ridge Trail. The ART would provide for public access and recreational opportunities that are more consistent with the region's ecological values and the area's beautiful wilderness character. This route should be closed to all motorized vehicle use and designated as a vital link in the Applegate Ridge Trail.

This route is referred to as the "Little Italy Trail" by OHV users, but is known as "The Sundown Trail" by the local hiking community. The route begins at Isabelle Saddle on decommissioned road 38-3-5, navigating around the gate which provides access to the closed roadbed beyond. The track is 5' wide and incised up to 12" deep where dirt bikes have churned, compacted, displaced, and made soils more susceptible to erosion and run-off. The trail quickly turns into a very wide, denuded single track trail between 12' and 20' wide as it enters the Wellington Butte Roadless Area and LWC. The location is on the boundary of the Wellington Butte Roadless Area and John's Peak Timber Mountain OHV Area. Portions of the trail exceed 18% grade.

At 0.76 miles a single patch of star thistle is found at the second crossing of road 38-4-1.1 as it touches the ridgeline. The trail crosses briefly to the grassy south-facing slopes where both the potential for noxious weed spread and cross-country motorized travel is very high. The trail continues 1.02 miles to another saddle and road crossing, where a BLM sign states: "Vegetation Study Site, Do not disturb vegetation." Flagging marks the location of the study site, which is impacted by the unauthorized OHV trail and the associated disturbance to vegetation and soils. Also posted is a "Plant Site" sign stating that Gentner's fritillaria (Fritillaria gentneri) grows

nearby. The single-track trail climbs straight up from this saddle on 28% grade, sustained for roughly 0.10 miles.

The trail reaches the ridgeline, then drops very steeply, again leaving the boundary of the John's Peak/Timber Mountain OHV Area and into the Wellington Butte Roadless Area. The drop is steep and often exceeds 20% grade. At mile 1.6 the trail winds into the headwater gulches of Balls Branch, Humbug Creek's last wild tributary. The trail is wide, up to 9', and incised 14"-18" deep. The trail tread is angled and prone to failure, as ruts and trail blowouts make travel more difficult. OHV riders widen the trail by driving outside the ruts and on less eroded terrain, this extends the rutted, eroded area, causing significant environmental impacts. The trail cuts through numerous headwater gulches before it reaches the Wellington Mine Road at mile 1.65.

Upon reaching the old mine road the track continues to the east, following the old track to Long Gulch Saddle. The road is steep and erosive throughout much of this portion, having been incised into little gullies by narrow, downward cutting dirt bike tracks.

Heavy rutting created by repeated OHV use on very steep slopes above China Gulch Saddle. Multiple gullies from between 3.5'-4' deep have developed along this ridgeline at the boundary of the Wellington Butte Roadless Area.

The road leads to Long Gulch Saddle where most riders continue along road 38-3-7 to a large rock quarry used for target shooting and littered in garbage. The track again narrows into an unauthorized, user-created, single-track trail on very steep terrain. The trail reaches the ridgeline 0.50 miles from Long Gulch Saddle and a little over two miles from Isabelle Saddle. The trail drops down the ridge about another half mile to China Gulch Saddle on some of the area's most heavily impacted and eroded OHV trails. The route is very steep, including sections over 30% grade. The track is badly eroded, forcing OHV riders to avoid the deep ruts created by past riders, only to widen the trail and further erode deep gullies on this ridgeline site. The gullies and compacted, denuded ground around the gullies are clearly channeling run-off and severely altering the area's hydrology. The trail is braided, creating a broad 12'-15' wide swath of compacted, denuded soils. Incisions created by repeated riding are numerous within the compacted trail area and extend 3.5'-4' deep. The trail drops to an old logging road; this intersection is badly eroded and incised as deep, braided OHV tracks drop to the roadbed. Surprisingly (or perhaps not surprisingly) the BLM has embraced this trail, having posted signage allowing quads and dirt bikes to utilize the route despite the severe erosion, hydrological concerns, and ever-expanding footprint. The action clearly shows the agency's indifference to OHV impacts and bias towards OHV use, despite flagrant environmental impacts

BLM trail signs and deep, braided erosion gullies directly below the ridgeline, with 4' deep ruts. The BLM is condoning and supporting extreme OHV impacts by designating this trail for OHV use.

and concerns that would support route closure. The route, although designated – without specific environmental review or public comment – is clearly not being "managed," as no erosion control structure, switchbacks, trail hardening, or other forms of rehabilitation have taken place. The situation is now beyond repair or mitigation, and the route must be closed to all forms of motorized use.

The ATA has proposed that the ART traverse this long ridge, extending from China Gulch Saddle to Isabelle Saddle, yet they have acknowledged the inappropriate nature of this specific OHV trail segment and have proposed creating new non-motorized trail on the south side of the ridge. This non-motorized trail would be designed and engineered to avoid the environmental impacts associated with steep, straight pitches like those currently favored by OHV riders. ATA will be funding an Environmental Analysis and working through the BLM's NEPA process to design, review, and hopefully designate the Applegate Ridge Trail; following designation the group can break ground on the proposed ART.

Meanwhile, OHV riders have worked outside agency approval processes, creating unauthorized, poorly designed, user-created trails that the BLM has, in the past, tried to "grandfather" into designation without environmental analysis or public comment. Clearly, the BLM's bias and political corruption towards OHV use are evident in the agency's management decisions and have created and encouraged the current renegade nature of OHV use in the Medford District. OHV riders and groups must be held to the same standards as non-motorized recreation groups and trails; all OHV trails should be subjected to environmental analysis, adequately designed to minimize environmental impacts, and subjected to BLM Environmental Analysis and public comment. No more user-created trails should be allowed to be developed by OHV users on the Medford District, and perhaps most importantly, routes currently creating significant environmental damage or user conflicts should be closed to OHV use and rehabilitated to minimize environmental impacts and chronic erosion issues.

Matney Gulch OHV Track

The Matney Gulch OHV Track is an unauthorized, user-created trail built within the Wellington Butte Roadless Area and LWC. The route includes fourteen stream crossings, ten in dry gulches and four through intermittent streams. The route also facilitates trespass on private land.

The Matney Gulch OHV Track begins along road 38-3-16.1 and heads west through mixed conifer forest, hardwood stands, oak woodland, and chaparral. The trail climbs roughly 600' from the road and on very steep 25%-30% grades, to a low spur ridge. The track is 4'-7' wide and built for quad use. The track quickly drops at roughly 25% grade into a dry gulch. In the next half mile the track crosses three dry gulches and three intermittent stream channels, including the mainstem of Matney Gulch. The road follows the mainstem of Matney Gulch within the riparian reserve and at times within feet of the stream channel for over 0.3 miles.

After a few more gulch crossings the track crosses onto posted private land at mile 1.06. The owners of this parcel have, for years, tried to keep OHV users from trespassing on their property from the BLM land above. Their attempts have not been successful and BLM has not contributed by closing the unauthorized track that accesses their land. The track continues through dry grass, constituting a severe fire danger directly adjacent to many residential properties.

At 1.21 miles from China Gulch Road, the track again enters public land and crosses two more gulches in the next 0.2 miles. At 1.41 miles a heavily used track joins the Matney Gulch OHV Track from private land below. In the next 0.2 miles another intermittent stream and three dry gulches are crossed. At mile 1.85 another quad track joins the OHV route from private land below.

Roughly two miles from China Gulch Road the Matney Gulch OHV Track comes to an abrupt halt in the bottom of a small canyon.

The Matney Gulch OHV Track should be closed to OHV use and monitored for closure violations. The track facilitates private land trespass, impacts numerous riparian areas, and introduces motorized use within the Wellington Butte Roadless Area and LWC.

China Gulch

China Gulch Road travels through private land for about two miles, reaching a locked BLM gate and road closure. OHV riders have circumvented the gate and numerous user-created OHV trails extend into various portions of the watershed. In general, the watershed is experiencing fairly extensive OHV use and the impacts associated with this use are growing. It is recommended that the entire watershed be closed to OHV use and trails rehabilitated to reduce erosion, route proliferation, hydrological impacts, noxious weed spread, and impacts to native vegetation.

China Gulch OHV Hill Climb

This user-created trail starts just past the yellow gate on China Gulch Road and travels east directly up very steep and erosive slopes. The trail climbs roughly 0.5 miles to the Oregon Belle Loop Road.

The lower portion of the trail winds through oak, pine and madrone woodland at a sustained 20% grade. The track is between 2’ and 6’ wide and incised by motorcycle tires up to 18” deep. The upper portion of the trail is even steeper, reaching up to 28% grade. The track climbs through grassy slopes and buckbrush thickets to the ridgeline and then on to the Oregon Belle Loop Road.

The trail is far too steep to be considered a sustainable trail tread. Erosion concerns and lack of adequate trail drainage necessitate closure of this user created OHV route.

China Gulch Meadows

China Gulch Meadows is a broad, open meadow at the upper end of China Gulch and within the boundary of the Wellington Butte Roadless Area and LWC. The meadow is adjacent to the closed portion of China Gulch Road and surrounded in mixed conifer forest and oak woodland. The topography is rolling and the upper portions of China Gulch, a small intermittent stream, have become heavily degraded by OHV use.

The large meadows at the head of China Gulch have become a “play area” for OHV users who have developed a web of trails doing great harm to ecological values. The area is inside the boundaries of the Wellington Butte Roadless Area and LWC.

The meadow has become a “play area” where OHV enthusiasts have created a web of trails. The trails crisscross the meadow, constituting a significant loss of vegetative cover, soil compaction, erosion, and hydrological impacts. The trails crosses the small, ephemeral channel in numerous places and hill climbs are being created on the steep slopes above, providing a direct connection between the erosive trail tread and the stream channel. In other cases small gulches have been turned into compacted trails and the banks used as “moguls.” Based on Goggle Earth imagery analysis it is estimated that 15-20% of the meadow has been denuded of vegetation and is in a barren, compacted state. The soil type is Manita loam; the soils are typically deep, but due to significant clay content have a high potential for compaction and excessive run-off creating erosion. These concerns are compounded by heavy OHV use.

The meadow is also infested with star thistle, a problem that will only get worse with continued OHV use and soil disturbance. The use of this area by OHVs will also constitute a significant vector for weed spread across the broader landscape, as OHVs have been shown to spread weed seed far from currently infested sites through the transportation of mud and debris from infested areas.

Hill climbs and OHV trails lead through the surrounding conifer forests and in the adjacent oak woodlands. Trails also impact riparian vegetation.

With OHV closure and site restoration the area could be utilized for non-motorized access to the Applegate Ridge Trail and the Wellington Butte LWC. Non-motorized use would be far more appropriate and sensitive to ecological concerns. The extreme environmental impact of OHV use in the area should be addressed with a watershed wide, emergency OHV closure to protect ecological and wildland values. Hiking trails could lead to the meadows and beyond to the closed portion of China Gulch Road, reaching the ridge at the Applegate Trails Association’s kiosk and trailhead at China Gulch Saddle.

China Gulch Road

A wide, erosive hill climb on upper China Gulch Road.

A large yellow gate closes the upper portion of China Gulch Road, a few miles from Highway 238. The road closure has been breeched by OHV users in all classes of vehicle, and the road has been impacted by inappropriate OHV use. Hill climbs and OHV routes cut the road's switchbacks in some places, creating erosive road failures up to 20" deep. The upper most hill climb reaches slopes in excess of 25% grade. Portions of this route reach 24' wide due to multiple braided trails crossing one another, making a broad denuded area cut by dirt bike ruts. Visible erosion is occurring and spilling into the roadbed below. The upper portions of China Gulch Road should be closed to motorized vehicle use, including quads and motorbikes. The area is within the Wellington Butte Roadless Area and would be better utilized as a non-motorized hiking trail accessing China Gulch Saddle and the proposed Applegate Ridge Trail.

Decommissioned and closed roads currently being utilized by OHV riders in the Enchanted Wellington RMA

- 38-3-16
- 38-3-16.1
- 38-4-1.1

Recommendations

Due to extreme resource damage, the BLM should begin by closing the entire China Gulch basin to OHV use. The agency should also consider expanding the boundaries of the Wellington LWC to include all BLM land west of the Oregon Belle Loop Road. Non-motorized use should be emphasized in the Wellington Butte Roadless Area, LWC, and in the vicinity of the Applegate Ridge Trail.

The BLM should also inventory all unauthorized, user-created OHV trails in the Enchanted Wellington RMA, the Wellington Butte Roadless Area and LWC. The BLM should institute a halt on all new user-created trail development and monitor the area for violations. Routes identified in the inventory that are generating significant environmental impacts or are located within the Wellington Butte Roadless Area and LWC should be permanently closed and prioritized for obliteration, rehabilitation, and monitoring. All user-created OHV trails facilitating trespass on nearby private lands or intersecting the proposed non-motorized Applegate Ridge Trail should also be permanently closed. All trails identified in this report should be closed to motorized use pursuant to Executive Orders 11644 and 11989 due to resource damage, environmental impacts, and impacts to adjacent private land. The closure should be instituted with an official Closure Order and made legally enforceable. If continued

resource damage, route creation, or OHV use on closed trails persists, the BLM should institute an area-wide closure, including all BLM lands and roads in the area between the Humbug Creek to the west, Forest Creek Road to the east, and south to Ruch, Oregon. Real environmental impacts and persistent illegal activities should be met with real ramifications. If closure measures are ineffective and prove unenforceable, then larger scale, area-wide closures will be needed.

Enchanted Timber RMA

The Enchanted Timber RMA is located mostly in the Forest Creek watershed, but also includes a portion of upper China Gulch adjacent to the long decommissioned Oregon Belle Loop Road. The area overlaps with the John's Peak/Timber Mountain OHV Area and much of the area has been badly damaged by unmanaged OHV use. The area includes user-created OHV trails within Riparian Reserves, hill climbs, and extensive OHV trespass on private residential land. The area sustains many miles of OHV trails, all user-created and unauthorized. User-created trails are still proliferating in the area. The area was designated an OHV area in 1995 with extremely vague language in the BLM's RMP; in the 20 years since, no management plan has been approved, creating a sense of entitlement in the OHV community. This sense of entitlement to ride wherever OHV riders please in the area has been reinforced by a lack of management and enforcement by the BLM.

Strong community opposition to the OHV area has developed in the Forest Creek community, with the 1,665 local landowners signing petitions to close the John's Peak/Timber Mountain OHV Area to off-road motorized use. Similar levels of resistance have sprung up on Foots Creek and other watersheds impacted by unmanaged OHV use. It is time for the BLM to admit their mistake and address the problem with meaningful reform. Perhaps the BLM should finally do the responsible thing: close the John's Peak/Timber Mountain OHV Area and begin rehabilitation of the environment.

<u>Bunny Meadows OHV Hill Climb</u>

The Bunny Meadows Hill Climb starts at the Bunny Meadows Staging Area and climbs an oaky hillside to the ridgeline dividing Forest Creek from George Black Gulch. The trail was originally located to the east along the apex of the ridge and consisted of a steep hill climb. Resource damage on this trail required an emergency trail and area closure in 2007 due to extensive resource damage. Similar action is needed throughout the John's Peak/Timber Mountain OHV Area.

At .4 miles the OHV route crosses a dry gulch and at .59 miles reaches the ridge. Much of this portion of trail is between 3' and 8' wide, with ruts 8-20" deep. Grades range from 8%-18% slope, a gradient far above BLM trail specifications. At roughly one mile the trail reaches a two-track road (37-3-26.1) being used by OHVs.

At 1.25 miles the OHV trail again reaches single-track trail. The trail runs across a gentle wooded ridge and into oak woodland with a Genter's fritillaria (Fritillaria gentneri) site clearly flagged. The trail runs through two flagged plant buffers, impacting both botanical sites. At 2.25 miles the trail reaches a large road intersection, then climbs the ridge north on steep erosive single-track.

The Bunny Meadows Hill Climb should be closed to reduce erosion on steep, unsustainable trail. The route should also be closed to avoid impacts to Fritillaria gentneri sites.

Forest Creek/Miller Mountain Hill Climb OHV Trail

This hill climb starts on road 37-3-26.1, winding down a steep, and at times, very erosive roadbed. Single-track riders have worn a deep rut in the roadbed 20”-27” deep where it drops off road 37-3-26.1. The route continues down the roadbed through star thistle infested slopes and across grassy birch leaf mountain mahogany openings. The route becomes rocky and erosive as it drops, at times reaching over 20% grade. The route is deeply rutted and is clearly capturing run-off and eroding out the roadbed. The route meets another old roadbed, which is equally rutted and erosive. One road drops to the left, crossing private land on the Right Hand Fork of Forest Creek. The route is facilitating private land trespass and user conflict between local residents and OHV users. The road to the right drops to an old mining ditch, now a single-track motorbike trail. The mine ditch trail leads through the Riparian Reserve of the Right Hand Fork of Forest Creek. The mine ditch reaches road 38-3-10 in a little over one mile. The Forest Creek/Miller Mountain Hill Climb OHV Trail should be closed to reduce impacts associated with heavy erosion, private land trespass, and the spread of noxious weeds such as star thistle, which has heavily infested the trail’s upper end.

A portion of the Baldy Mountain OHV Trail in the Riparian Reserve of Rail Gulch and a northern spotted owl nesting core.

Baldy Mountain Trail OHV Trail

The Baldy Mountain OHV Trail is an unauthorized, user-created trail in the Right Hand Fork of Forest Creek. The trail utilizes single-track trail and old abandoned roadbeds to climb the slopes of Baldy Mountain via Rail Gulch. The trail includes very steep, erosive hill climbs and impacts to riparian reserves in Rail Gulch. Portions of the trail in Rail Gulch also cut directly through a northern spotted owl core area where nesting sites have historically been documented. Noise disturbance protocol should mandate seasonal trail closures to protect nesting areas and young owl fledglings, but no restrictions have been put in place to protect this owl core; instead, the BLM has turned a blind eye to the impacts of OHV use in this sensitive area.

The OHV trail begins on the Right Hand Fork of Forest Creek and quickly hits an old roadbed that winds into the riparian reserve of Rail Gulch. After a short time the trail becomes single-track, user-created trail. The trail crosses through mature, late-seral forest and the center of a northern spotted owl core, traveling through the owl core for roughly 0.5 miles. OHV use on this trail would constitute a noise disturbance and should, at a minimum, be closed from March 1 to June 30. The trail is roughly 18”-30” wide and deeply incised to 18”. The trail cuts through the flagged and posted plant buffer site for Fritillaria gentneri. A sign states “no plants.” This should be confirmed again in the spring before any trail designation is considered.

The trail again follows old roadbed, then single-track trail as it winds steeply back into the riparian reserve of Rail Gulch. Steep single-track trail winds through the trees to road 37-3-33, where the trail leaves the northern spotted owl core. The trail continues up the road-cut in very steep and erosive terrain, then hits the ridge and climbs, reaching the junction of OHV trails and

This trail posted "closed" by the BLM is clearly receiving OHV use. Cross country travel and the use of closed OHV trails is common on Baldy Mountain.

a very old dozer trail. The dozer trail heads straight up a steep ridge and OHV riders are doing the same, creating very steep incised trail that is consistently over 5-6' wide. Towards the summit, the trail is extremely steep (25%-30% grade) as it follows the ridgeline beneath scattered large trees. Many of these trees' roots are being actively eroded and driven over, creating wide braided sections around some of the largest trees and impacting the trees' root systems. The trail climbs directly up the slope with little to no switchbacks or drainage structures.

After the trail reaches the ridgeline on Baldy Mountain's eastern flank, the trail forks: one trail drops (to the left) into road 37-3-33 on a very steep incline, the other track climbs over the flank of Baldy Mountain and beyond.

The route to the left drops rather steeply to road 37-3-33; the trail is eroding and rutted as it drops down a prominent ridgeline in oak woodland habitat.

The second route climbs the ridge west towards Baldy Mountain. The official trail rides the ridgeline while a decommissioned trail climbs through the grassy prairie on Baldy Mountain's southern face. The decommissioned track is clearly receiving OHV use despite the prominently posted closure signs. This track should be closed with debris to make the track impassable and obscure while reducing erosion and run-off. The main route climbs to nearly the summit of Baldy Mountain then traverses a north tending ridgeline. Sections of this trail are steep and erosive, including sustained grades of over 20%; motorbike tires have created deep incisions between 10" and 18" deep. The trail is braided and wide as it drops through forested stands on BLM land to private timberland in section 28.

The Baldy Mountain OHV Trail should be closed to motorized use due to impacts to riparian reserves and spotted owl nesting cores on the lower end of the slope. These impacts cannot be mitigated and should necessitate closure. The trail's upper end is very steep and erosive as it climbs towards Baldy Mountain. On Baldy Mountain unauthorized, user-created trails are expanding out onto the prairie-like slopes high on the mountain's south- and west-facing slopes. Numerous of these trails lead to hill climbs and trails that the BLM has closed to OHV use, yet significant use is currently impacting these user-created trails and hill climbs. BLM trail closures have been ineffective and much of the area is too inaccessible to support adequate enforcement and monitoring to ensure trail closures are respected.

Upper Forest Creek OHV Hill Climbs

The unauthorized, user-created trail leading to the upper Forest Creek OHV Hill Climb has been posted "closed" at its intersection with the Baldy Mountain Trail for sometime, yet is clearly still receiving moderate levels of use. More efforts should be made by the BLM to obscure this intersection with woody debris. Logs could be placed across the trail to reduce usage and make the route less visible. The hill climbs are having severe environmental impacts that will only become much more pronounced if continued use is allowed. The hill climbs do not only threaten the local environment, but they also pose a public safety risk unless permanent and effective closure is attained. In recent years, two OHV riders died on these hill climbs when their

side-by-side OHV rolled end over end down the steep, open, prairie-like slopes, dropping into the headwaters of Forest Creek. The two were in the area despite a motor vehicle closure when the accident occurred.

The OHV trail drops steeply from 15% to 18% grade down into the open, grasslands at the head of Forest Creek. The trail then hits an oaky ridge where a series of hill climbs drop straight down the grassy face, creating rill and gully erosion that will be very difficult to stabilize in the future. The upper end of the hill climb is wide, erosive and braided, the drop below is often between 20% and 30% grade. Multiple hill climbs are visible in the opening, and all drop to a private road below.

Although it appears the OHV trail system and hill climbs are already technically closed, the physical reality is that OHV riders are still using them and environmental impacts are continuing to mount. More effective trail closure should take place at the intersection on the Baldy Mountain Trail. Utilizing readily available forest debris to effectively mask the trail junction would be highly recommended. Prominent signage has proven ineffective at this time and physical closure/obliteration is now warranted. The trail demonstrates the inability of the agency to close many OHV trails and also demonstrates why large, relatively remote OHV areas only become enforcement nightmares and/or failures and potential public safety risks.

Oregon Belle Loop Road

The Oregon Belle Loop Road was created to provide access to the Oregon Belle Mine and other mining sites between Ruch and Forest Creek. The road is accessible from a variety of locations, including unauthorized, user-created trails, hill climbs, and decommissioned BLM roads. The track was historically a narrow, naturally surfaced jeep track. The track runs a little over 2.5 miles from lower China Gulch Road to China Gulch Saddle. Portions of the road are steep and erosive. Adjacent to the road are numerous unauthorized, user-created trails, including single-track hill climbs and the occasional 4X4 trail. Numerous of these unauthorized, user-created tracks lead to adjacent private lands and are encouraging trespass. Gentner's frittilaria (Fritillaria gentneri) sites are also being impacted by OHV use on this route.

The route begins at a yellow BLM gate on China Gulch Road. The Oregon Belle Loop Road was closed many years ago due to resource impacts, yet OHV riders have built trails around the gate, attaining access to the decommissioned roadbed. First, single-track trails were built around the gate, then trails wide enough to allow quads and other OHVs; now in recent years even wider trails have been created around the gate, providing access to full sized vehicles, presumably the very vehicles the gate was built to exclude. Currently all sizes and classes of OHVs can access the area.

These user-created 4x4 trails are located within a rare plant buffer for Gentner's fritillaria.

The road is wide and moderately eroded as it heads through thickets of buckbrush and oak. The road climbs to a saddle in roughly 0.30 miles. The saddle is posted with "Plant Site" signs, denoting the location of a Fritillaria gentneri site. The site is not only signed, but a flag line is also present, denoting the associated buffer area meant to protect the site from disturbance. The old decommissioned road lies within the buffer for this threatened species; adjacent to the road is a steep, denuded user-created hill climb accessible

by full sized trucks. Heavy disturbance, vegetation loss and erosion have impacted the protective plant buffer, limiting available habitat for this important and threatened species. The coordinates to the site are as follows: N 42.14.994' W 123. 02.856'.

A steep hill climb adjacent to the Oregon Belle Loop Road. This hill climb is sanctioned with BLM trail signs despite the clear impacts.

The road continues through oak woodland, grasslands, and chaparral. Slowly contouring up the ridgeline. Fine, flashy fuels are abundant on this slope and roadbed, constituting a significant fire risk to adjacent homes and communities. Numerous user-created single-track hill climbs break off the main road climbing nearby summits; other tracks drop to private lands. Many of these routes are very erosive and steep. Some of the hill climbs appear to have been sanctioned by the BLM without publication of a ROD or approval of a management plan, and have been posted for single-track OHV use. User-created trails in the area often exceed 20% grade. Many of these tracks also lead to brushy summits where trails are swallowed by dense, dry grass. The potential fire risk due to OHV use in these areas is of serious concern to many of the surrounding residents.

Climbing through oak woodland and dry, mixed conifer forests the trail reaches another yellow gate, closing the road to motorized use. This closure, like those below, has been breeched by OHV riders with trails for quads and single-track dirt bikes. The route continues past the gate, accessing an old road on the south side of the ridge near the Blue Jay Mine. Reaching road 38-3-14 the route drops quickly to China Gulch Saddle.

This entire road system should be closed to motorized use due to significant fire danger in the summer months, erosion concerns, botanical impacts, as well as impacts to adjacent landowners and increased OHV trespass onto adjacent private lands.

The ATA has proposed that the Oregon Belle Loop Road be closed to OHV use and designated an official hiking trail, providing a connector trail to the proposed Applegate Ridge Trail. Environmentalists have proposed that the upper portion of China Gulch Road also be permanently closed allowing for the expansion of the Wellington Butte Roadless and LWC across China Gulch to the Oregon Belle Loop Road for appropriate recreational use. This option is generally more supported by local residents and adjacent landowners than OHV use. The Oregon Belle Loop Road should be closed to all motorized use.

<u>Decommissioned and Closed Roads currently being utilized by OHV riders in the Enchanted Timber RMA:</u>

- 37-3-26.1
- 37-3-33
- 37-3-33.1
- 37-3-33.2
- 337-3-34.1
- 38-3-5
- 38-3-6

- 38-3-21
- 38-3-15.1
- 38-3-15.2
- 38-3-15
- 38-3-15-16.1
- 38-3-10-27.0
- 38-3-10-33.0
- 38-3-10-10.0
- 38-3-10-34.1

Recommendations

The BLM should inventory all unauthorized, user-created OHV trails in the Enchanted Timber RMA and Forest Creek watershed. The BLM should institute a halt on all new user-created trail development and monitor the area for violations. Routes identified in the inventory that are generating significant environmental impacts should be permanently closed and prioritized for obliteration, rehabilitation, and monitoring. All user-created OHV trails facilitating trespass on nearby private lands or intersecting the proposed non-motorized Applegate Ridge Trail should also be permanently closed. All trails identified in this report should be closed to motorized use pursuant to Executive Orders 11644 and 11989 due to resource damage, environmental impacts, and impacts to adjacent private land. The closure should be instituted with an official Closure Order and made legally enforceable. If continued resource damage, route creation, or OHV use on closed trails persists, the BLM should institute an area-wide closure, including all BLM lands and roads in the Forest Creek watershed. Real environmental impacts, continued private land trespass, and persistent illegal activities should be met with real ramifications. If closure measures are ineffective and prove unenforceable, then larger scale, area-wide closures will be needed.

Conclusions

OHV use is creating severe environmental impacts and user conflict in the Applegate Valley. The BLM has failed to manage or even approve management plans for areas affected by OHV use. The indifference of agency managers has created a strong sense of entitlement in the OHV community, creating a precedent that they can ride anywhere, build unauthorized trails, and seriously impact public lands with complete impunity. In fact, the BLM has often rewarded such behavior by designating damaging user-created trails for OHV use.

The impact of OHV use is expanding across the landscape, and in areas that support well established OHV use, the impact is growing worse by the day. OHV use in the Applegate Valley has essentially become a BLM sanctioned “free-for-all,” where OHV users have become de facto land managers, making trails where and when they please. These trails are then, in turn, designated by the BLM despite the lack of engineering, design, environmental mitigation measures, and agency approval. The impact of OHV use is currently impacting all ecosystems in the Applegate Valley from the ridge tops to the river bottom. Wildlife habitat, botanical diversity, wilderness values, and soils are being heavily impacted. OHV use is spilling out of BLM land and is also affecting private landowners who do not want OHV riders using their land. This is impacting property values, quality of life, privacy, and the physical nature of these private lands, in both the industrial and residential setting.

Using executive orders 11644 and 11989 the BLM has the authority and, in fact, a mandate to close existing user-created trails and OHV areas that are creating significant public lands impacts. Many of the OHV routes and areas in the Applegate Valley should be closed by emergency closure. In fact, all routes identified in this report should be closed by emergency closure pursuant to Executive Orders 11644 and 11989. The report demonstrates clear and compelling environmental and social impacts as well as significant user conflicts with nearly all other BLM forest users. This emergency closure should be adequately monitored and enforced by BLM law enforcement and all violators prosecuted. The agency should consider an application to the OHV Grant Program to fund full-time law enforcement dedicated to enforcing OHV regulations and closures.

The BLM should prioritize the creation of a Travel Management Plan to inventory and rehabilitate damaging OHV routes and to guide future OHV management across the region. As part of this plan, all user-created trails should be thoroughly inventoried across the Ashland Resource Area. The inventory would not only provide information regarding the scope and scale of the problem, but would allow the agency to address the specific needs of routes or areas for closure and restoration. The inventory would also allow the agency to identify current OHV user-created trails, enabling the identification of new routes as they are created. New route creation should be monitored and real world consequences must follow any proliferation of OHV routes. This could include prosecution for resource damage and the loss of designated OHV areas and routes if route creation continues. New routes should be promptly closed and monitored to ensure adequate enforcement.

In the recent Draft Management Plan and DEIS for the RMP, the BLM identified that 8% of BLM visitors engage in OHV use; however, the footprint of OHV recreation is much larger than other forms of recreational use on BLM lands. The political lobby, bias and manipulation of OHV groups clearly exceed the actual extent of public participation in OHV use. The BLM has been bought and sold by the influence of outside money, corporate interests, and the funds available through the OHV Grant Program. The MRA and other motorized use groups have a sphere of influence beyond their actual public support and benefits. They also operate from a place of impunity, as they promote and encourage authorized OHV use.

The impact of OHV use and trespass on adjacent landowners must also be addressed and steps taken to close all trails that lead to private land. The BLM's concept of seamless OHV areas that encompass private land, is a failed policy that has only impacted public relations, generating user conflicts, and hostility between private landowners, the BLM and local motorcycle riders. All trails, roads, and routes currently utilized by OHV riders that include portions of private land should be aggressively closed and monitored for violation.

A halt on new user-created trails should be instituted and strongly enforced before the OHV community degrades, impacts, and dominates all BLM lands in the Applegate Valley. Strong regulations and laws must be created that are not only enforceable, but also tend to discourage unauthorized and/or damaging OHV use. This would include area-wide closures rather than simply closing individual routes for closure. This will enable strong enforcement by creating clear, irrefutable regulations that both law enforcement and the public can enforce and understand. Motorized trails, in particular, tend to create severe environmental impacts and are very difficult to monitor and enforce, thus motorized use, including OHVs, should be limited to designated roads. Roads have been designed, engineered, and subsidized by public tax dollars for motorized use and thus will serve to minimize the environmental impact associated with OHV use. Limiting OHV use to designated and existing roads will address many of the social and

environmental concerns surrounding OHV use and reduce user conflict so that the majority of forest users can appreciate and experience public lands to their fullest.

Area-wide OHV closures should be instituted in China Gulch, the Wellington Butte Roadless Area and LWC, the Burton-Ninemile LWC, the Dakubetede Roadless Area and LWC, the Boaz Mountain area, Woodrat Mountain area, the Applegate Ridge Trail corridor, the Jack-Ash Trail corridor and in the vicinity of Anderson Butte.

This report was made possible by the supporters of a Kickstarter campaign, coordinated through the Siskiyou Crest Blog. For more information on the Applegate Valley OHV Monitoring Project:
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KLAMATH
FOREST ALLIANCE

August 20, 2015

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Submitted via Email: <blm_or_rmpwo_comments@blm.gov>

RE: Resource Management Plans for Western Oregon Draft Environmental Impact Statement

Dear Director Perez:

On behalf of our thousands of members and supporters throughout Oregon and the nation, our conservation organizations submit these comments concerning the Draft Environmental Impact Statement (DEIS) for the Resource Management Plans (RMP) for BLM forests and watersheds in Western Oregon.

Western Oregon's BLM lands support salmon, steelhead, and wildlife while delivering outstanding watershed and recreational values to the public. These forests are source-drinking watersheds for hundreds of thousands of Oregonians; they sequester large amounts of carbon; and they provide crucial ecological functions. The natural amenities found on these public lands are highly valued and sought after, from local residents to tourists from around the world.

We are pleased that the RMP recognizes that recreation is the means by which most Americans experience these lands, and that recreation provides the greatest economic benefits to local communities. Our members and supporters want the important natural amenities and environmental services to exist for future generations on BLM lands in western Oregon. However, we are concerned that the Draft RMP promotes plans that would resume clearcut logging, reduce streamside buffers, increase road construction, and reward damaging motorized off-road recreation on BLM forests.

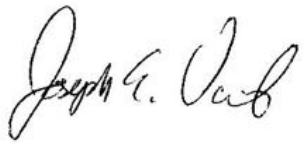
We are particularly concerned that BLM is proposing to disengage from the coordinated interagency federal land management plan embodied in the Northwest Forest Plan. Specifically, we are alarmed by the BLM's proposals to reduce riparian forest protections, eliminate the Aquatic Conservation Strategy, abandon protections for Key Watersheds, minimize green tree and down wood retention standards, abandon the Applegate Adaptive Management Area, and drop the Survey and Manage program for rare plants and animals. This profound shift away from a unified federal management strategy for lands within the range of the Northern spotted owl threatens to unravel the certainty and legal assurances relied upon by BLM and Forest Service

project planners across 25 million acres of federal land as well as assurances provided to adjacent private and state land managers throughout the Pacific Northwest.

As stated on page 21 of the DEIS, the purpose and need for the NWFP was guided by a presidential directive to the BLM and Forest Service to adopt a "comprehensive …common management approach to the [federal] lands administered throughout the entire region." The BLM has not provided a compelling reason for rejecting the comprehensive and unified approach to federal forest management that is abandoned in all of the action alternatives developed and considered in the DEIS.

We look forward to discussing these comments with your planning staff prior to the development of a Final Environmental Impact Statement and Record of Decision.

Sincerely,



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THE PURPOSE AND NEED

During the late 1980s and early 1990s, a series of lawsuits uncovered "*a remarkable series of violations of the environmental laws*," and "*a deliberate and systematic refusal … to comply with the laws protecting wildlife.*" [1] To end the gridlock, President Clinton directed the Forest Service and BLM to craft a comprehensive, long-term management strategy that is "*scientifically sound, ecologically credible, and legally responsible*." [2] The agencies assembled a team of leading scientists, called the Forest Ecosystem Management Assessment Team ("FEMAT"), to develop ecosystem management strategies that would meet this goal.[3] The final result was the Northwest Forest Plan, an ecosystem management plan that contained standards and guidelines for managing Forest Service and BLM public lands, created old-growth and riparian reserves, and provided for continued timber harvest. The Northwest Forest Plan has been upheld by the federal courts in challenges both from the timber industry and from conservation groups. The Ninth Circuit Court of Appeals also rejected the BLM's prior attempt to revise its RMPs to achieve the same objectives as earlier flawed attempts to revise the Northwest Forest Plan.[4] This DEIS marks the fourth major attack on the Northwest Forest Plan.

The range of reasonable alternatives to be considered in an environmental impact statement depends on the purpose of the project.[5] However, an agency's discretion to determine the purpose and need of a project is not unfettered. Courts require an agency's definition of purpose to be reasonable.[6]

Courts impose this standard to ensure that agencies do not avoid NEPA's requirements by defining a project's purpose so narrowly as to preclude consideration of reasonable alternatives.[7] Consideration of alternatives is "the heart of the environmental impact statement."[8]

For the Resource Management Plan for Western Oregon, BLM describes the purpose and need of the proposed action in the following way:

> *The BLM conducted plan evaluations in accordance with its planning regulations, which require that RMPs "shall be revised as necessary based on monitoring and evaluation*

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[1] *Seattle Audubon Soc'y v. Evans*, 771 F. Supp. 1081, 1089-90 (W.D. Wash.), *aff'd*, 952 F.2d 297 (9th Cir. 1991).
[2] Northwest Forest Plan Record of Decision at 3.
[3] . *Seattle Audubon Soc'y v. Lyons*, 871 F. Supp. 1291, 1303 (W.D. Wash. 1994), *aff'd*, 80 F.3d 1401 (9th Cir. 1996); FEMAT Report at I-1, II-36 to-37, ch. V.
[4] *Pac. Rivers Council v. Shepard*, No. 03:11-CV-00442-HU, 2011 WL 7562961 (D. Or. Sept. 29, 2011), *report and recommendation adopted as modified*, No. 03:11-CV-442-HU, 2012 WL 950032 (D. Or. Mar. 20, 2012); *Pac. Rivers Council v. Shepard*, No. 12-35570 (9th Cir. March 1, 2013) (opinion and order dismissing appeal by timber Intervenors for lack of jurisdiction and upholding district court decision in its entirety).
[5] *Methow Valley Citizens Council v. Regional Forester*, 833 F.2d 810, 815-16 (9th Cir. 1987) (impact statements must consider all reasonable alternatives that accomplish project purpose, but need not consider alternatives not reasonably related to the purpose).
[6] *City of Carmel-by-the-Sea v. United States Dep't of Transp.*, 123 F.3d 1142, 1155 (9th Cir. 1997); *Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 195-96 (D.C. Cir. 1991).

[7] *Simmons v. United States Army Corps of Eng'rs*, 120 F.3d 664, 666 (7th Cir. 1997); *City of New York v. United States Dep't of Transp.*, 715 F.2d 732, 743 (2d Cir. 1983); *Citizens Against Burlington*, 938 F.2d at 196.
[8] *Simmons v. United States Army Corps of Eng'rs*, 120 F.3d 664, 666 (7th Cir. 1997); *City of New York v. United States Dep't of Transp.*, 715 F.2d 732, 743 (2d Cir. 1983); *Citizens Against Burlington*, 938 F.2d at 196.

findings, new data, new or revised policy and changes in circumstances affecting the entire plan or major portions of the plan" (43 CFR 1610.5-6). These evaluations concluded that "[a] plan revision is needed to address the changed circumstances and new information that has led to a substantial, long-term departure from the timber management outcomes predicted under the 1995 RMPs*"* [9] *These evaluations also concluded that the management direction for most of the other resource management programs need to be modified or updated because of changed circumstances and new information. These evaluations concluded that changes are particularly indicated for the fisheries, aquatics, recreation, off-highway vehicle, and fire and fuels programs.*

Moreover, the BLM needs to revise existing plans to replace the 1995 RMPs' land use allocations and management direction because of new scientific information and policies related to the northern spotted owl. Since the 1995 RMPs were approved, there have been analyses on the effects of land management on northern spotted owl habitat, demographic studies, and analyses of the effects of barred owls on northern spotted owls. In addition, since that time, new policies for northern spotted owls have been put in place, including a revised recovery plan and a new designation of critical habitat.[10]

The DEIS goes on to note that this purpose and need includes providing a sustained yield of timber, conservation and recovery of listed species, providing clean water, restoring fire-adapted ecosystems, providing for recreational opportunities, and coordinating management of lands surrounding the Coquille Forest.[11]

While these goals are laudable, the resulting alternatives do not comport with these objectives because each alternative includes components that would threaten wildlife, watershed, and recreational values in an attempt to increase timber production. BLM has steadfastly maintained that the Northwest Forest Plan has failed to produce "enough" timber from O&C lands, but in fact, timber production has produced a relatively constant – if lower than historic highs – harvest level. *See infra*. Moreover, all of the "new information" BLM references demonstrates that the Northwest Forest Plan is working to achieve the remaining stated "needs" for action. Monitoring of implementation of the NFP has demonstrated that more species are better protected under the NFP than without it; watersheds are in better condition than they were prior to the implementation of the NFP; water is cleaner and cooler with the ACS, riparian reserves, and a program of watershed restoration than without the NFP; more people recreate on BLM lands than use them for timber harvest; and recreationalists contribute more money to local economies than does timber harvest. While "restoring fire-adapted ecosystems" is part of the stated purpose and need, BLM acknowledges that it has little ability to do so on its lands due to the checkerboard pattern of federal and nonfederal ownership on the O&C lands.[12] BLM has also not demonstrated that the status quo has precluded coordination with the Coquille Tribe regarding management of their lands adjacent to federal lands.[13]

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[9] (USDI BLM 2012a, p. 12).
[10] DEIS at 5.

[11] DEIS at 6-10.
[12] DEIS at 181, 212.
[13] *See generally*, Regional Ecosystem Office, *20 Year Reports for the Northwest Forest Plan* (July 8, 2015),http://www.reo.gov/monitoring/reports/20yr-report/.

Given that available information indicates that the Northwest Forest Plan is working, the stated purpose and need for action are impermissibly flawed, leading to alternatives that are trying to solve imaginary problems with the status quo.

I. THE SUSTAINED YIELD PURPOSE AND NEED SHOULD BE SECONDARY, NOT PRIMARY.

BLM cites as its first purpose of the RMP revision to "Provide a sustained yield of timber." (DEIS at 6). The DEIS shows that regeneration is not needed to restore early seral-habitat, because early seral habitat is already over-abundant and likely to increase in the future as a result of climate change.

Regeneration harvest is not needed for "community stability" because the DEIS admits that the timber industry is inherently volatile and has been for decades. Increasing regeneration harvest will actually reduce not increase community stability. And, regeneration harvest is not needed for fire hazard reduction, because the DEIS shows that young forests resulting from such logging are more hazardous than mature forests.

What is the real purpose of sustained yield? The O&C Act says that sustained yield is sought *"for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities"* [14]

BLM should structure the analysis so that these enumerated purposes are primary, and sustained yield is sought to the extent it fulfills these purposes. The analysis shows that pursuing a higher and more certain sustained yield will degrade watersheds and destabilize communities. This makes no sense. Is BLM seeking sustained yield for its own sake? Such a tautological approach is deeply flawed.

The DEIS at 6 concludes:

> *FLPMA specifically provides that if there is any conflict between its provisions and the O&C Act related to management of timber resources or the disposition of revenues from the O&C lands and resources, the O&C Act prevails (i.e., takes precedence) (43 U.S.C. 1701 note (b)). Thus, the multiple-use management direction of the FLPMA does not apply to the O&C lands that are suitable for timber production.*

BLM has jumped to a conclusion that there is a conflict between multiple use and lands suitable for timber production. BLM has not shown any such a conflict exists. In fact, the DEIS shows that forest conservation is highly compatible with the O&C Act purposes, including watershed protection and community stability.

BLM cannot rely on an interpretation of sustained yield that conflicts with its obligation to protect watersheds, regulate water flow, conserve endangered species, or maintain and restore water quality. BLM must use a rational definition of sustained yield that is qualified by conservation values. A consensus definition of the term is: "The sustainable yield of natural capital is the ecological yield that can be extracted without reducing the base of capital itself, i.e.

[14] 43 U.S.C. 1181a.

the surplus required to maintain nature's services at the same or increasing level over time. This yield usually varies over time with the needs of the ecosystem to maintain itself, e.g. a forest that has recently suffered a blight or flooding or fire will require more of its own ecological yield to sustain and re-establish a mature forest. While doing so, the sustainable yield may be much less."[15]

BLM should also interpret sustained yield in light of current scientific understandings of non-linearity of ecological process that sustain forests.

SUSTAINED YIELD FORESTRY IN BRITISH COLUMBIA by Lois Dellert is the definitive academic study of Sustained Yield in B.C. The report describes the evolution of Sustained Yield from 1900 to 1990 emphasizing the fear of scarcity and the hoped for improvement of timber production by scientific reordering of forests. From MacMillan through Sloan and Pearse to the present her central purpose is to examine the development of forest policy and,

> *...explore why it has been so difficult for forestry to achieve conservation in British Columbia.*
>
> *Forestry was motivated by scarcity and its goal was to support a forest-based economy by maximizing production and regulating the forest to provide a continuous supply of wood. Its policy of sustained yield was influenced by the scientific movement which believed the world operated according to universal rules and could be efficiently and rationally managed to capture its full potential and re-structured to achieve stability through order. The core ideas were efficiency and stability.*

The simple Newtonian universe of linear cause and effect and equilibrium dominant when Sustained Yield was developed no longer exists. Developments in non-equilibrium thermodynamics, in complexity and chaos theory, and in systems thinking about ecology and uncertainty have awoken science from Newton's sleep[16].

Recognizing that sustained yield must be achieved within some social and environmental constraints, the real goal is better conceived as sustainable forest management.

The Forest Service explored the definitions of sustainable forestry in a 2004 report called "National Report on Sustainable Forests—2003" (FS-766): The *Dictionary of Forestry* (Helms 1998) offers this description of forest sustainability:

> *....the capacity of forests, ranging from stands to ecoregions, to maintain their health, productivity, diversity, and overall integrity, in the long run, in the context of human activity and use.*

The *Dictionary of Forestry* also states that sustainable forest management is an evolving concept:

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[15] http://en.wikipedia.org/wiki/Sustainable_yield.

[16] http://www.pacificfringe.net/sustainedyield/ See also, Dellert, Lois. 1998. "Sustained Yield: Why Has It Failed to Achieve Sustainability?" in The Wealth of Forests: Markets, Regulation and Sustainable Forestry. Chris Tollefson, ed., UBC Press, Vancouver, B.C.

> *The stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality, and potential to fulfill, now and in the future, relevant ecological, economic, and social functions at local, national, and global levels, and that does not cause damage to other ecosystems–note criteria for sustainable forestry include (a) conservation of biological diversity, (b) maintenance of productive capacity of forest ecosystems, (c) maintenance of forest ecosystem health and vitality, (d) conservation and maintenance of soil and water resources, (e) maintenance of forest contribution to global carbon cycles, (f) maintenance and enhancement of long-term multiple socioeconomic benefits to meet the needs of societies, and (g) legal, institutional, and economic framework for forest conservation and sustainable management.*

Other definitions particularly stress the importance of recognizing environmental limits. One example is the following statement[17] from the book *Defining Sustainable Forestry*:

> *Since sustainable forest management is only possible within the ultimate constraints and limits imposed by the ecosystem, sustainability should be viewed as the degree of overlap between ecological possibilities and socially desired benefits of forests.*
>
> *The concept of sustainable forest management is related to but different in significant ways from an earlier concept of sustained yield—the amount of wood that a forest can produce on a continual basis. The concept of sustained yield, dating back to the Middle Ages in Europe, was brought to the United States in the late 1800s by early forestry leaders such as Bernhard Fernow and Gifford Pinchot. It was expanded over time to include the perpetual production of other forest outputs in addition to timber supply, including water, recreation, fish and wildlife, and livestock forage—the expanded concept is often referred to as the "multiple-use sustained-yield" principle. This principle was enshrined in law in 1960 for national forests. The concept of sustainable forest management, however, includes managing the forest for more than outputs; it focuses on maintaining processes and seeking to sustain communities, economies, and all the elements of a forest (Floyd 2002).*

When one views the multiple objectives of the O&C Act as modified by the Federal Land Policy and Management Act, Endangered Species Act, and Clean Water Act, there is clearly no significant difference between sustained yield, multiple-use sustained-yield, and sustainable forest management.

II. BLM FAILED TO HARMONIZE ITS LEGAL MANDATES.

The DEIS states that FLPMA's multiple use mandate does not apply to lands suitable for timber production because there is a conflict between the mandates of FLMPA and the O&C Act. This is an unsupported assumption. Before finding a conflict, BLM must first try to harmonize the objectives of these Acts, which is what the Northwest Forest Plan did, and there is no reason to conclude that this was an error.

[17] Noss 1993.

In the 1944 Sustained Yield Act, Congress articulated a vision of sustained yield that encompassed, *"... maintenance of water supply, regulation of stream flow, prevention of soil erosion, amelioration of climate, and preservation of wildlife.*"[18] Congress clearly does not see a conflict between sustained yield timber production and water quality or wildlife habitat. The Gang of Four also cautioned that there is "no free lunch." To reconcile these, one must conclude that as long as the timber yield is low enough, other resources can also be sustained.

BLM has the cart before the horse. Any acre that is suitable for timber production is accorded a special status that causes BLM to reject other potential uses of those lands. The DEIS fails to recognize that timber production conflicts with other public benefits that flow from BLM lands.

Before designating lands suitable for timber production, BLM should first determine whether those lands are more suited for other public purposes including, but not limited to: water quality, hydrologic function, slope stability, soil conservation, species recovery, keeping species off of the ESA list, carbon storage/climate stability, recreation, community stability, and quality of life.

In responding to public comments on the Northwest Forest Plan EIS, the agencies concluded that the Northwest Forest Plan, including the reserve system was consistent with the O&C Act.

> ***Comment****: The SEIS fails to acknowledge the Oregon and California (O&C) Lands Act (43 USC Sec. 1181a) as a constraint on the management of O&C lands. Alternative 9 violates the dominant use of O&C lands, and fails to acknowledge that these lands are the subject of special legislation that dedicates them primarily to timber production rather than ecologic (including wildlife) uses. The Endangered Species Act does not require the enormous land set-asides for wildlife which are being proposed, and the magnitude of the exclusion of the timber use must be submitted for congressional review under Section 202(e) of FLPMA.*
>
> ***Response****: The management of the O&C lands is governed by a variety of statutes, including the O&C Lands Act, FLPMA, the Endangered Species Act, and the Clean Water Act. The O&C Lands Act requires the Secretary of the Interior to manage O&C lands for permanent forest production; however, such management must also be in accord with sustained-yield principles. Further, that Act requires that management of O&C lands protect watersheds, regulate streamflow, provide for recreational facilities, and contribute to the economic stability of local communities and industries. The Act does not require the Secretary to harvest all old-growth timber or all commercial timber as rapidly as possible or according to any particular schedule. The Secretary has discretion to determine how to manage the forest on a sustained-yield basis that provides for permanency of timber production over a long-term period. The Secretary must necessarily make judgments, informed by as much information as possible, about what kind of management will lead to permanent forest production that satisfies the principle of sustained yield.*
>
> O&C lands must also be managed in accordance with other environmental laws such as the Endangered Species Act and the Clean Water Act. Some provisions of these laws take predominance over the O&C Lands Act. For instance, the Endangered Species Act (ESA)

[18] 16 U.S.C. § 583.

> requires the Secretary to insure that management of O&C lands will not likely result in jeopardy to listed species or destruction or adverse modification of critical habitat. The ESA directs the Secretary and all federal agencies to utilize their authorities to carry out programs for the conservation and recovery of listed species. Although several owl recovery plans have been proposed, the Secretary has not yet adopted final recovery plans for either the northern spotted owl or the marbled murrelet. Alternative 9's Late-Successional and Riparian Reserve concepts are important building blocks in the development of recovery plans to achieve the conservation and recovery of those species.
>
> One of the purposes of the Endangered Species Act is the preservation of ecosystems upon which endangered and threatened species depend. Certainly, a forward-looking land management policy would require that federal lands be managed in a way to minimize the need to list species under the ESA. Additional species listings could have the effect of further limiting the O&C Lands Act's goals of achieving permanent forest production, which would contribute to the economic stability of local communities and industries. The O&C Lands Act ought not be interpreted in such a manner that limits the Secretary's ability to take steps now that would avoid future listings, and additional disruptions, in the future.
>
> Moreover, the concept of creating a set of reserves in which timber harvest is substantially circumscribed across a portion of the landscape, such as the proposed Late Successional Reserves, is consistent with the O&C Lands Act. The Secretary has discretion under the O&C Lands Act to determine the length of harvest rotations on O&C lands or whether any particular tract should be subject to harvest, as well as the intensity of harvest activities, which should occur. From a practical point of view, there is little or no on-the-ground difference between a management strategy that provides for a deferred harvest for 80 years on Old-Growth Emphasis Areas as proposed in BLM's Draft Resource Management Plans, and one that sets aside reserves in order to restore and maintain a healthy old-growth forest ecosystem, over the time of the deferred harvest. Regardless of approach, FLPMA requires the Secretary to monitor and revise Resource Management Plans in light of changed circumstances or new information generated through the adaptive management process.
>
> The lands included in the reserves under the preferred alternative greatly constrain, but do not exclude timber use. Silvicultural treatments, such as thinnings, consistent with the objectives for the reserves will be allowed. Since this use is not totally eliminated, this management decision will not be subject to the reporting requirement in Sec. 202(e) of FLPMA.[19]

The BLM must recognize the timber production is embedded within and dependent upon a complex ecological system. Timber production is based on the growth of trees, which is based on the existence of a complex soil food web, a wide variety of nitrogen fixing species, nutrient cycling, fungal abundance and diversity, etc. The USDA Committee of Scientists (COS) recognized that "*without ecologically sustainable systems, other uses of the land and its*

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[19] 1994 NWFP SEIS pp F-114-115 (emphasis added).

resources could be impaired." [20] The BLM must strive to achieve ecologically sustainable forests, not just sustained production of timber based on simple agricultural models. "Ecological sustainability" means maintaining the composition, structure and processes of an ecological system within certain acceptable bounds typically described as the natural of historic range of variability. A modern and scientifically credible approach to sustained yield will require BLM to consider[21]:

- the dynamic nature of ecological systems,
- the role of natural functions and processes,
- uncertainty and variability of ecological systems,
- an integrated assessment of feedbacks and cumulative effects,
- how to preserve options, and
- the historic range of variability.

In the O&C Act, Congress did not require BLM to apply a one-dimensional view of sustained yield equating maximum tree growth rates with sustained yield. Congress explicitly required BLM to account for water resources, recreation, community stability, and later passed superseding legislation requiring conservation of water quality and imperiled fish and wildlife. The BLM must adopt a modern view of sustained yield.

Landscape ecology has lead to a new appreciation of the importance of disturbance agents such as fire and disease and insect outbreaks in maintaining forest health at the landscape level. Unfortunately, the sustained yield forestry approach still regards forests as timber supply areas where fire and pathogens destroy (waste) valuable timber.

Fire suppression in particular has had a very detrimental impact on habitat for biodiversity. Furthermore, the legacy of problems caused by fire suppression including the increased potential for devastating large scale forest fire will bedevil forest managers far into the future.

A particular revealing criticism of Sustained Yield management is that we are creating forests that need humans to take care of them. Fire and disease suppression as well as changed age class and species distribution has altered the dynamics of forest evolution that have been developing over millennia, creating conditions potentially overwhelming to established natural defense dynamics. Global warming and other anthropogenic changes will probably further exacerbate these problems.[22]

BLM must provide room for the entire suite of structures, functions, and processes that integrate to create and maintain healthy forest ecosystems. Disturbance agents such as fire, insects, and disease must be allowed to operate. The full suite of biodiversity must be preserved, including non-vertebrates that play such crucial roles in soil ecology and nutrient cycling.

Some observers warn, "*Distrust claims of sustainability. Because past resource exploitation has seldom been sustainable, any new plan that involves claims of sustainability should be suspect. One should inquire how the difficulties that have been encountered in past resource exploitation*

[20] COS p xvi.
[21] See Committee of Scientists pp 19-40. http://web.archive.org/web/20030212110159/www.fs.fed.us/news/science/
[22] http://www.pacificfringe.net/sustainedyield/index.htm

are to be overcome." [23] One of the main authors of the Northwest Forest Plan reinforced this same point.

Jack Ward Thomas, one of the main authors of the NWFP, also cautions against an outdated view of sustained yield timber production:

> *The vision that I was taught in school of the "regulated forest" and the resultant predictable outputs of commodities has turned out to have been a dream. And a dream that could only be realized in a time of seemingly boundless virgin forests. This vision held only so long as, no matter what the circumstances, there was more timber available over the next ridge. And, that timber was relatively cheap--easy to access and long--and environmental risks were either less appreciated or more palatable than at present. Further, it was assumed that good forestry was--as a matter of course--good wildlife management, good watershed and management, etc.*
>
> *By now it is becoming obvious that this dream was built on the pillars of the seemingly boundless virgin forest and an ethic of manifest destiny coupled with hubris of being able to predict the response of nature and humans. This was coupled with an inflated sense of understanding of forested ecosystems and of human control. Perhaps it is time to recognize that such stability is not attainable in any western region except for relatively short periods of years or decades.*
>
> *Why? Consider the variables that interact to affect long-term stability of the supply of timber. Each variable is subject, more or less independently, to considerable variation over the longer term. Taken together, in terms of their interactions, these variables are guaranteed to produce varying levels of uncertainty and makes attainment of stability unlikely.*
>
> *Oscillations in timber supply can be moderated by taking a conservative view of "annual sale quantity" projections as opposed to the tendency to make overly optimistic projections such as those that resulted in the first forest planning efforts of a decade or so ago.*
>
> *Insanity has been defined as doing the same things over and over and expecting a different result. Decidedly, optimistic outcomes were the trademark of the first generation of forest plans. With decided regularity, this optimism has not been justified and only reluctantly recognized and abandoned. This caused the agency(s) performance, in terms of commodity production, to consistently come in at below anticipated levels--i.e., the predictions were not valid and belated recognition of that fact, in turn, caused additional instability because of accumulated effects. More conservative approaches are more apt to produce predictable results. And, if results exceed those anticipated, it is easier to adjust commodity yields upward than to deal with the social and political consequences of short fall.*

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[23] Donald Ludwig, Ray Hilborn, Carl Walters. 1993. Uncertainty, Resource Exploitation, and Conservation: Lessons from History. Science 260(2):17, April 2, 1993. http://www.envsci.nau.edu/sisk/courses/env555/Readings/ludwig1.pdf

While the search for new understanding through science may produce short-term instability [sic] in commodities such as timber supply as managers react to new information, such efforts are essential to long-term stability if renewable natural resources are to be managed in a sustainable fashion. In the end, there can be no turning back from science--no matter now politically [sic] expedient that may seem in the short run.

In summary, the timber supply from federal lands is one drought, one insect and disease outbreak, one severe fire season, one election, one budget, one successful appeal, one loss in court, one listing of a threatened or endangered species, one new piece of pertinent scientific information, one change in technology, one shift in public opinion, one new law, one loss of a currently available technological tool, one change in market, one shift in interest rates, et al, away from "stability" at all times. And, these changes do not come one at a time, they come in bunches like banannas and the bunches are always changing. So, stability in timber supply from the public lands is simply a myth, a dream that was never founded in reality. It is time to stop pretending.[24]

BLM must respond to opposing viewpoints by taking a hard look at the core issue of sustained yield as the primary purpose of the RMP revision.

THE O&C ACT

I. MULTIPLE USE MANDATE OF THE O&C ACT

Given that the only apparent "problem" with the NFP is that it hasn't produced "enough" timber off O&C lands, it is clear that the real objective of the RMP revisions is to increase timber harvest. However, the O&C Act does not require maximum timber production from every acre all the time; the *Headwaters* case upon which BLM relies itself involved a land management plan with no-cut reserves; and the courts have already ruled that the Northwest Forest Plan does not violate the O&C Act. BLM is choosing to re-do its management plans, and that choice reflects only one true purpose – BLM's desire to increase logging on federal public lands in Oregon.[25]

The Oregon and California Lands Act ("O&C Act") governs railroad grant lands that revested in the federal government due to the railroad company's breach of its statutory duties. In the O&C Act, Congress sought to put an end to wasteful and destructive logging practices that clearcut large forest areas for short-term gains without safeguarding the forests and other resources. The

[24] Jack Ward Thomas, *The Instability of Stability*. Pacific Northwest Regional Economic Conference. Regions in Transition. Spokane. April 1997 http://www.pnrec.org/pnrec97/thomas2.htm

[25] It is not even clear that the O&C Act applies to BLM lands currently governed by the Northwest Forest Plan. The language of the Act states that it applies to "*such portions*...which have heretofore or may hereafter be classified as timberlands...." 43 U.S.C. § 1181a (italics added). Under this plain language, only portions of the O&C lands classified as timberlands are covered by the O&C Act. When BLM jointly promulgated the Northwest Forest Plan with the U.S. Forest Service, BLM changed the classification of the O&C lands previously defined as timberlands to the status of late-successional reserves and riparian reserves. BLM has the authority to reclassify its land under FLPMA § 202(d), where the lands are better suited to a different purpose.

Act instituted a conservation ethic, marking the first federal statute to impose sustain-yield constraints on timber cutting.

The O&C Act provides that O&C lands:

> *shall be managed . . . for permanent forest production, and the timber thereon shall be sold, cut and removed in conformity with the principal [sic] of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities.*

Numerous statutes other than the O&C Act establish duties that BLM must meet in managing the O&C lands.[26] The timber industry has contended that BLM must manage the O&C lands under a timber-first mandate, drawing from the permanent forest production goal set out in the O&C Act. BLM has long recognized, however, that it must manage the O&C lands for multiple purposes both to comply with the O&C Act and its duties under other laws. Indeed, under the Northwest Forest Plan, BLM has been managing these lands to comply with all applicable laws, including the O&C Act.

II. SAFEGUARDS DRAWN FROM THE O&C ACT

Under the Act, O&C lands "shall be managed . . . for permanent forest production," but subject to other constraints.[27] First, permanent forest production is not synonymous with commercial logging. A 1979 Interior Solicitor memorandum clarified the forest production need not be for commercial use. That is but one of the uses. The forest production could be to protect watersheds, stream flows, or recreation.[28]

Second, the goal of the timber production is to promote economic stability of local communities. In the O&C Act, Congress sought to curtail the type of boom and bust logging frenzies that had generated economic instability. Congress decidedly did not support maximizing timber production for short-term economic gain. Instead, it sought to institute long-term sustainability. To achieve these goals, BLM must consider alternatives that promote community stability, even if they favor thinning over clearcutting and even if they shift some areas of the forest to other activities that would achieve that goal.

Indeed, the DEIS indicates that an alternative that increase timber harvest will be inconsistent with the O&C Act, which requires timber harvest "...contribut[e] to the economic stability of local communities and industries."[29] The DEIS states that "Because the timber industry has a long, national history of high volatility, alternatives with harvest volumes that exceed current levels are likely to introduce greater instability to local economies, based on past business

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[26] These comments address only management of the O&C lands, but the RMP revisions pertain to all BLM lands, including vast tracts of public domain lands that are fully subject to all land management and environmental laws.
[27] 43 U.S.C. § 1181a.
[28] Interior Solicitor Mem. (Aug. 27, 1979).

[29] 43 U.S.C. 1181a.

cycles." [30] Introducing greater instability to local economies is an inappropriate outcome for BLM land management, and is inconsistent with the O&C Act.

Third, the Act does not seek to promote other resource extraction activities, such as grazing. Such activities should not occur where they conflict with any of the Act's other goals or BLM's duties under other laws.

Fourth, the O&C Act explicitly lays out other goals for management of the O&C lands. Specifically, the lands must be managed for the purpose of "protecting watersheds, regulating stream flow, . . . and providing recreational facilities."[31] The mandate to protect watersheds and stream flow supports establishing safeguards like those embodied in the Aquatic Conservation Strategy of the Northwest Forest Plan.

Similarly, BLM must manage the O&C lands to protect high-quality recreational opportunities. The Interior Solicitor has advised that this mandate "is broad enough to include such things as scenic highways or scenic rivers which are identified as such through the Bureau's planning process." [32] With respect to a wild and scenic river partially on O&C lands, the Interior Solicitor counseled that logging that would be noticeable from the river would be prohibited along scenic stretches of the river and that logging could occur in areas important for recreation only if it would not impair recreational or aesthetic qualities. [33]

SAFEGUARDS DRAWN FROM OTHER LAWS

BLM must comply with other laws unless they expressly carve out an exception for the O&C Act. The courts strive to reconcile overlapping statutory duties so that all applicable statutes retain their vitality. A statutory obligation is overridden only in the event of a direct conflict that makes it impossible to comply with competing mandates or explicit legislative language indicating an intent for one to be preeminent over another.

Initially, BLM and the courts focused on the role of the Federal Land Policy and Management Act ("FLPMA"), enacted decades after the O&C Act. In *Headwaters v. BLM*,[34] the Ninth Circuit held that BLM did not err in construing the O&C Act to make timber production a dominant or primary use of the lands. Headwaters had challenged a particular timber sale and argued that BLM erroneously emphasized timber production over conservation of wildlife habitat and old-growth forests. Before rejecting this construction of the O&C Act, the majority held that BLM appropriately tiered its environmental assessment for the timber sale to a programmatic environmental impact statement addressing wildlife and old-growth habitat, and it rejected Headwaters' challenge to BLM's multiple use determination, which emphasized timber production for the lands at issue. As later cases confirm, the result is often far different where BLM is subject to other statutory duties that lead it to protect O&C lands in order to protect wildlife or old-growth forests.

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[30] DEIS at 568.
[31] 43 U.S.C. § 1181a.
[32] Interior Solicitor Mem. at 10. (May 14, 1981).
[33] Interior Solicitor Mem. at 1-2 (Oct. 4, 1978).
[34] 914 F.2d 1174, 1183-84 (9th Cir. 1990),

FLPMA has also been construed to impact BLM's wilderness review obligations for O&C lands. Under FLPMA, BLM has an obligation to conduct a wilderness study review of roadless areas that have 5000 acres or more and wilderness characteristics.[35] The review should have occurred within 15 years of FLPMA's passage, i.e., by the end of 1991. During a wilderness study review, BLM must manage the lands in a manner that does not impair their suitability for preservation as wilderness.[36] This has been construed to prohibit roadbuilding and logging in most instances.

FLPMA has a savings clause, which provides that the O&C Act prevails "*in the event of conflict with or inconsistency between [FLPMA and the O&C Act] insofar as they relate to management of timber resources, and disposition of revenues from lands and resources . . .*"[37] An Interior Department Solicitor's memorandum indicates that there is scant legislative history pertaining to the savings clause, but there was some indication that the Department sought to assuage concerns raised by the Oregon delegation that the funding formula and management of O&C lands would be affected by FLPMA.[38] The Solicitor's memorandum reconciles the O & C Act with FLPMA's wilderness study provision as follows: O&C lands that are suitable for timber production are ineligible for wilderness study, while O&C lands that are unsuitable for timber production can be considered for wilderness. In practice, however, O&C lands have been included in some wilderness study areas and designated wilderness areas, such as the Wild Rogue Wilderness and Table Rock Wilderness. Moreover, BLM could properly determine that designating O&C lands that are suitable for timber production as wilderness would be the most effective way to meet its legal obligations to protect species and ecological functions.[39]

After *Headwaters*, the courts have retreated from a timber-centric vision for O&C lands. Instead, the operating principle has become one of dual responsibilities. BLM must meet all of its statutory obligations, many of which call for environmental safeguards even where such safeguards result in less intensive or pervasive logging.

In *Portland Audubon Society v. Lujan* [40], the Ninth Circuit found no unavoidable conflict between an injunction stopping old-growth logging pending compliance with the National Environmental Policy Act, and the O&C Act, even though the Act's timber targets (stated as a minimums) could not be met under the injunction. BLM and the O&C counties had argued that "the district court erred in issuing an injunction which prevents the BLM from selling a minimum of 500 million board feet of timber per year as directed by the" O&C Act.[41] The court rejected this argument, stating:

> *We find that the plain language of the Act supports the district court's conclusion that the Act has not deprived the BLM of all discretion with regard to either the volume requirements of the Act or the management of the lands entrusted to its care. Because there does not appear to be a clear and unavoidable conflict between statutory directives,*

[35] 43 U.S.C. § 1782(a).
[36] *Id*. § 1782(c).
[37] 43 U.S.C. § 1701 note.
[38] Interior Solicitor Mem. at 9 (Sept. 5, 1978).
[39] Since the O&C Act supersedes FLPMA only where the two conflict, BLM still has an obligation to designate Areas of Critical Environmental Concern particularly where special management is needed to protect ecological values that are consistent with the O&C Act's goals. *See* 43 U.C.S. § 1702.
[40] 998 F.2d 705 (9th Cir. 1993).
[41] *Id*. at 709.

we cannot allow the Secretary to 'utilize an excessively narrow construction of its existing statutory authorizations to avoid compliance [with NEPA].'" [42]

Under this ruling, BLM must comply with NEPA, the ESA, and other environmental laws in its management of O&C lands.

More recent court rulings have held that in fact, the BLM must comply with many other laws, in addition to the O&C Act, which may have the effect of reducing the amount of timber that can be produced on O&C lands.[43] Similarly, the *Swanson* court also held that timber industry Plaintiffs did not have standing to bring a claim against BLM for failing to offer 500 MMbf of timber per year.[44] Consequently, it is plain that BLM has the legal authority to reduce timber harvests where necessary to comply with the provisions of other laws, as well as the multiple use mandate of the O&C Act.

I. THE NORTHWEST FOREST PLAN COMPLIES WITH THE O&C ACT AND ENVIRONMENTAL LAWS

In the Northwest Forest Plan, the agencies understood that other environmental laws take precedence over the O&C Act in the absence of a conflict between laws, and that prudent management to avoid future conflicts with such other laws is within the BLM's discretion, as it could promote economic stability in the long-run. For example, "*That Act does not limit the Secretary's ability to take steps now that would avoid future listings and additional disruptions.*"[45] The Secretaries made the finding that the adopted plan "will provide the highest sustainable timber levels from Forest Service and BLM lands of all action alternatives that are likely to satisfy the requirements of existing statutes and policies." [46]

In *Seattle Audubon Society v. Lyons*,[47] Judge Dwyer rejected the contention that the Northwest Forest Plan violated the O&C Act, stating that BLM must fulfill its conservation duties under other environmental statutes in managing the O&C lands. He also rejected the contention that the agency need not comply with the NEPA or the ESA because it has no power under its enabling statute to modify its management activities based on the other environmental statutes. BLM "*for many years has exercised broad authority to manage the O&CLA lands: the BLM is steward of these lands, not merely regulator. Management under the O&CLA must look not only to annual timber production but also to protecting watersheds, contributing to economic stability, and providing recreational facilities.*"[48]

Judge Dwyer noted that the court in *Headwaters* approved a BLM management plan that allocated over 50% of the area at issue to non-timber uses and that the decision dealt with the O&C Act alone, not BLM's duty to comply with other statutes. He also pointed to *Portland Audubon* as confirming that BLM must fulfill conservation duties imposed by other statutes. As in *Portland Audubon*, NEPA compelled BLM to consider the environmental impacts of its

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[42] *Id*. at 709.
[43] *Swanson Grp. Mfg. LLC v. Jewell*, No. 13-5268, 2015 WL 3634645 (D.C. Cir. June 12, 2015).
[44] *Id.*
[45] NWFP ROD at 50.
[46] NWFP ROD 61.
[47] 871 F. Supp. 1291 (W.D. Wash. 1994) (appeal history omitted),
[48] *Id*. at 1314.

actions.[49] Moreover, Section 7(a)(1) of the Endangered Species Act requires BLM to utilize its authorities and carry out programs to conserve threatened and endangered species.[50] BLM appropriately construed this mandate to take action to minimize the need to list species in the future.[51] Moreover, Judge Dwyer concluded that the agencies could not, given the current conditions of the forests, meet their obligations under NEPA and § 7(a)(1) of the ESA "*without* planning on an ecosystem basis.*"*[52]

While NEPA and the ESA are two statutes that impose mandates on BLM's management of O&C lands, the Interior Solicitor has recognized that numerous statutes similarly constrain BLM's management of O&C lands. The Wild and Scenic Rivers Act is one such statute, and in fact several designated wild and scenic rivers include O&C lands. BLM must also manage the lands to safeguard species listed under state endangered species acts, to provide sufficient habitat to conserve and rehabilitate fish, wildlife, and game populations, to meet water quality standards established under the Clean Water Act, and to impose measures to protect wetlands, including by prohibiting logging in wetlands areas, where necessary. *See* Interior Solicitor Mem. (May 14, 1981).

In short, there is no need to emphasize timber production over other statutory mandates because BLM has been acting in concert with those mandates under the Northwest Forest Plan for 20 years. BLM should be up-front about its one true purpose in proposing this action – increasing the cut from BLM lands in Oregon.

II. THE DEIS FAILS TO DISCLOSE THE EFFECTS TO THE NORTHWEST FOREST PLAN AS A WHOLE.

The 1994 Northwest Forest Plan amended the planning documents of 19 national forests and seven BLM districts, and it set standards and guidelines for these lands. The timber industry challenged the agencies' authority to adopt an ecosystem plan that covered lands administered by both the Forest Service and BLM. As stated above, the district court noted that both agencies' planning statutes required an integrated, scientific approach; both agencies had to comply with NEPA's mandate to consider ecosystem effects; and both agencies had to comply with the Endangered Species Act, among other laws such as NEPA. The court held that "[g]iven the current condition of the forests, there is no way the agencies could comply with the environmental laws *without* planning on an ecosystem basis."[53]

The effectiveness and legality of the Northwest Forest Plan depends on its application to both Forest Service and BLM lands; the Northwest Forest Plan is a "coordinated management direction for the lands administered by the Forest Service and BLM within the range of the spotted owl [that will also] protect and enhance late successional and old-growth forest ecosystems."[54] Two key assumptions behind the biological analysis of the Northwest Forest Plan were that (1) "[r]iparian and Late-Successional Reserves (LSRs) will retain reserve status and

[49] 871 F. Supp. at 1311.
[50] *Id*. at 1311, 1314.
[51] *Id*. at 1314.
[52] *Id*. at 1311 (emphasis in original).
[53] *Seattle Audubon Soc'y v. Lyons*, 871 F. Supp. 1291, 1311 (W.D. Wash. 1994).
[54] FWS Northwest Forest Plan Biological Opinion at 2 (Feb. 10, 1994).

will not be available for timber production other than as provided in Alternative 9" and (2) "[a]lternative 9 applies to Forest Service and BLM lands; all future actions on these lands would be consistent with Alternative 9, as adopted in the Record-of-Decision (ROD)."[55] BLM's alternatives in this DEIS, however, violate both of these assumptions.

A similar conclusion was reached with respect to aquatic protection. "The effectiveness of the [Aquatic Conservation Strategy] is still subject to debate among scientists. If the plan as implemented is to remain lawful, the monitoring, watershed analysis, and mitigating steps called for by the ROD will have to be faithfully carried out, and adjustments made if necessary."[56]

Under NEPA, federal agencies are required to examine in an EIS the cumulative impacts of proposed actions – that is, those impacts that result from the incremental impact of the action when added to the past, present, and reasonably foreseeable future actions.[57] By considering action alternatives that would change BLM's land management, the agency is essentially considering pulling out of the multi-agency Northwest Forest Plan. BLM cannot do this without causing the entire Northwest Forest Plan to crumble; that is, although the action agency here is BLM, its decisions will by necessity change the validity of the Forest Service's actions and land management assumptions. The DEIS fails to address or analyze the environmental and cumulative impacts of these alternatives on the continuing validity of the Northwest Forest Plan as a whole.

Similarly, pursuant to the consultation provisions of the Endangered Species Act, BLM, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service must address the full effects of this action, which includes the dismantling of the regional Northwest Forest Plan.[58]

Because the unraveling of the Northwest Forest Plan and its protections is a foreseeable future action and effect of the proposed actions, the environmental and cumulative impacts of losing or changing the Northwest Forest Plan should have been analyzed by BLM in the DEIS. As they were not, the DEIS violates the National Environmental Policy Act. By attempting to back out of the Northwest Forest Plan, BLM is violating its affirmative conservation duties under ESA § 7(a)(1). Finally, consultation under ESA § 7(a)(2) must look at the entire agency action, which is the dismantling of the Northwest Forest Plan.

III. BLM CANNOT MAKE RADICAL DEPARTURES FROM THE NWFP WITHOUT EXPLANATION

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[55] *Id.* at 4.
[56] *Seattle Audubon Soc'y v. Lyons*, 871 F. Supp. at 1322.
[57] 40 C.F.R. § 1508.7.
[58] *See Connor v. Burford*, 848 F.2d 1441, 1453 (9th Cir. 1998) (agency must "analyze the effect of the of the *entire* agency action" and render a "comprehensive biological opinion") (emphasis in original); *Greenpeace v. National Marine Fisheries Serv*., 80 F. Supp. 2d 1137, 1147-50 (W.D. Wash. 2000) (finding biological opinion invalid for failing to assess full scope of individual and cumulative fishing allowed under fishery management plan); *see also PCFFA v. NMFS*, No. 04-1299-RSM, Report and Recommendation, slip op. at 22 (W.D. Wash. 2006) (later site-specific consultations that do not address entire Northwest Forest Plan cannot adequately address cumulative effects).

Recent *en banc* case law from the 9th Circuit affirms the principle that BLM cannot radially depart from the NWFP without adequate explanation. *Organized Village of Kake v. USDA*. (9th Circ, July 29, 2015) http://cdn.ca9.uscourts.gov/datastore/opinions/2015/07/29/11-35517.pdf

BLM proposes some significant changes from the Northwest Forest Plan, including

- eliminating the Northwest Forest Plan's survey and manage program,
- dramatic narrowing of the purpose of and the width of riparian reserves,
- increasing active management in the reserves, and
- reducing the retention requirements in the timber management areas.

The NWFP was adopted with the most compelling scientific rationale of any RMP anywhere.

The purposes of the survey and manage program were justified based on "additional species analysis" contained in the 1994 FSEIS for the Northwest Forest Plan and further explained in Appendix J2 of that document. Based on the encouragement of Judge Dwyer, the NWFP adopted an ecosystem management approach that attempted to protect species before they become threatened or endangered. BLM is now trying to narrow the purpose and need for this RMP revision by asserting that it does not have a wildlife conservation mandate. This is incorrect. Wildlife conservation is mandated by the ESA, FLMPMA, as well as the mandates of the O&C Act (e.g., "permanent forest production" and "recreation facilities"). BLM has tried three times (unsuccessfully) to eliminate the survey and manage program (2004 EIS/ROD, 2007 EIS/ROD and 2008 WOPR). Twice the courts have rejected the agencies' efforts because the survey and manage program was considered integral to the overall conservation scheme of the Northwest Forest Plan.

The broad purposes of the riparian reserves were explained in the 1994 FSEIS. These purposes include both terrestrial and aquatic conservation objectives, providing extra assurance that at-risk fish would be conserved, mitigating for cumulative impacts, maintaining microclimate and wood input for amphibians and other wildlife that live near but not in streams. The agencies wrote an EIS to amend the ACS in 2008 but withdrew it in the face of litigation. Now BLM proposes an even more radical revision of the riparian reserves and its objectives and standards & guidelines. BLM DEIS does not address all the reasons that riparian reserves were established.[59]

BLM proposes to allow significant logging in reserves with an assumption that logging is compatible with late successional habitat and other objectives. This assumption was rejected in the Northwest Forest Plan and BLM has not explained how they arrived at a contradictory conclusion.[60]

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[59] See Heiken, D. 2013. Riparian Reserves Provide Both Aquatic & Terrestrial Benefits - A Critical Review of Reeves, Pickard & Johnson (2013). https://dl.dropboxusercontent.com/u/47741/Heiken%202013.%20Review%20of%20Reeves%20et%20al%20Riparian%20Proposal.pdf

[60] See Heiken, Doug. 2009. The Case for Protecting Both Old Growth and Mature Forests, Version 1.8. Oregon Wild. http://dl.dropbox.com/u/47741/Mature%20Forests%2C%20Heiken%2C%20v%201.8.pdf (See especially the following sections that explain why the authors of the NWFP adopted a mostly hand-offs approach in reserves, except for dense young stands:

- Logging mature forests will impair development of important features of old-growth forests, especially snags and dead wood. p 29

Heiken (2009) explained:

> The Northwest Forest Plan prohibits logging of stands 80 years or older in the Late Successional Reserves for several reasons: (a) such stands are beginning to acquire late successional characteristics and provide valuable habitat for spotted owls and other wildlife; (b) there is a lack of evidence to support the hypothesis that logging in stands >80 years old is beneficial to habitat development; and (c) logging will likely do more harm than good.
>
> This reasoning is articulated in several scientific reports, including the 1990 Interagency Scientific Committee (ISC) Report, the 1993 SAT Report, and various reports to Congress where the scientists were being asked to explain to a skeptical committee in Congress why logging old forests could not be compatible with conserving late-successional forest ecosystems. The ISC report said "no consensus exists about whether any silvicultural systems would produce the desired results. The ability to harvest timber in currently suitable owl habitat and have that habitat remain suitable has not been clearly demonstrated."[61]
>
> The SAT noted that "considerable additional research is likely required" before we will know whether silviculture can be compatible with spotted owls, and while the spotted owl is relatively well studied, the risks and uncertainty are even more pronounced for the hundreds of other species associated with old-growth.[62] It should also be recognized that President Clinton's Mission Statement directed the FEMAT team to ensure that "tests of silviculture should be judged in an ecosystem context and not solely on the basis of single species or several species response."[63]
>
> The 1993 Report of the Scientific Analysis Team (SAT) specifically highlighted the risks associated with logging in suitable owl habitat, saying "intentions to selectively cut forest stands to create conditions favorable for spotted owls, represents increased risks to the viability of the spotted owl."[64] The Scientific Analysis Team said there are several factors that support this conclusion and affirm the Interagency Scientific Committee's decision to exclude logging in old growth reserves and rely on natural processes to maintain and restore habitat:

- In all forest types, recognize that logging has trade-offs. p 34
- In moist provinces, mature forests just need time, not logging. p 35
- In dry provinces, fire hazard is over-stated. Logging mature trees will just make things worse. p 39")

[61] Thomas, J.W., E.D. Forsman, J.B. Lint, E.C. Meslow, B.R. Noon, and J. Verner. 1990. A Conservation Strategy for the Northern Spotted Owl. A report by the Interagency Scientific Committee to address the conservation of the northern spotted owl. USDA, Forest Service, and U. S. Department of the Interior, Fish and Wildlife Service, Bureau of Land Management, and National Park Service. Portland, OR (*herein* ISC Report), 1990, p 104.

[62] Thomas, JW, Raphael, MG, Anthony, RG, Forsman ED, Gunderson, AG, Holthausen, RS, Marcot, BG, Reeves, GH, Sedell, JR, and DM Solis. 1993. Viability Assessments and Management Considerations for Species Associated with Late-Successional Old-Growth Forests of the Pacific Northwest. The Report of the Scientific Analysis Team (*herein* SAT Report), 1993, p 147.

[63] FEMAT Report, p iii.

[64] SAT Report p 145.

a. "Lacking experience with selective cutting designed to create spotted owl habitat, such practices must be considered as untested hypotheses requiring testing to determine their likelihood of success. ... Given the uncertainty of achieving such expectations, it is likely that some silvicultural treatments, which have been characterized as largely experimental, may well have an opposite effect from that expected. Consequently, such treatments may hinder the development of suitable habitat or they may only partially succeed, resulting in development of marginal habitat that may not fully provide for the needs of spotted owls. Results which fall short of the expected conditions could occur because of delay or failure to regenerate stands that have been cut, increased levels of windthrow of remaining trees, mechanical damage during logging to trees remaining in the logging unit, the spread of root rot and other diseases. Increased risk of wildfires associated with logging operations that increase fuels and usually employ broadcast burning to reduce the fuels also increase the risk of not attaining expected results. Such events may spread to areas adjacent to stands that are logged, thereby affecting even more acreage than those acres directly treated." [SAT p 147-148] The SAT indicates that these comments apply equally to density management and patch cutting, both of which are being promoted as tools to enhance owl habitat. The SAT also cited concerns about the effect of logging on snags and down woody debris which are essential features of owl habitat.

b. "Planning produces a description of desired future conditions [and] culminates in a final plan for a project which, for timber sales, involves legal contracts obligating the purchaser and the seller to specific provisions. … Our experience is that commonly not all provisions of the plan are thoroughly incorporated into such contracts, nor are all contract provisions thoroughly administered to ensure compliance." [SAT p 148-149].

c. "There are also probabilities associated with how well monitoring will identify 'trigger points' that indicate a management plan may need modification. The more complex the plan (i.e., the more variables there are to monitor) the less likely the monitoring plan will successfully detect problems. Manipulation of forest stands to accelerate development of spotted owl habitat on a landscape scale, as prescribed in the Bureau of Land Management Preferred Alternative, is an extremely complex issue involving a myriad of variables over a very long timeframe. Development of a monitoring plan intensive enough to isolate the causes of observed variations for wide-scale implementation of the Bureau of Land Management Preferred Alternative seems unlikely to us. … [I]nadequate monitoring will increase, perhaps dramatically, the risk of failure of a plan that relies heavily on adaptive management." [SAT p 149].

d. "A basic requirement for a viable adaptive management strategy is the existence of resources necessary to make the required adjustments. Adaptive management can only be expected to reduce risk if options to adjust management to fit new circumstances are not eliminated. Adaptive management, therefore, can be considered a means to reduce risk associated with a Resource Management Plan commensurate with the options for adjustment which remain during the time the plan is in effect." [SAT p 149-150] In other words, silvicultural manipulation of mature forests has long-term consequences and is likely to foreclose some future options in

those stands, thus reducing the utility of adaptive management. A prime example is the fact that logging "captures mortality," yet mortality is an essential feature of old-growth habitat used by both spotted owls and their prey.

e. SAT then noted the cumulative effects of all these uncertainties: "The combined risks associated with treatment of spotted owl habitat or stands expected to develop into suitable habitat for spotted owls, as discussed above, will likely result in situations where either habitat development is inhibited or only marginal habitat for spotted owls is developed. The exact frequency of these partial successes or failures is unknown. Given the likely cumulative relationship among the risks for each factor, it appears to us that the overall risk of not meeting habitat objectives is high. … Members of the Interagency Scientific Committee indicated that, because a plan (the Interagency Scientific Committee's Strategy) was put forth which proposes to reduce the population of a threatened species by as much as 50 percent, providing the survivors with only marginal habitat would be extremely risky and certainly in their minds not 'scientifically credible' [65]

f. The SAT concluded, "The transition period (1-50 years) between implementation of the Interagency Scientific Committee's Strategy and achievement of an equilibrium of habitat and spotted owls is a critical consideration. … Given the existing risks that face owl populations and the sensitivity of the transition period, the short-term effect of these actions on habitat loss may be much more significant than the long-term predicted habitat gains. We further conclude that, although research and monitoring studies are presently being initiated, no significant new data exist which suggest that the degree of certainty that is expressed in the Bureau of Land Management Draft Resource Management Plans for developing owl habitat silvicultural treatments is justified. Therefore, it is our opinion that the course prescribed in the Interagency Scientific Committee's Strategy, pertaining to timber harvest in Habitat Conservation Areas, remains the most likely course to result in superior habitat conditions within reserves (i.e., Old-Growth Emphasis Areas). The approach prescribed by the Interagency Scientific Committee's Strategy preserves options for adjustments in the course of management under a philosophy of adaptive management." [66]

The authors of the Northwest Forest Plan took all this into account and determined that 80 years is a useful place to draw the line between younger forests that are likely to benefit from careful thinning and older forests that are likely to experience net negative consequences.[67] There is no new science to change that conclusion. In fact, new information developed since 1994 shows that dead wood is probably more

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[65] USDA 1991:45., SAT p 151. file://localhost/mailbox/::C%257C:Documents%20and%20Settings:netcorps:Application%20Data:Thunderbird:Profiles:0a0zzrc0.default:Mail:pop.efn.org:Inbox.sbd:DC%3Fnumber=100232524 - _ftn3

[66] SAT p 151-152.

[67] See 1993 SAT Report pp 146-152. AND February 1991 Questions and Answers on A Conservation Strategy for the Northern Spotted Owl (prepared in response to written questions from the Senate Energy and Natural Resources Committee to the Interagency Scientific Committee on the May 1990 ISC Report. AND Jerry Franklin, David Perry, Reed Noss, David Montgomery, Christopher Frissell. Simplified Forest Management To Achieve Watershed And Forest Health: A Critique. National Wildlife Federation. http://www.coastrange.org/documents/forestreport.pdf

valuable than previously thought. It is important for a wide variety of ecological functions, not least of which is providing complex habitat to support owl prey species. Thinning stands over 80 years will remove many large trees and prevent them from ever becoming snags and dead wood. The long-term loss of recruitment of dead wood habitat in older stands is a very strong argument against logging in stands over 80 years old.[68]

Structure-based management (SBM) is often suggested as a way to produce logs and habitat from the same forests, but this is not a well-supported approach to managing older forests. There are well-founded critiques which point out that structure-based management is untested, uncertain, high risk, and unlikely to result in desired outcomes. Consider the well-developed critique of structure based management set forth by the Scientific Panel on Ecosystem Based Forest Management:

> The concept that all forests must be silviculturally manipulated (logged) and eventually replaced in order to provide desired goods and services, including the continued health of forest landscapes, is an old and honored tradition. … The proposition that forest values are protected with more, rather than less logging, and that forest reserves are not only unnecessary, but undesirable, has great appeal to many with a vested interest in maximizing timber harvest. … Our interpretation of the scientific literature, combined with our professional experience, leads us to some very different conclusions about appropriate approaches. Scientifically based strategies for the conservation of forest ecosystems, with a sound theoretical basis in conservation biology—including biodiversity and critical ecological services—have inevitably incorporated reserves along with ecologically sensitive management of unreserved areas (e.g., FEMAT 1993). … In our view, the assumptions underpinning simplified structure-based management (SSBM) are not supported by the published scientific literature on structural development of natural forests, disturbance ecology, landscape ecology and conservation biology, or by the relationships between ecosystem structures and processes. … We do not believe, however, that scientific literature or forestry experience supports the notions that intensively managed forests can duplicate the role of natural forests, or that sufficient knowledge and ability exist to create even an approximation of a natural old-growth forest stand.[69]
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> …

[in dry forests]

Hanson et al (*in press*) reviewed 2 decades of fire records in conifer forests in dry provinces of the Northwest Forest Plan and found that the proportion of area burned and the severity of

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[68] USDA Forest Service. 2007. Curran Junetta Thin Environmental Assessment. Cottage Grove Ranger District, Umpqua National Forest. June 2007. http://www.fs.fed.us/r6/umpqua/projects/projectdocs/curran-junetta-thin/index.shtml This EA revealed that heavy thinning in young stands would delay attainment of objectives for recruitment of dead wood for 6 decades or more.

[69] Jerry Franklin, David Perry, Reed Noss, David Montgomery, Christopher Frissell. Simplified Forest Management To Achieve Watershed And Forest Health: A Critique. National Wildlife Federation. http://www.coastrange.org/documents/forestreport.pdf

fire has not changed significantly.[70] These findings, along with the evidence that logging has unavoidable adverse impacts, indicates that caution is warranted. We should not encourage excessive and unwarranted logging in mature forests. PNW Research Station recently reported that profit-driven fuel reduction logging can conflict with both habitat objectives and fire risk reduction objectives.[71]

If there is a new push for timber volume from mature forests and trees, it will cause fire hazard to increase. Commercial logging can increase fire hazard by making forest stands hotter and windier, and fuels dryer. "Thinning opens stands to greater solar radiation and wind movement, resulting in warmer temperatures and drier fuels throughout the fire season. [T]his openness can encourage a surface fire to spread. …"[72] Opening the canopy also stimulates the growth of new surface and ladder fuels, and logging moves fine fuels from the canopy to the ground where they are more available for combustion.

BLM's Western Oregon Plan Revision EIS confirms that fire hazard will increase in areas managed for timber production, and that retaining more canopy cover would help reduce fire hazard. "The more canopy that would remain, the less effect wind would have on drying fuels and surface fires. This reduction in mid-flame wind speed would reduce flame length, which can lead to a reduction in tree mortality. … A lower probability of mortality equates to greater fire resiliency."[73]

The current DEIS does not provide adequate discussion or explanation for the radical departures from these important Northwest Forest Plan requirements.

RANGE OF ALTERNATIVES

In preparing an EIS, NEPA requires the agency to "study, develop and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources."[74] The regulations implementing NEPA explain that alternatives to the agency's proposed action are "the heart of the environmental impact statement."[75] The "touchstone" of the alternatives analysis is "whether [the] selection and discussion of alternatives fosters informed decision-making and informed

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[70] Hanson, C.T., Odion, D.C., DellaSala, D.A., and W.L. Baker. *in press.* Overestimation of fire risk in Northern Spotted Owl Recovery Plan. Conservation Biology.

[71] PNW Research Station. 2006. Seeing The Bigger Picture: Landscape Silviculture May Offer Compatible Solutions To Conflicting Objectives. Science Findings. July 2006. Http://Www.Fs.Fed.Us/Pnw/Sciencef/Scifi85.Pdf

[72] USDA Forest Service; Influence of Forest Structure on Wildfire Behavior and the Severity of Its Effects, November 2003. http://www.fs.fed.us/projects/hfi/2003/november/documents/forest-structure-wildfire.pdf

[73] BLM. 2008. Western Oregon Plan Revision FEIS, pp 810-811.

[74] 42 U.S.C. § 102(2)(E).

[75] 40 C.F.R. § 1502.14; *see also* 42 U.S.C. § 4332(2)(E); 40 C.F.R. 1507.2(d), 1508.9(b).

public participation."[76] "The existence of a viable but unexamined alternative renders an environmental impact statement inadequate." [77]

The BLM failed to consider a reasonable range of alternatives in the DEIS. First, BLM explains that it did not consider an alternative that would examine the status quo, which is implementation of the Northwest Forest Plan *as amended and currently implemented*.[78] BLM's rationale for not analyzing effects of the NFP as implemented is that:

> *It is not possible to analyze continuation of the current practices within the decision area as the No Action alternative for two reasons. First, implementation of the timber management program has departed substantially from the outcomes predicted in the 1995 RMPs, and the manner and intensity of this departure has varied substantially over time and among districts (USDI BLM 2012, pp. 6-12). There is no apparent basis on which the BLM might select and project into the future continuation of the practices from a specific year (or set of years) since 1995. Second, continuing to harvest timber at the declared annual productive capacity level for multiple decades into the future would not be possible using the current practices (USDI BLM 2012, pp. 6-12). The No Action alternative provides a benchmark to compare outputs and effects, even though this alternative does not meet the purpose and need of the project. Because of the inherent unsustainability of current practices, the BLM cannot project their implementation into the future; thus, continuation of the current practices would not serve the essential function of the No Action alternative of providing a baseline for comparison of outputs and effects.*[79]

This rationale is arbitrary and capricious. While it may be true that the BLM's timber program has departed from timber harvest *estimates* in existing RMPs or even the NFP, this does not mean that BLM cannot model or predict how existing RMPs will affect the environment. BLM could simply forecast timber outputs based on continued application of the RMPs as amended by court order or other change; and BLM provides no evidence that this approach is inappropriate. Indeed, in order for the agency to conclude that the existing RMPs are not "sustainable over time," it must have completed some sort of calculations; but this evidence is not in the DEIS or appendices.

Similarly, BLM claims that "continuing to harvest timber at the declared annual productive capacity level for multiple decades into the future would not be possible using the current practices," and cites its 2012 *Resource Management Plan Evaluation Report: Western Oregon* for support. However, that report simply lists reasons why BLM has not met the timber targets in existing RMPs, not that it is impossible to continue to implement existing RMPs as amended by the NFP and to project those environmental consequences into the future.[80]

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[76] *Westlands Water Dist. v. U.S. Dep't of Interior*, 376 F.3d 853, 872 (9th Cir. 2004) (*quoting California v. Block*, 690 F.2d 753, 767 (9th Cir. 1982)).
[77] *Morongo Band of Mission Indians v. FAA*, 161 F.3d 569, 575 (9th Cir. 1998); *Alaska Wilderness Recreation & Tourism v. Morrison*, 67 F.3d 723, 729 (9th Cir. 1995).
[78] DEIS at 77-79.
[79] DEIS at 77.
[80] 5 U.S.C. § 706(2)(A).

I. ARTICULATION OF ENVIRONMENTAL CONSEQUENCES FROM ALTERNATIVES

The DEIS is clear that the BLM does not intend to select one of the alternatives analyzed in the DEIS, but instead will select aspects of the various alternatives for implementation. DEIS at 76. For that reason, each alternative contains different mixes of uses that seek to offset any environmental "benefit" (i.e., protection) with a commensurate amount of environmental "harm" (i.e., extraction). While this is an attempt to develop alternatives that are "balanced," in practice it means that the public cannot assess the individual components of each alternative. Instead, the public is left with the impression that more timber harvest means less environmental protection, which, while likely true, does not allow for the public to have a true understanding of the actual differences among the alternatives, or what combination of particular aspects of particular alternatives have what particular environmental effects. For example, an alternative that allocates more land to the timber harvest base, but also decreases riparian buffers and increases ACEC designations over the status quo may have the "same" effects on fisheries as an alternative that reduces lands in the harvest base but also increases riparian buffers and does not designate any additional ACECs. This alternatives approach does not allow the public to clearly understand the differences among alternatives and to make a reasoned choice among them.[81]

II. INCREASED DISCRETION HAS ADVERSE ENVIRONMENTAL CONSEQUENCES.

BLM's internal agency reward system leads to unintended consequences. Unreasonably high timber targets combined with highly discretionary standards and guidelines will lead to abuse of discretion and failure to attain environmental objectives.

The EIS needs to take a hard look at the adverse effects from increased discretion, especially increased flexibility for logging in reserves. Rules for riparian reserves and LSRs provide too much discretion, allowing BLM to log inside the riparian areas for reasons other than restoring aquatic resources. Logging often causes a mix of positive and negative effects. In an effort to meet timber targets, BLM will focus on the benefits and ignore the adverse trade-offs, and therefore likely lead to logging in reserves with net negative effects on ecological objectives for the reserves.[82]

The action alternatives leave very little of the BLM landscape off-limits to logging. Subtracting structurally complex LSR, inner riparian zones, and congressionally reserves lands, leaves 63% of BLM lands open to logging under the preferred alternative.

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[81] *California v. Block*, 690 F.2d at 767.

[82] See Heiken, Doug. 2009. The Case for Protecting Both Old Growth and Mature Forests, Version 1.8. Oregon Wild. http://dl.dropbox.com/u/47741/Mature%20Forests%2C%20Heiken%2C%20v%201.8.pdf

2015 BLM RMP Analysis of what's open to logging				
Open to logging	**Acres**	**Not open to logging**	**Acres**	
LSR	636,635	LSR that is structurally complex*	463,910	
outer riparian zone**	167,729	inner riparian zone	232,083	
HLB Low	77,384	cong reserved	40,537	
HLB mod	224,582	district reserves - not including road footprint*	187,926	
HLB uneven	274,199			
East Side Mgt Lands	151,885			
District Reserve Road Footprint**'	33,701			
Totals	1,566,115		924,456	2,490,571
Percentages	**63**		**37**	

3. The DEIS Fails To Distinguish Differences Among Alternatives.

The DEIS seems to focus too much on the similarity among alternatives instead of highlighting differences. The purpose to NEPA is to help the decision-maker choose among alternatives, so the analysis must be redone to better highlight differences that are relevant to the decision-maker's choice among alternatives.

For instance, the DEIS at 225 says "All of the alternatives would increase the potential large wood and small functional wood contribution to streams from the current conditions. There is no meaningful difference discernible at this scale of analysis among the alternatives in their effect on potential wood contribution." This fails to recognize that there are significant differences in wood recruitment among the alternatives. In particular, those that allow commercial logging within the riparian reserves will capture mortality and reduce recruitment of functional wood to both the stream and the adjacent stream-side habitat. Another example is on page 233 of the DEIS which says "there would be no identifiable difference among the alternatives in the effects on fish from peak flow increases …" This does not mean that differences will not occur but rather, BLM reached this conclusion because the analysis was done at a scale that was not designed to identify differences.

As another example, DEIS at 315 states "Although the absolute values for increased potential fine sediment delivery through 2023 vary by alternative, these differences do not represent a substantial difference in the effects of the alternatives, because the increases in sediment delivery and the differences among the alternatives in future increases in sediment delivery are so small in comparison to the existing sediment delivery." This is misleading. Instead of highlighting the small additional level of sediment produced at a regional scale compared to the sediment from existing roads, BLM should disclose that some of the new sediment would be produced in areas that are not currently exposed to high levels of sediment form existing roads. There are local effects that will be significant and differ significantly among alternatives that allow more or less logging and road building near streams.

DEIS at 430 says "there is no basis for predicting a difference in effects between the No Action alternative and Alternatives A, B, and C" with respect to conservation of rare plants and fungi. This is high misleading, especially given the fact that the no action alternative requires pre-disturbance surveys and protection buffers for rare and uncommon species, while the action alternatives do not require surveys and will result in the loss of countless populations of rare and uncommon wildlife. The action alternatives won't even protect existing known sites of rare and

uncommon species on O&C lands "when protection measures … conflict with sustained-yield timber production…" There are many bases for BLM to distinguish alternatives but BLM offers a misleading analysis that highlights similarities. This is arbitrary and capricious.

BLM is basically asking the wrong questions and failing to highlight the choice faced by decision-makers. The EIS needs to clearly show that more logging allowed near streams, more regeneration logging with less retention, more logging of older forests, and more logging without survey for rare and uncommon species, will result in greater the adverse effects to fish, water, wildlife, carbon, and recreation. It is important for the decision-maker to understand this and to be able to see and understand these differences among alternatives.

One example where BLM does find a substantial difference is on DEIS at 255 which says "There is a substantial difference in the structural complexity of most future forests when comparing the even-aged management (which includes clear-cutting) practices in the HITA in Alternatives A and C to the two-aged practices (which include variable retention-regeneration harvest) in the No Action alternative, and the LITA and MITA in Alternatives B and Sub-alternative B, and the MITA in Alternative D." This is an important disclosure that should lead the decision-maker to choose an alternative that retains more structure in regeneration harvest areas. It also shows why BLM finds a difference – because it looked at stand-scale effects, instead of regional effects. BLM needs to do more of this and ask further questions such as. What are the local stand-scale and reach-scale effects of more logging near streams or near populations of rare and uncommon wildlife.

Once these local effects are more clearly understood and disclosed, BLM can then add up those effects to provide a clearer picture of cumulative impacts.

AQUATIC CONSERVATION STRATEGY

The Northwest Forest Plan included the Aquatic Conservation Strategy ("ACS") developed by FEMAT. The ACS has four basic components: (1) a system of key watersheds or refugia comprising watersheds with the best aquatic habitat or the greatest potential for recovering at-risk fish stocks; (2) riparian reserves along streams where certain activities are constrained; (3) watershed analysis to be used to tailor activities to specific watersheds needs; and (4) a comprehensive, long-term watershed restoration program.[83]

The ACS imposed constraints on habitat-degrading activities in two ways. First, binding standards and guidelines restrict certain activities within riparian reserves and key watersheds.[84] Second, FEMAT recognized the need to constrain: (1) activities outside riparian reserves in, e.g., unstable areas; and (2) the cumulative impacts of activities throughout a watershed.[85] Instead of imposing explicit constraints on such activities, the ACS has nine objectives that require aquatic habitat to be maintained and restored to properly functioning conditions.[86] The Northwest Forest Plan Record of Decision gave the ACS objectives binding force as standards and guidelines and

[83] Northwest Forest Plan Record of Decision at B-12; FEMAT at V-32.
[84] See Northwest Forest Plan Record of Decision at C-7, C-30 to C- 38.
[85] FEMAT at V-29.
[86] Northwest Forest Plan Record of Decision at B-11; FEMAT at V-30 to-31.

explicitly required that federal lands shall be managed to attain the ACS objectives. "Both FEMAT and the [Northwest Forest Plan] contemplate that projects must be consistent with ACS objectives."[87]

When Judge Dwyer upheld the validity of the Northwest Forest Plan, he cautioned with respect to the ACS that, "[I]f the plan as implemented is to remain lawful, the monitoring, watershed analysis, and mitigating steps called for in the ROD will have to be faithfully carried out, and adjustments made if necessary." *Seattle Audubon Soc'y*, 871 F. Supp. at 1322. More recently, courts have found that FEMAT embodies the best available scientific information pertaining to the impacts of forestry activities on salmon and their habitat.[88]

The BLM offers no compelling rationale for why all of the proposed action alternatives eliminate the Aquatic Conservation Strategy Objectives and the Key Watershed designations of the NWFP. As confirmed in the 20-year NWFP Monitoring Report, the Aquatic Conservation Strategy Objectives and the Key Watershed designations have proven effective at improving water quality. The BLM's refusal to develop or consider an action alternative that retains these bedrock conservation elements of the NWFP is arbitrary and capricious.

As acknowledged by the BLM on pages 9-10 of the DEIS, FLPMA (43 USC 1701[a][8]) directs the agency to protect water resources and the O&C Act (43 USC 1181a) requires the BLM to manage forests for the purpose of protecting watersheds. At no point in the DEIS does the BLM identify how abandoning the ACS of the NWFP will achieve those objectives or contribute to attaining the purpose and need of the plan revisions process.

I. RIPARIAN RESERVES ARE AN INTEGRAL PART OF THE ACS.

The FEMAT scientists first convened in April 1993 and assessed the likelihood of having the continued persistence of the species, well-distributed throughout its historical range on federal lands over the next 100 years.[89] They were instructed to assume that the Aquatic Conservation Strategy would be fully implemented. For the salmon species considered, the likelihood of their continued survival on these lands over the next 100 years was only 65%.[90] Only when the riparian reserves and other mitigation measures were added into the protections of the ACS did the Northwest Forest Plan result in an 80 percent or greater likelihood of continued existence of salmon and steelhead.[91]

Recognizing that the ACS represented the best available science on the intersection between forest management and salmonid protection, NMFS has relied on ACS consistency in order to

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[87] PCFFA v. NMFS, No. 04-1299RSM, Order on Report and Recommendation, slip op. at 4 (W.D. Wash. March 30, 2007).
[88] *PCFFA v. NMFS*, 71 F. Supp.2d 1063, 1069 (W.D. Wash. 1999); see also *PCFFA v. NMFS*, No. 04-1299RSM, Order on Report and Recommendation, slip op. at 6 (W.D. Wash. March 30, 2007) ("The FEMAT scientists are respected scientists and their views relevant.").
[89] FEMAT at IV-40.
[90] FEMAT Table V-11, at V-69.
[91] FSEIS at 3&4-196; App. J2- 47-48.

judge jeopardy. "[B]ecause NMFS is allowed to equate ACS consistency with a no jeopardy finding, NMFS chooses to inquire into ACS consistency."[92]

Riparian forests are distinctly different from upland forests because they are located adjacent to stream channels where dynamic processes of stream flow and sediment transport interact with vegetation. Riparian forests have a dual role of providing water quality and habitat for freshwater species as well as late-successional habitat for a variety of birds, mammals and other species. Plants along streams and aquatic animals have distinct management needs quite different from upland areas. A large body of scientific literature describes interactions between riparian forests and stream channels as well as larger scale watershed processes.

II. THE BLM SHOULD WORK TOWARD SALMON RECOVERY

The recovery of threatened salmonids (e.g. the Southern Oregon Northern California Coast (SONCC) coho salmon Evolutionary Significant Unit and the Oregon Coast coho salmon ESU) must be a high priority for the RMP planning process. Development of the 1995 Medford District RMP and other RMPs anticipated federal ESA fish listings by adopting the Aquatic Conservation Strategy (ACS) of the Northwest Forest Plan into RMPs. Subsequently, the SONNC coho salmon ESU was federally listed as threatened in 1997 and the listing reaffirmed in 2006. The NOAA Fisheries has determined that the Northwest Forest Plan ACS is adequate for protection and recovery of listed fish ESUs, including the SONCC. We recommend that the ACS be used in all alternatives. Incorporation of the ACS would assure approval by NOAA fisheries and avoid questions of legality as occurred in the WOPR. We are concerned that the RMP process is emphasizing forestry classifications (e.g. moist/dry) that are designed to be compatible with spotted owl recovery while largely ignoring the need for protection of riparian forests to recover coho salmon.

Habitat monitoring has found that streams have generally improved with the ACS (Lanigan et al. 2011). Unfortunately, SONCC coho salmon populations have recently declined despite modest improvements in habitat. The SONCC coho recovery plan states that the SONCC coho salmon ESU is at high risk of extinction and is not viable." The parallel to spotted owl declines is striking but not surprising since both species are strongly dependent on watersheds with mature and old growth forest cover.

Riparian Forests are best managed with treatments that enhance structure through decadence creation, underplanting and prescribed fire (see Franklin et al. 2009:32). We believe these silivicultural treatments are appropriate in riparian forests because they do not remove structure (i.e. coarse wood) needed for the dual purpose of providing habitat for animals and integrity for stream channels. Commercial thinning in riparian forests is often not appropriate because it removes the very component (coarse wood) needed to achieve desired conditions and creates numerous adverse impacts antithetical to stream integrity.

[92] PCFFA v. NMFS, 265 F.3d 1028, 1034-35 (9th Cir. 2001) (further noting that presumably other methods of reaching a jeopardy determination are available, but discussing none).

III. PROTECT KEY WATERSHEDS

The RMP fails to identify a hierarchical system of 5th, 6th, and 7th field coho "key" spawning and coho "key" rearing watersheds with requirements to substantially reduce road density and grazing in 6th and 7th field watersheds. Summer steelhead would also be high priority for key watershed designations. Key watersheds were identified in the Northwest Forest Plan prior to the listing of coho salmon. Federal listings of coho salmon, SONCC coho recovery plan, and recent research findings[93] indicate a need to build on key watershed component of the ACS to direct effective recovery actions at appropriate watershed scales. Although not federally listed, summer steelhead in the Rogue Basin are at a high risk for loss of viability over the next decades. Generally coho and summer steelhead spawn in the same tributaries, thus these watersheds or sub-watersheds would be high priority for key watershed designation (e.g. Cheney Creek, Foots Creek, Evans Creek etc.).

IV. BASIS FOR KEY WATERSHED RMP STANDARDS AND GUIDELINES

Refugia are a cornerstone of most species conservation strategies. Williams et al. (2011b) identified four critical elements for watershed scale conservation: (1) maintain processes that create habitat complexity, diversity and connectivity;(2) nurture all of the life history stages of the fishes being protected; (3) include a large enough watershed to provide long-term persistence of native fish populations and (4) provide management that is sustainable over time. A system of Coho Key Watersheds that serve as refugia is crucial for maintaining and recovering habitat for threatened coho salmon within core areas identified in SONCC recovery plan. Coho Key Watersheds would include areas of high quality habitat as well as areas of degraded habitat. Coho Key Watersheds with high quality conditions would serve as anchors for the potential recovery of depressed populations segments within core population areas. Those areas of lower quality habitat with a high potential or capacity for restoration and will become future sources of high quality habitat with the implementation of a comprehensive restoration program.

As stated in our scoping comments, we recommend that 5th field watersheds with relatively high amounts of high intrinsic potential coho habitat and relatively high spawner counts be identified in RMPs as Key Coho Watersheds. For example, in the Illinois Basin, Sucker Creek, Deer Creek, upper East Fork Illinois River, Elk Creek and possibly Althouse Creek would be identified as Coho Key Watersheds to support core area designation in the SONCC Coho Recovery Plan (p. 30-6). Within Coho Key Watersheds we recommend that sufficient 6th or 7th field sub-watersheds be identified as Coho Key Spawning Watersheds. Likely candidates as Key Coho Spawning Watershed would be smaller watersheds of "key" streams (e.g., Bear Creek and Grayback tribs to Sucker Creek). Mainstem areas of 5th field watersheds are often too unstable for successful spawning by coho because of instability of gravel beds during winter peak flows.[94] Thus, it is common to find high concentrations of coho spawning in only a few tributaries of 5th field watersheds or in spring fed side channels buffered from bedload movement (e.g., Sucker Creek). A portion of juvenile coho migrate to mainstem 5th field stream areas suitable for rearing

[93] Firman et al. 2011
[94] Nawa and Frissell 1997.

or seek out other tributary reaches. The relatively small 6th and 7th field sub- watersheds would be high priority areas for intensive road decommissioning and grazing reduction.

A review by Carnefix and Frissell (2009) found that it is more effective to reduce road densities to very low densities in selected high priority watersheds than to reduce high road densities to only moderate levels. A road density effect on adult coho salmon was corroborated by Firman et al. (2011) who found that "[p]redictor variables indicative of land management, cattle density, and road density were negatively associated with peak spawner densities in many of our models."

The coho populations studied were spawning in 7th field watersheds. This is important because reducing road densities is extremely costly. Reducing roads to very low densities in 6th and 7th field Coho Key Spawning Watersheds would be far more practical and effective than attempting to reduce road densities in Coho Recovery Plan "population" areas that are many times larger. The recommended restoration strategy is to concentrate road density reductions in small watersheds where they will be most effective to benefit known coho spawning populations.

V. RECOMMENDED STANDARDS AND GUIDELINES FOR KEY WATERSHEDS

- Coho Key Watersheds are highest priority for watershed restoration;
- No new roads would be built in Coho Key Watersheds;
- Road Densities in Coho Key Spawning Watersheds would be reduced to 0-0.5/mi^2 during first ten years of plan;
- Grazing would be reduced or eliminated in Coho Key Spawning Watershed; and
- Watershed analysis is required prior to major ground disturbing management activities such as timber harvest in Coho Key Watersheds.

VI. THE BLM SHOULD MAINTAIN RIPARIAN RESERVES

> *The No Action alternative has wider Riparian Reserve widths on fish-bearing streams than all action alternatives." –DEIS at 228.*
>
> *[T]he Riparian Reserves in the No Action alternative were designed to meet an array of objectives, including broad ecological objectives and riparian and terrestrial species habitat. In contrast, the Riparian Reserves in the action alternatives are designed to meet narrower objectives: conservation and recovery or listed fish and protection of clean water, consistent with the purpose and need for action. -DEIS at 80.*

The BLM offers no compelling rationale or reason for its refusal to develop and consider action alternatives that meet the "broad ecological objectives" for Riparian Reserve management that underlie the NWFP. Indeed, federal courts have ruled that the NWFP conservation plan (including the terrestrial habitat connectivity function of Riparian Reserves) is the absolute minimum allowed by federal law. The DEIS contains no proposal to replace the habitat connectivity function provided by NWFP Riparian Reserves and contains no analysis or disclosure of the impacts of reduced riparian widths on terrestrial wildlife connectivity. Thus the

BLM is stepping away from minimum level science based broad ecological objectives that provide a comprehensive management approach to federal lands throughout the entire region, which is what the purpose and need of this DEIS calls for.

As illustrated in Table 3-89 of the DEIS, several BLM action alternatives would allow logging impacting 275-372 miles of fish-bearing and perennial streams "susceptible to shade reductions that could affect stream temperatures." Raising stream temperatures directly inhibits BLM watershed management goals and may result in violations of the Clean Water Act associated with TMDL listed-waterbodies.

Page 317 of the DEIS indicates that increase in riparian reserve logging proposed in every BLM action alternative would necessitate additional road construction within the "sediment delivery distance" (200 feet) near streams.

> *Within the sediment delivery distance (200' feet), newly constructed roads would primarily be constructed to provide access for forest thinning [logging] within the riparian reserve. In the action alternatives, this thinning [logging] would be limited to the outer zone of the riparian reserve." DEIS at 317.*

The BLM fails to quantify the amount of road to be constructed in Riparian Reserves or the amount of sediment that will be added to streams. The BLM neglects to disclose which streams in the planning area are currently TMDL listed for sediment and how the agency intends to meet its Clean Water Act obligations.

Please note that pages 332-335 of the DEIS indicate that the shade reductions and soil disturbance associated with Riparian Reserve logging will make "riparian habitats more susceptible to the introduction and spread of invasive plants" undermining BLM policy objectives for the management of invasive species and riparian habitats.

VII. BLM SHOULD RETAIN NWFP RIPARIAN RESERVES AND STANDARDS & GUIDELINES

We have two primary concerns with alternatives that modify streams buffers. First, the spatial extent of the buffers is reduced without any compelling justification. Second, the standards & guidelines governing activities in the buffers are weakened which will allow many activities to degrade the conditions that need careful conservation. We find no compelling rationale for either of these changes.

BLM claims that the riparian requirements under the no action alternative have conflicting objectives and that the action alternatives will increase certainty. This is inaccurate and misleading. The Northwest Forest Plan clearly prohibits timber harvest in riparian reserves. While it is true that the agencies have exploited some loopholes in that prohibition, that problem could be easily fixed with direction from BLM's state office. Contrary to BLM's assertions, the action alternatives actually increase uncertainty because most of the alternatives allow regeneration harvest in areas that are currently reserves, and they allow commercial logging in the outer portion of narrower stream buffers to achieve questionable purposes that will likely lead to conflict and controversy.

The DEIS fails to consider an adequate range of alternatives for riparian reserves. BLM should consider adopting wider stream buffers to meet several important policy objectives, including, but not limited to:

- Maintain and improve water quality;
- Maintain natural rates of wood recruitment both instream and adjacent areas that support terrestrial wildlife that live near streams;
- Provide high value habitat for spotted owls, marbled murrelets, and Pacific fishers that spend disproportionate time in lower slopes near streams;
- Increase old forest habitat to provide connectivity and support wildlife dispersal across the managed landscape;
- Provide habitat (including moderated microclimate and natural rates of wood recruitment) for numerous species that are not threatened & endangered;
- Provide greater assurance that salmon populations and water quality will be conserved;
- Provide carbon storage in highly productive streamside forests;
- Provide a buffer for increased climate extremes expected under climate change;
- Mitigate for amplified hydrologic cycle caused by climate change;
- Reduce landslide risk by encompassing a greater amount of potentially unstable lands;
- Protect of recreation and scenic values in areas where those values are high;
- Allow near stream forests to serve their natural functions including capture/store/release water, energy, sediment, carbon, nutrients, as well as provide unimpeded movement of wood, gravel, and organisms.

BLM should consider an alternative that retains the existing NWFP buffer widths with clarified standards & guidelines that limit active management to situations that provide clear net benefit to aquatic AND terrestrial wildlife, and do not retard attainment of ACS objectives.

BLM needs to compile and synthesize all the adverse impacts that are caused by reducing streamside buffers and increasing logging near streams, such as those listed above. Where effects are disclosed, the DEIS spreads these effect disclosures across numerous different sections of the DEIS, so the public and the decision-maker cannot see clearly all the public benefits that result from the simple requirement to maintain or increase stream buffers.

The DEIS does not address the original reasons for adopting wider buffers, nor provide a compelling alternative rationale for the proposed radical reduction of stream buffers. The Northwest Forest Plan adopted wider riparian reserves to meet a specific set of objectives that encompassed both aquatic and terrestrial wildlife and to mitigate cumulative effects. When an agency proposes to change course after making an important policy decision, the courts have consistently held that NEPA analysis must clearly explain the rationale for the change. This requires addressing the reasons for the original decision. The DEIS appears to lack any clear disclosure of the multi-faceted purposes of the riparian reserves and the diverse aquatic and terrestrial values that were intended to benefit from the adoption of wider stream buffers. The EIS needs to present the decision-maker with a clear picture of all the adverse impacts that will be caused by the choice whether to maintain or reduce stream buffers and whether to maintain or weaken rules protecting those buffers.

The Northwest Forest Plan explicitly adopted wider stream buffers for a variety of reasons that remain compelling to this day. BLM must not reverse the policy decision to protect wide stream

buffers absent a clear disclosure of a competing rationale and disclosure of the adverse effects of reduced protection for streamside forests. Oregon Wild has carefully reviewed and documented the original reasons for adopting wide stream buffers and Oregon Wild convincingly refutes all the rationales for reduced stream protection offered to-date. BLM must carefully review and respond to this analysis.[95] BLM is proposing to dramatically change the purposes of the riparian reserves in the Northwest Forest Plan from terrestrial AND aquatic purposes, to exclusively aquatic purposes. In making this change, BLM must carefully evaluate the original broad purposes of the riparian reserves, and provide a clear and compelling rationale for narrowing those purposes.

Most of the purposes of the wide riparian reserves adopted in the NWFP cannot be met by protecting forests elsewhere on the landscape. Simply put, meeting Recovery Action 32 is not a substitute for wide riparian buffers. Many of the purposes of the reserves are directly or indirectly connected to the unique slope positions and proximity to streams. For example, any amphibians are associated with streams but use habitat much farther than ½ to 1 site-potential tree distance from the stream. Narrow riparian buffers will have direct adverse effects on these amphibian species.

VIII. OTHER SPECIES RELY ON RIPARIAN AREAS

One of the key purposes of wide riparian buffers was to provide for dispersal of terrestrial organisms. This rationale has only increased in importance in the years since the Northwest Forest Plan was adopted.[96]

Spotted owls disproportionately use lower slopes near streams. Evidence indicates that spotted owls and barred owls are more likely to tolerate each other's presence in mixed hardwood-conifer forests near streams. These conditions often extent more than ½ to 1 site-potential tree distance from streams. Marbled murrelets disproportionately rely on nesting habitat near streams. Reducing stream buffers to ½ to 1 site-potential tree will shrink potential marbled murrelet nesting opportunities and expose marbled murrelet nest patches to next predation. Even wildlife that live within ½ to 1 site-potential tree still rely on protection of forests beyond that narrow buffer. Reducing stream buffers will expose their habitat to edge effects such as increase wind, increased temperature, reduced humidity, and reduced input of down wood which is in short supply as a result of past practices and which so many wildlife species rely on. This is why the authors of the NWFP saw a need for a buffer-on-the-buffer.

The DEIS does not disclose all of these significant adverse effects from reduced stream buffers. The DEIS analysis of riparian reserves does not address all the values provide by riparian reserves. The analysis focused exclusively on listed fish and water quality, but riparian reserves also provide value to non-aquatic species such as spotted owls and marbled murrelets and Pacific fisher, which spend disproportionate time on lower slopes near streams. Wide riparian buffers

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[95] See Heiken, D. 2013. Riparian Reserves Provide Both Aquatic & Terrestrial Benefits - A Critical Review of Reeves, Pickard & Johnson (2013). https://dl.dropboxusercontent.com/u/47741/Heiken%202013.%20Review%20of%20Reeves%20et%20al%20Riparian%20Proposal.pdf.

[96] See Alexander K. Fremier. Leona K. Svancara, Michael Kiparsky, Dale D. Goble, Stephan Gmur, Barbara Cosens, Jocelyn Aycrigg, Frank W. Davis, Robin Kundis Craig, J. Michael Scott (2015) A riparian conservation network for ecological resilience. Biological Conservation 191 (2015) 29–37.

also meet the purpose and need to reduce fire hazard by maintaining more mature forest and less regeneration harvest that leads to hazardous fuel conditions. Wide riparian buffers also contribute to community stability by protecting important public values near streams and by constraining timber harvest that makes communities boom and bust. The DEIS analysis of the alternatives therefore fails to recognize all the important effects of the wide buffers in the no action alternative.

The DEIS fails to address the unique values of lands near streams. BLM treats all lands outside of their new narrow buffers as if they were interchangeable in providing habitat functions for spotted owls, marbled murrelets, and other wildlife. BLM is assuming that protecting old forest far from streams is equivalent to protecting habitat near streams. This is wrong. The no action alternative protects wider riparian buffers. These forests may appear to resemble upland habitat, but their proximity to streams makes them function differently, and the EIS needs to recognize this.

Reeves et al. admit that riparian reserves were established to provide "dispersal corridors for a variety of terrestrial organisms" and "[t]he boundaries of the Riparian Reserve were extended to a full site-potential tree height on all non-fish bearing streams … to provide additional support for non-fish organisms that use the area near streams as habitat or migratory corridors"[97] but their analysis never fully acknowledges the scope of the terrestrial wildlife objectives expected from riparian reserves, nor does their analysis show whether terrestrial objectives will be met if riparian reserves are systematically reduced as they propose.

Application of riparian reserves Scenario 1 throughout the range of the northern spotted owl was one of the key mitigations adopted to assure long-term viability of, not just fish, but a wide range of aquatic and terrestrial species. The EIS supporting the NWFP states: *[General Mitigation Measures] Application of Riparian Reserve Scenario 1 in the intermittent streams would benefit a wide variety of terrestrial and aquatic species by providing additional habitat. These species include the northern spotted owl, coho salmon, amphibians, small mammals, and some vascular plants. Connectivity of the ecosystem would also be improved.*[98]

The NWFP Record of Decision adopted Riparian Reserve Scenario 1 with the explicit intention to benefit: spotted owls, marbled murrelets, marten, red tree vole,[99] vascular plants, bryophytes, amphibians[100] (especially tailed frog, Van Dyke's salamander, clouded salamander, Del Norte salamander, black salamander, Cope's giant salamander, Cascade torrent salamander, southern torrent salamander[101]), bats,[102] birds, mammals, mosses, arthropods,[103] goshawk, fisher, bufflehead, harlequin duck,[104] 19 mollusks,[105] 12 species of lichen, 23 species of fungi,[106] and

[97] Reeves et al. pp 8 and 9.

[98] 1994 FSEIS p 3&4 – 49.

[99] 1994 FSEIS, Appendix B-11, p B-143 -145.

[100] 1994 ROD p B-13.

[101] 1994 FSEIS p 3&4 – 176; 1994 FSEIS, Appendix J2, p 45.

[102] 1994 FSEIS pp 3&4 – 186-187.

[103] 1994 FSEIS, pp 3&4 – 61, 81.

[104] 1993 SAT Report, Ch 5, pp 296-298, 304, 308—309, 310.

130 species that were subject to "additional species analysis" because of viability concerns and received mitigation in the form of wider riparian buffers).[107] Two of these benefited species - the spotted owl and marbled murrelet - were already listed as "threatened" under the ESA when the NWFP was approved. Since the NWFP was adopted, three additional benefited species are warranted (or likely warranted) for ESA listing (the Pacific fisher, the Humboldt marten, and the North Coast DPS of the red tree vole).

In upholding the Northwest Forest Plan Judge Dwyer said "*The federal defendants were bound by law, and by the obvious fact of species interdependence, to consider the survival prospects of species other than vertebrates.*"[108] There is no new information available suggesting that the current buffers are not needed. In fact, there is some evidence suggesting that buffers should be extended to accommodate dispersal of wide-ranging amphibians over ridgetops.[109]

Reeves et al. devote a section of their paper (at pages 46-48) to address the terrestrial wildlife impacts of their proposal, giving five justifications for adopting smaller riparian reserves and why it will have "minimal" effects on terrestrial wildlife. All of their justifications are flawed.

Those flaws are described in detail in the following documents: Heiken, D. 2013. Riparian Reserves Provide Both Aquatic & Terrestrial Benefits - A Critical Review of Reeves, Pickard & Johnson (2013).[110] The DEIS does not address the voluminous evidence that riparian reserves like those in the no action alternative are irreplaceably important for spotted owls, marbled murrelets, and a variety of amphibians, as reported in Heiken (2013).

IX. RIPARIAN RESERVES CONTRIBUTE TO SPOTTED OWL CONSERVATION

The NWFP represents the "federal contribution to recovery" of the threatened northern spotted owl.[111] The NWFP relies on riparian reserves to provide benefits to spotted owls, including dispersal, connectivity, and demographic support. Reeves et al. dismiss the need to maintain riparian buffers for spotted owls because FWS' final critical habitat rule did not specifically incorporate riparian reserves. A more thorough review of the evidence shows that riparian

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[105] 1994 ROD p 38.

[106] 1994 FSEIS, Appendix J2, pp 20 – 23.

[107] 1994 FSEIS, Appendix J2; 1994 FSEIS, Appendix B11, pp B-143 – B-145. Martin Raphael. 2012. The Function of Riparian Reserves for Terrestrial Species – What Was the Intent? http://ecoshare.info/wp-content/uploads/2013/01/Raphael-buffers.pptx

[108] *Seattle Audubon Society v Lyons*, 871 F. Supp. 1291 (W.D. Wash. 1994).

[109] Science Findings, Issue 120 (February 2010) Linked in: Connecting riparian areas to support forest biodiversity, based on science by Kelly Burnett and Deanna Olson. http://www.fs.fed.us/pnw/sciencef/scifi120.pdf; and Olson, D.H., Anderson, P.D., Frissell, C.A., Welsh, H.H., Jr., and D.F. Bradford. 2007. Biodiversity management approaches for stream–riparian areas: Perspectives for Pacific Northwest headwater forests, microclimates, and amphibians. Forest Ecology and Management 246 (2007) 81–107.

[110] https://dl.dropboxusercontent.com/u/47741/Heiken%202013.%20Review%20of%20Reeves%20et%20al%20Riparian%20Proposal.pdf

[111] 1994 ROD p 15.

reserves are critically important for spotted owls, and increasingly so in light of new threats like the barred owl and climate change.

The 1994 Record of Decision for the NWFP explained the role of riparian reserves in conservation of spotted owls:

> ***Mitigation Measures Adopted*** *… The standards and guidelines of the selected alternative mitigate the impacts to plant and animal species and their interrelated ecosystems. The standards and guidelines for the land allocations of this decision will improve current conditions and alter certain past practices detrimental to late-successional species by protecting large blocks of remaining late-successional and old-growth forests, and by providing for the regrowth and replacement of previously harvested late-successional forest stands. …*
>
> *… riparian reserves in particular mitigate timber harvest effects by providing for well distributed patches of late-successional forest that serve for dispersal of mobile species such as the northern spotted owl, and serve as refugia for species that disperse only short distances.*
>
> *… Another possible mitigation is that the rate of timber harvest in the matrix could be controlled (such as with the 50-11-40 rule) to provide additional dispersal habitat for spotted owls. This measure was not adopted, in part, due to the acreage of late-successional and other reserves well-distributed in the matrix … this will protect larger amounts of nesting, roosting, and foraging owl habitat, which will be higher quality than what the 50-11-40 rule would have done (see Appendix G, part 3 of the Final SEIS).*[112]

A careful review of the available evidence shows that riparian reserves provide disproportionate value to spotted owls and they represent an integral part of the spotted owl conservation strategy adopted in 1994. New evidence reinforces the importance of riparian reserves.

Contrary to Reeves et al.'s assertions, the critical habitat rule and the recovery plan explicitly recognize the role of riparian reserves in owl conservation. FWS's 2012 proposed rule for revised critical habitat said "Riparian Reserves, Adaptive Management Areas and Administratively Withdrawn Areas can provide both demographic support and connectivity/dispersal between the larger blocks, but are not necessarily designed for that purpose."[113] And FWS's 2011 Revised Recovery Plan states:

> Riparian Reserves, Adaptive Management Areas and Administratively Withdrawn Areas can provide both demographic support and connectivity/dispersal between the larger blocks, but are not necessarily designed for that purpose. … Apparently in response to barred owls, some marked spotted owl site centers have moved higher up slopes (Gremel 2005). According to one study, "the trade-off for living in high elevation forests could be reduced survival or fecundity in years with severe winters (Hamer et al. 2007:764).[114]

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[112] 1994 NWFP ROD p 29-31.

[113] USFWS 2012. Proposed rule- Revised Critical Habitat for the Northern Spotted Owl. Federal Register Jun 1, 2012. http://www.gpo.gov/fdsys/pkg/FR-2012-06-01/html/2012-13305.htm

[114] USFWS 2011. Final Revised Recovery Plan for the Northern Spotted Owl. pp A-14, B-11.

Spotted owls spend disproportionate time in riparian areas and on the lower third of slopes. Robert Anthony recently provided input to an interagency process regarding thinning in riparian reserves and noted that spotted owls are associated with riparian areas, and that logging has negative effects on spotted owls and their prey:

> *Northern spotted owls are also associated with riparian areas, which is relevant to thinning of young forests in these areas (McDonald et al. 2006, Glenn et al. 2004). The association with riparian areas has been determined with the use of radiotelemetry studies of their movements and habitat use, which have shown that owls use riparian areas more than their proportional availability across the landscape. There have been at least three hypotheses proposed for the disproportionate use of riparian areas: (1) riparian areas provide more favorable thermoregulatory conditions (Barrows 1981); (2) prey species are more abundant in riparian areas (Carey et al. 1992 1999); and (3) fire severity has been lower in riparian areas resulting in the retention of structural complexity (Reeves et al. 2006). There is some support for all three of these hypotheses so they all likely have some influence over the use of riparian areas by northern spotted owls.*
>
> *… [M]any of the forest management practices (i.e., clearcuts, shelterwood cuts, heavy commercial thinning) used in the Pacific Northwest have had negative effects on spotted owls*[115]
>
> *… [I]t is safe to say that commercial thinning within the range of the northern spotted owl will have a negative effect on abundance of northern flying squirrels. Northern flying squirrels are the owl's primary prey by number and biomass throughout most of their range; consequently, there is little doubt that commercial thinning will have a negative effect on abundance of flying squirrels as prey for spotted owls. In addition, commercial thinning has negative effects on the abundance of red-backed voles (Suzuki and Hayes 2003, Manning unpublished data), which is also an important prey species for the owl.*[116]

The contractor's report supporting FWS' 2004 status review of the spotted owls found "owl locations were positively associated with proximity to riparian habitat..."[117] The SEI Report also said, "In the Klamath Province, more nests than random sites were on the lower third of slopes … "[118] Blakesly et al. (1992) found similar results in California: "Spotted owls also selected the lower third of slopes, used the middle third of slopes in proportion to their availability, and used the upper third of slopes less than expected …"[119]

Riparian stands may be particularly important to spotted owls in areas where old forests are uncommon, such as the BLM checkerboard of western Oregon. Glenn et al. (2004) said:

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[115] Forsman et al. 1984, Zabel et al. 1995, Buchanan et al. 1995, Hicks et al. 1999, Meimann et al. 2003.

[116] Anthony, R.G. 2013. Effects of Riparian Thinning on Marbled Murrelets and Northern Spotted Owls. Part III of the Science Review Team for the identification and interpretation of the best available scientific information to determine effects of riparian forest management. 28 January 2013.

[117] SEI Scientific Evaluation Of The Status Of The Northern Spotted Owl, Chapter 5: Habitat Associations, p 5-6. http://www.sei.org/owl/finalreport/Chapter5HabitatAssociations.pdf *citing* Irwin et al. (in press).

[118] SEI p 5-19, *citing* Hershey et al. (1998).

[119] Blakesly, Franklin & Gutierrez 1992. Spotted Owl Roost And Nest Site Selection In Northwestern California. J. Wildl. Manage. 56(2):388-392. http://www.fs.fed.us/psw/publications/blakesley/blakesley1.PDF

> *[N]est sites for owls at NCR [Northern Coast Range] and ESF [Elliot State Forest] generally were located within mature/old conifer forest or along conifer–broadleaf edges associated with riparian areas. … In areas of western Oregon where spotted owls occupy sites with little or no old conifer forest, we recommend that managers retain existing old and mature conifer forest, broadleaf forest, broadleaf forest edges, and forested riparian areas as owl habitat.*[120]

The NWFP expected riparian reserves to serve two main purposes for spotted owls – First, owls use high quality habitat in riparian reserves for movement of adults within and between territories, and for dispersal of juveniles between reserves. Second, riparian reserves provide "demographic support" for owls in the matrix, that is, the additional suitable owl habitat occurring in riparian reserves supports a larger owl population that is less vulnerable to extinction.

The riparian reserves were adopted in part as a replacement for the spotted owl dispersal standard known as the "50-11-40 rule" that pre-dated the NWFP. Riparian reserves were expected to maintain and develop late-successional habitat, and provide superior dispersal habitat (i.e., better than 11" dbh and 40% canopy closure).[121] Higher quality dispersal habitat means that owls can not only move safely through the landscape with protective cover from predators, but they can also find roosting sites that are protected from weather extremes, hunting perches, a prey base offering foraging opportunities, as well as nesting/breeding sites.

An addendum to the Biological Assessment for the NWFP states:

> *Owl dispersal requirements are believed to be met in Alternative 9 due to the cumulative benefits from a variety of land allocations and standards and guidelines which are not specifically earmarked as owl dispersal standards. The following are two [sic] the benefits which are expected to be the most important to assuring owl dispersal … .*
>
> *Riparian Reserve Scenario 1 results in an increase in the total acreage and the amount of owl habitat and murrelet habitat which would be retained along intermittent streams. This will have a greater effect in the provinces which have higher stream densities, as illustrated in the calculations below and the Aquatic Conservation Strategy discussion in Chapter 3&4. The larger acreage of protected habitat will increase the amount of dispersal and nesting habitat which will be retained throughout the owl and murrelet range.*
>
> *Riparian Reserve Scenario 1 will apply to Alternative 9 throughout the range of the northern spotted owl. This modification increases the acreage of Riparian Reserve along intermittent streams from one-half to the full height of a site potential tree. … The decision to implement Riparian Reserve Scenario 1 results in 3,233,100 acres of Riparian Reserves, which is an additional 638,000 acres (25 percent increase) over the Draft SEIS Alternative 9. … These Riparian Reserves will improve travel and dispersal corridors for*

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[120] Glenn, Hansen, & Anthony 2004. Spotted Owl Home-Range And Habitat Use In Young Forests Of Western Oregon. Journal Of Wildlife Management 68(1):33–50. http://www.eddylsrproject.com/deis/B1/703-47%20Glenn%202004.pdf

[121] 1994 ROD p 29-31.

many terrestrial animals and plants, and serve as connectivity corridors between the Late-Successional Reserves. …

The standards and guidelines state that Riparian Reserve widths may be modified after completion of watershed analysis. That analysis will take into account northern spotted owl dispersal needs as well as other species that were intended to be benefited by this mitigation measure. There are two specific values in the application of Riparian Reserve Scenario 1 for spotted owl dispersal. First is the fact that the acreage reserved will be fairly evenly arranged across the landscape. This is important because of the documentation of juvenile spotted owl dispersal occurring in random directions. An even distribution of dispersal habitat is important, and this was one factor which lead to the development of the 50-11-40 rule. The second important feature is that the acreage reserved will have the potential both in the short term and in the long term to provide higher quality habitat than "11-40" conditions. The Riparian Reserves will have more complex forest structure and more dead and down, which will provide better roosting and foraging conditions than a strictly 11 inch dbh and 40 percent canopy closure stand would provide. This will increase its effectiveness in providing for owl survival during dispersal.[122]

David Wiens conducted intensive research on spotted owls in the Oregon Coast Range west of Eugene and found that:

Spotted owls and barred owls in my study selected foraging sites that were closer to streams than random locations, and the relative probability of selection decreased linearly with increasing distance to a stream for both species … . In my study area, small low-order streams were common in lower elevation riparian-hardwood zones and steep, narrow ravines in patches of mature and old conifer trees. Strong selection for habitats near riparian zones has at least 3 explanations. First, cool microclimates associated with stream drainages may be favorable for thermoregulatory purposes during hot, dry summers (Forsman 1976, Barrows 1981). Second, and perhaps more importantly, productive vegetation conditions near streams are likely to support a rich diversity of prey used by both owl species, including woodrats (Carey et al. 1999, Anthony et al. 2003), flying squirrels (Meyer et al. 2005, Wilson 2008), deer mice, and shrews (Verts and Carroway 1998). … A third reason that riparian areas were selected may be due to their complex canopy structures that resulted from past fires that burned less intensively along stream corridors than in upslope areas (Reeves et al. 1989, Kauffman et al. 2001). Such structures may provide good perching opportunities for hunting terrestrial or arboreal prey. … [123]

The 1993 SAT Report, which provided the genesis of the ACS, also offered evidence that riparian areas serve as source areas for small mammals which may serve as a prey base for spotted owls and other predators, stating:

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[122] 1994 FSEIS, Appendix G – Part 3 – Addendum to Biological Assessment. pp G-23 – G-24.

[123] Wiens, J. David. 2012. Competitive Interactions and Resource Partitioning Between Northern Spotted Owls and Barred Owls in Western Oregon. PhD dissertation. OSU. http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/28475/WiensJohnD2012.pdf

Many mammal populations are also dependent on riparian areas. Doyle (1986 and 1990) found that riparian areas in old-growth forests in the Cascades of Oregon were source areas for upland small mammal populations. Abundance of small mammals in coastal forests of Oregon were greatest within 300 feet of the stream, even though individuals were found up to 600 feet away (Gomez 1992). Chapter 5 of this document and USDI (1992) identify several mammal species that use or are dependent on riparian zones. Riparian corridors may also be important as dispersal, travel, and migratory routes for mammals (Gregory et al. 1991).[124]

X. RIPARIAN RESERVES HELP REDUCE COMPETITION BETWEEN SPOTTED OWLS AND BARRED OWLS.

Barred owls, native to eastern North American, have moved west and invaded the entire range of the northern spotted owl. When the NWFP was adopted in 1994, the barred owl was barely mentioned in the analysis. It was assumed that all suitable spotted owl habitat would be available to spotted owls and contribute to their conservation and recovery. Now barred owls occupy and defend tens of thousands (if not hundreds of thousands) of acres of suitable owl habitat that was assumed to be available for the recovery of the spotted owl. Barred owls and spotted owls use similar habitat, and there is significant dietary overlap between the two owls, though barred owls appear to be more generalists in both habitat and food sources.

The barred owl population appears to be growing, and there is no evidence that its population growth is slowing. To mitigate for this, suitable owl habitat needs to be conserved now more than ever. Protecting existing habitat in riparian reserves (and growing more habitat inside and outside reserves) helps increase the chances that spotted owls and barred owl can co-exist. Reducing stream buffers and increasing logging will just increase adverse competitive pressures and magnify the existential perils faced by the spotted owl.

There are two approaches being considered to address the new and significant threat posed by the barred owl: (1) grow more habitat, and (2) kill barred owls. These are not mutually exclusive. The first approach is to protect and grow more suitable owl habitat based on a well-known axiom of the "species-area relationship" from island biogeography which holds that as habitat area increases, the number of cohabiting species also increases.[125] Simply put, spotted owls are more likely to *co-exist* with barred owls if there is more suitable habitat, while local or regional *extirpation* is more likely if there is less suitable habitat available. The existing riparian reserves help protect and restore more suitable habitat and increase the chances of co-existence. Reeves et al. proposal for more logging in riparian reserves will mean reduced area of suitable habitat and greater likelihood of competitive exclusion.

Corroborating these ecological principles, Dr. David Wiens recent telemetry work shows that barred owls have a survival advantage relative to spotted owls in fragmented landscapes.

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[124] 1993 SAT Report, Chapter 5, pp 461-462.

[125] Oscar E. Gaggiotti and Ilkka Hanski. 2004. Chapter 14 - Mechanisms of Population Extinction. *In* Ecology, Genetics, and Evolution of Metapopulations. Elsevier. 2004. http://web.archive.org/web/20070612211945/http://www.eeb.cornell.edu/sdv2/Readings/Gaggiotti&Hanski.pdf. See also Martina Carrete, José A. Sánchez-Zapata, José F. Calvo and Russell Lande. Demography and habitat availability in territorial occupancy of two competing species. OIKOS 108: 125-136, 2005 http://www.ebd.csic.es/carnivoros/personal/carrete/martina/recursos/13.%20carrete%20et%20al%20%282005%29%20oikos%20108-125.pdf.

However, that survival advantage diminishes in landscapes with a higher proportion of older forest (as show in the figure below).[126]

This provides strong support for the continued conservation of mature & old-growth forest inside and outside riparian reserves because spotted owls are able to compete nearly equally with barred owls in landscapes with a high proportion of old forest. According to Wiens:

> *Survival of both species was positively associated with an increasing proportion of old (>120 yrs old) conifer forest within the home range, which suggested that availability of old forest was a potential limiting factor in the competitive relationship between the 2 species. When viewed collectively, my results support the hypothesis that interference competition with a high density of barred owls for territorial space can act to constrain the availability of critical resources required for successful recruitment and reproduction of spotted owls.*[127]

To address the need for additional suitable habitat and to reduce the adverse competitive interactions between spotted owls and barred owls, the FWS adopted Recovery Action 32 that recommends conservation of a *subset* of high quality suitable owl habitat in all federal land allocations. This is a step toward mitigating the effects of the barred owl, but we are not ware of any analysis showing that protecting just a subset of the highest quality habitat is adequate mitigation for all the suitable habitat occupied and defended by barred owls. An impressive groups of spotted owl experts are already calling for conservation of a more inclusive subset of high quality owl habitat.[128]

Even if the highest quality owl habitat in the matrix is likely to be protected under Recovery Actions 10 and 32, riparian reserves still serve an important role in owl conservation. Reeves et al.'s suggestion otherwise is unsupported for several reasons. First, FWS made the recommendation for conservation of high quality habitat knowing that riparian reserves were important for spotted owls and riparian reserves were already protected. Spotted owl conservation likely requires conservation of *both* high quality owl habitat <u>and</u> riparian reserves, not one or the other. Second, riparian reserves are disproportionately important to owl conservation in general, and barred owl mitigation in particular, as described below. Protection

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[126] Wiens, J. David. 2012. Competitive Interactions and Resource Partitioning Between Northern Spotted Owls and Barred Owls in Western Oregon. PhD dissertation. OSU. http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/28475/WiensJohnD2012.pdf. Wiens, D. 2012. Presentation to The Wildlife Society. http://tws.sclivelearningcenter.com/index.aspx?PID=6893&SID=163551 (at 1:12).

[127] Id.

[128] Eric D. Forsman, Robert G. Anthony, Katie M. Dugger, Elizabeth M. Glenn, Alan B. Franklin, Gary C. White, Carl J. Schwarz, Kenneth P. Burnham, David R. Anderson, James D. Nichols, James E. Hines, Joseph B. Lint, Raymond J. Davis, Steven H. Ackers, Lawrence S. Andrews, Brian L. Biswell, Peter C. Carlson, Lowell V. Diller, Scott A. Gremel, Dale R. Herter, J. Mark Higley, Robert B. Horn, Janice A. Reid, Jeremy Rockweit, Jim Schaberl, Thomas J. Snetsinger, and Stan G. Sovern. "Population Demography of Northern Spotted Owls." DRAFT COPY 17 December 2010. This draft manuscript is in press at the University of California Press with a projected publication date of July 2011. It will be No. 40 in Studies In Avian Biology, which is published by the Cooper Ornithological Society. http://www.reo.gov/monitoring/reports/nso/FORSMANetal_draft_17_Dec_2010.pdf

of high quality owl habitat outside of riparian reserves is not a replacement for conservation of riparian reserves.

David Wiens' recent PhD dissertation based on field research in the Oregon Coast Range provides strong evidence that riparian reserves are disproportionately valuable for reducing competition between spotted owls and barred owls.

> *Spotted owls' habitat selection shows a preference for riparian hardwoods (more than 4x greater than the non-forest reference), only slightly less than the owls' preference for old conifer forest (>5x). Furthermore, there is evidence that riparian forests may provide hope as an area where resource partitioning and niche segregation exists between the two owl species. That is, the diverse mix of food sources and habitat structures in riparian reserves appears to meet important needs of both species with less direct competition for resources. Finally, Wiens' telemetry work provides evidence that when spotted owls venture close to barred owls, their selection for riparian forests intensifies.*
>
> *Under the base [resource selection function] RSF for spotted owls, old conifer was >5 times as likely to be selected for foraging as the nonforest reference category (selection ratio [exp(ˆ)] = 5.3, 95% CI = 4.4–6.4), followed by riparian hardwood (4.3, 95% CI = 3.5–5.4), mature conifer (3.4, 95% CI = 2.8–4.1), and young conifer forest (1.9, 95% CI = 1.6–2.4). … As proximity to a barred owl's core-use area increased, a spotted owl's affinity for old, mature, and young conifer forest types was gradually replaced by selection for riparian hardwood forest (Fig. 3.7). … [S]potted owls spent a disproportionate amount of time foraging in steep ravines within patches of old conifer forest. Spotted owls in my study also showed strong selection for riparian-hardwood forest along low-order streams. … My results also parallel those of Glenn et al. (2004), who reported that resource selection by spotted owls in younger forests of western Oregon was associated with hardwood (broadleaf) trees and riparian areas. … Spotted owls and barred owls in my study selected foraging sites that were closer to streams than random locations, and the relative probability of selection decreased linearly with increasing distance to a stream for both species. … The best model of resource selection indicated that spotted owls responded to an increased likelihood of encountering core-use areas of barred owls by decreasing the time spent in mature and old forest and intensifying use of riparian-hardwood forests. Additionally, I found that when spotted owls did enter a core-use area of barred owls they were located more frequently within riparian-hardwood forest than other forest types. … Data on habitat selection and dietary composition suggested that riparian hardwood forests may be an important aspect of resource partitioning between the Species … My results emphasize the value of older conifer forests, large hardwood trees, and moist bottomland riparian areas to resource partitioning between spotted owls and barred owls in the central Oregon Coast Ranges. … My finding that older riparian-hardwood forests played an important role in niche segregation between the 2 species emphasizes the need to consider these forest*

conditions within a management context, as these forests are likely to promote a wide diversity of prey for both species …"[129]

XI. RIPARIAN RESERVES ARE IMPORTANT FOR MARBLED MURRELETS

Marbled murrelets are a threatened seabird that nest on large mossy limbs of mature and old-growth trees located within about 50 miles of the coast. Like spotted owls, marbled murrelets also depend disproportionately on lower slopes and riparian forests. FWS' 1997 Recovery Plan for the Marbled murrelet says "With respect to slope, eighty percent of nests in the Pacific Northwest were located on the lower one-third or middle one-third of the slope."[130] Hamer and Nelson (1995) show that the mean distance to streams from marbled murrelet nests in the Pacific Northwest is 159 meters.[131]

In California, Baker et al. (2006) found that marbled murrelet nest sites "were located closer to streams, had a greater basal area of trees >120 cm dbh, and were located lower on slopes than random sites based on analysis of variance models." Baker (2006) states:

> *We found that nest sites were much closer to streams than would be expected based on randomly available sites within old-growth forests. Nest sites may have been located near streams because these sites afforded murrelets better access from at-sea flyways. Studies have found proximity to streams or other openings to be important for murrelet nesting in other regions as well (Hamer and Nelson 1995, Meyer et al. 2004, Zharikov et al. 2006).*[132]

In British Columbia Burger & Chatwin (2002) found that "[f]orests bordering major stream channels provided high quality nest habitat for murrelets, with large trees, high epiphyte cover and many potential nest platforms. Detections of murrelets were also highest along stream beds …."[133]

Increased clearcutting within riparian reserves is in direct conflict with FWS' 1997 Recovery Plan for the Marbled Murrelet which recommends that mature forests within "secured areas" (such as riparian reserves) be protected so they can serve as future nesting habitat for the marbled

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[129] Wiens, J. David. 2012. Competitive Interactions and Resource Partitioning Between Northern Spotted Owls and Barred Owls in Western Oregon. PhD dissertation. OSU. http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/28475/WiensJohnD2012.pdf

[130] USFWS 1997. Marbled Murrelet Recovery Plan, p 32. http://ecos.fws.gov/docs/recovery_plans/1997/970924.pdf

[131] Thomas E. Hamer & S. Kim Nelson. 1995. Chapter 6: Characteristics of Marbled Murrelet Nest Trees and Nesting Stands. USDA Forest Service Gen. Tech. Rep. PSW-152. 1995. http://www.fs.fed.us/psw/publications/documents/gtr-152/chap6.pdf.

[132] Baker, L.M., Peery, M.Z., Burkett, E.E., Singer, S.W., Suddjian, D.L., And S.R. Beissinger. 2006. Nesting Habitat Characteristics of the Marbled Murrelet in Central California Redwood Forests. The Journal of Wildlife Management (70(4) 939-946. https://www.cnr.berkeley.edu/beislab/BeissingerLab/Steve'%20Publications/Baker_et_al_2006.pdf

[133] Burger, A.E., and T.A. Chatwin. 2002. Multi-scale studies of populations, distribution and habitat associations of Marbled Murrelets in Clayoquot Sound, British Columbia. Ministry of Water, Land and Air Protection Victoria, BC. March 2002. http://env.gov.bc.ca/wld/documents/techpub/mamuwebs.pdf

murrelet.[134] This recovery plan recommendation is not about *existing* high quality habitat, but about mature forests that can serve as future recruitment habitat. These 80-120 year-old maturing forests are precisely those targeted for logging in many recent policy proposals, such as the BLM Secretarial Pilots,[135] and the federal legislation proposed by Representatives DeFazio, Walden, and Schrader.[136]

XII. MAINTAIN BUFFER PROTECTIONS FOR WILDLIFE THAT LIVE NEAR STREAMS

Reeves et al. claim that new information shows that narrow buffers will adequately protect the microclimate needed to meet ACS objectives, stating:

A number of research efforts have examined the effects of forest management on microclimate in riparian areas since the ACS and the associated ecological function curves were originally formulated. … it has been suggested that a one tree-height buffer on fish streams should reduce potential impacts of harvesting in areas on the edge of the buffer on riparian microclimate and water temperature (Brosofske et al. 1997, Moore et al. 2005) (Figure 9b).

… With buffers of 49 ft or greater width, daily maximum air temperature above stream center was less than 1°C greater, and daily minimum relative humidity was less than 5 percent lower than for unthinned stands.[137]

Reeves et al. err by focusing on conditions at the *center of the stream* instead of conditions *throughout the buffers*. This is one of the most significant errors in Reeves et al.'s analysis. Riparian reserves are intended to protect numerous species that do not live *in* the stream, rather, they live in the stream-side forest extending hundreds of feet from the stream, but they still require a relatively cool-moist microclimate, complex forest structure, and abundant wood, and these species will be adversely affected by logging adjacent to narrower riparian reserves. This is part of the reason the NWFP adopted a *buffer-on-the-buffer*, that is, an outer buffer of shade and cover to maintain suitable microclimate conditions for wildlife that live in the inner buffer.

The EIS supporting the NWFP states:

> *Riparian areas are widely considered to be important wildlife habitat. Cool air temperatures due to the presence of cool and turbulent surface waters, typically dense vegetative canopy cover, and their location in the lowest portions of watersheds combine to maintain a distinct microclimate along stream channels and in the adjacent riparian*

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[134] USFWS 1997. Recovery Plan for the Marbled Murrelet. http://ecos.fws.gov/docs/recovery_plans/1997/970924.pdf

[135] Oregon Wild 2011. Scoping Comments on the Wagon Road and Roseburg BLM Secretarial Pilots. http://www.oregonwild.org/oregon_forests/forest-management/in-your-forests/files-for-eyes-on-the-agencies/Wagon_Road_and_Roseburg_Pilots_scoping_6-29-2011_BLM.pdf

[136] Oregon Wild 212. Problems and Pitfalls Associated with the Proposed "O&C Trust, Conservation, and Jobs Act" Version 1.3, June 5, 2012. http://www.oregonwild.org/oregon_forests/old_growth_protection/westside-forests/western-oregon-s-patchwork-public-lands/O-C_Trust_Act_White_Paper_FINAL_6-5-2012_w_DeFazio_response.pdf

[137] Reeves et al. pp 25, 26.

> *area. Maintaining the integrity of the vegetation in these areas is particularly important for riparian-dependent species of amphibians, arthropods, mammals, birds, and bats. Many species of amphibians, birds, and mammals use late-successional and old-growth riparian areas, including associated streams, ponds and wetlands, for reproducing, foraging, roosting, and as travel corridors (Table 3&4-11). The many wildlife species, along with lichens, mosses, vascular plants and mollusks, listed in Table 3&4-11 depend on diverse and complex riparian and aquatic habitats.*
>
> *The principal factor influencing the outcomes for amphibians related to the width of Riparian Reserves.*[138]

The NWFP anticipated regeneration harvest (modified clearcutting) on lands in the matrix outside of riparian reserves. The ongoing threat of regeneration logging is highlighted by recent efforts to increase regeneration harvest. The NWFP recognized that forest openings adjacent to a riparian buffer would create "edge effects" that change the microclimate in the buffer and reduce the recruitment of wood to the buffer. The NWFP addressed this problem by adopting a *buffer-on-the-buffer* so that at least the inner portion of the riparian reserves would have near-natural microclimate and wood recruitment processes.

Reducing the width of riparian reserves and increasing logging adjacent to the narrower buffer will expose sensitive wildlife such as amphibians, lichen, mollusks, red tree vole, and spotted owls, to unfavorable microclimate conditions and reduced levels of dead wood recruitment. This undermines the viability of numerous species that were specifically intended to benefit from the absence of edge effects in the inner buffer.

Reeves et al. recognize a "primary purpose for the extension of the boundary of the Riparian Reserve from one site-potential tree height to two on fish-bearing streams was to protect and enhance the microclimate of the riparian ecosystem within the first tree height …"[139] but they dismiss concerns about microclimate throughout the inner buffer by shifting the focus to microclimate conditions at the *stream center,* or at most 20 meters from the stream. This ignores the fact that many riparian species that were intended to benefit from the riparian reserves use habitat much further from the stream. The outer buffers were established in part to protect microclimate within an inner buffer extending up to 1 site-potential tree height from the stream, which notably protects only a portion of the habitat used by riparian associated species.

Reeves et al. rely on Olson et al. (2007)[140] to support the idea that narrower buffers may be adequate, stating:

> *Olson et al. (2007) reviewed studies of the effects of timber harvest activities, inside and outside of riparian buffers, on microclimatic conditions and amphibians. They concluded that relatively narrow buffers (compared to those of the Northwest Forest Plan) can be effective in maintaining microclimates 33-66 ft (10-20 m) from the stream center. Potential concerns about microclimate that could arise from reducing the size of riparian*

[138] 1994 FSEIS pp 3&4 - 61, 3&4 - 81.

[139] Reeves et al. p 24.

[140] Olson, D.H., Anderson, P.D., Frissell, C.A., Welsh, H.H., Jr., and D.F. Bradford. 2007. Biodiversity management approaches for stream–riparian areas: Perspectives for Pacific Northwest headwater forests, microclimates, and amphibians. Forest Ecology and Management 246 (2007) 81–107.

buffers can be reduced further by minimizing clearcutting along the outer boundary (Moore et al. 2005, Anderson et al. 2007, Kluber et al. 2008). As mentioned previously, clearcutting is not part of the silvicultural strategy under ecological forestry—strategically placing aggregated retention patches during harvest should help ameliorate concerns here.[141]

Reeves et al. make several errors here:

- First, Olson et al. (2007) actually refer to buffers that maintain conditions "at stream center" and the microclimate that "*may* extend 10-20 meters." Reeves tries to make an uncertain statement seem more certain.
- Second, Reeves et al. ignore a very important caveat in Olson et al. (2007) which actually expresses a specific concern about the microclimate effects upslope beyond 10-20 meters from the stream center. Olson et al. state: "However, we have few data for predicting the countervailing spatial extent of upslope harvest influences on microclimates within buffers."[142]

- Third, riparian reserves are intended to protect many species that rely on moderated microclimate conditions extending more than 10-20 meters from the stream. The reduced riparian buffers advanced by Reeves et al. might maintain the microclimate at the *stream center,* or at most 20 meters from the stream, but the NWFP sought to protect the microclimate out to a distance equal to the height of a *site-potential tree*, often 60 meters.[143]
- Fourth, the variable retention harvest (VRH) advocated by Reeves et al. and Franklin & Johnson (2012)[144] is in fact a form of clearcutting (with small reserves). At the site scale, VRH likely creates "edge effects" that are indistinguishable from clearcutting.

A key issue is whether narrow buffers are adequate to protect wildlife, such as amphibians, that may be associated with streams, but also venture away from the water. The NWFP adopted wider buffers in part because many amphibians live up to 900 feet from water. The 1993 SAT

Report explained:

The abundance of amphibians in Pacific Northwest forest and riparian zones is influenced by habitat conditions in riparian areas (Bury et al. 1991, Gomez 1992). Amphibians populations are generally found less than 900 feet from water sources (Nussbaum et al. 1983). Gomez (1992) found that rough-skinned newts, tailed frogs, and western redbacked salamanders were the most abundant species of herptafauna in upland and riparian areas along the Oregon Coast Range. These organisms were found up to 600 feet from streams but were most abundant within 300 feet. Many species have

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[141] Reeves et al. p 27.

[142] Olson et al. (2007) at p 98.

[143] 1993 SAT Report, Chapter 5, pp 461-462. See also Olson, D.H., Anderson, P.D., Frissell, C.A., Welsh, H.H., Jr., and D.F. Bradford. 2007. Biodiversity management approaches for stream–riparian areas: Perspectives for Pacific Northwest headwater forests, microclimates, and amphibians. Forest Ecology and Management 246 (2007) 81–107.

[144] Franklin, J. F. And K. N. Johnson. 2012. A Restoration framework for federal forests in the Pacific Northwest. J. For. 110(8): 429-439.

Table 3
Maximum distances away streams into upland forests at which Pacific Northwest amphibians have been found

Species	Distance (m)	Comments	Reference
RHKE/RHVA, ANFE, PLDU, PLVE, ENES, TAGR [ASTR, DITE]	30–40 m [20–30 m]	Time-constrained searches in quadrats 0–10, 10–20, 20–30, and 30–40 m from streams; 5–100+ year old conifer stands, 0 to 40+ m buffers, 1st–3rd order streams, Oregon; DITE, RHKE/RHVA, PLDU and ASTR found primarily at 0–10 m from stream, PLVE found primarily at 0–20 m from stream	Vesely (1996)
AMGR, TAGR, ENES, PLVE	55	Pitfall traps and cover boards spanning 5, 30 and 55 m from stream; 70-year-old conifer stands; British Columbia; more AMGR were captured at 30 m from stream than 5 and 55 m from stream; AMGR and TAGR moved more along streams than up or down slopes	Maxcy and Richardson (2000)
ASTR	65	Pitfall traps at 5, 25, 45, 65 m from stream; <5 and 80+ year old conifer stands; non-fish-bearing streams <3 m wide; British Columbia; no difference in capture frequency across distance from stream	Matsuda and Richardson (2005)
DITE	66, 22, 19	Radiotracking; forested, clearcut with buffer (20–30 m), and clearcut conifer stands; small streams 1–6 m wide; British Columbia; maximum distance from stream was 66 m in intact forested habitat, 22 m in clearcut, 19 m in buffered clearcut	Johnston and Frid (2002)
ASTR	100	Pitfall traps 5, 25, 50 and100 m from stream; 5- and 250-year-old conifer stands; headwater streams 1–3 m wide and fishless; British Columbia; mean distances from stream reported (adults: 28 m; juveniles: 17 m; males 23 m; females 17 m); frogs captured farther from streams in old growth than in clearcuts	Wahbe et al. (2004)
DITE, TAGR, PLVE, ENES, AMGR, ASTR, RAAU	~135	Pitfall traps, 10 × 10 grid across 135 m × 135 m; 40–50-year-old red alder stands; 2nd order streams, Oregon	McComb et al. (1993a)
ASTR, DITE, BAWR, PLDU, PLVE, RAAU, RHsp, TAGR	200	Pitfall traps at stream and 200 m upslope, 2 trans-riparian pitfall arrays with traps every 25 m; 5–200+ year old conifer stands, deciduous stands; 3rd–4th order streams, Oregon	Gomez and Anthony (1996)
DITE, TAGR, PLDU, PLVE, ENES, ANFE, ASTR, RAAU	400	Pitfall traps <10 and 400 m from streams, 2 trans-riparian arrays with traps every 50 m; 12–140 year conifer stands; 2nd–3rd order streams, Oregon	McComb et al. (1993b)

Species acronyms follow Table 2.

Author's copy

> *specific tolerance thresholds (e.g., temperature and moisture) microhabitat requirements (e.g., headwater seeps or talus slopes). Many also require downed wood, but may differ in types of wood (e.g., snag, bark on a log, or bark on the ground) or particular decay class of wood (refer to Chapter 5 more specific requirements of specific species). Alteration of microhabitat climate may influence the suitability of riparian conditions for riparian-dependent organisms.*[145]

Narrow buffers that maintain microclimate at the stream center are unlikely to protect temperature-sensitive species that live hundreds of feet from streams.

Reeves et al. offer an incomplete and misleading account of amphibian habitat use, saying "*Recent research by D. Olson of the USFS Pacific Northwest Research Station, found that most amphibians moved along the stream within 45 ft (13.6 m) of the channel.*"[146] In reality there is abundant evidence from Olson and others showing that amphibian use habitat much farther than 45 feet from streams.

The results presented in Olson et al. (2007) do not justify any systematic reduction of stream buffers on federal lands. In fact, their findings strongly reaffirm the importance of the existing buffers, or even an expansion of buffers to promote connectivity between watersheds.

Recent recognition that **stream-breeding amphibians can disperse hundreds of meters into uplands** implies that connectivity among neighboring drainages may be important to their population structures and dynamics.

> *Microclimate studies substantiate a ''stream effect'' of cool moist conditions permeating upslope into warmer, drier forests. … Riparian areas may function as habitat for resident*

[145] 1993 SAT Report, Chapter 5, p 461.

[146] Reeves et al. p 28.

> *species and as corridors for transient species … [Amphibians] may be abundant upslope, and loss or degradation of upland forest habitat could disrupt population dynamics or affect persistence. … Questions persist about whether narrow buffers provide sufficient moderation of microclimate, habitat diversity, and transfers of energy and matter to support non-fish aquatic and riparian biota, particularly sensitive frogs and salamanders, whose abundance is often greatest upstream of fish-bearing waters and whose adult stages sometimes forage hundreds of meters upland from the immediate stream margin. … Many studies reveal pronounced decreases in the ability of amphibians to disperse as human alteration of landscapes increases, and survival of juveniles in such fragmented landscapes is often substantially reduced (see Cushman, 2006)*. These findings imply dramatic effects on immigration because dispersal in amphibians is thought to be primarily effected by juveniles rather than adults (e.g., Funk et al., 2005; Cushman, 2006). … [*L]ess intensive thinning harvests that retain a substantial proportion of the pre-harvest stand density and canopy cover have less impact on stream and riparian microclimates than do more intensive regeneration harvests. … Relatively narrow buffers … can be effective in maintaining stream center microclimate conditions and therefore the steep near-stream microclimate gradients that may extend 10–20 m from streams in intact stands (Anderson et al., 2007; see above microclimate discussion). However, we have few data for predicting the countervailing spatial extent of upslope harvest influences on microclimates within buffers. In general, our understanding of trans-buffer microclimate gradients must be improved by sampling at a higher spatial resolution with spacing among sensors sufficient to quantify non-linear trends across ecotones associated with both stream-buffer and buffer-upslope edges.*[147]

Evidence continues to show adverse effects on microclimate from logging near streams.

Reeves et al. recognize that "large wood is an important element of stream and river ecosystems"[148], however, Reeves et al. mislead when they assert that "[a]llowing ecological forestry in the outer half of the riparian buffers along non-fish-bearing streams is also unlikely to affect wood recruitment."[149] Reeves et al. fail to recognize that recruitment of wood is not just important for streams but also for terrestrial/upland ecosystems that were also intended to benefit from riparian reserves. Reeves et al.'s focus on clearcutting adjacent to narrow buffers and tree tipping into streams fails to recognize likely adverse affects on wood recruitment to terrestrial portions of the riparian reserves.

Many riparian species rely on unimpeded successional processes that accumulate abundant dead wood *near* streams, but not necessarily *in* streams. Logging within and adjacent to riparian reserves will capture mortality, truncate wood recruitment processes, and deprive wildlife of the abundant dead wood they need. Likewise, reducing stream buffers and allowing clearcut edges directly abutting inner riparian buffers will eliminate one source of down wood that would

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[147] Olson, D.H., Anderson, P.D., Frissell, C.A., Welsh, H.H., Jr., and D.F. Bradford. 2007. Biodiversity management approaches for stream–riparian areas: Perspectives for Pacific Northwest headwater forests, microclimates, and amphibians. Forest Ecology and Management 246 (2007) 81–107 (emphasis added).

[148] Reeves et al. p 14.

[149] Reeves et al. p 28.

otherwise fall into the buffer. Protecting an outer *buffer-on-the-buffer* helps maintain natural levels of wood recruitment at least within the inner buffer, though the outer buffer itself would still suffer from depleted dead wood levels due to edge effects.

The NWFP explicitly recognized the problem of reduced wood recruitment in narrow riparian buffers adjacent to logged sites. The 1993 FEMAT Report, an appendix to the EIS supporting the NWFP explained:

> *Large wood on the ground is an important habitat component in riparian areas. Maintaining the integrity of the vegetation is particularly important for riparian-dependent organisms including amphibians, arthropods, mammals, birds, and bats (see appendix V-E for greater detail).*

XIII. RIPARIAN PROCESSES AS A FUNCTION OF DISTANCE FROM STREAM CHANNELS - LARGE WOOD DELIVERY TO RIPARIAN areas

Large downed logs are recruited into riparian areas from the riparian forests and from upslope forests. Similar to large wood delivery from riparian areas into streams, the effectiveness of upland forests to deliver large wood to the riparian area is naturally expected to decline at distances greater than approximately one tree height from the stand edge (Thomas et al.., 1993). Timber harvest adjacent to the riparian area creates an edge that eliminates one source of large wood. Thus, long-term levels of large wood may diminish in the riparian zone.[150]

Additionally, any proposal to protect buffers narrower than one site-potential tree will trigger concerns about wood recruitment to streams, and (depending on slope and aspect) could also degrade the riparian microclimate. Wood is recruited from the full site-potential tree buffer, plus unstable areas. Logging in those areas will capture mortality and reduce in-stream wood recruitment. Also, riparian reserves serve to mitigate for logging outside the buffers. Retaining untreated "skips" (such as riparian reserves) helps mitigate for the loss of snags and dead wood in logged uplands.[151]

OREGON DRINKING WATER PROTECTION PROGRAMS

The Oregon Department of Environmental Quality has spatially mapped drinking water surface source areas for Oregon.[152] We are specifically requesting that BLM analyze a higher protection standard for BLM lands within these drinking water source areas. For example, we recommend that Cave Junction and the Kerby Water District receive a higher degree of watershed protections and higher priority for restoration. A Cave Junction "Drinking Water Special Management Unit" would include the entire East Fork Illinois River watershed upstream of the highway 199 bridge where the City of Cave Junction water intake is located. The federal government invested more than $10 million to construct the City of Cave Junction water and sewage treatment systems in

[150] 1993 FEMAT Report, pp V-25 - V-26.

[151] Heiken, D. 2013. Riparian Reserves Provide Both Aquatic & Terrestrial Benefits - A Critical Review of Reeves, Pickard & Johnson (2013). https://dl.dropboxusercontent.com/u/47741/Heiken%202013.%20Review%20of%20Reeves%20et%20al%20Riparian%20Proposal.pdf

[152] http://www.deq.state.or.us/wq/dwp/swcountymap.html

the 1990s. That investment and the City water rights should be a high priority for protection. In addition the City of Cave Junction has complied with the US Environmental Protection Agency source water protection planning requirements. The City of Cave Junction holds two water rights to divert water from the East Fork Illinois River and serve domestic water to many businesses and 2,350 citizens who live in Cave Junction and Kerby. The Oregon DEQ has mapped the drinking water source area for Kerby and Cave Junction. BLM needs to make spatially explicit analysis of this and all Oregon DEQ drinking water source area maps.

Improved drinking water protection would entail the retention of NW Forest Plan Riparian Reserves with added emphasis on actions to filter out excessive nutrients caused by logging (e.g. phosphorus, nitrogen), filter out roadside use of herbicides, reducing pollutants from road runoff by decommissioning roads or disconnecting roads from stream channels., eliminating rampant off- road- vehicle use that often travel in and across stream channels, eliminating herbicides for roadside weed control, eliminating grazing and horse trails, reducing public road access to stream channels where motorized user dump trash and toxic materials (e.g. Logan Cut), halting mineral withdrawal to prevent the creation of additional toxic mine waste (e.g. Queen of Bronze mine in Takilma Area) and increasing law enforcement to prevent illegal marijuana gardens that use toxic materials (rodenticides) and excessive fertilizers.

We will not be satisfied with the all too often repeated rhetoric that "logging will meet all drinking water requirements." Management of BLM lands and streams must be designed to buffer the effect of ongoing private land pollution and not contribute towards cumulative non-point water pollution effects.

RECOVERY ACTIONS FOR SALMON AND OTHER FISHES

The Southern Oregon Northern California Coastal Coho Cecovery Plan provides recovery actions relevant for analysis in this DEIS. Modeling analysis must delineate critical coho habitat and the network of stream channels upstream of critical habitat that would affect critical habitat.

Circumstances have changed since the ACS was adopted in 1995 BLM RMPS. Coho salmon have been listed and critical habitat identified on BLM lands. The NMFS has deemed the existing ACS (no action alt.) as adequate to maintain and recover listed coho salmon. A recovery plan is final for Southern Oregon Northern California Coastal coho salmon, and a final plan is expected soon.

A huge body of monitoring and research demonstrate that the current ACS has been effective at protecting and improving both water quality and habitat for coho salmon. Any analysis for reduced riparian reserves need to factor in climate change that is likely to be first evident with exacerbated hot dry summers in the Medford District.[153] We provide the following recovery actions and analysis for coho salmon and other fishes that could become biologically threatened and need to be listed and protected.

[153] See Climate Change Report for Rogue Basin http://www.geosinstitute.org/climatewiseservices/completed-climatewise-projects.html

- The National Marine Fisheries Service has identified critical habitat for Oregon Coastal Coho salmon and Southern Oregon Northern California Coastal coho salmon. Spatially explicit identification of these critical habitats need to be integrated into analysis with a higher Riparian Reserve protection standard than non-critical habitat or unoccupied critical habitat. Analysis would need a watershed approach since all stream channels upstream of occupied critical habitat would also need a higher protection standard (e.g. Riparian Reserve land allocations, protections from logging, habitat enhancement, passage improvement, and sediment reductions from non-point sources such as roads, gullies, landslides, OHV use).
- Timber yield projections (p. 58) must be reduced due to landslide prone lands that are unsuitable for harvest due to sediment pollution risk to coho salmon or are uneconomical due to access costs and risks. This is especially relevant for the Medford District because of low productivity on steep lands and need for relatively high road miles to access the low volumes of timber (See Table 28 p. 127). The Medford District needs over a mile of new road for every 1.5 million board ft thinned.
- We recommend that one or more alternatives analyze retaining the existing ACS with more flexibility when implementing project level "buffers" within Riparian Reserve that contain occupied critical habitat of listed species such as coho salmon.
- Analysis of at least one action alternative must include the identification of "inner gorges" and "landslide prone areas" for inclusion within protective riparian reserves based on site-specific project analysis.
- Where feasible, large trees >20' dbh in the outer fish riparian reserve (150-300ft) would be cut or tipped and cabled yarded into the stream with logging equipment. The Medford District has been successful with this technique on Cheney Creek, a high quality coho stream in the Applegate River basin. Obviously, if these large trees in the existing fish riparian reserves (15-300ft) are logged (Alts A, B, C, D) they will never be available for enhancing fish habitat.
- Fire killed trees within Riparian Reserves would not be removed from the riparian reserve. Fire killed trees would be retained to provide shade and dead wood. Burned hazard trees in the riparian reserve would felled into the stream. These management techniques were successfully implemented with the Biscuit Fire decisions.
- Occupied critical stream habitat shall be withdrawn from mineral entry to expedite installation of wood/boulders, ensure retention of large wood placement and ensure protection of spawning gravel and riparian forests.
- Coho salmon migration barriers within project areas or along haul routes shall be removed through collaboration with other agencies, watershed councils, and private land owners.
- A list of coho barriers shall be developed with ODFW and the top barriers shall be removed each year beginning with the year after the ROD. The BLM shall enter into cooperative agreements (i.e. funding, technical expertise) to improve passage on private lands that affect BLM lands upstream.
- Pacific lamprey are declining on the west coast and have been petitioned for federal listing. The principal issue for them is passage of adults to spawning areas. Spatially explicit analysis is needed to identify priorities for retrofitting culverts to provide Pacific lamprey passage on larger streams.

- Sediment from roads within a project area shall be reduced through disconnecting the road runoff from the stream network, decommissioning roads, and preventing off road vehicle use.
- Illegal water withdrawals on coho or summer steelhead streams shall be investigated and returned to instream flow.
- Watersheds with coho spawning shall be reviewed for logging deferral due to cumulative impacts. For example, portions of the Evans Creek watershed on the Medford District were deferred from logging in the 1995 Medford RMP. Conditions remain severely degraded in portions of this watershed (West Fork Evans Creek) and the logging deferral needs to be reinstated.
- Identify a network of 5th or 6th field watersheds as key coho salmon/summer steelhead watersheds for priority restoration.
- Identify a network of 6th and 7th field coho salmon/summer steelhead spawning key watersheds for intensive sediment reduction. Roads would be storm proofed or decommissioned. Roads would be disconnected from the stream network. Grazing would be eliminated. Firman et al. 2012 found that coho salmon spawner abundance was correlated with lower road densities and lower grazing.
- Beaver dams create the highest quality coho salmon habitat. Existing and former beaver dams need to be identified and management directed to enhancing conditions for beaver and protecting beaver from persecution (Pollock et al. 2003).

1. The DEIS Does Not Provide Relevant Choices For The Decision Maker To Ameliorate Sediment Delivery To Critical Coho Habitat.

It is vital that the BLM prevent sediment delivery to coho critical habitat and identify one or more mandatory techniques that would substantially reduce chronic and episodic sediment delivery to streams. We recommend:

- Retain 2 tree height riparian reserves for occupied critical coho habitat. This would greatly reduce sediment from landslides and timber harvest, reduce road building adjacent coho critical habitat, and prioritize road removal/sediment abatement.
- Identify roads within 6th or 7th field coho spawning watersheds for sediment reduction by disconnecting the road from the stream network or decommissioning/obliterating roads.
- Prohibit OHV use in 5th field coho watersheds. Designate them as "closed" and prioritize law enforcement, physical barriers, signs, monitoring and outreach in these watersheds.
- Eliminate grazing along occupied coho critical habitat.
- Identify headwalls and unchanelled valleys as potential sediment delivery sources (i.e. landslide prone areas). Retain mature or older forests on these sites and prohibit road building across potentially unstable areas.
- Reduce or identify a relatively low ASQ for dry forests because due to low productivity it takes twice the number of road miles to obtain the same volume of timber as other districts.

2. Nutrient Loading

The BLM failed to address nutrient loading of streams due to logging. Modeling analysis with reduced (60 ft.) no cut buffers must disclose increased risk of nutrient loading of nitrogen and

phosphorus into streams that are released with logging activities. Many streams in the planning area exceed Oregon DEQ standards for nutrients.

Generally forest buffers of 100 ft or more are needed to retain mobilized nutrients. Adequate no cut buffers are particularly important in headwater streams because of their extensive linear network. There is no science to support narrower buffers in headwater channels subject to nutrient loading. Many streams in the planning area exceed DEQ standards for phosphorus (e.g. Sucker Creek on the Medford District). The issue is how best to keep nutrients retained in soils and not leached out to streams.

3. Medford District Riparian Reserves

Analysis is needed to address the special needs of streams and cold water fish in the Medford BLM District where the dry forest classification dominates. The Riparian Reserve analysis needs to reflect conditions (i.e., context as per NEPA) that warrant a high standard of protection to achieve desired outcomes.

- The Rogue Basin experiences naturally very high stream temperatures, low stream flows exacerbated by droughts, and frequent fires. These hostile factors for fish and water quality are best ameliorated in the long term with the existing Riparian Reserve widths.
- Climate change modeling indicates more heat and drought related stresses on Rogue River cold water salmonids, requiring the maximum protection (i.e. NW Forest plan ACS).
- The federally listed Southern Oregon/ Northern California Coastal Coho salmon Evolutionary Significant Unit in the Medford District is listed separately from the Oregon Coastal Coho ESU. This is important because the SONCC ESU Coho in the Medford District are at a much greater risk of extinction than the Oregon Coastal Coho ESU. Coho populations are much below desired levels and have been decreasing, resulting in the need for retaining a high standard for protection and restoration for at least the next ten years.
- Small cold water refuges created by groundwater make the 2 tree default riparian reserve advisable for occupied coho salmon and summer steelhead habitat.
- Retaining the existing Riparian Reserve standards for the Medford District would greatly simplify timber sale implementation across all forest designations. The Medford District has done a good job of implementing Riparian Reserve thinning and this would continue across all designations as determined by local conditions.
- The Medford District rarely needs to consult with National Marine Fisheries Service because the existing Riparian Reserve widths are known to be adequate to protect federally listed SONCC Coho salmon. Retaining the existing Riparian Reserve standards in the Medford District would ensure speedy timber sale implementation because no consultation with NMFS would be needed.

For the reasons stated above, we think it best for the “dry forest” Medford District to continue managing Riparian Reserves as they have in the past, which includes the judicious commercial thinning of second growth within the reserves based on extremely variable site specific

conditions that defy modeling. Bringing existing Riparian Reserve management forward into the DEIS as a preferred option would ensure a smooth and less controversial transition for changes with upland (dry) forest management (i.e. improved "certainty").

BUREAU SENSITIVE SPECIES AND SURVEY AND MANAGE

The BLM analysis relies upon the development of hypothetical future structurally complex older forests to offset the very real and **immediate** impacts associated with abandoning the Aquatic Conservation Strategy and the Survey and Manage program of the NWFP.

As indicated on page 683 of the DEIS, currently 28% of BLM forests are young stands that lack the wildlife habitat and hydrological values associated with older structurally complex stands. "Young forest habitat is the most prevalent type of habitat" actually present on BLM lands today. Page 684 of the DEIS goes on to acknowledge that when the private lands portion of the O&C checkerboard is considered, 45% of Western Oregon forests consist of young stands. Hence "the prevalence of young and stand establishment stands is greater in the decision area than average historical conditions."

Every BLM action alternative calls for an increase in clearcutting and plantation establishment in a landscape in which young stands already dominate the "timbershed."

Page 225 of the DEIS indicates that alternatives B and C would reduce the amount of structurally complex forests within one site potential tree of streams. *See also* Figure 3-52 and page 233.

Page 680 of the DEIS indicates that the BLM intends to rely upon projected increases in hypothetical habitat for Bureau Sensitive Species (BSS) and (former) Survey and Manage species rather than protecting the actual known sites where these species occur. Trading occupied actual habitat for hypothetical future habitat is arbitrary and capricious.

I. BLM HAS NOT PROVIDED A RATIONALE FOR ABANDONING SURVEY AND MANAGE MITIGATION.

The Northwest Forest Plan adopted survey and manage as mitigation for past and ongoing loss of habitat that are associated with old forests and adversely affected by logging and fragmentation. BLM appears to have adopted a very narrow purpose and need focused on recovery of ESA-listed species, to the exclusion of the NWFP goal of keeping wildlife off of the list. BLM must address the original purposes of the Northwest Forest Plan and must provide a compelling rationale for changing the core purposes of land management. BLM cannot avoid their duty to protect wildlife and avoid analyzing the effects of failing to protect wildlife.

BLM should not abandon core elements of the Northwest Forest Plan, including the survey and manage program, which courts have repeatedly said is important to meeting the goals of the Plan. One of the purposes of the Northwest Forest Plan was to restore a functional interconnected old growth ecosystem. Another purpose was to not only recover species currently listed under the Endangered Species Act, but also prevent new species from being listed. This involved an ecosystem approach to forest management.

Past management of BLM lands has caused severe fragmentation of habitat and substantial emissions of greenhouse gases. Fragmentation of habitat results in increased extinction risk for wildlife populations and these effects tend to be time-lagged. Global warming will compound these effects. It takes a long time to recover from this "extinction debt." BLM lands remain highly fragmented, and the atmosphere remains polluted with excessive greenhouse gases, so BLM has a duty to focus on species that may become endangered during the lag period, rather than just focus on the species that are currently listed under the Endangered Species Act. *See* Jens Kolk, Tobias Naaf. Herb layer extinction debt in highly fragmented temperate forests - Completely paid after 160 years?[154]

In the 1994 Northwest Forest Plan, protecting species diversity was considered an integral part of maintaining functional old growth forest ecosystems. To meet the underlying need for "*a healthy forest ecosystem with habitat that will support populations of native species (particularly those associated with late-successional and old-growth forests),*" the 1994 EIS considered various combinations of reserves and standards and guidelines that mitigate the effects of continued logging and other management activities.[155] In the framework of the 1994 FSEIS, the twin goals of viable populations and functional ecosystems are mutually reinforcing. "In many respects the test of providing a functional, interacting late-successional and old-growth forest ecosystem subsumes the test of viability for the system's component species and groups of organisms."[156] This is merely an expression of the well-recognized interdependence of species.

The structure and function of the historic landscape condition in this region was created by relatively high-productivity forests visited by infrequent large stand-replacing fires which created a landscape dominated by large blocks of old forest. This is the condition that more than 1,000 species evolved with, but this condition was highly fragmented and functionally destroyed by decades of industrial clearcutting. The NWFP sought to recreate something much closer to the conditions that species evolved with.

The authors of the Northwest Forest Plan recognized that establishing large reserves on a highly fragmented landscape is not enough to meet the goal of preventing new species listings. Until the historic pattern of large blocks of old forest can be restored, the survey and manage program is needed to avoid loss of rare and uncommon species during logging.

For decades prior to 1992, logging proceeded on federal forests in the Pacific Northwest without adequate consideration of the needs of species that are dependent upon late-successional and old-growth forest (LSOG). Logging plans were typically designed to disperse cutting units across the landscape in order to avoid acute effects in any one area, but the resulting habitat fragmentation caused widespread harm to virtually the entire forest ecosystem. In the 1993 FEMAT report and the 1994 FSEIS for federal forests within the range of the spotted owl, federal forest managers for the first time attempted to craft a plan that would maintain and restore a functional interconnected late-successional old-growth forest ecosystem that would provide for the needs of

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[154] *Biological Conservation* 182 (2015) 164-172 http://www.sciencedirect.com/science/article/pii/S0006320714004777; and Mark Urban. Accelerating extinction risk from climate change. SCIENCE 1 MAY 2015. https://www.sciencemag.org/content/348/6234/571.full.pdf

[155] 1994 FSEIS vol I p 1-4.

[156] FEMAT, p. II-36.

the spotted owl, marbled murrelet, Pacific salmon, and hundreds of other species associated with LSOG and aquatic ecosystems.

BLM's assertion that "*the distribution of structural stages in the decision area in 50 years would be within the range of the average historic conditions*" (DEIS p 680) is highly questionable. BLM needs to better explain why this conclusion differs from the NWFP. BLM also needs to consider the landscape perspective. Late successional forests are in such short supply on non-federal lands that BLM may need to provide greater than historic average levels of old forest on BLM lands in order to compensate for degraded conditions across the federal/non-federal landscape so that wildlife associated with old forests remain viable.

Conservation of BLM lands represents a rare opportunity to restore low elevation forests. Restoration of a functional interconnected old forest ecosystem, as intended by the NWFP, requires that forests are allowed to express their full range of development and such forests are represented across a wide range of different biophysical settings, such as high elevation and low elevation, valley bottoms and ridge-tops, northern latitudes and southern, moist western aspects and dryer eastern aspects. The NWFP recognized this by including a wide range of biophysical settings in a network of reserves. "*Lower elevation forests have been subject to more intensive forest management than higher elevation forests because a large portion of lands at low elevations are privately owned. Small fragments of old growth are the only remaining representatives of low elevation forests in some areas.*" [157] BLM lands in western Oregon represent a large amount of low elevation forests that have relatively high productivity and high biodiversity. More BLM lands should be allocated to reserves to conserve their high ecological values.

In 1993-94, the authors of the FEMAT and the NWFP FSEIS considered a range of alternatives and concluded that none of the alternatives would ensure attainment of a functional interconnected late-successional old-growth ecosystem within 100 years, because the reserves were so damaged by past management that they likely needed 200 or more years to regrow and recover.

> *During the next 100 years, none of the alternatives provides for a higher than 60 percent likelihood of reaching an outcome in which the quality and quantity of the overall late-successional ecosystem (as defined by the three attributes: abundance and ecological diversity, processes and function, and connectivity) would be at least as high as the hypothesized long-term average condition."*[158]
>
> *In general, high rates of logging, forest plantations, fire suppression, ownership patterns, and human population and environmental influences have altered the regional ecosystem on federal lands to the extent that none of the alternatives can provide for a return to conditions that closely match those of previous centuries. ... [N]one of the alternatives achieved a likelihood of 80 percent or greater for Outcome 1 for any of the individual attributes (see the FEMAT Report, Chapter IV, Terrestrial Forest Ecosystem Assessment). ... The results indicate that none of the alternatives had a 60 percent or greater likelihood of producing a late-successional and old-growth ecosystem with*

[157] 1994 NWFP SEIS, p 3&4-31.
[158] 1994 FSEIS p 3&4 – 43

attributes that approximate at least long-term average conditions (Outcome 1) over a timeframe of 100 years. This occurs primarily because 100 years is not long enough for cutover landscapes to return to late-successional conditions that approximate prelogging conditions. Many late-successional attributes require 200 to 500 years to develop."[159]

The ecosystem assessment shows that the likelihood of attaining a functional and interconnected late-successional and old-growth forest ecosystem in the next 100 years is reduced because some characteristics of terrestrial ecosystems will not be obtained for at least 200 years. Similarly, the Assessment Team expected that degraded aquatic ecosystems will not be fully functional in 100 years. [160]

In recognition of the current deficit of functional late successional forest and the continued risks faced by many late-successional species, the agencies added several mitigation measures, including survey and manage, to the preferred alternative in the Final EIS. The Survey and Manage program requires that the agencies search for and protect certain rare and uncommon species, resulting in the creation of many relatively small, but biologically valuable, protection buffers.

The 1994 FSEIS relied primarily on a network of large reserves to maintain a functional interconnected late-successional old-growth ecosystem.[161] "The reserve system is designed to be comprehensive, adequate, representative, and replicated." [162] However, there are two problems with reliance on reserves. First, there are "significant unanswered questions about the degree to which a reserve system designed spatially to accommodate vertebrate dispersal meets the needs of small organisms," [163]

The second problem with excessive reliance on the reserves is that "old growth forests tend to be distributed in a highly fragmented mosaic." [164] Before the reserves were established in 1994, they were significantly impacted by past logging and road building so the reserves are not currently capable of ensuring the persistence of all late-successional old-growth species.

As much as 40 percent of the Late Successional Reserves currently in young plantations were established for timber production. Typically, the plantations are densely stocked with young Douglas-fir trees, and are unlikely to follow natural stand development pathways toward late successional conditions. Consequently, late-successional forest development in these plantations may be retarded or may not occur at all. In addition, young plantations often increase the occurrence of human caused wildfires, as well as increase the rate of spread and extent of fire and other disturbances across landscapes. The presence of young plantations in Late-Successional Reserves, thus, may increase the risk of loss of intermingled late-successional forests."[165]

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[159] 1994 FSEIS p 3&4 – 45
[160] 1994 FSEIS p 3&4 – 66
[161] 1994 ROD p 45. 1994 FSEIS vol I p 2-23. 2004 FSEIS vol I p 129
[162] 2004 FSEIS vol I p 129
[163] Perry et al. Sept 4, 2001 letter to the RIEC. See also 2004 FSEIS vol I pp 108-109.
[164] 1994 FSEIS vol I p 3&4-29.
[165] 1994 FSEIS vol I p 3&4-49. 2000 FSEIS vol I p 17.

So, the reserve system may not only be conceptually flawed for rare species with limited dispersal capabilities, but it is also non-functional for species that can disperse.

The current DEIS analysis is mostly limited to an projection of the abundance of various forest structural stages, while failing to fully consider other important attributes and indicators of ecosystem integrity. For instance, providing the historic *abundance* of structurally complex forests does not ensure support for healthy populations of wildlife if the habitat is fragmented and not arranged in an appropriate spatial pattern. BLM's analysis asks: "*What levels of habitat would be available under each alternative for [special status] species."* In the FEMAT report and 1994 FSEIS, "*The evaluation of late-successional and old-growth forest ecosystems is expressed as an expected likelihood of achieving long-term past conditions based on three attributes that characterize the quantity and quality of the ecosystem."*[166] Those three attributes are: (1) abundance and diversity, (2) process and function, and (3) connectivity.

II. AMOUNT OF LATE SUCCESSIONAL HABITAT IS INSUFFICIENT.

The current abundance of LSOG in the reserves is insufficient to provide a functional interconnected late-successional old-growth ecosystem, so any additional increment of LSOG outside the reserves (such as survey and manage buffers in the matrix) helps to provide important short-term functionality while the reserves regrow and recover from past logging. The following map of the 66,000 acre Fall Creek LSR clearly shows, with small light-green polygons, the fragmenting effect of past clearcutting. This LSR contains 44% late successional habitat, which is even more than the region-wide average for all reserves (37%).

[166] 1994 FSEIS vol I p 2-68.

III. DIVERSITY OF HABITAT IS IMPORTANT.

Diversity of habitat types is another important attribute LSOG considered by the 1994 FEIS. The survey and manage buffers help contribute to *diversity* simply because each one is in a unique location outside the reserves. Each physical location has a unique combination of geology, soils, slope, aspect, elevation, climate, and especially history of disturbance, therefore LSOG that is retained in different locations will represent a wider diversity of forest-types.

The scientists' Sept 4, 2001 letter to the RIEC says, "Species, species assemblages, and the genetic structure of populations may vary at relatively fine scales for small organisms (which account for by far the largest share of diversity), raising the possibility that each remaining older forest is to some degree unique in its biological structure."

Since survey and manage buffers retain LSOG outside of the reserves, the buffers protect different locations with different geophysical settings and different stand histories, and will thereby enhance the diversity of habitat types within the overall forest ecosystem.

IV. PROPOSED REMOVAL OF SURVEY AND MANAGE

All action alternatives remove the Survey and Manage measures that require the agency to survey for and protect sites of Bureau Sensitive Species when planning a site-specific logging project. The BLM is required pursuant to agency policy to "conduct[] evaluations of the distribution, abundance, population trends, current threats, or habitat for those species using available information." DEIS at 692.

As an initial point, the BLM is eliminating the survey and manage program which satisfied the agency's conservation duties towards these Bureau Sensitive Species. The BLM is eliminating these protections, but does not elaborate on the measures the BLM will take to satisfy their conservation duties. The BLM suggests that the reserve system being set up in WOPR will protect these species; however, this reserve system was not set up to benefit these species or takes into account these species whatsoever, because BLM plainly eliminates the goal of supporting viable populations of old-growth associated species from the WOPR revision. DEIS at 22. This is inadequate treatment of Bureau Sensitive Species.

Not all of these species react to forestry activities the same way the spotted owl does. For example, while thinning in reserves may benefit the spotted owl in the long run, thinning could extirpate many sensitive species from an area. The BLM needs to put a program in place to conserve and analyze impacts to Bureau Sensitive Species.

Also, the BLM's analysis of the vast impact of the removal of this program is woefully inadequate. First, the BLM claims that with complete and species specific surveys, the BLM could analyze the impacts to these species under the various alternatives, but says that the cost of conducting that analysis is too high to conduct all at once during this broad planning stage.

However, this is why Survey and Manage existed in the first place. The BLM has conservation and evaluation responsibilities towards these species, and the most effective way to meet this obligation was a project by project system of surveys, where project receipts would pay for the surveys. It is completely irrational for the BLM to assert that it cannot pay for surveys across the landscape, while also eliminating the only measure designed to mitigate that knowledge gap.

Secondly, the BLM should take into consideration the known sites of various species. The BLM states that for these sensitive species, the BLM will conduct evaluations of impacts to the species based on known information. Over the past two decades the BLM has surveyed for and discovered many known sites of various Bureau Sensitive Species. Those site locations and concentrations should be disclosed to the public in this NEPA process. The BLM could draw conclusions from the surveys conducted for these species concerning range, habitat, and distribution, because little is known about the range and distribution of these species. None of this analysis exists for any species with the exception perhaps of the red tree vole. Failure of the BLM to even attempt this analysis with the existing information it has from decades of survey efforts is a failure to take a hard look at the impact of removing these protections in the future.

Third, the BLM claims that the true analysis of the impact of removing protections for these species was conducted in 2004, the 2004 Final SEIS to Remove or Modify the Survey & Manage Mitigation Measure Standards and Guidelines. DEIS at 692. It incorporates that analysis here. There are several problems with this approach. First, the 2004 ROD and FEIS does not contemplate the various changes in the current alternatives with altering riparian reserve widths, altering the reserve system, altered protections for other late-successional species, like owls and murrelets. All of these changes render the analysis useless because all the underlying protection and buffer standards have changed. Further, there has likely been a lot of new information and significant changes that would render the baseline information in 2004 useless as well. Additionally, it is likely that the data concerning habitat and known sites that are over a decade old is now stale. It is plainly not accounting for the decade plus of surveys that have been conducted for all these species.

Additionally, the BLM cannot rely on a non-NEPA document to cure a lack of analysis in the present document. The 2004 ROD and FEIS, while it went through a NEPA process in 2004, the document was invalidated, DEIS at 692. Therefore, without a new decision on that NEPA document that analysis cannot be relied upon by connected later decisions.

As a final point, the BLM makes a massive faulty assumption regarding Bureau Sensitive Species in the DEIS. The BLM assumes that the habitat and sites of species that fall within the reserve system would receive protection. However, the BLM is permitting in the reserves various types of commercial timber harvest activities that downgrade or removal late-successional habitat. Without maintain the Survey and Manage program on reserve lands, the BLM cannot make this assumption. The BLM would also have to map out the location of every known sensitive species site in order to assure the protection of these sites on the reserves.

V. SURVEY AND MANAGE BUFFERS CONTRIBUTE TO THE FUNCTION OF LSOG FORESTS

The survey and manage species and buffers clearly contribute to the *function* of the LSOG forest, another important old-growth attribute considered in 1994. "Functions … refer to ecological values of the late-successional and old-growth ecosystem that (1) maintain or contribute to the maintenance of populations of species that use these ecosystems, …" [167] The survey and manage buffers contribute disproportionately to this attribute of forest ecosystems, because the buffers are not just randomly designated late successional areas; they are areas that have been surveyed and are known to actually harbor "populations of species that use these ecosystems," and not just any species, but rare and uncommon species that this forest plan was intended to protect. The presence of these rare and uncommon old-growth species is strong evidence that the survey and manage buffers contribute to the function of the old-growth forest ecosystem.

The 2000 and 2004 FEISs both recognize that if populations of survey and manage species are not maintained well-distributed across their native range there will be a "loss of normal biological function." [168]As a result of the 2004 ROD there are now 193 species that will have "insufficient habitat," resulting in some loss of biological function where those species are significantly reduced in population or no longer occur.[169]

The 1993 FEMAT Report also recognized the functional importance of many taxa included in the survey and manage program and the "broad benefits" of retaining even small fragments of LSOG in the matrix.

> *Although an important function of the Matrix is to provide for dispersal of organisms, perhaps of greater importance is the maintenance of organisms with key functional roles in the forest ecosystem. Taxa such as fungi, nitrogen-fixing organisms, and arthropods influence natural succession, nutrient cycling, and other ecosystem processes. Maintenance of populations of these organisms in the Matrix is essential to long-term forest productivity, as well as biodiversity.*
>
> *Old forest patches as small as only a few acres can also provide important refugia for sedentary organisms.... Lichens, fungi, bryophytes, mollusks, arthropods, vascular plants, and the less mobile vertebrates were consistently identified during the expert panel process as benefiting from even small fragments of old forest. <u>Panelists consistently reiterated the important functional roles played by these organisms. Panelists highlighted the necessity of maintaining these organisms well distributed throughout the ecosystem, not just confined to reserves.</u>*
>
> *<u>Summary of mitigation measures having broad benefits</u>*
> *(4) Retain small patches of late-successional or old-growth forest within the Matrix. These small patches can provide important habitat for arthropods, fungi, lichens, bryophytes, vascular plants, mollusks, small mammals, amphibians, and bats. Species*

[167] 1994 FSEIS vol. I p 3&4-37.
[168] 2000 FSEIS vol I p 191. 2004 FSEIS vol I pp 119-121.
[169] 2004 FSEIS vol I pp 124-125.

that are poor dispersers, narrow in their habitat requirements, have restricted geographic ranges and are sensitive to variation in microclimates will benefit most from retention of these patches of late-successional forest.
(6) Survey upland sites for rare, endemic, or sensitive organisms prior to any disturbance caused by management. Protect sites where these organisms occur (e.g. special habitats such as serpentine barrens, wetlands, rock outcrops).[170]

VI. CONSERVING SURVEY AND MANAGE SPECIES ENSURES THAT ECOLOGICAL PROCESS CONTINUE

Ecological processes are another important attribute of LSOG considered in the 1994 FEIS. Examples of ecological *processes* provided directly by survey and manage species include nitrogen fixation (by lichens), nutrient cycling (by fungi, arthropods, and mollusks), symbiosis (in which fungi provide water and nutrients to vascular plants, including virtually all the dominant trees species in the late successional forest, in exchange for photosynthate produced by the plants). Loss of survey and manage protections will lead to reduced benefits related to these processes.

The diversity of functions and processes represented by survey and manage species also enhances the resiliency of the entire forest ecosystem, which is particularly important in the face of climate change and other pressures. This resiliency value of biodiversity also refutes the assertion in the 2004 EIS that if survey and manage species are truly rare, then they must play only a minor role in ecosystem processes and functions.[171] As the climate changes, species that are rare today could become much more important tomorrow. Conserving survey and manage species helps ensure that ecological processes will continue under changing conditions.

VII. SURVEY AND MANAGE BUFFERS PROVIDE HABITAT CONNECTIVITY.

The survey and mange buffers provide important *connectivity* between larger fragments of suitable habitat. The 1995 FSEIS says "Connectivity is a measure of the extent to which the landscape pattern of the late-successional and old-growth ecosystems provides for biological and ecological flows that sustain late-successional old growth ecosystems and plant species across the range of the northern spotted owl." [172]

The current fragmentation of the landscape is not just *between* the reserves but also *within* the reserves themselves. The survey and manage buffers can be viewed as "stepping stones" that link larger patches of late-successional habitat wherever they occur. The added increment of connectivity provided by survey and manage buffers may be very important for enhancing persistence values while the fragmented forests recover.

The design of the Northwest Forest Plan includes large Late Successional Reserves, managed to protect LSOG habitat for species associated with LSOG, with intervening matrix areas, where

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[170] 1993 FEMAT pp IV-186 to IV-190 (emphasis added).

[171] 2004 FSEIS vol II pp 207-208.
[172] 1994 FSEIS vol I p 3&4-38.

more logging is allowed. But the matrix is not a sacrifice zone. There are several standards & guidelines (including survey and manage) to ensure that the matrix plays a role in the ecosystem management scheme of the Northwest Forest Plan.

[F]orests in the matrix function as connectivity between Late Successional Reserves and provide habitat for a variety of organisms associated with both late successional and younger forests. Standards & guidelines for the matrix are intended to provide for important ecological functions such as dispersal or organisms, carryover of some species from one stand to the next, and maintenance of ecologically valuable structural elements such as down logs, snags, and large trees.[173]

Riparian reserves are also located between the LSRs, and, like the Matrix, they are intended to provide connectivity and dispersal. However, the riparian reserves, even more so than the LSRs, are highly impacted by past logging and construction of roads that follow streams, so they are not currently providing adequate connectivity. The objective is that 80 percent of the reserves will be covered with LSOG, but FEMAT estimated that the riparian reserves were only about 31 percent covered with medium and large conifers (versus 42% for the LSRs)[174]. While riparian reserves recover from past disturbance, the survey and manage buffers clearly help serve an important function for connectivity between the LSRs. The 2004 FEIS did not consider the benefit of survey and manage in this context.

Related to connectivity, there is concern for persistence of many species covered by the survey and manage program in part because of the species' limited dispersal capabilities.[175] The scientists' Sept 4, 2001 letter to the RIEC said, "Studies and modeling over the last few years suggest that many LSOG associates in the PNW may be limited more by dispersal than by the abundance of habitat per se, including species of lichens, bryophytes, mollusks, fungi, and invertebrates (Boughton 2001, Sillett et al. 2000). This implies that every remaining piece of suitable habitat becomes an important focus for eventual colonization of the surrounding landscape."

VIII. THE SURVEY AND MANAGE PROGRAM CONTRIBUTES TO KNOWLEDGE AND UNDERSTANDING.

Another "value-added" feature of the survey and manage program is the knowledge gains that contribute to the agencies' understanding of the ecosystem. This value was attributed to some other mitigation but also applies to survey and manage and has not been adequately recognized in the FEIS.

Many of the survey and manage species are included in the program because they are thought to be closely associated with late-successional old-growth forests, yet for some species little is known about their specific habitat associations and their specific role in a functional interconnected old-growth ecosystems.[176] The 1994 EIS said that "opportunities to enhance knowledge about ecosystem function and management in the Adaptive Management Areas of

[173] 1994 ROD pp B-1 to B-2.

[174] FEMAT pp IV-51, IV-54
[175] 1994 FSEIS Appendix J2.
[176] 1994 ROD p C-6

Alternative 9 actually increased the likelihood that this alternative would provide late-successional characteristics in the future." [177] A similar *knowledge-value* is provided by the survey and manage program which not only informs and improves the design of projects at the local scale through pre-disturbance surveys (2001 ROD p 15), but also includes a comprehensive program of strategic regional surveys designed to gain scientifically useful information about little-known, rare, and uncommon species.[178] 2004 ROD eliminates both pre-disturbance surveys and strategic surveys designed to increase knowledge. The objective of functional interconnected late-successional old-growth ecosystem will be reduced to the extent that future knowledge will not be generated by the survey and manage program.

The DEIS at 692 says:

> *…the information in the 2004 SEIS and 2007 SEIS does present analysis based on the incomplete survey information available that concludes that most Survey & Manage species would have sufficient habitat to support stable populations under the No Action alternative without the Survey & Manage measure. … Compared to the No Action alternative, all action alternatives allocate more acres to the Late-Successional Reserve, which the Northwest Forest Plan expected to meet the needs of late-successional and old-growth related species.*

First, we find is very odd that BLM would attempt to tier to previous EISs that were found to be legally deficient by the courts. The analysis in the DEIS is just a few pages and does not address the flaws in those earlier EISs.

Second, the DEIS needs to take a hard look at species that would NOT have sufficient habitat. The fact that "most" species would have sufficient habitat does means that "some" won't.

Third, the DEIS needs to take a hard look at the consequences of increased logging in the reserves which is a likely result of weaker rules for logging in reserves. The standards & guidelines for LSRs allow far too much discretionary logging so the LSRs may not adequately protect rare and uncommon species (or listed species). This concern is amplified because riparian reserves are eliminated in LSRs. The action alternatives leave very little of the BLM landscape off-limits to logging. Subtracting structurally complex LSR, inner riparian zones, and congressionally reserves lands, leaves 63% of BLM lands open to logging under the preferred alternative.

2015 BLM RMP Analysis of what's open to logging

Open to logging	Acres	Not open to logging	Acres	
LSR	636,635	LSR that is structurally complex*	463,910	
outer riparian zone**	167,729	inner riparian zone	232,083	
HLB Low	77,384	cong reserved	40,537	
HLB mod	224,582	district reserves - not including road footprint*	187,926	
HLB uneven	274,199			
East Side Mgt Lands	151,885			
District Reserve Road Footprint**'	33,701			
Totals	1,566,115		924,456	2,490,571
Percentages	**63**		**37**	

[177] 1994 FSEIS vol I p 3&4-46. FEMAT p IV-72.
[178] 2000 FSEIS vol I p 330. The

Fourth, the DEIS needs to account for the increased uncertainty caused by climate change. Species may be less secure than previously assumed and more logging will cause greater risk to wildlife than assumed in previous analyses relied on here.

Fifth, the DEIS failed to take a hard look at the adverse effects on wildlife (including survey and manage species) caused by eliminating other key aspects of the Northwest Forest Plan, such as reducing protection for riparian reserves. The DEIS analysis seems to assume that survey and manage species are mainly dependent on the LSRs when in fact they are dependent on the combination of LSRs, riparian reserves, and other standards & guidelines (including the survey and manage requirements themselves). The matrix standards & guidelines for green tree retention, and down wood retention have significant benefits for wildlife. See 1994 ROD p 29; 1994 FSEIS, Appendix J2. The DEIS needs to clearly disclose the adverse wildlife effects of alternatives that remove these requirements. The EIS supporting the NWFP states:

> *[General Mitigation Measures] Application of Riparian Reserve Scenario 1 in the intermittent streams would benefit a wide variety of terrestrial and aquatic species by providing additional habitat. These species include the northern spotted owl, coho salmon, amphibians, small mammals, and some vascular plants. Connectivity of the ecosystem would also be improved.*[179]

The NWFP Record of Decision adopted Riparian Reserve Scenario 1 with the explicit intention to benefit: spotted owls, marbled murrelets, marten, red tree vole,[180] vascular plants, bryophytes, amphibians[181] (especially tailed frog, Van Dyke's salamander, clouded salamander, Del Norte salamander, black salamander, Cope's giant salamander, Cascade torrent salamander, southern torrent salamander[182]), bats,[183] birds, mammals, mosses, arthropods,[184] goshawk, fisher, bufflehead, harlequin duck,[185] 19 mollusks,[186] 12 species of lichen, 23 species of fungi,[187] and 130 species that were subject to "additional species analysis" because of viability concerns and received mitigation in the form of wider riparian buffers).[188]

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[179] 1994 FSEIS p 3&4 – 49.

[180] 1994 FSEIS, Appendix B-11, p B-143 -145.

[181] 1994 ROD p B-13.

[182] 1994 FSEIS p 3&4 – 176; 1994 FSEIS, Appendix J2, p 45.

[183] 1994 FSEIS pp 3&4 – 186-187.

[184] 1994 FSEIS, pp 3&4 – 61, 81.

[185] 1993 SAT Report, Ch 5, pp 296-298, 304, 308—309, 310.

[186] 1994 ROD p 38.

[187] 1994 FSEIS, Appendix J2, pp 20 – 23.

[188] 1994 FSEIS, Appendix J2; 1994 FSEIS, Appendix B11, pp B-143 – B-145. Martin Raphael. 2012. The Function of Riparian Reserves for Terrestrial Species – What Was the Intent? http://ecoshare.info/wp-content/uploads/2013/01/Raphael-buffers.pptx; See Heiken, D. 2013. Riparian Reserves Provide Both Aquatic & Terrestrial Benefits - A Critical Review of Reeves, Pickard & Johnson (2013). https://dl.dropboxusercontent.com/u/47741/Heiken%202013.%20Review%20of%20Reeves%20et%20al%20Riparian%20Proposal.pdf

BLM's DEIS fails to disclose the consequences of the fact that the old-growth forest ecosystem is currently non-functional. When such a high percentage of the historic amount of mature and old-growth has already been logged, protecting a high percentage of the small amount of remaining habitat does not ensure adequate protection. Likewise, including a high percentage of the forest plan area in the reserve system does not ensure adequate protection, because past logging has already affected such a high percentage of the reserves. Given the existing level of degradation, every acre of mature and old-growth forest is important. Acres with survey and manage species are even more important. Before cutting more of the remaining mature and old-growth forest, it is important to implement mitigation measures to protect species that contribute to the functionality of the overall mature and old-growth ecosystem.

Because the reserves are degraded and not fully functional and will remain so for the next century, the 1994 FSEIS considered, and the 1994 ROD adopted, a number of mitigations, including survey and manage, that will help maintain and restore some of the attributes of functional interconnected forest ecosystems and increase the likelihood that certain species will persist.[189]

The DEIS needs to disclose that Survey and manage buffers play a disproportionately important role in conservation of species because they are not randomly located, but rather they are (1) known to provide habitat for and be occupied by at-risk species and (2) they are located in areas that are threatened with immediate habitat modification.

The DEIS does not adequately disclose the ecological consequences of increased logging in the absence of the survey and manage program, nor does the DEIS explain how they expect to get rid of survey and manage now, after two courts have rejected prior efforts to eliminate the program. BLM must fully disclose the purposes of the program and provide a compelling rationale for abandoning it.

BLM cannot rely on the fact that a large fraction of the landscape is in reserve land allocation, when the old forests in reserves are highly fragmented and a large fraction of the reserves are covered by early and mid-seral forests that do not provide habitat for species of concern.

The scale of analysis makes the alternatives look similar, but this is misleading. At the site scale survey and manage makes a big difference. The 2004 Survey and Manage EIS clearly admits that implementing survey and manage "generally adds protection and reduces risk to species" compared to not doing it.

The DEIS fails to disclose that the Special Status Species Programs (SSSP) are far less protective than survey and manage. The scientific basis of these programs is weak. These programs are often under-funded and inconsistent. Special Status Species Programs give too much discretion to local managers causing inconsistent application and loss of occupied sites. BLM has far too much discretion (just in the fuzzy words) to make choices <u>not</u> to search for and <u>not</u> to protect SSSP. These program slack an "action forcing" mechanism, so the public will be unable to hold the agencies accountable for implementing the programs. Experience has shown that the agencies only act in the interests of wildlife when forced to do so. BLM and other federal

[189] See 2000 S&M FSEIS vol I pp 17-18. 2004 S&M FSEIS vol I p 17.

agencies are notorious for abusing such discretion and making choices in favor of timber extraction and against species conservation. The EIS should disclose the historical facts that lead Judge Dwyer to say in May 1991, that, "*...a deliberate and systematic refusal by the Forest Service and the Fish and Wildlife Service to comply with the laws protecting wildlife ...[demonstrates] a remarkable series of violations of the environmental laws."* [190]

"Site management" for SSSP is far less protective than for survey and manage species. BLM's approach to SSSP is to only protect high priority sites, but unlike survey and manage requirements, there are no consistent criteria or mechanisms to ensure that high priority sites are accurately and consistently identified and protected. The main difference between survey and manage and SSSP is the discretion SSSP affords local managers. This means that BLM's main expectation with the decision to eliminate the survey and manage program is to give local managers discretion to NOT conduct surveys and NOT protect sites. This means we are going from an accountable and consistent system to an unaccountable and inconsistent (i.e. arbitrary and capricious) system of species conservation.

> *Based on BLM Manual 6840, the BLM shall address Bureau Sensitive species (BSS) and their habitats in land use plans and shall implement measures to conserve these species and their habitats, to promote their conservation, and reduce the likelihood and need for these species to be listed under the Endangered Species Act." –DEIS page 680.*

The BLM DEIS largely ignores the binding direction to address and conserve BSS species in favor of a strategy that eliminates the Survey and Manage program, logs known sites, and relies on hypothetical future habitat to mitigate for the actual and certain loss of sensitive species from logging sites that they are known to inhabit.

The BLM presents no quantified analysis of the population levels or trends for any of the Survey and Manage species to be dropped from the program or the handful[191] that will be managed as BSS species. As disclosed on page 692 of the DEIS "there is incomplete and unavailable information relevant to the effects of the action alternatives on Survey and Manage species." What is certain is that the BLM intends to dramatically increase logging of known sites in the short term while relying on hypothetical future habitat. This strategy is not informed by actual species-specific population-informed data or analysis

IX. PACIFIC FISHER

As stated on page 703 of the DEIS the "BLM did not forecast population trends of fisher, because a quantified relationship between the specific number of individuals and the availability of habitat is unknown." This holds true for most BSS and S&M species. Yet the BLM is willing to conclude that hypothetical future habitat outweighs the impacts of refusing to look for, analyze, or buffer habitat for rare species in the planning area. This despite the fact that all of the action alternatives reduce denning habitat, resting habitat and total habitat for the first 10-20 years of implementation.

The fisher is likely to be proposed for federal listing during the RMP process. Management actions must be analyzed to protect and enhance specific habitat features critical to fishers.

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[190] http://clinton6.nara.gov/1993/07/1993-07-01-forest-background.html

[191] Only 5 of 28 current Survey and Manage Species are BSS species. DEIS 692.

Merely reporting generic fisher habitat types from various alternatives is necessary but fails to address needed conservation actions for specific habitat features (large denning trees, hollow logs, mistletoe trees, dense understory shrub, densely vegetated riparian reserves).

The Fish and Wildlife service is conducting a status review of the west coast fisher (78FR16828-16829) and a proposed listing is expected fall 2014. A 2012 update of fisher (77FR70010) states "*Existing regulatory mechanisms on Federal, State, and private lands do not provide sufficient protection for the key elements of fisher habitat, or the certainty that conservation efforts will be implemented or effective. The magnitude of threats is high as they occur across the range of the DPS, resulting in a negative impact on fisher distribution and abundance."* (Emphasis added) Thus, it would be prudent for the DEIS to analyze actual conservation actions to preserve and promote "key elements of fisher habitat" needing special management that would protect fishers and allow for them to increase abundance and range. A well-documented native fisher population is found primarily in the Medford BLM District.[192] A spatially explicit analysis is needed to identify lands with high habitat value as proposed, but analysis also needs to identify where specific conservation actions are needed. Some specific protections would be to protect all snags, live trees >32" dbh since these are used for denning and likely unavailable on most private timberlands. Fuels treatment projects are in conflict with fisher preferred habitat and spatially explicit analysis is needed to ensure that cumulative fuels treatment impacts do not harm fisher habitat. Fishers prefer undisturbed riparian areas. The robust riparian reserves in the no action alternative would best meet the needs of fishers and this conservation needs to identify for fishers. Current project level analysis simply assumes that project impacts are not important because there is abundant fisher habitat that is not being impacted. This is false and not scientific. Landscape scale spatially explicit analysis is needed in this RMP process to identify critical habitat for fishers for protection and enhancement of "key elements."

X. GOLDEN EAGLE AND BALD EAGLE

For the Golden Eagle, the BLM acknowledges that threats include "increased off-road recreation" [193] yet every action alternative includes more acres designated for ORV use while no analysis or data is provided regarding actual impacts to Golden Eagle populations and behavior.

The BLM analyzes impacts to the Bald Eagle at the entire planning level scale, and concludes that there will be "indistinguishable" differences between the action alternatives at this scale. Given that there are only approximately 250 thousand acres of nesting habitat on BLM lands, the BLM should be looking specifically at the impacts to these various habitat patches (older forest in close proximity to large water bodies). Merely concluding that there will be minimal differences at a scale of analysis taking into account millions of acres is inadequate under NEPA. Which sites will be logged, which sites will be retained? Does commercial thinning impact the species even if these sites are located in reserves? Please address these questions in the FEIS.

XI. BLACK-TAILED DEER AND ROOSEVELT ELK

[192] RMP Planning Criteria at 191.
[193] DEIS at 709.

BLM analyzes impacts of the plan revision process to deer and elk using early-seral habitat as a proxy for impacts to the species. BLM assumes that there is a need to increase early-seral habitat because ODFW has documented declines in deer populations across the state. DEIS at 676. To establish a proper baseline for analysis, the BLM instead needs to focus on deer population changes in the project area as opposed to state-wide. We are concerned that deer populations in the project area are stable, perhaps eliminating a need to create early-seral forests on BLM lands in the project area. Additionally, even though population numbers have declined since the 1980's we are concerned that this is an improper baseline for population analysis given the prevalence of clearcut logging in the years proceeding and programs to eliminate predators. In other words, deer numbers in 1979, might have been the highest in Oregon's recorded history, and do not necessary reflect an accurate or ecologically appropriate number of deer for the state and project area. Please develop a more accurate baseline for modeling and interpretation.

XII. WOLVES

Wolves are wide-ranging predators that can exist in a wide variety of habitat types. They are habitat generalists in terms of terrain and vegetation (Boyd 1999, Oakleaf et al. 2006). They are not wilderness dependent, but their survival depends on the availability of cover and relatively secure areas that allow them to avoid humans and escape persecution (Carroll et al. 2003). To successfully inhabit an area they require a year-round prey base of wild ungulates (Boyd et al. 1994, Fritts and Carbyn 1995). Deer, elk, beavers, wild turkeys, marmots, and other small mammals are probably preyed on also.

Because wolves are wide-ranging, disturbance and effects to the species will occur across BLM lands as the species continues to move west and south. Effects could occur during project activities from noise, road building, timber felling, yarding, hauling, smoke (prescribed fire), and increased human activity and presence. Additionally, effects will also be seen by grazing allotments.

Gray wolves are sensitive to road associated factors. (de Vos 1948, Mech et al. 1988, Thurber et al. 1994, Paquet and Callahan 1996, Boyd and Pletscher 1999). For gray wolves, both Mech et al. (1988) and Thiel (1985) found that when road densities exceed about 1 mi/mi^2, wolves avoided or were displaced from areas. Mladenoff el al. (1995) found that road density was the major predictor of wolf pack location. Jensen et al. (1986) reported that road densities >0.6 km/km^2 were apparent barriers to wolf dispersal. Wolves have also been documented to be killed by collisions with vehicles (Gibeau and Heuer 1996, Paquet and Callahan 1996).

The BLM needs to develop standards to ensure that road densities in the forests it manages remain below road densities over 1 mi/mi^2 or manage areas over this road density to prevent any new road construction temporary or permanent. The BLM in its DEIS failed to consider this issue at all, and a failure to do so is a failure to take a hard look at the issue under NEPA.

Specifically, to conserve complete arrays of species and associated ecological interactions, management schemes must consider the density of roads. Road densities greater than 1 mi/mil are considered detrimental to wolf and elk populations Qensen et al. 1986). Wolf pup survival rates indicate that wolves may tolerate road densities higher than 1 mi/mi2 if extensive roadless regions exist adjacent to wolf territories (Mech 1989). But road densities within much of eastside forests exceed 2.5 mi/mi2 (e.g., Colville and Winema National Forests), and remaining roadless regions are quickly disappearing. Protection of terrestrial vertebrates, as well as fisheries resources, requires a moratorium on road building plus efforts to remove existing roads. Henjum, M.G., J.R. Karr, D.L. Bottom, D.A. Perry, J.C. Bednarz, S.G. Wright, S.A.Beckwitt and E. Beckwitt. 1994. Interim Protection for Late-Successional Forests, Fisheries, and Watersheds: National Forests East of the Cascade Crest, Oregon and Washington. A Report to the Congress and President of the United States by the Eastside Forests Scientific Society Panel.

Pups are born at a natal den in spring (generally mid-to late April) and remain there with their mother for about 2 months (Mech 1970, Boyd 1999). During this time any disturbance that results in the female leaving the den may expose the pups to predation or inclement weather. The sensitivity of females to human disturbances at den sites varies greatly among individuals (Boyd 1999). Due to the potential disruption of breeding as a result of human activity associated with any timber harvest, hauling, or road construction activity, these activities and any other activities that could cause disruption should be restricted from April through June. BLM failed to take a hard look at this issue in violation of NEPA.

Wolves are also impacted by grazing activities and grazing allotments. There are 3 potential effects of the proposed grazing activities on gray wolf:

1) Cattle presence on the allotment could displace deer, the primary prey of gray wolves in this area, and thus cause wolves to move to other areas to hunt. Studies have found that deer either moved or changed their use patterns when cattle were turned into allotments (Mackie 1981). Wolves are wide-ranging predators that have been known to travel more than 20 miles away from a den or rendezvous site while hunting (Mech and Boitani 2003). Cattle use of the allotment may result in wolves having to travel further to hunt deer.

2) Human management of the grazing allotment; eg. maintaining fences and water developments, placing salt, moving cattle, looking for cattle, may disturb gray wolves that may be in the allotments. Human disturbance at natal den or rendezvous sites may result in abandonment of the sites (Fritts et al. 2003, Frame et al. 2005).

3) The possibility of livestock/wolf interactions that would result in wolf control actions. Although wolves normally prey on wild ungulates or other wild animals, they sometimes attack and kill livestock or other domesticated animals. Livestock depredation by wolves is difficult to predict and seems to be influenced by many factors. Newborn livestock in remote

places are more vulnerable than larger, older stock that are kept closer to humans, and leaving livestock carcasses out and available for scavenging may increase the risk of wolf depredation (Fritts et al. 2003). The proximity of livestock to wolf homesites can also be a factor in determining the potential for wolf to depredate on livestock (Stone et al. 2008).

The BLM needs to develop conservation measures for its grazing allotments that will deter, wolf-livestock conflict and reduce the need for lethal control actions. This should include, livestock carcass and bone pile removal from allotments, retirement of allotments near rendezvous or den sites, elimination of attractants for livestock near any den sites or rendezvous site, and active implementation of non-lethal techniques to deter conflict when necessary. Please take a hard look at these issues in the FEIS.

XI. RED TREE VOLE

Under the former management mandate (2001 ROD), vole surveys were required pursuant to the species Survey Protocol (now 3.0) and any sites discovered were required to be managed pursuant to the species Management Recommendations (2.0). There was a frequently used exception for pre-disturbance surveys in thinning projects in stands under 80 years old (Pechmann Exemption). WOPR greatly reduces these protections in all alternatives, completely eliminating the vast majority of the species range (all habitat south of Highway 20) from any survey or management regime.

The DEIS contains no analysis or disclosure regarding the impacts of the proposed actions on Red Tree Voles occurring outside the Northern Oregon Distinct Population Segment. What are the population levels and trends for Red Tree Voles (RTV) elsewhere in the planning area? How will genetic connectivity be assured? How many known active RTV sites will be logged? How many RTV will be harmed by such logging?

> *"Since every RTV site in the NOCDPS is a critical for persistence, the lack of provisions for pre-disturbance surveys and known site protection under alternatives A and C would negatively affect the species." DEIS at 738.*

Pages 738 and 744 of the DEIS indicates that Alternatives A and C would negatively affect the species by logging 136 of 383 known sites. Given the acknowledgment that "every RTV site in the NOCDPS is critical for persistence" of the species, the contention on page 744 that the BLM is unsure if such logging would contribute to the need to list the species under the ESA is in error.

A spatially explicit analysis for managing the red tree vole is needed on the entire planning area to assure abundance/distribution for its viability and as an important food source for northern spotted owls and other predators.

The simplistic modeling based on Huff et al 2012 is not adequate and the BLM needs to use Dunk and Hawley. The federal register notice for listing the north Oregon coast red tree vole states:

> *The most comprehensive analysis of current red tree vole habitat conditions specific to the North Coast Range DPS is a report by Dunk (2009, entire). Dunk (2009, p. 1) applied a red tree vole habitat suitability model (Dunk and Hawley 2009, entire) to 388 Forest Inventory Analysis (FIA) plots systematically distributed on all ownerships throughout the DPS (the FIA is a program administered by the USDA Forest Service, and is a national scientific inventory system based on permanent plots designed to monitor the status, conditions, and trends of U.S. forests).*[194]

Certainly the BLM has access to similar plot information identified by the Fish and Wildlife Service to conduct recommended analysis. We are particularly concerned about habitat fragmentation and decreased abundance due to proposed heavy thinning on the Medford District that would space mature trees to the extent that red tree voles would be locally extirpated (e.g. 40% canopy for spotted owl dispersal habitat). Management for abundant and continuous distribution of red tree voles needs to be spatially linked to management for northern spotted owl recovery.

Sites in Reserves: In the WOPR analysis of effects to red tree voles, the BLM forecasted effects to the species by "applying observed detection rates and mean size of occupied stands against acreage of habitat in the Harvest Land Base" and "assumed all sites would be protected in reserves." However, there is no requirement it appears from the management objectives and actions that surveys be conducted in reserves for red tree voles when activities are planned that could remove red tree vole habitat.

Any timber harvest activities in reserves will remove and displace voles. "Continuing timber harvest in younger forest areas adjacent to remaining patches of older forest diminishes the habitat quality of these stands by maintaining them in an isolated and fragmented condition that may not allow for persistent populations of red tree voles." Federal Register /Vol. 76, No. 198 /Thursday, October 13, 2011 / Proposed Rules 63735. Thinning younger stands occupied by tree voles can reduce or eliminate voles from these stands (Biswell 2010, pers. comm.; Swingle 2010, pers. comm.), and Carey (1991, p. 8) suggests activities that result in rapidly developing (changing, unstable) younger forests are a limiting factor for red tree voles. *Id.* at 637-38.

If the BLM wants to make the assumption that all vole sites are reserved in its analysis, all timber removal activities in the reserves should require full and complete red tree voles surveys, and the adequate protection of these red tree vole sites. *Id.* at 637-38. This should include protections of large blocks of habitat not just isolated patches of older forests created by the current Management Recommendations because the FWS's "evaluation of the remaining older forest patches within the DPS indicate they are likely insufficient to sustain red tree voles over the long term due to their relatively small size and isolated nature." *Id.* at 637-38.

Non-high priority sites: Although the baseline No Action Alternative takes into account the 2001 ROD, it does not mention or consider the "Non-High Priority" process that has designated many acres of existing red tree vole sites as non-high priority and cleared them for

[194] 76FR63724

logging. Not factoring in this option would allow the BLM to selectively log certain new red tree vole sites and it overlooks an option existing land managers had under the NFP. Its availability could influence the BLM's decision to eliminate Survey and Manage for red tree voles in most of the alternatives. Please disclose the amount of acres that have been designated or are proposed to be designated non-high priority. The BLM should develop an alternative that uses the survey and non-high priority approach to managing sites in the Harvest Land Base. Further surveys would contribute to a greater understanding of this imperiled species and inform future management and recovery decisions, not to mention the listing status of the species.

Additionally, will it be possible for the BLM to use the non-high priority process north of highway 20? This is not clear.

Need to List the Species: Based upon the findings of the FWS's Warranted but Precluded Findings for the North Coast Oregon DPS of the red tree vole, any reduction in federal vole protections will result in threats to the persistence of the species, and a potential need to list the species. The North Oregon Coast DPS extends north of the Siuslaw River to the Columbia, and the FWS concluded "that the ongoing effects of the destruction, modification, and curtailment of its habitat, in conjunction with other factors described in this finding, pose a significant threat to the persistence of the North Oregon Coast DPS of the red tree vole." FR 63740.

"Clearly, existing and projected amounts of older conifer forest habitat conducive to red tree vole persistence are less than the amounts projected to have occurred historically and with which tree voles have evolved. High-quality older forest habitat remains in isolated fragments, most of which are too small to support tree voles, and are so widely separated as to be likely well beyond the dispersal capability of the species. Unlike historical conditions, which were highly stochastic, these changes are likely to be permanent. Based on our analysis of best available information, we conclude the remaining high-quality habitat within the DPS is likely insufficient to support red tree voles over the long term, and persists in a fragmented and isolated condition that renders local populations of red tree voles vulnerable to extirpation or extinction through a variety of processes, including genetic stochasticity, demographic stochasticity, environmental stochasticity, and natural catastrophes." FR 63754.

Based on these conclusions by FWS, any reductions to protections to the species will contribute to the need to list the species. This is particularly true because "red tree voles are afforded more protection on Federal lands than on State Forest and private lands within the DPS, primarily as a result of the Survey and Manage protections" *id,* and every BLM DEIS Alternative aside from the no-action alternative removes Survey and Manage protections, or reduces these protections dramatically. Based on the WPB findings by the FWS, the BLM should have developed an alternative that set aside specifically large blocks of habitat in areas critical for red tree vole persistence, dispersal, and genetic connectivity. The BLM did not develop any alternative to this regard and did not analyze these issues at all.

Further, the BLM DEIS assumes a large number of sites will be treated as non-high priority, this was not the understanding of the FWS that concluded "all sites on Federal land within the DPS are considered high-priority sites with the exception of 198,000 ac (80,130 ha) of the southernmost portion of the DPS (primarily located within the Siuslaw River drainage)."

Undermining survey and manage protections and the high-priority treatment of vole sites will lead to threats to the species persistence within the North Oregon Coast DPS, not just the area north of Highway 20.

XII. BLACK BACKED WOODPECKER

Spatially explicit analysis is needed to identify expected areas of snag shortages over the entire landscape. Snag retention standards are needed for black-backed woodpeckers. Adjacent industrial private timber management produces virtually no snags.

Post fire forests that are aggressively clear-cut do not provide habitat for the Black Baked Woodpecker. Numerous mammals, birds and amphibians are dependent on snags and down wood. Fishers, black-backed woodpeckers and other future candidates for federal listing need active management to assure snag habitat is protected or artificially created. The BLM needs to reconsider assumptions about stand replacing fire regimes and treatments to reduce high intensity fire (Odion et al. 2014). Standards for snag retention during post fire logging are needed to assure viability of snag dependent animals currently in decline (e.g. fishers, black-backed woodpecker, olive sided flycatcher). Areas with existing or modeled snag shortages would be candidates for snag creation where unwanted competing trees exist within outer Riparian Reserves. There needs to be systematic active management to maintain desirable snag densities at appropriate spatial scales. At a minimum snags, live trees >32" dbh and hollow logs need to be protected in fisher areas during timber harvest. Similarly, dense stands of trees and fire-killed snags need to be maintained for black-backed woodpeckers.

The BLM must identify a spatially explicit analysis of the effects of salvage logging, thinning, and fire suppression on wildfire dependent black-backed woodpeckers. The black-backed woodpecker is undergoing a federal status review and a proposed listing is likely during summer 2014. The findings from the Federal Register notice (78FR21097)[195] states:

> *On the basis of our determination under section 4(b)(3)(A) of the Act, we find that information in the petition and readily available in our files presents substantial scientific or commercial information indicating that listing the Oregon Cascades-California population and the Black Hills population of the black-backed woodpecker may be warranted. This finding is based on information provided in the petition, in addition to information readily available in our files, on the possible loss of black-backed woodpecker habitat due to* ***salvage logging, fire suppression, and forest thinning****, and on the possible negative population effects due to small population size and climate change. We will initiate a status review to determine whether listing each population as endangered or threatened under the Act is warranted.* (emphasis added)

Thus, the BLM needs to analyze management options that would improve viability of black-backed woodpeckers by instituting conservation measures to provide large patches of intact burned forest, manage for dense forests with no thinning, curtail fuels treatment, and reduce the intensity of fire suppression efforts in appropriate potential habitat.

XII. MARBLED MURRELET

[195] http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0F5

In the NFP and original BLM RMPs, the agency would survey prior to logging in any potential Marbled Murrelet habitat. If there is any indication of occupancy, the agency would protect a 0.5 mile radius of all contiguous existing and recruitment habitat (stands capable of becoming habitat in 25 years). These areas would be managed as LSR. Recruitment habitat was required to "protected and enhanced" by any silvicultural treatment. (Eugene RMP at 62).

WOPR alters this regiment in all alternatives as laid out below. In the preferred alternative, murrelet surveys are restricted to the first 35 miles from the coast, and marbled murrelet habitat generally can extend up to 55 miles inland. Additionally, survey habitat is much more strictly defined as detailed out below. Timber harvest is allowed without surveys if large legacy trees are withheld from harvest and habitat is "maintained."

*Alternative A: No surveys, protect existing sites, seasonal disruption restrictions

*Alternative B: Surveys 35 miles from Coast in "mature or structurally-complex coniferous forest" and "conifer forests under 80 years old with platform trees (must be within 35 miles of coast, conifer, dbh greater than 19.1, over 33 meters tall, potential structure over 10 meters from ground, and contains platform over 4 inches in diameter. If stand occupied protect all occupied habitat plus 300 foot buffer around occupied stand. In stands under 80 with platforms, no surveys needed if platform trees aren't removed; maintain habitat (need to define); seasonal restrictions during breeding season.

*Alternative C: surveys in conifer stands over 120 years old, protect sites same as above for 10 years, and existing site protection lasts 10 years

*Alternative D: surveys same as B (but no 35 mile limitation), buffer all contiguous habitat within .5 mile radius of occupied stand (no gaps wider than 100 meters in forest)

Existing Sites: Marbled Murrelets have high nest-site fidelity, and as such, the PSG protocol recommends treating all occupied Marbled Murrelet sites as occupied sites indefinitely. A murrelet site, due to the inability to locate an exact nest location, occupies the entire area of contiguous forest. Given that the BLM is under direction from the FWS to protect occupied habitat, a majority of BLM alternatives say that the BLM will protect existing sites, but it is unclear what this means. DEIS at 722.

Pursuant to the PSG Protocol and available murrelet studies, occupied habitat means all the trees in a contiguous stand, including platform and non-platform trees. Any logging within this occupied habitat opens up the stand to predators and fragments the bird's habitat, resulting in take.

The BLM states that under three of the four action alternatives, all existing murrelet sites would be "retained." DEIS at 733. The BLM needs to elaborate on what this means. We assume it means that the entire survey area, i.e. contiguous forest stand, for each murrelet nest site is to be

protected, off limits from any kind of logging. Marbled Murrelet nest sites are compromised by forest and canopy openings that can be created by thinning or adjacent clearcutting. The BLM if indeed it is committed to protecting existing occupied sites, needs to ensure that all these sites are off limits from commercial harvest of any kind, because logging will create forest edges and openings that will expose these nest sites to an increased risk of predation. Additionally, even if these sites are in reserves this does not guarantee their protection because of the logging permitted in reserves that can downgrade or remove older forest.

300 Feet: In two of the BLM Alternatives the BLM proposes to protect Marbled Murrelet nest sites with a buffer of 300 feet as opposed to a half mile. This results in marbled murrelet occupied sites are approximately 6.5 acres in size as opposed to approximately 500 acres in size. The BLM provides no analysis or scientific justification that these 300 feet buffers will ensure protection of the nest site. Almost assuredly, a 6 acre nest site for the murrelet will result in the failure or predation of that nest site. We have attached numerous studies on the murrelet to that regard. Therefore, the BLM's assumption in the DEIS, that these sites will not be "taken" because of this 300 foot buffer is false and has zero scientific justification or rationale. This prescription will result in violations of the ESA, the MAMU Recovery Plan, the 5 Year Review Recommendations, and the NWFP Recommendations.

Potential or Suitable Habitat: We are concerned that the BLM is defining potential or suitable survey habitat for these alternatives too narrowly, and will accordingly miss certain types of Marbled Murrelet nest sites from this survey regiment. Murrelets will nest in younger stands if a single legacy tree is present, but the BLM is taking a stand level approach. When averaged, stands that provide nesting trees and habitat for murrelets could have average DBH, tree height, and various measurements that will not satisfy the BLM survey standards laid out above. Please provide scientific justification for the assertions that a large cohort of legacy trees within a forest stand is necessary for marbled murrelet habitat.

The BLM either needs to delete the DBH and height limitations or any limitations based on the number of platform trees present, or the BLM needs to factor in the percentage of nest sites that will occur outside of survey habitat and account for their loss and destruction in the modeling of the impacts. As an illustration, the BLM admits that over 10% of the existing occupied sites exist outside of what the agency has modeled or considered "nesting habitat." DEIS at 733. The agency needs to take a hard look at this issue.

35 Mile Delineation: Please explain or provide ecological or scientific justification for the 35 mile mark in Alternative B. It seems entirely arbitrary and will result in the take of murrelets nesting outside this area.

Habitat "Maintenance": Under the alternatives where surveys are required in the future, we are concerned that the BLM's habitat maintenance program will not result in adequate protection of the newly discovered nest site, not make it safe to assume that new sites will be retained, or that

Marbled Murrelets will continue to reproduce at these locations. The BLM is permitting logging, as long as the large legacy trees with platforms are not removed. Again, it is inadequate to just protect potential Marbled Murrelet nest trees in a stand. Logging trees that provide canopy closure around these legacy trees opens the stand up to corvids and will result in dramatic risk of nest predation and failure. The entire contiguous stand with large buffers needs to be protected in perpetuity to protect murrelets.

Large Block Habitat: The BLM should have considered blocking up large areas of habitat known to contain legacy and platform trees to provide refuges for the marbled murrelet. Aside from the no action alternative, it appears every alternative is reducing protections for the Marbled Murrelet. Given the species flat lining or declining population levels, coupled with an alarming drop in juvenile numbers which signal problems with reproduction, should implicate an alternative that strengthens protections for the species and creates special reserves for the species to guarantee viability of the species.

False Assumptions: In numerous places throughout the DEIS, the BLM assumes that murrelet populations are increasing. This is false, and we have attached numerous recent studies to this regard. Alternatives that all reduce protections for the species because they are based upon this false assumption flaws the NEPA process.

Studies: We have attached numerous studies that provide scientific support for the points made above. Please contact us for further scientific information or any questions regarding the studies and science provided.

XIII. OREGON SPOTTED FROG

Analysis and survey data are needed for the Oregon spotted frog because it has been proposed for federal listing and proposed critical habitat identified. The federal register notice (78FR53582-53632) for proposed listing of the Oregon spotted frog identifies two Oregon spotted frog populations in the planning area. The BLM must identify the need for a field survey in the decision area to locate additional populations in the Lakeview District and Medford District Ashland Resource Area. In the absence of a systematic field survey the BLM must assume that suitable spotted habitat is occupied and will be adversely impacted from grazing, water withdrawals, and potential introductions of alien predator species. The BLM must identify suitable Oregon spotted frog habitat for spatially explicit analysis purposes and to guide needed field surveys. The BLM must treat a species proposed for listing as if it is already listed. The RMP must identify conferencing with US Fish and Wildlife Service to guide the final decision of needed conservation actions and field surveys for the Oregon spotted frog.

XIV. NORTHERN SPOTTED OWL

WOPR Proposed Actions Common to All Action Alternatives:

"Protect stands of older, structurally complex conifer forest" and "maintain habitat for NSO" In LSR.

*Maintain means keep Nesting Roosting and Foraging Habitat (NRF) and dispersal. (Cites III-15 of recovery plan for management allowed in NRF)

*Maintain NRF, Nesting Roosting and Foraging Habitat defined as multi-layered, multi-species canopy, diameter over 30 inches dbh and canopy cover over 60% and decadence components

*Harvest generally prohibited, but road construction allowed, hazard logging allowed unless it downgrades habitat (NRF to dispersal).

*Fire suppression, fuels reduction, insect and disease logging, or any other logging to promote overall health of stand allowed even if it downgrades or removes habitat.

*No requirement for surveys.

*Alternatives A and C: No protections for spotted owl known or historic sites, no requirement for spotted owl surveys. Entirely based on land allocations.

*Alternative B: Is the same as A, except that the Sub-Alternative will protect known and historic sites within the Harvest Land Base, treating these areas as Reserves.

*Alternative D: Maintains all known and historic sites, like Sub B.

NRF and Recovery Action 32 Habitat: It is unclear from the DEIS, but is NRF habitat now being defined as only multi-layered, multi-species canopy, diameter over 30 inches dbh and canopy cover over 60% and decadence components? Spotted owls can and do nest in forests over 80 years old, even if they have not yet developed full decadence components present in unique old-growth forests like RA 32 habitat. In this new plan and DEIS, is the BLM equating RA 32 habitat to NRF habitat?

Better Comparison with NFP:

Generally, spotted owl management under the Northwest Forest Plan consisted of a land allocation approach (Late-Successional Reserves, Riparian Reserves, etc.) and site specific management. In LSRs, timber harvest was not allowed in stands over 80, and in stands under 80 only thinning was permitted to accelerate growth of the stand. In the Matrix, the agency was required to retain 100 acres of best NSO habitat as close as possible to the nest site or owl activity center as a core. Cores are managed as LSR, even if later unoccupied. Additionally within an owl home range (historic, modeled, or documented), the agency is required to maintain certain percentages of the owl's home range (appx. 1.5 mile radius) and certain percentage of the owl's nest core (appx. .6 miles radius). This maintenance of owl habitat generally required the agency to maintain over 60% canopy cover in the area post-treatment.

Also across the Matrix were Connectivity Blocks, where individual tree retention was higher, and the agency was required to maintain 25% of the best habitat within these blocks. Also within each fifth field watershed, 15% of all Matrix lands had to be late-successional forest to help meet spotted owl needs.

The agency is also required to survey for the species in potential habitat, and abide by recommendations made by USFWS to mitigate or eliminate adverse impacts to the species and critical habitat. The agency is also required to comply with the owl's recovery plan.

Under WOPR, almost every alternative shifts these various layers of protection to one land allocation based approach. But the WOPR analysis is unclear and not specific on the impact of the removal of these various protections. For example, if the BLM retained that 15% standard what would still be protected vs. what would be lost? This side by side comparison specific to former individual protective standards is needed to fully grasp the impact of the proposed changes, and to better analyze which changes would be most beneficial or harmful to the species. Please elaborate on a protective standard by standard basis in the FEIS.

Importance of BLM Lands: As an initial point, it is unclear from the NEPA documents produced by the BLM how important BLM lands are to the northern spotted owl. From the logging numbers and conclusions from the modeling in Appendix S, it appears that the differences in harvest land base allocations and volume to be logged will not make any significant impact on owl habitat or recovery objectives. Accordingly, BLM concludes that the primary role of its lands for the northern spotted owl is connectivity in the "central Klamath," coast province.

But this contradicts the DEIS (p 746), that states that BLM are "indispensable" for the northern spotted owl, and critical for both east-west and north-south dispersion. Given the critical nature of BLM reserves, and the critical dispersal element these lands play, the BLM should choose an alternative or modification of an alternative that maximizes reserve size and maximizes dispersal corridors.

In the agency description of riparian reserve objectives, the contribution of conservation and recovery of species is limited to "special status riparian associated species". Formerly the reserves contributed to dispersal and connectivity corridors for terrestrial species as well.

Riparian reserves were originally designed in part to facilitate spotted owl movement between reserves. Given the BLM's lands indispensable need towards owl connectivity, these riparian dispersal corridors should be increased, but it appears that almost every alternative is moving to shrink these riparian corridors. In fact, in the purpose and need for riparian corridors, benefit to terrestrial species like the northern spotted owl was completely ignored, even though this was one of the primary reasons for this allocation's original creation. The BLM should consider an alternative that increased riparian reserve size and protections in order to benefit dispersal capabilities for the northern spotted owl and other terrestrial species. Also it appears the BLM failed to take a hard look at the terrestrial species benefits that are provided by the riparian reserves, or the potential for these benefits to continue.

Scale of Analysis: We are concerned that the spotted owl's scale of analysis was too broad, and may have eliminated many conservation potential benefits by operating on such a large scale. We understand that this scope of analysis is needed for overall harvest projections and a bigger picture, but more local and detailed analysis is needed to more fully capture impacts to individual owl sites, areas of threatened connectivity, and how to rehab or connect isolated patches of owl habitat.

It is clear from the conservation needs of the spotted owl, spelled out on page 747-48, that all high quality habitat is needed for owl recovery, and all sites need to be protected. We are concerned that the definitions of what is considered high-quality habitat has changed, and may have led to much potential habitat falling through the cracks.

Generally under the Northwest Forest Plan, forests over 80 years in age were considered to have developed some older forest characteristics that benefited spotted owls, and was considered nesting, roosting, and foraging habitat (NRF). NRF habitat was considered high-quality owl habitat. It appears that the BLM has not adapted this definition of owl habitat, but has used a more complex metric by factoring in tree height, diameter, canopy cover and a range of other variables that are captured in a rating based on owl selection, i.e. "strongly selected for" or "strongly selected against."

The WOPR NEPA description of the models used for spotted owl habitat are not elaborated upon well. Spotted owl habitat suitability is rated on a 0 to 100 scale (higher numbers indicating better habitat) and the scale is based upon canopy cover, mean tree diameter, and slope. This new metric raises a lot of questions. Exactly what variables were included, and how are they weighted? Were legacy trees accounted for or secondary older cohorts accounted for and how? Additionally, the BLM divided owl habitat into four categories "strongly selected for", "selected for", "selected against", and "strongly selected against." I believe this means that a "strongly selected for" area had a high proportion of northern spotted owl nest locations based on the relative habitat suitability value.

It would be beneficial to the public and our organization to see how this new metric rates against the more simple analysis of stand age. In other words, we would like to know and see maps of how much of the BLM land is over 80 years in age, and how much of this land falls within the different new allocations. We need to see these maps and tables side by side with the new interpretations of owl habitat. How many forests over 80 were lost with this new metric and in what areas, or how many forests were gained based on this new habitat value interpretation?

It was make sense based on the owl's crashing demography that the BLM would err on the side of caution, and use the definition of habitat that would capture the most possible acreage to conserve based on the owl's needs and the indispensable nature of BLM lands to these needs. Additionally, it appears that the BLM excluded habitat that was not in large chunks of certain sizes from its modeling or consideration for conservation. Again it would be nice to see on a map and in tables, how much habitat was lost through these consolidations, and in what areas were they lost. It is a hard reality that much of BLM land in western Oregon is in the checkerboard and highly fragmented, but it would be nice to know that the habitat restoration efforts over the past 20 years were not in vain. Perhaps many of these isolated areas are close to being connected by recovering riparian corridors, or recently thinned forests nearing 80 years in age and attaining mature forests characteristics.

We are worried, that this block defining may have incidentally excluded a good deal of habitat that was formerly the focus of numerous recovery efforts. It would also be beneficial to see maps of where thinning had formerly taken place, so that the BLM could take full advantage and consideration of past restoration efforts. It could be that forests poised to more quickly attain habitat characteristics that would benefit the owl because of restoration efforts, will be lost in the definition shuffle and large scale approach taken by the BLM here.

Please include this analysis, these tables and maps, and comparisons in the FEIS.

Appendix S Modeling: The BLM states that it modeled in all potential timber harvest when calculating and modeling effects from the alternatives to the species. They specifically did not

include any patches under 10 acres, any forests over 500 meters from a road, any early-seral forest, and any forest logged within 50 years. DEIS at 1484.

We are concerned that BLM also did not account for in the model logging defined as "fire-suppression, fuels reduction, insect and disease control, and other activities needed to protect health of the stand or adjacent stands." This type of logging is permitted in LSRs even if it downgrades or removes spotted owl habitat. DEIS at 938.

We have seen numerous timber sales under the Northwest Forest Plan that have logged extensively, downgrading and removing spotted owl habitat that has been classified as "fire-suppression, fuels reduction, insect and disease control" and almost every timber sale planned is justified as a promotion of stand health.

Based on historic rates of this logging, the BLM needs to anticipate and account for a similar degree of this type of forest activity into the future, and needs to model its impact to the Northern Spotted Owl. BLM's failure to do so fails to satisfy the "hard look" required under NEPA.

Additionally, the modelling for the northern spotted owl appears to have an improper baseline. The No Action Alternative is defined as the existing 1995 RMPs for the various BLM districts. DEIS at 27. However, the models for impacts to Northern Spotted Owl habitat uses a baseline of no timber harvest. Appendix S, Page 1464. This is misleading to the public. Under the existing 1995 RMPs, the BLM was largely focused on restorative thinning projects to expedite the creation of Northern Spotted Owl habitat. By in essence changing the baseline to no timber harvest when analyzing impacts to the owl, the BLM masks the beneficial effect of the thinning regiment because under a no timber harvest baseline, these plantations are going to take much longer to development into taller, larger trees and other metrics the BLM is using to define good spotted owl habitat, or "strongly selected for" spotted owl habitat.

The analysis needs to be consistent with its baseline approach, and the modeling for the Northern Spotted Owl needs to be based upon the current management regime under the 1995 RMPs.

Protection of existing sites:

Generally, Northern Spotted Owl management under the 1995 RMPs consisted of a land allocation approach (Late-Successional Reserves, Riparian Reserves, etc.) and site specific management. In LSRs, timber harvest was not allowed in stands over 80, and in stands under 80 only thinning was permitted to accelerate growth of the stand. In the Matrix, the agency was required to retain 100 acres of best NSO habitat as close as possible to the nest site or owl activity center as a core. Cores are managed as LSR, even if later unoccupied. Additionally within an owl home range (historic, modeled, or documented), the agency is required to maintain certain percentages of the owl's home range (appx. 1.5 mile radius) and certain percentage of the owl's nest core (appx. .6 miles radius). This maintenance of owl habitat generally required the agency to maintain over 60% canopy cover in the area post-treatment. To facilitate this management surveys were required for Northern Spotted Owls, and the BLM was also required to comply with the spotted owl's recovery plan.

It appears in every action alternative that surveys for Northern Spotted Owls are not required. Are spotted owl surveys required for management actions in reserves under the various alternatives? The purpose of creating and protecting these reserves is to protect and recover the

Northern Spotted Owl. Thinning efforts that have been occurring for decades in Late-Successional Reserves were done to accelerate the development of spotted owl habitat. Riparian Reserves and dispersal habitat have been maintained to allow spotted owls to recolonize this new habitat, which the BLM models to be extensive in the future in Appendix S.

However, as touched on above, management activities and logging is permitted in the reserves even if it downgrades or removes spotted owl habitat. Surveys should be required for the Northern Spotted Owl for projects in the reserves because the BLM is not modeling for future owl sites, and we want to protect owls that are recolonizing thinned/restored habitat. This would also be an essential monitoring tool for the species, to determine if indeed the species is recolonizing commercially thinned forests.

In order to satisfy Recovery Action 10 and the mandate to conserve spotted owl sites, the BLM needs to conduct surveys for spotted owls and protect sites that it finds. The BLM states that it will, "[i]n areas of significant population decline, sustain the full range of survival and recovery options for the species in light of significant uncertainty." Page 747. The entire planning area is defined as an area of significant population decline. The BLM's insistence on abandoning the unified federal management plan for public lands within the range of the Northern Spotted Owl (NSO) may result in significant unintended consequences that curtail timber production. Existing Habitat Conservation Plans (HCP) and designated critical habitat necessary for the survival and recovery of NSO populations rested upon the assumption that the BLM would implement the NWFP including the protection of terrestrial connectivity values provided by full NWFP Riparian Reserve buffers. The BLM's action alternatives call that assumption into question.

As stated on page 749 of the DEIS:

> *analyses differs from the analyses done by the US Fish and Wildlife Service to inform its decisions on NSO recovery and NSO critical habitat (USDI FWS 2011Aa, Appendix C; USDI FWS 2012). These differences arise from differences in planning needs and regulatory requirements, as well as differences in data availability. The Service delineated critical habitat units, in part, assuming that existing NWFP land use allocations and management standards would continue, including on BLM-administered lands. In contrast, the BLM evaluated scenarios in which NWFP land use allocations and management standards would change on BLM-administered lands in the planning area." –DEIS page 749.*

By withdrawing from the NWFP, the BLM puts existing HCPs, the NSO Recovery Plan, and the basis for NSO critical habitat designations at immediate risk. In contrast, the NWFP provided regulatory certainty that contributes directly to the stated purpose of the RMP Revision Process to contribute to economic stability.

Please note page 769 of the DEIS acknowledges that alternatives A and C would provide less east-west NSO habitat connectivity between the Oregon Coast Range and the Oregon Western Cascades. This is a key distinction in that the USFWS has "identified east-west connectivity through this area as essential the conservation" of the species. DEIS page 769.

Given that the NSO Recovery Plan identifies habitat loss via fire as a significant issue for NSO survival and recovery, the BLM decision on page 774 of the DEIS not to analyze the effects of

its management on this aspect of NSO recovery is noteworthy. We would again point out that page 194 of the DEIS indicates that:

> *The HITA includes management such as thinning and regeneration harvest with no retention and rapid reforestation on a relatively short rotation. This management approach would result in continuous horizontal and vertical fuel profiles and conditions more closely aligned with high severity fire.- DEIS page 194.*

As stated on page 798 of the DEIS "*the NSO currently is under significant biological stress, and at risk of extirpation, over much of the moist forest portion of its range."* Given this reality, and given the BLM's proposal to dramatically increase even-age harvest that increases fire hazard in moist forests, the BLM must analyze and disclose the impacts of its activities on NSO survival and recovery.

Page 804 of the DEIS indicates that the BLM is aware of Recovery Action 6 which calls for thinning of moist forest plantations in order to develop structurally complex forests. Yet the DEIS contains no analysis of the BLM's proposal to greatly increase the creation of moist forest plantations that will presumably then require thinning to attain structural complexity. Indeed, the BLM appears committed to eliminating the leave tree and wood retention standards and guidelines that provide at least some structural complexity in NWFP regeneration harvest units. The US Fish and Wildlife Service relied upon the retention of structural legacies in harvest units over time in development of the NSO Recovery Plan and in the designation of NSO critical habitat.

The final decision on this plan revision should emphasize a large, well-connected reserve system, and do the most to emphasize the unique role of BLM lands in terms of connectivity, productive low-elevation habitat, and demographic support.

DEIS at 746 says -

> *In the Coast Range, the BLM has no opportunity, through habitat management, to reduce risks to the northern spotted owl during the next 50 years, and there are no substantive differences among the alternatives in their potential effects on those risks. However, in the western Cascades and Klamath Basin, the BLM, under all alternatives, would contribute to self-sustaining northern spotted owl populations during the next 50 years. ... The alternatives differ substantively in their contributions to east-west northern spotted owl movement between the Coast Range and western Cascades.*
>
> ** BLM-administered lands are indispensable:*
>
> ** To northern spotted owl reproduction, movement and survival in the southern half of the Coast Range, and in western and central portions of the Klamath Basin;*
>
> ** And in supporting north-south species movement through the southern portion of the Coast Range, and east-west species movement between the Coast Range and western Cascades."*

The final decision must address these "indispensables" with larger reserves, and high quality dispersal habitat (e.g., wider stream buffers, light-touch forestry, etc.) We remain concerned that the scale of analysis under-represents the importance of BLM lands elsewhere.

XV. BARRED OWL: INCREASED LOGGING OF HABITAT WILL INCREASED SPOTTED OWL EXTINCTION RISK

The Revised Recovery Plan for the Northern Spotted Owl includes Recovery Action 32 (RA 32) which recommends protection of a subset of high quality spotted owl habitat. The DEIS fails to clearly articulate the specific purpose of RA 32, which is to mitigate for the invasion of the barred owl. BLM should definitely meet FWS' RA 32 recommendation, but BLM must also consider how to address the more fundamental issue, which is how to manage owl habitat so that the two owls are more likely to co-exist on the landscape.

Since the Revised Recovery Plan for the NSO is not a NEPA document, BLM must conduct a full NEPA analysis to evaluate the efficacy of RA 32 as a mitigation and whether there is more than BLM can do to achieve the goal of spotted owl recovery in the face of barred owl competition, such as conserve *all suitable owl habitat* instead of just a *subset of high quality habitat*. Neither BLM nor FWS has conducted a NEPA analysis to consider whether conserving all suitable habitat, rather than just a subset, would better meet spotted owl recovery objectives. A NEPA analysis of this issue will show that protecting all suitable NRF habitat will not only increase the chances of spotted owl recovery, but provide a host of complementary benefits, including clean water, carbon storage, prevent new species listings, enhance recreation and scenic values, maintain quality of life, and provide community stability.

When deciding whether to protect all suitable nesting, roosting, foraging habitat for the spotted owl or just a subset of high quality habitat, it is important that BLM consider the best available information which is contained in part in the latest meta-analysis of all the spotted demography studies. We expect this report to show that the spotted owl is doing worse than expected, providing support for a cautionary decision to protect all suitable owl habitat instead of just a subset. BLM and others appear to be trying to keep this information out of the public record by saying it is in peer review. Nevertheless, the Department of Interior helped pay for this study; its employees helped collect data and write the report; the report is likely in BLM's possession; and we understand the BLM officials have been briefed on its contents, so it would be arbitrary and capricious not to fully consider the latest meta-analysis and make it part of the administrative record.

In DEIS Appendix S, BLM considered a model that segregated landscape patches into groups ("bins"), including "selected for" owl habitat and "strongly selected for" owl habitat. BLM should protect all selected for habitat, not just strongly selected for. Conserving all suitable/all selected habitat is more likely to advance recovery in several ways. First, it prevents the loss of habitat available for both species, thus reducing the risk of adverse competitive interactions between the two owls. (See more on that below.) Second, it increases the likelihood of future recruitment of additional high quality habitat. Suitable habitat that is not yet "high quality" habitat, is likely the best candidates for future recruitment of high quality habitat. If such habitat is instead logged it will prevent or delay recruitment of more high quality habitat.

The DEIS also needs to critically review the assumption implicit in RA 32 that "allowing for other threats, such as fire and insects, to be addressed by restoration management actions" will in fact enhance rather than detract from spotted owl recovery objectives. As explained in great detail in the fire and fuel section, forest treatments intended to reduce the threat of fire are more likely to cause harm to the owl than fire itself. See the fire and fuel section and Heiken, D. 2010. Log it to save it? The search for an ecological rationale for fuel reduction logging in Spotted Owl habitat.[196]

Barred owl competition and displacement are significant concerns documented in the recent status reviews for the northern spotted owl. The 2004 status review panel unanimously identified barred owls as a future threat to the spotted owl. [197]

The invasion of the barred owl undermines a critical assumption underlying the Northwest Forest Plan - that all *suitable* owl habitat is *available* to spotted owls. With the invasion of the barred owl, tens of thousands of acres old forest owl habitat (which was in short supply even before the barred owl arrived) are now occupied and defended by barred owl to the exclusion of spotted owls. Many acres that were previously assumed to be available to spotted owls is no longer available because the barred owl is there. The logical response now is to protect and restore more suitable owl habitat to reach previously established spotted owl recovery goals.

Based on well-established scientific principles, such as the species/areas relationship, BLM needs to protect more suitable habitat to ensure that these two owl species can co-exist, and to decrease the likelihood of competitive exclusion. This is corroborated by FWS' Final Recovery Plan for the Northern Spotted Owl, which recommends protection of "substantially all of the older and more structurally complex multi-layered conifer forest outside of MOCAs" in westside provinces (as well as on non-federal lands). "These forests are characterized as having large diameter trees, high amounts of canopy cover, and decadence components such as broken-topped live trees, mistletoe, cavities, large snags, and fallen trees."[198] This recovery action is intended to reduce competitive pressures between spotted and barred owls, but unfortunately an analysis has not been done to show *how much* additional habitat needs to be protected to help assure co-existence of the competing owls, and the USFS and BLM have not taken steps to implement this recovery plan recommendation.

The FY2014 Annual Report On Northern Spotted Owl Monitoring states:

> *There is mounting evidence that barred owls may be negatively impacting the spotted owl population within the KSA [Klamath Study Area]. This is illustrated by several apparent population trends: (1) spotted owl detections have been steadily decreasing (Figure 6) and reached the lowest point in 2014, when barred owl detections reached their highest level; (2) fecundity rates appear to be declining (Figure 8) and in only 2 of the previous 10 years was the rate above the 25 year average; and (3) the fecundity rate for sites with known barred owl presence was lower than at other sites and is continuing to decline. Forsman et al. (2011a) noted that the consistency of the negative associations between spotted owl demographic rates and the presence of barred owls supports the conclusion*

[196] Oregon Wild. V 1.0. May 2010. http://dl.dropbox.com/u/47741/Heiken_Log_it_to_Save_it_v.1.0.pdf
[197] https://web.archive.org/web/20060927184758/http://www.sei.org/owl/meetings/Presentations/June/Gutierrez%20Threats.pdf.
[198] See Recovery Action 32.

that barred owls are having a negative effect on spotted owl populations. The recent KSA data, with the combination of decreasing occupancy and reduced fecundity, appears to reinforce this conclusion.[199]

A recent telemetry study showed that in fragmented landscapes barred owls have a survival advantage relative to spotted owls, but that survival advantage diminishes in landscapes with a higher proportion of older forest. In other words, conservation of mature & old-growth forest should be favored because spotted owls are able to compete nearly equally with barred owls in landscapes with a high proportion of old forest.

[200]

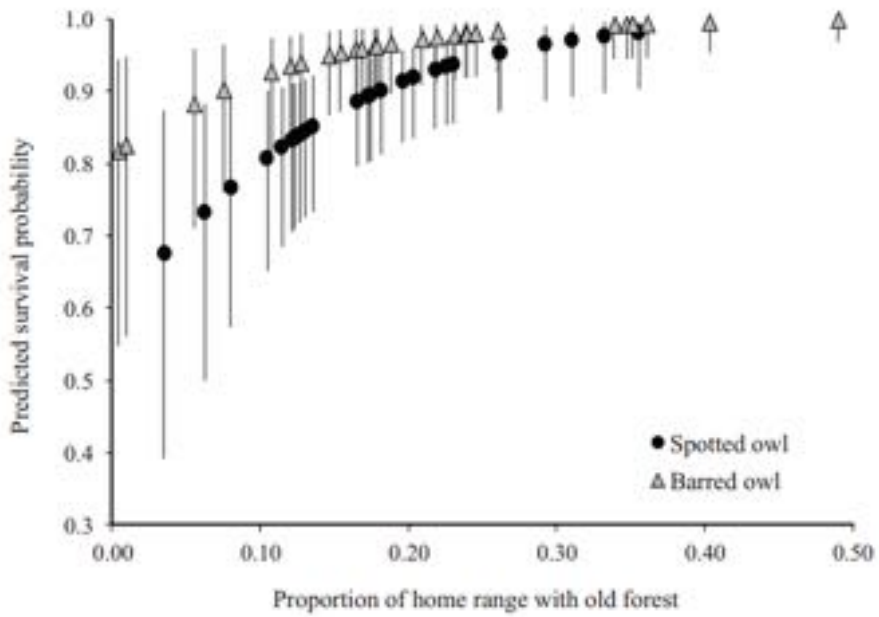

Figure 13. Predicted relationship between mean proportion of old conifer forest within the home range and seasonal (6-month) survival probabilities of radio-marked northern spotted owls ($n = 29$) and barred owls ($n = 28$) in western Oregon, USA, 2007–2009. We calculated point estimates with 95% confidence intervals at observed mean values for each individual under the best-supported model of survival, which included the additive effects of species and proportion of old conifer forest within the home range.

BLM has no NEPA analysis to tier to that supports RA 32 and addresses (on a range-wide scale) how to mitigate the adverse competitive interactions between spotted owls and barred owls. Before BLM adopts a plan that degrade more suitable owl habitat they must consider a range of NEPA alternative that protects more than just the "structurally

[199] Hollen, Horn, et al 2015. Demographic characteristics of northern spotted owls (*Strix occidentalis caurina*) in the Klamath Mountain Province of Oregon, 1990-2014. http://www.reo.gov/monitoring/reports/nso/KLA%20nso%20demog%20annual%20report%202014.pdf

[200] Wiens, J.D., Anthony, R.G., and E.D. Forsman. 2014: Competitive Interactions and Resource Partitioning Between Northern Spotted Owls and Barred Owls in Western Oregon. Wildlife Monographs 185:1–50; 2014; DOI: 10.1002/wmon.1009. https://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/48214/AnthonyRobertFisheriesWildlifeCompetitiveInteractions.pdf

complex older forest" in order to increase the chances that spotted owls and barred owls can co-exist.

The final Recovery Plan for the Northern Spotted Owl has partially addressed the barred owl issue by adopting Recovery Action 32 which urges the FS and BLM to "Maintain substantially all of the older and more structurally complex multi-layered conifer forests on Federal lands outside of MOCAs…" based on the idea that "protecting these forests will not further exacerbate competitive interactions between spotted owls and barred owls as would occur if the amount of shared resources were decreased.[201]" The revised critical habitat for the northern spotted owl was also expanded to "… increase the likelihood that spotted owls would be able to persist in areas where barred owls are also present. … [A]dditional critical habitat may allow for coexistence of the two species, potentially reducing competition. [202]

In considering this recommendation the agencies must prepare NEPA analysis which considers the full potential of suitable habitat quantity and quality and its mediating influence on the interactions between spotted owls and barred owls. Maintaining a subset of suitable habitat as recommended by the recovery plan is one option, but the agencies must consider the full benefits of protecting all suitable habitat, not just a subset, and providing additional mitigation in matrix areas such as managing the matrix to enhance habitat for owl prey species. The recovery plan is not a NEPA document and FWS was not required to consider all reasonable alternatives. Action agencies like the FS and BLM on the other hand are required to fully consider alternatives. It would be wise to do so at a range-wide level, but until that is done, the agencies should not adversely modify any suitable habitat. The recovery plan purports to offer the agencies an exception to the recommendation in Recovery Action 32 ("Land managers have made significant investments of time and resources in planning projects that may have been developed prior to the approval of this Recovery Plan, thus some forests meeting the described conditions might be harvested…"[203] however, FWS cannot exempt the action agencies from NEPA. Protection of additional suitable habitat in order to reduce competitive interactions between the two owls is now a recognized tool in the toolbox and represents significant new information about *any* proposal to modify suitable habitat regardless of how far the planning process may have proceeded.

A 2010 Draft report "Population Demography of Northern Spotted Owls" corroborates the need to protect more than just the highest quality spotted owl habitat as contemplated in the draft Recovery Action 32.

> *We also found a negative relationship between recruitment rates and the presence of Barred Owls and a positive relationship between recruitment and the amount of suitable owl habitat in the study areas. Recruitment was higher on federal lands where the amount of suitable owl habitat was generally highest. [p 96].*
>
> *While our observational results do not demonstrate cause-effect relationships, they provide support for the hypothesis that the invasion of the range of the Spotted Owl by Barred Owls is at least partly the cause for the continued decline of Spotted Owls on*

[201] FRP p 34.
[202] Dugger et al. 2011; Forsman et al. 2011." FWS 2012. CHU draft EA, p 53, 62. http://www.fws.gov/oregonfwo/Species/Data/NorthernSpottedOwl/Documents/CH_DRAFTEnvAssmnt_6.1.12.pdf.
[203] FRP p 35.

federal lands. Our results also suggest that Barred Owl encroachment into western forests may make it difficult to insure the continued persistence of Northern Spotted Owls.[204] *The fact that Barred Owls are increasing and becoming an escalating threat to the persistence of Spotted Owls does not diminish the importance of habitat conservation for Spotted Owls and their prey. In fact, the existence of a new and potential competitor like the Barred Owl makes the protection of habitat even more important, since any loss of habitat will likely increase competitive pressure and result in further reductions in Spotted Owl populations.*[205]

Our results and those of others referenced above consistently identify loss of habitat and Barred Owls as important stressors on populations of Northern spotted Owls. In view of the continued decline of Spotted Owls in most study areas, it would be wise to ***preserve as much high quality habitat in late-successional forests for Spotted Owls as possible****, distributed over as large an area as possible. This recommendation is comparable to one of the recovery goals in the final recovery plan for the Northern Spotted Owl,*[206] *but* ***we believe that a more inclusive definition of high quality habitat is needed*** *than the rather vague definition provided in the 2008 recovery plan. Much of the habitat occupied by Northern Spotted Owls and their prey does not fit the classical definition of "old-growth" as defined by Franklin and Spies (1991), and a narrow definition of habitat based on the Franklin and Spies criteria would exclude many areas currently occupied by Northern Spotted Owls. [p 99]...*[207] *"Population Demography of Northern Spotted Owls." DRAFT COPY 17 December 2010. This draft manuscript is in press at the University of California Press with a projected publication date of July 2011. It will be No. 40 in Studies In Avian Biology, which is published by the Cooper Ornithological Society.*[208]

A well-known axiom of the species-area relationship from island biogeography holds that as habitat area increases, the number of cohabiting species also increases.[209]

The major causes of population and species extinction worldwide are habitat loss and interactions among species. ... The most robust generalization that we can make about population extinction is that small populations face a particularly high risk of extinction. ... [E]mpirical support for the extinction-proneness of small populations has been found practically wherever this issue has been examined. ... The loss of habitat reduced population size ... Larger habitat patches have larger expected population sizes than smaller patches. Therefore, other things being equal, we could expect large habitat patches to have populations with a lower risk of extinction than populations in small

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[204] *See also* Olson et al. 2004.
[205] Horn and MacArthur 1972, Olson et al. 2004, Carrete et al. 2005. [pp 97-98]
[206] USDI Fish and Wildlife Service 2008.
[207] Eric D. Forsman, Robert G. Anthony, Katie M. Dugger, Elizabeth M. Glenn, Alan B. Franklin, Gary C. White, Carl J. Schwarz, Kenneth P. Burnham, David R. Anderson, James D. Nichols, James E. Hines, Joseph B. Lint, Raymond J. Davis, Steven H. Ackers, Lawrence S. Andrews, Brian L. Biswell, Peter C. Carlson, Lowell V. Diller, Scott A.Gremel, Dale R. Herter, J. Mark Higley, Robert B. Horn, Janice A. Reid, Jeremy Rockweit, Jim Schaberl, Thomas J. Snetsinger, and Stan G. Sovern.
[208] http://www.reo.gov/monitoring/reports/nso/FORSMANetal_draft_17_Dec_2010.pdf.

[209] *See especially,* Part III - Competition in a Spatial World *in* Tilman, D. and P. Karieva, Eds. 1997. Spatial Ecology: The Role of Space in Population Dynamics and Interspecific Interactions. Monographs in Population Biology, Princeton University Press. 368 pp.

patches. ... More generally, the relationship between patch size and extinction risk provides a key rule of thumb for conservation: other things being equal it is better to conserve a large than a small patch of habitat or to preserve as much of a particular patch as possible. ... [T]here are likely to be many complementary reasons why large patches have populations with low risk of extinction. " [210]

The territorial occupancy model developed by Lande (1987), extended here to include two competing species, represents a useful tool for evaluating how equilibrium breeding numbers could be affected by changes in habitat availability, demographic parameters, dispersal behavior and interspecific competition … Its application shows that **increases in the exclusive suitable habitat of each species is the best option to maintain viable populations of territorial competitors** in a same area, given that it reduces competition for territories. Increases in habitat overlap by reducing the exclusive habitat available for one species strongly affected the outcome of competition, resulting in extinction of the species for which exclusive habitat had been eliminated.[211]

From these ecological foundations, one can see that the barred owl, by invading, occupying suitable habitat and excluding spotted owls, has reduced the effective size of the reserves that were established in 1994, and thereby reduces the potential population of spotted owls. Extinction risk is increased by this loss of habitat and smaller population. If we provide more suitable habitat, the population potential increases, and the risk of extinction decreases. The most rational way to respond is to protect remaining suitable habitat, expand and restore the reserve system to provide more suitable habitat to increase the likelihood that the two owl species can co-exist.[212]

This view is corroborated by owl biologist David Wiens who was interviewed on the Lehrer News Hour, he said: "*The more habitat you protect, the more you're going to alleviate the competitive pressure between the species. Rather than reducing it and increasing the competitive pressure between these two species, we need to provide as much habitat as possible for them*."[213] Robert Anthony agrees, "*If you start cutting habitat for either bird, you just increase competitive pressure.*"[214] And in the same article Eric Forsman added "*You could shoot barred owls until you're blue in the face," he said. "But unless you're willing to do it forever, it's just not going to work*."

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[210] Oscar E. Gaggiotti and Ilkka Hanski. 2004. Chapter 14 - Mechanisms of Population Extinction. *In* Ecology, Genetics, and Evolution of Metapopulations. Elsevier. 2004. http://web.archive.org/web/20070612211945/http://www.eeb.cornell.edu/sdv2/Readings/Gaggiotti&Hanski.pdf

[211] Martina Carrete, Jose´ A. Sa´nchez-Zapata, Jose´ F. Calvo and Russell Lande. Demography and habitat availability in territorial occupancy of two competing species. OIKOS 108: 125-136, 2005 http://www.ebd.csic.es/carnivoros/personal/carrete/martina/recursos/13.%20carrete%20et%20al%20%282005%29%20oikos%20108-125.pdf.

[212] Put another way, when threatened with extinction, "the best defense is a strong offense" that is, species are more likely to persist if they have a large, well-distributed population size and if we minimize all manageable threats. Dunham, Jason. 2008. Bull trout habitat requirements and factors most at risk from climate change. http://www.fs.fed.us/rm/boise/AWAE/projects/bull_trout/bt_Dunham.html

[213] DAVID WIENS. News Hour interview. "Biologists Struggle to Save the Spotted Owl." December 18, 2007. http://www.pbs.org/newshour/bb/science/july-dec07/owl_12-18.html.

[214] Welch, Craig. 2009. The Spotted Owl's New Nemesis. Smithsonian Magazine. January 2009. http://www.smithsonianmag.com/science-nature/The-Spotted-Owls-New-Nemesis.html?c=y&page=2

The book "Signs of Life: How Complexity Pervades Biology" by Sole and Goodwin has an interesting discussion that immediately brings to mind the barred owl/spotted owl issue. Chapter 7 of the book describes work being done by a Japanese researcher named Kaneko who developed and explored a modeling concept called "coupled map lattices." The lesson from these models is that when habitat is abundant, competing species operate within the "coexistence regime" but when habitat becomes scarce the model switches to a new attractor and operates in the "exclusion regime." This model strongly supports the idea that retaining more habitat increases the likelihood that spotted and barred owls can coexist, and if we eliminate reserves or continue to log suitable habitat in the matrix, then barred owl may competitively exclude and extirpate the spotted owls. Similar results are demonstrated in resource competition models described by Tilman, Lehman, and Thompson. 1997.[215]

XVI. SISKIYOU MOUNTAIN SALAMANDER

The proposal to eliminate the survey and manage program and to allow for ground-disturbing activities in the majority of Siskiyou Mountain Salamander (SMS) sites managed by the BLM may directly contribute to the need to list the species under the Endangered Species Act (ESA). Implementation of the action alternatives in the DEIS would undermine several key elements of the 2007 SMS Conservation Strategy that were deemed necessary in order to "maintain well-distributed populations" and "avoid a trend towards listing under the ESA."

The BLM is planning to eliminate the Adaptive Management Area (AMA) land use allocation that contains 67% of known SMS sites according to page 12 of the 2007 SMS Conservation Agreement to which the BLM is a party. The BLM is also proposing to significantly reduce the width of Riparian Reserves that were relied upon as a selection criterion for determining "high priority" SMS sites.

Page 5 of the SMS 2007 Conservation Agreement and page 5 and 40 of the 2007 Conservation Strategy indicate that "*significant changes in Forest Service or BLM land-use allocation within the area of the conservation strategy"* must trigger *"immediate review of the Conservation Agreement."*

Page 3 of the Conservation Agreement acknowledges, *"habitat loss, degradation and additional fragmentation of discrete populations are all potential threats to the species."* The BLM RMP action alternative may directly contribute to all three of these threats to species persistence.

Page 4 of the Conservation Strategy indicates that the location of reserves (including Riparian Reserves) influenced the selection of high priority SMS sites and page 18 indicates that an objective of the strategy was to *"utilize the existing federal land use allocations as a foundation*

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[215] Tilman, Lehman, and Thompson. 1997. Plant diversity and ecosystem productivity: theoretical considerations. Proceedings of the National Academy of Sciences. 94:1857-1861. http://www.cedarcreek.umn.edu/biblio/fulltext/t1694.pdf. See also, Tilman, D. and P. Karieva, Eds. 1997. Spatial Ecology: The Role of Space in Population Dynamics and Interspecific Interactions. Monographs in Population Biology, Princeton University Press. 368 pp. and Valenti D., Fiasconaro A., Spagnolo B. Pattern formation and spatial correlation induced by the noise in two competing species http://arxiv.org/PS_cache/cond-mat/pdf/0401/0401424v1.pdf.

for providing a high likelihood of continued persistence." This objective, and the underlying assumptions of the Conservation Strategy, are undermined by BLM plans to abandon the land-use allocations of the NWFP.

Page 17 of the Conservation Strategy indicates that it rests upon the reasonable assumption that *"clearcut logging is no longer carried out on Forest Service or BLM lands within the range of this species."* The RMP DEIS renders this assumption invalid.

Please note that page 21 of the Conservation Strategy indicates *"if intervening lands become highly disturbed and unsuitable habitat conditions predominate, connectivity to retain interacting individuals across the landscape may need to be re-addressed."*

Page 21 of the Conservation Strategy also notes "long-term effects on the species from federal land management of occupied salamander habitat sites that are not chosen as high priority sites are unknown." The RMP DEIS does not disclose or analyze the uncertainties associated with BLM plans for non-high priority SMS known sites.

Please note that the January 24, 2008 Federal Register Notice by the USFWS denying ESA protection to SMS specifically states that "*given the stability of Federal Land and Resource Management Plans and the Northwest Forest Plan since its establishment in 1994, we assume that significant changes to current land management practices on Federal lands are not likely to occur within 20 years*."[216] This RMP DEIS renders that assumption invalid.

The USFWS also relied upon the belief that SMS management would include *"NWFP Matrix Standards and Guidelines [that] are designed to provide for important ecological functions such as dispersal of organisms, carryover of some species from one stand to the next, and maintenance of ecologically valuable structural components…"* 4388. The BLM RMP revisions undermine the NWFP conservation strategy relied upon by the USFWS in its determination that SMS need not be listed.

Additionally, as stated by the USFWS, the "*Survey and Manage guidelines have provided additional security for salamander populations across the vast majority of the range of the Siskiyou Mountains salamander.*" 4390. That security would be removed under every BLM RMP action alternative.

The USFWS determination not to list SMS under the ESA specifically mentions the 2007 Conservation Agreement and its assumption that *"many additional populations will continue to persist in reserved lands and in Matrix where habitat is retained for other reasons."* 4390. As discussed above, the BLM is proposing to reduce the size of Riparian Reserves and eliminate Matrix tree retention standards that were relied upon in both the Conservation Agreement and in the USFWS listing assessment.

XIII. PROPOSED TO BE LISTED SPECIES

Original RMPs under the NFP required the protection and conservation of proposed to be listed species. The new purpose and need for BLM WOPR eliminates this category of species for conservation mandates (likely overlooked in No Action Alternative). There is no analysis in the

[216] Vol. 73, No. 16. 4381.

DEIS of these particular limbo species. These species would be considered Bureau Sensitive Species, but the BLM states that it will only be providing conservation measures for these species to the extent that they are compatible with O&C Act purposes. Proposed to be listed species, deserve ESA protections, but the FWS is unable to address these protections given other higher priorities. These species should deserve special treatment under the plans, as they did under the NFP. Merely conserving to extant compatible with the O&C Act will lead to conflicts with the ESA, and potential future listings of these species.

OFF ROAD VEHICLES

While there is responsible Off Road Vehicle (OHV) use in western Oregon, illegal off road vehicle (ORV) use is predictable, widespread, and systemic on some BLM lands in the analysis area.

> *In this analysis, the BLM assumed that OHV users would operate vehicles consistent with BLM decisions about OHV use. Although the BLM has some site-specific and anecdotal information about illegal OHV use, the BLM does not have a basis for predicting the location or effects of any widespread or systemic illegal OHV use. – DEIS, 321*

Throughout the DEIS, the BLM refuses to analyze or disclose the significant, predictable, ongoing impacts of illegal off-road vehicle (ORV)[217] use. There is no rationale basis for the agency's contention that off-road vehicle users will abide by BLM rules and regulations.

Off-road vehicle damage to meadow and riparian habitats is particularly pronounced, significant, and predictable. Numerous meadow and riparian sites have been blocked or rehabilitated by the BLM on a continuous basis, only to be trashed by motorized use again and again.

The analysis contained in the DEIS repeatedly assumes that off-road vehicle damage is limited by steep forested landscape, yet page 623 of the document acknowledges that in "most of the interior south, the ability to track numerous different routes across the open space can lead to degradation and erosion…."

Rather than disclosing and analyzing the foreseeable impacts of illegal ORV use, the DEIS repeatedly claims that "the BLM does not have a basis for predicting the location or effects of any wide spread or systemic illegal OHV use." This is not an accurate statement. By observing past illegal OHV impact acres, it is reasonable to assume that sites that have been repeatedly trashed will be trashed again. Additionally, the BLM ignores the need to create an ORV enforcement strategy rather than relying on a strategy of user compliance that has been proven ineffective.

Please note that there is at least one website dedicated to advocating that the public violate BLM travel management policies in the Medford District.[218]

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[217] Please note, the BLM refers to such vehicles as "off highway vehicles" (OHVs) when it is much more accurate to describe them as "off road vehicles" (ORVs).

The agency's reliance on regulations and land use allocations to mitigate significant and foreseeable ORV damage to watersheds, wildlife and recreation has been proven ineffective. Approximately 75% of ORV riders regularly ignore regulations such as speed limits and closures. *See, e.g.*, Testimony of Jack Gregory, Special Agent in Charge (Ret.) USFS Southern Region, Before Subcommittee on National Parks, Forests, and Public Lands, U.S. House of Representatives, March 13, 2008, (hereafter "Gregory Testimony"). The testimony at 8 states:

> *Even if agency ORV route planning makes sense in downtown offices and public meeting rooms, there must also be a well-funded on-the-ground monitoring and enforcement component. This is where [agencies have] failed time after time. Once plans are drawn up and implemented, there is not adequate funding for field resources to police this activity where it's actually occurring. Throughout my years of working for the FS, I witnessed the development of many good plans, but a failure to provide the field resources to properly execute them. It is unfortunate that the FS is long on "plans" and seemingly good intentions, but very short on effective field implementation, particularly with providing necessary LE [law enforcement] resources for dealing with serious problems.*

Similarly, another law enforcement officer has publicly testified "about the growing burden on local law enforcement caused by a growing minority of reckless OHV riders and the need for effective management." Statement of Frank Adams, Executive Director of the Nevada Sheriffs' and Chiefs' Association, at the Senate Energy and Natural Resources Off-Highway Vehicle Management on Public Lands, Jun 2008. Sheriff Adams noted that "any kind of public lands law enforcement [is] challenging, but particularly with OHVs given the technology that allows users to cover vast distances in remote areas over a short period of time." *Id*. The Sheriff observed:

> *With such great land-masses and so few enforcement officers, it does not take a large group of individuals disobeying federal and local laws to cause a problem. We have determined that a small number of individuals riding OHVs that use our outdoors for recreation are causing the problems. They are reckless in the operation of their vehicles; they disregard instructions to stay off of sensitive lands and are destructive to the facilities that are provided for their use. This is evident by the increase in the number of injuries that are being reported and the increase in the number of search and rescue mission that occur. We see blatant disregard for areas that are posted as "do not travel" as they have been designated sensitive areas. Part of the problem that encourages this reckless behavior stems from the feeling of anonymity that many of the OHV riders have because there is no way of identifying them or their vehicles. Most States do not require a license plate for such vehicles. Those States that do require tagging, the tags are not large enough to be seen with out being in almost on top of the vehicle. If you are able to determine that there is a tag on the OHV, determining the tag number is almost impossible. Id*. at 3.

While assuredly many ORV riders have lawful intentions and "follow the rules," a disturbingly high percentage show a pronounced preference and practice among off-road vehicle

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[218] http://www.grantedright.com/Home_Page.html

recreationists to travel cross-country and ride off of legal routes. Indeed, this conclusion is derived from publically available data generated by the ORV community itself.

Monaghan and Associates, a marketing research firm, conducted a 2001 study at the behest of the Colorado Coalition for Responsible OHV Riding, a coalition of off-road vehicle representatives, environmentalists and public officials. *See* Status and Summary Report; OHV Responsible Riding Campaign. Researchers surveyed Colorado off-road vehicle riders through a series of three focus groups.

Monaghan and Associates found that the majority of off-roaders understand that staying on designated routes is "fundamental trail etiquette" and that going off trail is not "correct" off-road vehicle behavior. *Id*. at 11. The survey revealed, however, that regardless of this knowledge "as many as two-thirds of adult users go off the trail occasionally." *Id*. A significant percentage of riders, 15-20%, admitted to frequently breaking the rules and riding off of legal routes often. *Id*. Survey participants also stated that "others" ride off-route and cause most of the damage. *Id*. at 7. "Many reluctantly admit to having gone off trail 'a couple times' but felt that it is permissible if rarely done .... '*just this one time. '" Id.* (emphasis in original). Tellingly, the report concluded: "In a 'nutshell,' it is our premise that further ***information*** and ***education*** per se - will <u>not</u> result in substantial behavioral change." *Id*. at 1 (emphasis in original).

Similar results were found in Utah. In 2002, the Utah Division of Parks & Recreation commissioned Utah State University to survey riders to determine their "OHV uses and owner preferences." The university conducted a telephone survey of 335 riders from a random sample of the 50,676 people who registered off-road vehicles with the state in 2000. *See* Fisher, Andrea L., Dale J. Blahna, and Rosalind Bahr, 2001; Off Highway Vehicle Uses and Owner Preferences in Utah. Logan, Utah. Utah State University, at iv,

The Utah report reveals that an inordinate number of riders prefer to ride "off established trails." Of the ATV riders surveyed, 49.4% prefer to ride off established trails, while 39% did so on their most recent excursion. Of the dirt bike riders surveyed, 38.1% prefer to ride off established trails, while 50% rode off established trails on their most recent excursion. *Id*.

It should be noted that pro-ORV groups commissioned both of the studies cited above. Additionally, these data are ratified by two other recent reviews. In 2006, the Montana Fish, Wildlife and Parks received survey responses from 446 owners of registered off-road vehicles. *See* Lewis, M.S., and R. Paige. 2006: Selected Results From a 2006 Survey of Registered Off-Highway Vehicle (OHV) Owners in Montana. Responsive Management Unit Research Summary No. 21. Prepared for Montana Fish, Wildlife and Parks. Among the full sample of respondents, almost a quarter, 23%, "never" or "sometimes" comply with Montana's law against cross-country driving even though off-route riding has been illegal there since 2001. *Id*. at 2. Over 28% "never" or "sometimes" avoid riparian areas and wetlands, in violation of rules for federal and state public lands in Montana. Sixty-four percent of those surveyed have used an off-road vehicle while hunting. *Id*. at 2. The majority of this hunting subset admits to illegally riding cross-country — over 58% have traveled off of legal routes to retrieve downed game. *Id*. In the context of the assumption that land use allocations and designated BLM routes will cure unlawful ORV behavior, this figure is notable to the extent that the survey found that "[t]wo-thirds of the respondents who have used an OHV when hunting reported they have seen written materials (e.g., brochures, posters, articles, etc.) that address the topic of hunting and responsible OHV

use." *Id*. The survey concluded, therefore, "most OHV owners in Montana have been exposed to a variety of safety and responsible use information." *Id*. at 4. Regardless of this "education," the survey noted:

> *OHV owners do not always follow important guidelines for responsible use when operating OHVs. For instance, about a third of the respondents who have used an OHV when hunting disagree or strongly disagree that "OHV users should NOT travel off legal routes to retrieve harvested game." Only 42 percent of the respondents who have used an OHV when hunting reported they always follow this guideline. Nearly 7 percent reported they never follow this guideline. And, 52 percent reported they follow this guideline sometimes. Id*. (emphasis in original).

Echoing these findings are the results of a 2003 survey of Wisconsin ATV users. A study of "motivations and attitudes" by graduate student Robert A. Smail at the University of Wisconsin - Steven's Point, included a survey of user preferences for riding and found nearly two-thirds of respondents prefer to ride off maintained trails.

> *[S]urvey respondents were asked to indicate where they prefer to ride their ATV. Of the five possible choices, 'On maintained trails' (28.5%) ranked third. The top choice was 'On user created trails' (33.3%) followed closely by 'Cross country, off trails and roads' (32.0%). In other words, 65.3% of all users prefer to ride off of maintained trails." Id. Dr. Smail concluded that the survey results demonstrated that past orthodoxies premised on education and the assumed "positive peer-pressure" flowing from membership in established "rider clubs" are not adequate to generate trail-riding compliance; they had "no influence." Id. at 69. Rather, "[t]hese results indicate that messages promoting responsible ATV riding or use will need to be reformulated and law enforcement will need to be increased in order to prevent resource damage and user conflict.*[219]

Finally, the U.S. Fish and Wildlife Service found a near universal disregard for motorized guidelines when the BLM experimented with a "voluntary off-road vehicle route system" in Nevada. The area in question serves as a refuge for the disappearing Sand Mountain Blue butterfly, a species proposed for listing under the Endangered Species Act. A 2006 monitoring report compiled over a three-year period found that "98 percent of all existing routes continued to be used and new routes were created, indicating an ongoing expansion of habitat degradation." Nevada Fish and Wildlife Office, U.S. Fish and Wildlife Service. 2007. 12-Month Finding on a Petition to List the Sand Mountain Blue Butterfly (*Euphilotes pallescens ssp. arenamontana*) as Threatened or Endangered with Critical Habitat. Federal Register, Vol. 72, No. 84. *See* pages 24260-61. The study also found that "about 50 percent of all noncompliance points occurred *at or near red carsonite posts installed to alert riders that travel was discouraged in areas behind the posts*" to protect sensitive butterfly habitat. *Id*. at 24261, (emphasis added). The cumulative impacts of such "noncompliance points" were four-fold as each discouraged route experienced multiple incursions. *Id*. The FWS noted that "[h]igh levels of noncompliance occurred *from the*

[219] Robert A. Smail, July 2007, Wisconsin All Terrain Vehicle Owners: Recreational Motivations and Attitudes Toward Regulation, A Thesis Submitted in partial fulfillment of the requirements of the degree Master Of Science In Natural Resources Resource Policy And Planning College Of Natural Resources University Of Wisconsin, Stevens Point, Wisconsin, copy obtained from author.

onset of implementation of the voluntary system, and the number of incursions into habitat outside of the encouraged routes *increased* in 2006. *Id*. at 24260-61.

Providing a broader overview, in September 2007, the Izaak Walton League, one of the country's oldest conservation groups, released a study of state game and fish managers revealing that 83% of wildlife managers have seen "resource damage to wildlife habitat" caused by ORVs and 72% cited "disruption of hunters during hunting season" as another impact from ORVs. "Off-Road Vehicle Impacts on Hunting and Fishing, The Izaak Walton League of America, 2007, at 15.

Similarly, fully 60% of fisheries managers deemed ORV use to generate adverse impacts on Riparian resources. *Id*. at 16. Notably, 41% of wildlife and 50% of fisheries managers do not believe that current standards and protections adequately protect the resources they are responsible for with the perceived attitude of lawlessness playing a central role: "We have numerous rules and regulations, but many ORV riders have an attitude that they should not apply to them and many just ignore some rules because they want to ride someplace. It increases law enforcement effort and takes time from other areas." *Id*. at 15. "There seems to be a misconception that just because you own a piece of equipment that can go almost anywhere, that you are entitled to go almost anywhere including public land dedicated to wildlife management. This needs to change." *Id*. at 16. Further, "They go where they please, when they please, if they please. Not all do this, but many do. They cause significant upland erosion as well as stream side and in-stream damage." *Id*. "Many ORV riders seemingly have no conservation ethic or appreciation for habitat management or understanding of the damage they cause." *Id*. Another said: "While there is regulatory ability, there is insufficient enforcement response capability to adequately respond to illicit ORV use." *Id*. at 15.

In a tracking review on federal land managers, in December 2007, the Public Employees for Environmental Responsibility ("PEER") released the first-ever survey of federal rangers' views on off-road vehicle issues. "Rangers for Responsible Recreation: Off-Road Vehicle Issues Survey of SW Law Enforcement Professionals - Bureau of Land Management (BLM) & Forest Service (FS), 2007.

Strikingly:

> *• 91% of respondent rangers agree "off-road vehicles present a significant law enforcement problem in my jurisdiction";*
>
> *• More than half (53%) feel "off-road vehicle problems in my jurisdiction are out of control"; and*
>
> *• 74% say that off-road abuses "are worse than they were five years ago" while fewer than one in six (15.2%) believe the situation is improving. Id. at 1.*

Moreover, the survey found that rangers believe their agencies are unequal to the task of controlling ORV abuse:

> *• 62% believe their agency is not "prepared to deal with the ORV problems we are experiencing"; and*

• 78% do not think their department "devotes adequate resources to cope with ORV problems." Id. at 3.

An article published in the Washington Post entitled "'Off-Road Rage' Climbs as Trails Get More Crowded," was published on August 12, 2008, and appeared in section A at page 2. The report provides additional documentation of many ORV riders' unlawful — even violent — disregard of the rules and regulations applicable to ORV use on public lands.

Additionally, in the Roseburg BLM District, the White Rock OHV area is listed in Table N-287 (Appendix N, page 1284) as "managed as Extensive Recreation Management Areas (ERMA)" under alternatives C and D. However, this is the only place in the entire DEIS where the White Rock OHV area is mentioned. There is no NEPA analysis of the environmental impacts of creating this new OHV area. In fact, the DEIS makes it seem as if it is an existing OHV emphasis area. It is not. Local OHV enthusiasts have asked the BLM to create the White Rock Emphasis Area, but the Roseburg BLM has not acted on this request. The BLM cannot now choose alternative C or D and create it without any NEPA analysis.

OHV recreationists have severely degraded this area by riding off trails, riding through wetlands, and by creating play mud-bogs in areas like Yellow-Jacket Springs. They have violated closed and barricaded roads to do this. The Roseburg BLM has admitted they are powerless to enforce current regulations that forbid resource damages. Making a new White Rock OHV area, without NEPA analysis would only exasperate this problem.

I. THERE IS GREATER DEMAND FOR NON-MOTORIZED RECREATION THAN FOR EXPANDED ORV OPPORTUNITIES.

As illustrated on Table 3-126 (page 448) of the DEIS, there are currently three times as many participants interested in wildlife viewing and nature study on BLM lands than in motorized off-highway vehicle travel. Similarly, driving on *existing BLM roads,* camping and picnicking, non-motorized travel and hunting all draw more than one million participants yearly and significantly exceed the demand for motorized ORV travel.

In the Medford District the demand for non-motorized recreation compared to ORV use is even more pronounced. Page 462 of the DEIS projects 85,000 hiking trail users at sites within 30 minutes of Medford and only 18,589 ORV visits in the same area. Within an hour of Medford the BLM anticipates 137,371 hiking visits and only 30,041 ORV participants.

Please note that page 493 of the DEIS clearly establishes that "the most common outdoor recreation activities, requiring the least equipment or specialized skill, have the greatest participation numbers, and…provide the greatest total net benefit."

Given that the public prefers non-motorized recreation and that it provides the most social and economic benefits, it is arbitrary and capricious for the BLM to continue to emphasize ORV use

on tens of thousands of acres of public lands to the detriment of terrestrial and aquatic forest resources, neighboring landowners and other forest users.

II. BLM ORV ROUTE DESIGNATION CRITERIA

Page 638 of the DEIS indicates that the agency is aware of the route designation criteria in 43 CFR 8342 which directs the agency that ORV "[a]reas and trails shall be located to minimize damage to soil, watershed, vegetation, air, or other resources of the public lands and to prevent impairment of wilderness suitability." Yet all of the action alternatives appear to codify ORV routes that directly harm soils, streams, riparian vegetation, and lands with wilderness character.

Page 638 also acknowledges that 43 CFR 8342 directs the BLM that ORV"[*a]reas and trails shall be located to minimize harassment of wildlife or significant disruption of wildlife habitats. Special attention will be given to protect[ing] endangered or threatened species and their habitats."* Yet the action alternatives appear to codify numerous ORV routes that directly harm listed species such as the northern spotted owl (NSO).

The DEIS must analyze, disclose, avoid, or mitigate the impacts of foreseeable ORV noise harassment from proposed motorized use on NSO reproductive success and behavior patterns.

We bring to your attention the following language from pages 82-83 of the Rogue River/South Coast Biological Assessment FY04-08 for the Medford District BLM and the Rogue River-Siskiyou National Forests, July 11, 2003:

> *Noise above ambient levels may disturb or flush from their nest site, could cause a juvenile to prematurely fledge or could interrupt foraging activity. While the effects of noise are not clear, any of these impacts could result in the reduced fitness or even death of an individual bird due to missed feedings, or reduced protection of the young if adults are disturbed.*
>
> *There has been little data regarding the impacts of noise on spotted owls and other listed species. However, the Service has recently analyzed the available data on spotted owls, murrelets and other species (USFWS 2003c; Appendix D), and has consulted species experts who have worked extensively with spotted owls to determine the extent to which above-ambient noises affect spotted owls. The results of this analysis indicate that spotted owls may flush from their nest or roost or may abort a feeding attempt of their young when the following activities occur up to the specified distances (Table 11). The Lacy Washington office of the Service in two biological opinions has used this data and it is the Service's current understanding of harassment distances based on the best available science. Consequently, it will be incorporated into this Opinion as current guidance for harassment distances for various activities as it relates to adverse effects to the spotted owl from harassment due to disturbance. If the Services' understanding of these distances changes, adjustments to these distances may be recommended in the future.*
>
> *Above-ambient noises further than these Table 11 distances from spotted owls are expected to have ether negligible effects or no effect to spotted owls. The types of reactions that spotted owls could have to noise that the Service considers to have a*

negligible impact, include flapping of wings, the turning of a head towards the noise, hiding, assuming a defensive stance, etc.[220]

The risk to spotted owls from noise disturbance is tied to the timing of the activity and is highest when adults are defending young or eggs in a nest or are feeding and protecting recently fledged juveniles. During this period, the separation of adults and their young could result in death or injury to the young as a result of predation. The leading known causes of mortality in juvenile spotted owls are starvation and predation by great horned owls (Miller 1989; USDI 1990a~listing document). The time period when adults or offspring are unable to move away from threats or noises is between the time that the eggs are laid and when the young can fly, which is generally about two weeks after the young fledge from the nest. After the young are able to fly, we assume that adults and young may move, but would stay together if annoyed by noise from the proposed action.

The timing of these development benchmarks (nesting and fledging) varies geographically, although spotted owls are generally believed to start laying their eggs around the beginning of March. In Oregon, data based on fledge dates indicate June 30th is the date by which almost all juveniles are capable of flight. This 1 March – 30 June period of vulnerability is called the "critical nesting period."

Activities that may result in above-ambient noise levels include the use of mechanized tree harvest equipment, road hauling, aircraft/helicopters, heavy equipment, hydraulic hammers, blasting, and road construction and maintenance equipment. In some instances, noise levels produced by these activities can remain above ambient levels out to one mile (for blasting) and still affect spotted owls. If potentially disturbing activities are implemented during the spotted owl critical nesting season (March 1 – June 30) within the prescribed distances in Table 11 of occupied or unsurveyed spotted owl habitat, those activities may adversely affect spotted owls by causing adults to flush from their nest site, abandon a nest, or cause juveniles to prematurely fledge, interrupt foraging activity, or result in increased predation due to less protection when the adult flushes. After June 30, it is presumed that most fledgling spotted owls are capable of sustained flight and can avoid harmful disturbances; thus, disturbance from proposed actions within the prescribed distances shown in Table 10 of known activity centers or unsurveyed suitable habitat, and between July 1 and September 30, may affect, but are not likely to adversely affect, spotted owls.

The SW Oregon administrative units typically utilize minimization measures to avoid adverse impacts to nesting spotted owls wherever they occur, but it is likely that some adverse impact may occur to owls due to disturbance in unsurveyed habitat within or adjacent to project areas. The SW Oregon administrative units and the Service, used an average of the new Service disturbance distances to assess the potential impacts associated with tree harvest activities (the average of disturbance distances associated with tree harvest =100 yards - Table 10), they estimated 40 percent of an average zone of 300 feet around a standard project area (presumed to be 50 acres) would be NRF (as

[220] USFWS 2003.

determined by the percentage of suitable habitat in the matrix according to the Environmental Baseline Tables in the Assessment).

We also bring to your attention that page III-85 of the Rogue River-Siskiyou Draft Environmental Impact Statement for Motorized Vehicle Use indicates that noise disturbance from OHV use is roughly the equivalent of that which occurs from chainsaw use:[221]

Page 638 of the DEIS further acknowledges that 43 CFR 8342 directs the BLM that ORV:

> *"[a]reas and trails shall be located to minimize conflicts between of[f]-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors."* Yet the BLM continues to emphasize and prioritize ORV use near homes and communities. As stated on page one the May 5, 2009 comments of the City of Jacksonville regarding the Draft Timber Mountain Recreation Management Plan DEIS, "[*n]oise from BLM sponsored OHV trails is not compatible with the existing and proposed non-motorized reaction of Jacksonville land. The BLM must provide sufficient distance and buffers between BLM trails and Jacksonville land so that OHV noise does not disturb the peace and quiet desired by hikers, equestrians, picnickers and other non-motorized recreational pursuits."*

With regard to public off-road vehicle travel the BLM must analyze the "closed" option for the as a first step to protect sensitive public lands from motorized vandalism and associated illegal activities (trash dumping, poaching, meth labs, marijuana gardens, soil/plant destruction, invasive plant introduction, pathogen introduction of *P. lateralis*, and mobilization of fish killing fine sediment).

Circumstances have changed since 1995 with exponential growth of motorized vehicle activity on public lands. Deferring analysis for basic RMP decision about motorized use designations would jeopardize other outcomes for soil productivity, timber production, quality traditional recreation, fire prevention, public safety, endangered species recovery, and water quality. Deferring basic analysis and motorized use designations would not be consistent with BLM directives to minimize damage from motorized use. Analysis needs to clearly distinguish between unauthorized motorized use that damages lands (vandalism) and motorized use that is currently authorized (recreation). Lumping these creates huge amounts of confusion and misinformation.

It is prudent to single out the Medford District for motorized use analysis and subsequent designations with RMP decision as the Medford District has had unprecedented and ongoing damage from motorized users due to its context. A network of historic but unauthorized mining roads are regularly used by off highway vehicles to access fragile Jeffrey pine savannas, meadows, and wetlands where rare plants are destroyed and meadow hydrology irreparably damaged. Similarly, a large system of abandoned native service logging roads are regularly damaged during the wet season to access off road areas within timber stands. The French Flat ACEC on the Medford District receives nearly daily damage by off road vehicles despite official

[221] http://www.fs.fed.us/r6/rogue-siskiyou/projects/travel/deis.shtm

vehicle closures to protect *Lomatium cookii*, a federally listed species. Similar damage occurs on most serpentine lands in the Medford District with naturally sparse vegetation, mining history, and gentle slopes that make these areas attractive to motorized vandals. The interspersion of hundreds of home-owners adjacent Medford District BLM lands provides for illegal motorized access that is largely unregulated.

Analysis must inform the public and decision makers that ongoing and largely unregulated motorized access to Medford District BLM lands is connected to illegal and undesirable activities such as: destruction of critical habitat for coho salmon; destruction of listed plant species critical habitat; increased soil compaction; destruction of upland and riparian plants; animal poaching; timber theft; toxic trash dumping; meth labs; stream water pollution; marijuana gardens; rodenticide use that kills spotted owls, fishers, foxes; fertilizer applications that poison streams with excessive nitrates; stolen vehicle abandonment and stripping; wildfire ignitions; chronic illegal occupancy; and illegal mining. All of these transgressions have been repeatedly reported on Medford District lands by our staff and others. BLM cannot dismiss this as a "law enforcement" issue because no amount of law enforcement could effectively reverse current trends and impacts because of the network of off road activity not visible from most system road. The DEIS needs to analyze a combination of actions for the Medford RMP to effectively address motorized vehicle activities that can easily undermine other resource allocations. Streams and wetlands in the Medford District predicted to be protected from logging are being severely damaged with off road vehicles. In severe cases, cumulative soil impacts from OHV and past logging would exceed the 15% soil compaction standard making some timber stands off limits for programmed harvest.

We recommend that motorized analysis include a combination of spatially explicit "closed" designations, legal administrative prohibitions, law enforcement, physical barriers, coordination with adjacent land owners (especially the Forest Service), signs, agency monitoring, citizen monitoring, outreach, and education. We agree that intensive recreational development for off highway vehicle could be deferred from this RMP decision, but ongoing off highway vandalism must be effectively reduced. Currently, it is not practical to have "limited" off highway use areas on the Medford District except for areas currently being analyzed for legitimate recreation (e.g.,Johns Peak, Quartz Creek). Managed recreation and unregulated vandalism are two distinct issues and must be kept separate. Analysis assumptions that areas designated "closed" would not have significant impacts is false, however, anticipated off highway damage would be accounted for in "cumulative effects" that would include "illegal" use.

Recovery actions need to be incorporated into an alternative in the DEIS. At a minimum, coho passage issues both on and off public lands need to be addressed in systematic and timely manner. Similarly, reductions in non-point pollution from roads and off road use need to by systematically addressed with spatially explicit analysis. Priorities for restoration and protection would focus on spatially explicit occupied critical coho habitat. An annual timetable for specific recovery actions must be incorporated into analysis. Habitat quality contingent for increasing coho abundance is directly correlated with road densities in small 6th or the coho spawning watersheds.

III. THE DEIS UNDER-ESTIMATED THE ECONOMIC VALUE OF RECREATION

Recreation and other amenity values associated with forest conservation, not only provide direct economic benefit to those who enjoy those activities, but there are indirect benefits for the whole economy. Public land recreation and amenities like clean water and scenic views, help attract people to the region, help create jobs in non-recreation sectors, and help grow the whole economy.

Speaking about the natural amenities in the Northern Rockies, the National Parks and Conservation Association says:

Three million acres of national parks and protected wildlands—and eight million more of other public lands— give rise to our rivers and lakes, and support world-class biodiversity as well as ski hills, hiking trails, and fishing access sites.

Combined, these amenities drive a powerful economic engine, fueled by a core of national parks and adjacent protected lands. Tourism brings more than $3 billion to the Crown each year—Glacier National Park alone generates more than $110 million in new money to local economies, not to mention those entrepreneurial tourists who choose to relocate and start businesses here.

The stories in this report point to the Crown's spectacular wildlife, its scenic appeal, and its unmatched outdoor recreation as anchors to which our economic success is tethered.

[A] growing number of "footloose" businesses—outfits that locate where they choose, often far from markets, but close to amenities that deliver a high quality of life.[222]

From this perspective, recreation is not just another industry that provides a few direct jobs, rather recreation and amenities are an engine of economic growth across diverse economic sectors. The EIS needs to recognize this.

In 2012 Oregon BLM lands recreation generated $223 million in economic activity while timber production only provided $23 million. DEIS at 472.

"*The most common outdoor recreation activities, requiring the least equipment or specialized skill, have the greatest participation numbers, and...provide the greatest total net benefit."* [223] BLM should therefore reduce emphasis on OHV recreation. These noisy, dangerous, polluting machines displace and conflict with other low impact recreation. Only a small fraction of all recreation visits are associated with OHVs. There were 10.8 million recreation participants on Oregon BLM lands in 2013. Only 826,556 "participants" utilized BLM lands for ORV travel in 2012, while 2,564,574 "participants" visited Western Oregon BLM lands for wildlife viewing and nature study.

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[222] NPCA 2012. Pathways to Prosperity - The Natural Roots of Economic Success in the Crown of the Continent http://www.npca.org/assets/pdf/Pathways-to-Prosperity-Final.pdf. See also, Todd Cherry, Dan Rickman, 2010, "Environmental Amenities and Regional Economic Development", Routledge, 336 pages. http://www.gbv.de/dms/zbw/597954267.pdf ; https://books.google.com/books?id=PWiNAgAAQBAJ&printsec=frontcover#v=onepage&q&f=false

[223] DEIS at 493.

Oregon/BLM recreation related jobs are growing at a much faster rate (and with less volatility) than are timber jobs. DEIS at 567.

SALVAGE LOGGING

I. BLM CANNOT ADOPT A PROGRAM OF SALVAGE LOGGING WITHOUT TAKING A HARD LOOK

This is a programmatic EIS and BLM is clearly contemplating a program of salvage logging where commodity extraction trumps ecological values after natural disturbance events, including within reserves. This will conflict with a wide variety of management objectives (late successional habitat, complex early seral habitat, recovery of listed species, watershed protection, carbon storage, community stability, fire hazard reduction, etc.)

This program of salvage logging will cause very significant cumulative effects. BLM has never produced an adequate programmatic analysis of the effects of salvage logging, yet significant salvage logging was conducted during the last 20 years without any credible programmatic analysis of its effects on late successional habitat objectives. There is significant new information about the adverse effects of salvage logging since the last programmatic NEPA analysis was done. Now is the time to take the required "hard look" at the effects of salvage logging, and the time to adopt scientifically sound and ecologically appropriate policies for management of forest ecosystems following natural disturbance.

II. SALVAGE LOGGING IS INCOMPATIBLE WITH ECOSYSTEM MANAGEMENT

The DEIS (p 434) says "In all alternatives, salvage would take place in the Harvest Land Base after a high or moderate severity fire event." And under Alternative C "Within the Late-Successional Reserve, the BLM would conduct timber salvage after disturbance,…" (DEIS p 62). This is not consistent with the best available science regarding how to achieve ecological objectives in reserves. BLM was a cooperating agency in the Interior Columbia Basin Ecosystem Management Project which asked (and concluded) –

> **Can salvage timber sales be compatible with ecosystem-based management?**
> … Our findings suggest that this type of harvesting is not compatible with contemporary ecosystem-based management. Ecosystem-based management would emphasize removing smaller green trees with greater attention to prevention of mortality rather than removal of large dead trees.[224]

The DEIS does not fully and accurately describe the benefits of retaining large dead trees and the benefits of natural recovery after natural disturbance, nor does the DEIS fully and accurately describe the adverse effects of salvage logging.

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[224] Quigley, Thomas M., tech. ed. 1996; The Interior Columbia Basin Ecosystem Management Project: Scientific Assessment.) Gen. Tech. Rep. PNW-GTR-382; Page 178.

We strongly urge BLM to adopt an alternative that prohibits post-disturbance salvage logging in all reserves (only allowing felling of imminent hazard trees in areas of high public use). Based on current ecological science, this is the best way to meet objectives for reserves. Large dead trees which are the target of salvage logging are old growth structurally elements that provide significant ecological value even if they are not surrounded by green trees. Large snags provide "life boats" allowing many late successional organisms to persist in "young" forests. Science shows that best way to develop complex old forest is to maintain complex young forest and allow forest to regenerate naturally and move through succession without interference. Salvage logging is adverse to reserve objectives because it removes late successional habitat components that take a long time to develop once they are removed and creates atypical simplified habitat structures and patterns.

BLM cannot take a hard look at the issues of snag habitat and complex young forests without considering the dynamics of snags and dead wood in natural forests. Natural young forests are typified by large amounts of dead wood. Salvage logging results in atypical and undesirable ecological conditions.

> Spies et al. (1988) reported that amounts of CWD were high in the youngest successional stages, were lowest in 60-80-year-old forests, and were high in old stands (< 500 years). After 500 years CWD amounts declined to an intermediate level. Spies and Franklin (1988) reported that CWD input may be low in young stands because of the small size of dead and dying stems. Volumes in these stands are often high, however, due to residual CWD from the previous stand.[225]

Jerry Franklin's long career studying old forests led him to the conclusion that salvage logging is not compatible with conservation of old growth ecosystems.

> There are implications for management of old-growth stands selected for perpetuation. Salvage logging is inappropriate since it removes at least two of the major structural components -dead and down- that are key elements of the system. In all likelihood, some of the more decadent, live trees would also be removed. Salvage logging is also inappropriate because of the damage inevitably done to root systems and trunks of the residual stand which results in accelerated mortality of trees and overall deterioration of the stand.[226]

We also urge BLM to minimize salvage logging in other areas including the timber management areas. The purpose of this recommendation is to realize the benefits of complex early seral

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[225] Lofroth, Eric. 1998. The dead wood cycle. In: Conservation biology principles for forested landscapes. Edited by J. Voller and S. Harrison. UBC Press, Vancouver, B.C. pp. 185-214. 243 p. http://www.for.gov.bc.ca/hre/deadwood/DTrol.htm.

[226] Franklin, J.F., K. Cromack, Jr., W. Denison, A. McKee, C. Maser, J. Sedell, F. Swanson, and G. Juday. 1981. Ecological characteristics of old-growth Douglas-fir forests. PNW-GTR-118. USDA Forest Service. PNW Research Station. February 1981.
http://www.fs.fed.us/pnw/pubs/gtr118part1.pdf
http://www.fs.fed.us/pnw/pubs/118part2.pdf

habitat which is one of the most under-represented forest habitat types in western Oregon. Unsalvaged, naturally regenerated, young stands are one of the rarest forest types in the Pacific northwest, and their biodiversity rivals that of old-growth forests.

> Indeed, naturally developed early-successional forest habitats, with their rich array of snags and logs and nonarborescent vegetation, are probably the scarcest habitat in the current regional [Pacific Northwest] landscape.[227]
>
> "There has been a loss of diverse young forests on all ownerships. … Conservation of diverse young forests has received little attention in forest policy."

Janet Ohmann; Science Findings, Issue 56; Seeing the trees for the forest: mapping vegetation biodiversity in coastal Oregon forests; (September 2003). http://www.fs.fed.us/pnw/sciencef/scifi56.pdf.

III. BLM NEEDS TO CONSIDER ALTERNATIVE APPROACHES TO SALVAGE LOGGING

In timber management areas BLM should consider alternative approaches to salvage logging modeled on the recommendations of the Beschta report. Specifically:

- prohibit post-fire logging AND roadbuilding on all sensitive sites, including: severely burned areas (areas with litter destruction), on erosive soils, on fragile soils, in roadless/unroaded areas, in riparian areas, on steep slopes, and any site where accelerated erosion is possible. We would add: Late-Successional and Riparian Reserves, and protective land allocations or designations including Botanical and Scenic River Areas;
- protect all live trees;
- protect all old snags over 150 years old;
- protect all large snags over 20 inches dbh;
- protect at least 50% of each size class of dead trees less than 20 inches dbh.[228]

BLM should also consider alternatives for salvage logging that address the recommendations in the following publications:

- *Society for Conservation Biology Scientific Panel on Fire in Western U.S. Forests. Reed F. Noss (editor), Jerry F. Franklin, William Baker, Tania*

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[227] Lindenmayer, David B. and Jerry F. Franklin. 2002. Conserving Forest Biodiversity: A Comprehensive Multiscale Approach. Island Press. Washington, DC: 69. *See also*, DellaSala, D.A., J.E. Williams, C. Deacon-Williams, and J.F. Franklin. Beyond smoke and mirrors: a synthesis of fire policy and science. Conservation Biology, Pages 976–986. Volume 18, No. 4, August 2004. http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/17521/Beyond%20smoke%20and%20mirrors.pdf

[228] *See* Beschta RL, Frissell CA, Gresswell R, Hauer R, Karr JR, Minshall GW, Perry DA, and Rhodes JJ. 1995. Wildfire and Salvage Logging: recommendations for ecologically sound post-fire salvage logging and other post-fire treatments on Federal lands in the West. Corvallis, OR: Oregon State University. Available at: http://www.fire-ecology.org/science/Beschta_Report.pdf.

Schoennagel, and Peter B. Moyle. Ecological Science Relevant to Management Policies for Fire-prone Forests of the Western United States. February 24, 2006. http://www.conservationbiology.org/sections/namerica/FireWhitepaper.pdf.

- *See also the published version, Reed F. Noss (editor), Jerry F. Franklin, William L. Baker, Tania Schoennagel, and Peter B. Moyle. 2006. Ecology and Management of Fire-prone Forests of the Western United States. Society for Conservation Biology Scientific Panel on Fire in Western U.S. Forests. August 2006. http://www.conbio.org/images/content_policy/2006-8_SCB_NA_Statement_Wildland_Fire.pdf.*

BLM in the DEIS at 212 states "The ability to conduct salvage harvest for purposes of protecting human health and safety within the dry forest would be available under all alternatives." We are concerned that this authority is not adequately constrained. We support felling of real and imminent hazard trees in areas that are frequently used by workers and the public (e.g., in developed recreation sites and along paved roads). However, we have too often seen hazard tree removal used as an excuse for commodity extraction in areas that are not a high priority for hazard removal (e.g., remote locations where people visit infrequently and/or risk exposure is brief periods such as passing by large snags along a remote road or trail). BLM should consider (1) felling and retaining hazard trees onsite for ecological benefits, (2) keep workers out of the way of hazards as a way to retain high value large snags; (3) recognize that the public is risk tolerant when they are visiting wild forests. The public does not want a sanitized recreational experience on their public lands.

The DEIS at 813 concludes "In northern spotted owl critical habitat in the Harvest Land Base, the No Action alternative and Alternative B, Sub-alternative B, and Alternative D would allow salvage operations that meet down wood and snag retention standards, the minimum level needed 'to conserve and restore habitat elements.'" We are concerned about "managing for minimums." BLM should be managing for optimal levels of key habitat elements such as large trees, and dead and down wood. This requires retaining abundant levels of green trees for long-term recruitment of high levels of snags. BLM should consider alternatives that meet DecAID 50-80%+ tolerance levels for species associated with dead wood and sensitive to low levels of dead wood.

Appendix B "Management Direction" regarding salvage logging raises several concenrs. It urges BLM to minimize commercial loss and deterioration" but it does not balance with objective with any of the significant trade-offs including: recovery of listed species; protecting soil, water, and watersheds; mitigating the landscape shortage of large snags in the checkerboard lands; mitigating the temporal "snag gap" caused by stand replacing disturbance; development of future complex habitat (early seral or late seral); or carbon storage.

IV. BLM MUST TAKE A HARD LOOK AT THE ADVERSE EFFECTS OF SALVAGE LOGGING

Salvage logging also causes a host of adverse effects associated with logging in general, e.g., watershed degradation, erosion, sedimentation, road impacts, habitat fragmentation, soil

compaction, visual blight, etc. Many of these effects are worse than green timber sales because the soil lacks structure and protection normally found in green forests.

Renowned fisheries expert James Karr said:

> … I joined eight other scientists to explore whether forests might be restored by logging soon after a fire. We had among us a wealth of knowledge across a wide range of fields. We pored over several decades of research but found nothing to show that fire-adapted forests might be improved by logging in the wake of a fire.
>
> In fact, we found just the opposite: Most plants and animals in these forests are adapted to periodic fires; they have a remarkable way of recovering – literally rising from the ashes.
>
> These forests have evolved with fire. Periodic fires have been part of a normal cycle lasting thousands of years. Logging a burned forest damages the soil, carrying away nutrients, robbing seedlings of moisture and clogging nearby streams. Trees in a burned landscape, both dead and alive, continue to provide homes for wildlife after a fire and form the building blocks of new forests.[229]

BLM should carefully review the post-fire science summary prepared by the World Wildlife Fund in 2006.

> In general traditional forestry has viewed fire as bad and dead trees as a waste. These views have skewed public policies about post-fire logging. However, current scientific understanding recognizes that disturbance and dead trees are in fact critical to forest health. Of the approximately thirty scientific papers on post-fire logging and additional government reports published to date, not a single one indicates that logging provides benefits to ecosystems regenerating post-disturbance. In general, post-fire logging impedes regeneration when it compacts soils, removes "biological legacies" (e.g., large dead standing and downed trees), introduces or spreads invasive species, causes soil erosion when logs are dragged across steep slopes, and delivers sediment to streams from logging roads. Further, a large body of science on disturbance ecology (e.g., recent books on Mt. St Helens and studies in the Yellowstone Ecosystem and elsewhere) indicate that when natural disturbance events are preceded and/or followed by land management activities they often impair the recovery of forest ecosystems.[230]

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[229] Karr, James. 2005 Nature doesn't benefit from logging fire-damaged lands | The News Tribune, Tacoma, WA. ftp://ftp2.fs.fed.us/incoming/r5/Klamath/Mt.HebronRestoration/MountHebron.Records/MtHebronRestoration.ProjectRecord/D.%20ScopingComments.Analysis/ArtleyAttachment9.FullArticles/Pub10.Karr2005.Tribune.pdf

[230] Dominick A. DellaSala 2006. POST-FIRE LOGGING SUMMARY OF KEY STUDIES AND FINDINGS. World Wildlife Fund, February 2006. ftp://frap.cdf.ca.gov/pub/incoming/IMMP/Post%20Fire%20Salvage%20Logging%20Papers/Post%20Fire%20Logging%20Review%202006.pdf

In October 2013, 250 scientists signed a letter urging greater attention to the conservation of complex early seral forests and natural recovery after fire. These scientists conclude that the

> *"current state of scientific knowledge, … indicates that [salvage logging] would seriously undermine the ecological integrity of forest ecosystems on federal lands. … This post-fire habitat, known as 'complex early seral forest,' is quite simply some of the best wildlife habitat in forests and is an essential stage of natural forest processes. Moreover, it is the least protected of all forest habitat types and is often as rare, or rarer, than old-growth forest, due to damaging forest practices encouraged by post-fire logging policies. While there remains much to be discovered about fire in our forests, the scientific evidence indicates that complex early seral forest is a natural part of historical fire regimes in nearly every conifer forest type in the western U.S. (including ponderosa pine and mixed-conifer forests) … Numerous studies also document the cumulative impacts of post-fire logging on natural ecosystems, including the elimination of bird species that are most dependent on such conditions, compaction of soils, elimination of biological legacies (snags and downed logs) that are essential in supporting new forest growth, spread of invasive species, accumulation of logging slash that can add to future fire risks, increased mortality of conifer seedlings and other important re establishing vegetation (from logs dragged uphill in logging operations), and increased chronic sedimentation in streams due to the extensive road network and runoff from logging operations."*[231]

The EIS needs to carefully and comprehensively disclose and consider the following issues before approving a program of post-disturbance salvage logging:

a. the natural range of variability and existing rarity of complex young forests (e.g., young forests that are unsalvaged after disturbances). Since large snags are outside the natural range of variability across the landscape, the agency must retain all large snags to start moving the landscape toward the natural range of variability, or the agency must carefully justify in the NEPA analysis every large snag it proposes to remove. See Jerome J. Korol, Miles A. Hemstrom, Wendel J. Hann, and Rebecca A. Gravenmier. Snags and Down Wood in the Interior Columbia Basin Ecosystem Management Project. PNW-GTR-181. http://www.fs.fed.us/psw/publications/documents/gtr-181/049_Korol.pdf. This paper estimates that even if we apply enlightened forest management on federal lands for the next 100 years, we will still reach only 75% of the historic large snag abundance measured across the interior Columbia Basin, and most of the increase in large snags will occur in roadless and wilderness areas.
b. the ecological values (such as wildlife habitat) associated with snags, dead wood, and complex young forests. See Rose, C.L., Marcot, B.G., Mellen, T.K., Ohmann, J.L., Waddell, K.L., Lindely, D.L., and B. Schrieber. 2001. Decaying Wood in Pacific

[231] Della Sala, D. et al (2013) Open Letter to Members of Congress from 250 Scientists Concerned about Post-fire Logging. October 30, 2013. http://geosinstitute.org/images/stories/pdfs/Publications/Fire/Scientist_Letter_Postfire_2013.pdf or http://www.scribd.com/doc/181401520/Open-Letter-to-Members-of-Congress-from-250-Scientists-Concerned-about-Post-fire-Logging-October-30-2013

Northwest Forests: Concepts and Tools for Habitat Management, Chapter 24 *in* ***Wildlife-Habitat Relationships in Oregon and Washington*** (Johnson, D. H. and T. A. O'Neil. OSU Press. 2001) http://web.archive.org/web/20060708035905/http://www.nwhi.org/inc/data/GISdata/docs/chapter24.pdf

c. Given the regional deficit of young complex forests and the fact that many species, such as woodpeckers and secondary cavity users, appear to be adapted to exploit the structure and resources available within disturbed forests, the agencies should comprehensively consider and disclose the direct and indirect effects of salvage logging on species associated with young complex forests. The Forest Service has numerous Management Indicator Species whose populations have not been monitored, so the agencies lack the information necessary to that the salvage logging program will maintain species viability.

d. the effects of salvage logging on the development of complex forest habitat; "The early post-disturbance period of forest ecosystem development - pre-tree-canopy closure - is profoundly important!" because it is heterogeneous, light-energy rich, structure rich, biodiversity rich, and process rich. "**Removal of legacies is most profound long-term impact**" because of the "Importance of Coarse Wood:
   - Habitat for species
   - Organic seedbeds (nurse logs)
   - Modification of microclimate
   - Protection of plants from ungulates
   - Sediment traps
   - Sources of energy & nutrients
   - Sites of N-fixation
   - Special source of soil organic matter
   - Structural elements of aquatic ecosystems"

   Jerry Franklin - What is a 'Good' Forest Opening? – Powerpoint http://courses.washington.edu/esrm315/Lectures/FranklinEarlySuccession.pdf

e. all the new science related to salvage logging and dead wood, including but not limited to: Beschta R.L., J.J. Rhodes, J.B. Kauffman, R.E. Gresswell, G.W. Minshall, J.R. Karr, D.A. Perry, F.R. Hauer, and C.A.Frissell, 2004. Postfire management on forested public lands of the western USA. Cons. Bio.,. http://pacificrivers.org/files/post-fire-management-and-sound-science/Beschta-etal2004.pdf and Rose, C.L., Marcot, B.G., Mellen, T.K., Ohmann, J.L., Waddell, K.L., Lindely, D.L., and B. Schrieber. 2001. Decaying Wood in Pacific Northwest Forests: Concepts and Tools for Habitat Management, Chapter 24 in Wildlife-Habitat Relationships in Oregon and Washington (Johnson, D. H. and T. A. O'Neil. OSU Press. 2001) http://web.archive.org/web/20060708035905/http://www.nwhi.org/inc/data/GISdata/docs/chapter24.pdf

f. "Conservation of diverse young forests has received little attention in forest policy." USDA PNW Research Station. *Science Findings.* Sept 2003. http://www.fs.fed.us/pnw/sciencef/scifi56.pdf. "[T]here's a looming shortage of diverse young forests - where seedlings intermingle with fallen logs, standing dead

snags, and shrubs - that provide specialized habitat for certain animals and plants. … there's a looming gap in diverse, young, early-successional conifer forest, the type of forest that once came in naturally after forest fires. These young forests, up to 10 years old, have a diversity of forest structures - fallen logs and dead snags - and a diversity of plant life. They are important habitat for the western bluebird and other birds that prefer open areas, as well as some shrub species. Today, because of intense timber management on private lands, young forests don't get the chance to develop much diversity." OSU. 2001. Press Release: Researchers Assess Forest Sustainability. http://web.archive.org/web/20060914032259/http://oregonstate.edu/dept/ncs/newsarch/2001/Oct01/assess.htm According to the CLAMS project: "Diverse young forests: also rare but receiving less attention. Legacy tree habitat: uncertain future.." Ohmann, Spies, Gregory, Johnson. 2002. Vegetation Biodiversity in the Oregon Coast Range. http://www.fsl.orst.edu/clams/download/presentations/j02s_ohmann_10june02.pdf (slide 24).

g. Hutto, R.L., 2006. Toward Meaningful Snag-Management Guidelines for Postfire Salvage Logging in North American Conifer Forests. Conservation Biology Volume 20, No. 4, 984–993. http://web.archive.org/web/20090310114517/http://avianscience.dbs.umt.edu/documents/hutto_conbio_2006.pdf ("Species such as the Black-backed Woodpecker (*Picoides arcticus*) are nearly restricted in their habitat distribution to severely burned forests. Moreover, existing postfire salvage-logging studies reveal that most postfire specialist species are completely absent from burned forests that have been (even partially) salvage logged. I call for the long-overdue development and use of more meaningful snag-retention guidelines for postfire specialists, and I note that the biology of the most fire-dependent bird species suggests that even a cursory attempt to meet their snag needs would preclude postfire salvage logging in those severely burned conifer forests wherein the maintenance of biological diversity is deemed important.")

h. A recent study of birds that use post-fire mosaics highlighted the importance of resprouting shrubs and forbs on the re-establishment of nesting birds following wildfire. "Of the 39 species for which nests were found, 14 (37%) used cavities and 25 (63%) built open-cup nests.... Species that built cup nests used snags, residual live trees, resprouting hardwoods, and other ground vegetation and downed wood. The associations between the presence of breeding species and forb and shrub cover indicate that these are important components of the early establishment of bird populations following stand-replacing fires. These data suggest that post-fire management of resprouting hardwoods and herbaceous vegetation should consider potential impacts to bird species that nest and forage in burned forests." CFER 2007. Response of Birds to Fire Mosaics. CFER News. Winter 2007. http://www.fsl.orst.edu/cfer/pdfs/Vol7_1.pdf.

i. BLM's Western Oregon Plan Revision (WOPR) DEIS (p. LII) admits that structurally complex young forests develop old forest characteristics twice as fast as structurally deprived initial conditions.

j. Mark E Swanson, Jerry F Franklin, Robert L Beschta, Charles M Crisafulli, Dominick A DellaSala, Richard L Hutto, David B Lindenmayer, and Frederick J

Swanson 2010. The forgotten stage of forest succession: early-successional ecosystems on forest sites. Front Ecol Environ 2010; doi:10.1890/090157

k. Bats find favorable habitat in burned areas with abundant and diverse snags and abundant and diverse flying insects. Salvage logging will remove potential roost sites, and food sources. Carol Chambers and Erin Saunders. BATS IN THE BURNS - Studying the impact of wildfires and climate change. BATS. Bat Conservation International. Winter 2013, Volume 3, No. 4. http://www.batcon.org/index.php/media-and-info/bats-archives.html?task=viewArticle&magArticleID=1154

l. "Leaving a damaged forest intact means the original conditions recover more readily," says David Foster, … director of the NSF Harvard Forest LTER site. "Forests have been recovering from natural processes like windstorms, fire and ice for millions of years. What appears to us as devastation is actually, to a forest, a natural and important state of affairs." 10-16-2012 Press Release 12-198, In Blown-Down Forests, a Story of Survival To preserve forest health, the best management decision may be to do nothing. http://www.nsf.gov/news/news_summ.jsp?cntn_id=125744; Audrey Barker Plotkin, David Foster, Joel Carlson, and Alison Magill 2013. Survivors, not invaders, control forest development following simulated hurricane. Ecology, 94(2), 2013, pp. 414–423. http://harvardforest.fas.harvard.edu/sites/harvardforest.fas.harvard.edu/files/publications/pdfs/BarkerPlotkin_Ecology_2013.pdf

m. "Unmanaged early-seral stages of forest development are now considered to be among the most threatened habitat types in coniferous regions of the western United States (Noss et al. 2006, Thomas et al. 2006). Not surprisingly, concern has arisen over viability of populations that use broadleaf vegetation in early-seral forest, particularly as this habitat type contributes disproportionately to forest biodiversity (Halpern and Spies 1997). In the northwestern United States, a number of bird species thought to be strongly associated with early-seral broadleaf habitat have declined and are considered conservation priorities (Altman 1999, U.S. Fish and Wildlife Service 2002). Because the PNW represents a substantial portion of the ranges of these species, loss of quality early-seral habitat could increase risk of extinction." M. G. BETTS, J. C. HAGAR, J. W. RIVERS, J. D. ALEXANDER, K. MCGARIGAL, AND B. C. MCCOMB. 2010. Thresholds in forest bird occurrence as a function of the amount of early-seral broadleaf forest at landscape scales. Ecological Applications, 20(8), 2010, pp. 2116–2130. http://www.fsl.orst.edu/flel/pdfs/Betts%20et%20al%202010%20Ecol%20Apps.pdf

Before adopting a widespread salvage logging program, BLM needs to carefully consider and disclose reasons NOT to remove snags. Science tells us that natural forests develop after disturbance with abundant structural legacies. These legacy features include snags and down wood which play a wide variety of valuable ecological services for the developing forest, including but not limited to:

- nutrient uptake, storage, and release
- water uptake, storage, and release
- mycorrhizal colonization

- wildlife habitat, in particular for primary cavity species which are recognized as a "keystone" element of healthy forests
- allowing some forest species to linger in burned forests after disturbance and to recolonize burned forests sooner after disturbance, thereby shortening the period during which burned stands are unsuitable for wildlife
- providing food for insects that in turn feed a wide variety of other wildlife such as birds and bats
- favorable sites for seed germination and establishment
- mechanical thinning of the regenerating stand due to the process of snag fall
- shade and cover for everything from seedlings to big game
- perches, nest, and den structures.
-

In general, the larger the piece size, the longer they tend to last. But salvage logging removes those very elements that are most valuable for wildlife and most difficult to replace.

Since this project involves post-fire commodity extraction (also often referred to erroneously as "salvage" logging) please carefully analyze, consider, and disclose the site-specific analysis of the many reasons NOT to do post-fire commodity extraction, including but not limited to:

- adverse impacts to soil, such as erosion, compaction, displacement, litter disturbance, nutrient depletion; loss of chemical buffering; loss of soil organic matter; loss of burrowing wildlife that help aerate soils; reduction of nitrogen fixing plants that boost soil fertility; loss of slope and snow stabilizing effects which could lead to mass wasting or eliminate mechanisms that may mitigate mass wasting;
- loss of down wood functions s such as trapping sediment and aiding water infiltration, and creating microsites favorable for germination and establishment of diverse plants, and habitat for diverse wildlife;
- loss of decaying wood and depletion of the "savings account for nutrients and organic matter" which affects site productivity through the removal of dead trees which store nutrients and slowly release them to the next stand. Marañón-Jiménez, S., Fernández-Ondoño, E., and J. Castro. 2013. Charred wood remaining after a wildfire as a reservoir of macro- and micronutrients in a Mediterranean pine forest. International Journal of Wildland Fire. http://dx.doi.org/10.1071/WF12030 ("Partially charred wood represented a considerable pool of nutrients, due to both the relatively high concentrations and to the great amount of biomass still present after the fire. Potential contributions of the charred wood were particularly relevant for N and micronutrients Na, Mn, Fe, Zn and Cu, as wood contained 2–9 times more nutrients than the soil. Post-fire woody debris constitutes therefore a valuable natural element as a potential source of nutrients, which would be lost from ecosystems in cases where it is removed")
- Recent studies indicate that wood may release nutrients more rapidly than previously thought through a variety of decay mechanisms mediated by means other than microbial decomposers, i.e. fungal sporocarps, mycorrhizae and roots, leaching, fragmentation, and insects;
- loss of nutrients from live trees that are determined to be "dying." Live trees produce serve as refugia for animals, invertebrates, and mycorrhizae; produce litter fall; and help cycle nutrients which are all extremely valuable in the post-fire landscape;

- loss of wood that serves to buffer soil chemistry and prevent extreme changes in soil chemistry;
- water quality degradation;
- loss of water storage capacity in down logs;
- altered timing of storm run-off which could lead to peak flows that erode stream banks and scour fish eggs;
- delaying the pace of vegetative recovery and reducing the quality/diversity of the vegetation community;
- dead trees serve as a natural fence that protects young seedlings from browse by cattle and big game. This is one way that young aspen and other valuable species can get their start;
- spread of invasive weeds through soil disturbance and extensive use of transportation systems;
- loss of legacy structures that can carry species, functions, and processes over from one stand to the next;
- loss of terrestrial and aquatic habitat (mostly snags and down logs) potentially harming at least 93 forest species (63 birds, 26 mammals, and 4 amphibians) that use snags for nesting, roosting, preening, foraging, perching, courtship, drumming, and hibernating, plus many more species that use down logs for foraging sites, hiding and thermal cover, denning, nesting, travel corridors, and vantage points for predator avoidance;
- Depletion of large wood structures in streams that can cause: 1) simplification of channel morphology, 2) increased bank erosion, 3) increased sediment export, 4) decreased nutrient retention, 5) loss of habitats associated with diversity in cover, hydrologic patterns, and sediment retention;
- commercial salvage usually removes the largest trees, but this will disproportionately harm wildlife because: (1) larger snags persist longer and therefore provide their valuable ecosystem services longer and then serve longer as down wood too, and (2) most snag-using wildlife species are associated with snags >14.2 inches diameter at breast height (dbh), and about a third of these species use snags >29.1 inches dbh.
- Truncation of symbiotic species relations and loss of biodiversity. Sixteen species are primary cavity excavators and 35 are secondary cavity users; 8 are primary burrow excavators and 11 are secondary burrow users; 5 are primary terrestrial runway excavators and 6 are secondary runway users. Nine snag-associated species create nesting or denning structures and 8 use created structures.
- Reduced avian and terrestrial species diversity which affects plant and invertebrate diversity. Since different wildlife help disperse different sets of seeds and invertebrates, reduced wildlife diversity can significantly affect pace of recovery and the diversity of the regenerating stand. Snag- associated wildlife play a greater role in dispersal of invertebrates and plants, while down wood-associated wildlife play a greater role in dispersal of fungi and lichens. Down wood-associated species might contribute more to improving soil structure and aeration through digging, and to fragmenting wood which increases surface area encouraging biological action that releases nutrients.
- loss of partial shade that helps protect the next generation of forest;
- loss of cover quality and fawning areas for big game;

- loss of future disturbance processes such as falling snags that help thin and diversify the next generation of forest;[232]
- increased human activity and human access that can increase fire risk;
- increased fine fuels on the forest floor that can cause an increase in fire hazard;
- loss of seed sources, and
- loss of diversity of vegetation and microsite conditions.
- The fact that regional standards for snags and down wood fail to incorporate the most recent science indicating that more snags and down wood (especially large snags and logs) are required in order to maintain species viability and sustain site productivity.
- Arguments in support of the "reburn hypothesis" are specious. (1) partial reburn may be completely natural and desirable in some cases to consume some fuel and diversify the regenerating forest, and (2) salvage logging will cause a pulse of fine fuels on the ground and actually increase the reburn risk/hazard above natural levels, and (3) fuels that fall to the ground over time will to some extent decay as they fall.
- Uncertainty calls for a cautious approach.
-

Compare these adverse impacts of salvage logging to the few scant reasons to salvage (e.g., economic recovery of fiber).

V. THE DEIS FAILS TO RECOGNIZE THE SIGNIFICANT ECOLOGICAL VALUE OF RETAINING LARGE SNAGS

Protecting large snags from salvage logging is particularly important. Because large snags last much longer than small snags, large snags are disproportionately valuable as wildlife habitat, nutrient and water reservoirs, soil stabilizers, etc. If the agency chooses to conduct a salvage operation in this fire area, they must use a diameter cap and protect these scarce and valuable forest structures.

Jerry Franklin, in commenting on a large fire salvage project in 2015 said:

> Large snags and logs are the most important surviving structural elements or biological legacies of a forest disturbance (Franklin et al. 2002), excepting only surviving large live trees. Importance, in this case, refers to the roles of these structures in:
>
> (1) Providing essential habitat for an immense array of species;
> (2) Maintaining important ecosystem functions; and
> (3) Structurally enriching the young forest stand, making it possible for mid- and latesuccessional species to re-colonize the stand much earlier in its chronological development than would otherwise be the case (Franklin et al. 1987).

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[232] JAMES A. LUTZ AND CHARLES B. HALPERN. 2006. TREE MORTALITY DURING EARLY FOREST DEVELOPMENT: A LONG-TERM STUDY OF RATES, CAUSES, AND CONSEQUENCES. Ecological Monographs, 76(2), 2006, pp. 257–275. This study showed that mortality from mechanical damage ("crushing disturbance") from falling limbs and trees and snow loads can be a more significant factor than suppression mortality. See also, Brown, Martin J.; Kertis, Jane; Huff, Mark H. 2013. Natural tree regeneration and coarse woody debris dynamics after a forest fire in the western Cascade Range. Res. Pap. PNW-RP-592. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 50 p. "Snag fall and fragmentation added so much wood to the ground—thousands of meters of log length per hectare—that it probably constitutes a significant ecological disturbance in itself, a kind of rain of logs.")

The importance of large snags and down wood for a broad array of species is recognized in the EIS document. These structures provide habitat for early as well as late successional species and sustain many important ecosystem processes (e.g., Harmon et al. 1986). However, the long persistence and multiple roles played by the large pulse of snags, logs, and other CWD provided by the stand-replacement event (Harmon et al. 1986; Maser et al. 1988) do not appear to be adequately recognized in the analysis of how much of this wood should be retained. For example, large Douglas-fir logs continue to fulfill important ecological functions, such as habitat for small mammals and salamanders, for 200 to 250 years after their death. Cedar snags can persist for at least as long as 1 ½ centuries and as logs for over twice that long.

The massive input of large dead wood is characteristic and critical to stand development processes and the ultimate provision of habitat for late-successional species following stand replacement fires (Maser et al. , 1988; Franklin et al. 2002). As noted these wood structures may persist and play functional roles for several centuries, particularly in the case of decay resistant species. Large pines may also persist as snags for several decades and additional periods as logs on the forest floor. In fact, the entire recovering forest ecosystem will depend upon this pulse of CWD until it reaches a point in its development where the new stand begins to generate snags and logs of comparable size and heartwood content-generally between 100 and 200 years (Maser et al. 1988; Franklin et al., 2002). Consequently, basing snag and CWD retention following salvage on levels of these structures found in existing mature and old forests is not appropriate; *all of this initial pulse of wood is needed to reach those levels one to two centuries from now!* Indeed, the use of mature forests as a standard for CWD is particularly inappropriate since this is the period when CWD levels are at their lowest level during the entire natural developmental sequence from stand-replacement fire to old growth (see diagram in paper by Spies in Maser et al. 1988). It certainly does not appear to me that the approach taken in the DEIS reflects an appreciation of the fact that this one-time input oflarge and decay resistant CWO is all that the recovering forest ecosystem is going to get for the next 100 to 200 years.

The importance of snags, logs, and other CWD is recognized in FEMAT's (1993) scientific analysis. For example (my underlining for emphasis):

> *Because of the important role of dead wood in late-successional and old-growth forest ecosystems, and because there is much to learn about the role of dead wood in the development of forests, only limited salvage is appropriate in Late-Successional Reserves. .. <u>The Final Draft Recovery Plan [for the NSO] would allow removal of small-diameter snags and logs, but would also require retention o[snags and logs likely to persist until the new stand begins to contribute significant quantities of coarse woody debris</u>." FEMAT 1993, p. IV-37.*
>
> *Snags provide a variety of habitat benefits for a variety of wildlife species associated with late-successional forests. <u>Accordingly, following stand-replacing disturbances. management should focus on retaining snags that are likely to</u>*

> *persist until late-successional conditions have developed and the new stand is again producing large snags. FEMAT 1993, p. III-37.*
>
> *Following a stand replacing disturbance, management should retain adequate coarse woody debris quantities in the new stand so that in the.fi1ture it will contain amounts similar to natural regenerated stands. The analysis that determines the amount of coarsewoody debris to leave must account for the filii period of time before the new stand begins to contribute coarse woody debris .... FEMA T 1993, p. III-37.*

> In summary, general salvage of large snags and logs is clearly antithetical to the goal of rapid recovery of fully functional late-successional forest habitat and inappropriate within the Late Successional Reserves.

Jerry Franklin. Comments on the Klamath NF, Westside Fires Salvage DEIS. 6 April 2015.

Retaining large snags is necessary to mitigate the "snag gap" caused by stand replacing disturbance. It may seem counter-intuitive but fire results in a snag shortage. One of the most significant and lasting effects of stand replacing disturbance such as fire, wind, or regeneration logging is to bring the process of snag recruitment to a virtual standstill for many decades. Even if snags are not removed by the disturbance, snags created by the disturbance will fall down over time and few if any snags are created. This results in a "snag gap" that has serious adverse consequences for habitat and many other ecological processes. The apparent abundance of large snags after a stand replacing disturbance masks a severe shortage of large snags down the road.

In Congressional testimony in July 2004, Jerry Franklin said:

> It is sometimes argued that following a stand-replacement fire in an old-growth forest that snags and logs are present in "excess" of the needs of the site, in terms of ecosystem recovery. In fact, the large pulse of dead wood created by the disturbance is the only significant input of woody debris that the site is going to get for the next 50 to 150 years—the ecosystem has to "live" off of this woody debris until the forest matures to the point where it has again produced the large trees that can become the source for new snags and logs (Maser et al. 1988).

Dr. Jerry F. Franklin, Professor of Ecosystem Studies, College of Forest Resources, University of Washington. July 15, 2004. TESTIMONY FOR THE RECORD ON OVERSIGHT HEARING ON "RESTORING FORESTS AFTER CATASTROPHIC EVENTS" BY HOUSE COMMITTEE ON RESOURCES, SUBCOMMITTEE ON FOREST AND FOREST HEALTH. http://www.signaloflove.org/clearcutting/reports/fire3/Franklin%20Jerry%20July%202004%20testimony.pdf.

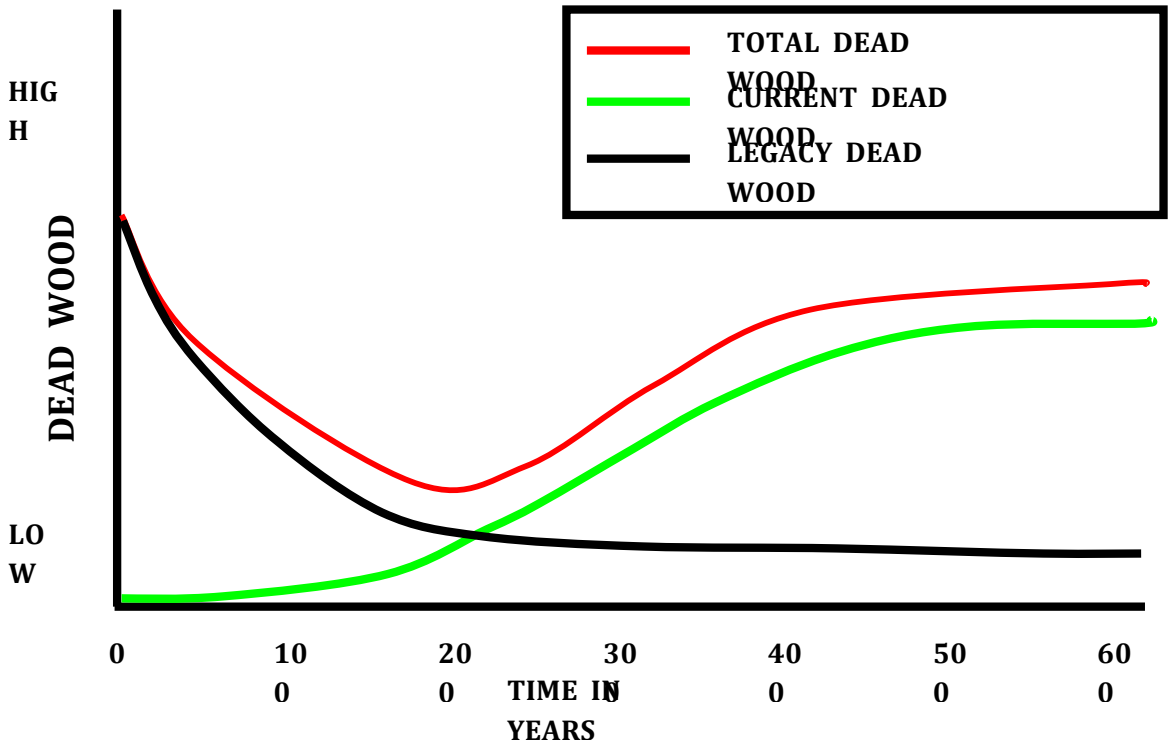
Similarly, Johnson & Franklin's 2008 Forest Plan for the Klamath Tribes says of large fires;

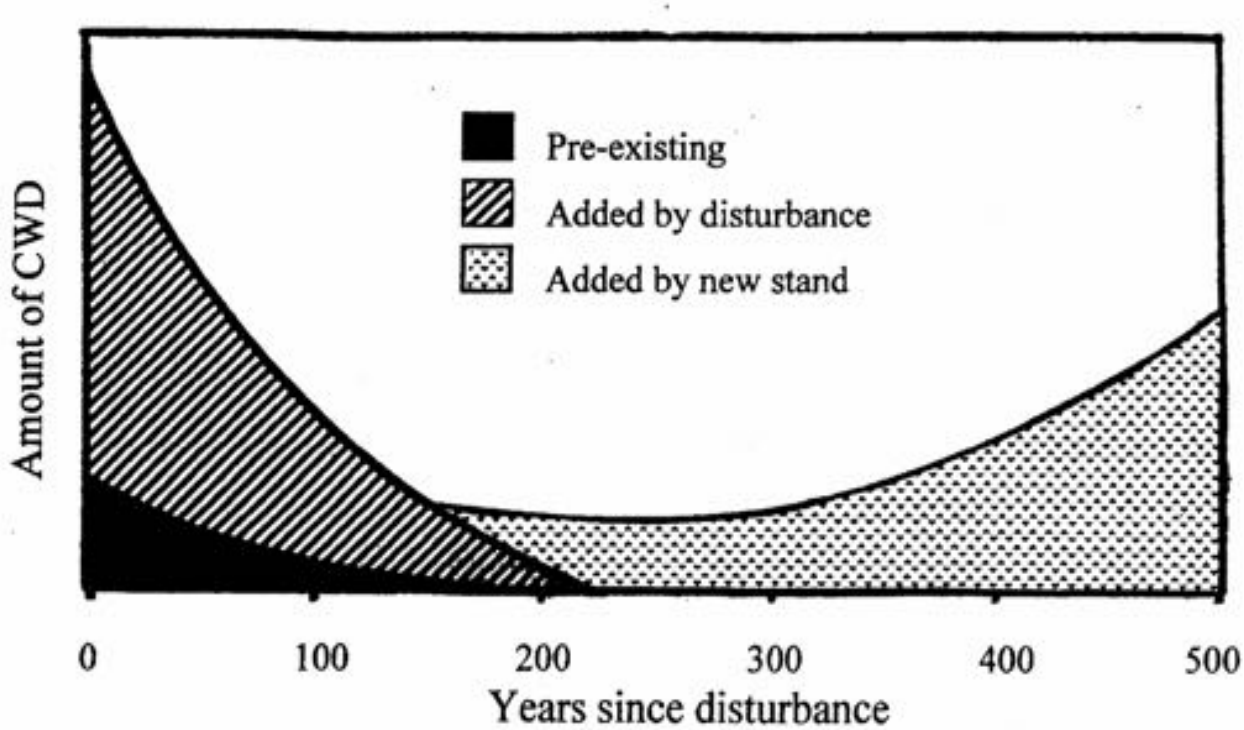
> Such fires do generate a large pulse of dying, dead and down material. After a stand-replacement fire, that pulse of large wood is all of the large wood that the recovering

ecosystem is going to get for the next century or more—i.e., until trees of large size are once again a part of the stand. Some of this dead wood legacy will persist and fulfill important functional roles in the recovering forest for many decades and, in the case of the largest and most decay resistant material, even for a century or more.

1. The agency must recognize the asymmetric nature of snag dynamics after all types of stand replacing disturbance. High rates of snag fall would be expected in the decades following disturbance, while low rates of snag recruitment would be expected in the decades following a disturbance. This unavoidably results in a serious deficit of snags at some point in the future.
2. In order for the NEPA analysis to fully address the snag habitat issue it must look carefully at the snag gap from both ends.
    a. The snag gap begins when too many of the current snags are gone. So the snag gap is exacerbated on the front end by salvage logging which removes too many large snags.
    b. The snag gaps ends when the next stand grows to the point that it contains large trees and some of them die, so the snag gap is exacerbated on the back end if there is a significant delay in tree regeneration.
3. The agency has a tendency to focus on the back end of the snag gap which is allegedly mitigated by tree replanting, but this benefit is in the distant future and remains speculative. The agencies tend to ignore the effect of logging on the front end of the snag gap (which is concrete and unavoidable).
4. Logging which retains only enough snags to meet snag requirements after harvest will not meet snag requirements in a few years after those few retained snags fall.
5. Both the RMP and the Northwest Forest Plan (p C-13) require that snags be maintained through time, so our goal must be to manage snags to minimize the time period that there is a deficit of snags.
6. The NEPA analysis must account for snag fall rates and figure out how to minimize the snag gap. Every day that the "snag gap" is lengthened by salvage logging is a violation of the RMP. Models that may be used to analyze snag dynamics can be found here: http://www.for.gov.bc.ca/hre/deadwood/DTmod.htm.
7. There is a strong correlation between the size of the snags and the length of time it is likely to remain standing, so salvage must be designed to retain all the large snag and only remove trees from smaller size classes.
8. Consider this example: Assume that the stands currently have 30 large trees/acre and 24 of those will be removed via salvage logging while 6 trees/acre will be retained for snag habitat. Further assume that in 50 years 2 percent of the large snags will remain standing as snag habitat. Two percent of 6 trees/acre is FAR LESS than 2 percent of 30 trees/acre, so there is a virtual statistical certainty that salvage logging will exacerbate the snag gap.
9. The snag gap is really exacerbated by salvage logging in two ways — first by targeting removal of the large and most persistent component of the snag population, and second by accelerating the rate that remaining snags fall and are lost from the snag population. New science from Idaho reveals that Ponderosa pine snags persist longer in unlogged areas. See Russell, R.E., Saab, V.A., Dudley, J.G., and J.J. Rotella. 2006. Snag longevity in relation to wildfire and postfire salvage logging. Forest Ecology and Management 232 (2006) 179-187. http://www.fs.fed.us/rm/pubs_other/rmrs_2006_russell_r001.pdf ("The predicted half-life of

a ponderosa pine snag was 7-8 years in salvage logged plots and 9-10 years in unlogged plots.”)





The agency often compares their proposed snag retention levels to the *average* number of snags across the landscape, without recognizing that after a significant disturbance such as fire “the

rate of input [of snags] to the CWD pool is 100-1000x the rate expected for an unburned steady-state forest (Harmon et al 1986). Even afterwards, in the next 5 or 6 years, the rate of input is still 5 or 10 or even 100 times that steady-state rate."
http://web.archive.org/web/20050428020846/http://www.brownandbrown.tv/warner-presentation-2002-05-14b.pdf

The shortage of snags in the decades following stand replacing fire is acknowledged by the Forest Service on page 136 of the Wallowa-Whitman National Forest's Trail Vegetation Management Project EA (October 2012). http://www.fs.usda.gov/project/?project=34482

The BLM has previously admitted that a "high proportion" of snags "are expected to persist for at least 50 years." Roseburg BLM 2009, Little Wolf 3 Density Mgt EA. http://www.blm.gov/or/districts/roseburg/plans/files/LittleWolf3EA.pdf. This means that salvage logging can exacerbate the snag gap the front end by at least 50 years.

An example of how salvage would lengthen the period that a forest remains inhospitable to wildlife is provided by the following study, Payer, D.C., and D.J. Harrison. 2000. Structural differences between forests regenerating following spruce budworm defoliation and clear-cut harvesting: Implications for marten. Canadian Journal of Forest Research 30(12): 196572. ("Summary: The authors looked at the use of clearcuts and areas where spruce budworm has caused mortality in relation to the American marten. When establishing new territories, martens avoid clearcuts but do not avoid stands with a history of extensive tree mortality caused by eastern spruce budworm. Although live tree basal area was similar between stand types, the results showed that the vertical structure provided by large snags can offset the limited availability of live trees for the marten, particularly where coarse woody debris and understory vegetation are plentiful.") http://www.umaine.edu/cfru/documents/payer.pdf

Salvage Logging is Incompatible with Watershed Recovery
Salvage logging should be avoided and minimized because it will violate the O&C Act mandate to protect watersheds and favorable conditions of water flow. Salvage retards watershed and aquatic recovery.

> In short, by adding another stressor to burned watersheds, postfire salvage logging worsens degraded aquatic conditions accumulated from a century of human activity (CWWR 1996,NRC 1996, 2002,McIntosh et al. 2000). The additional damage impedes the recovery and restoration of aquatic systems, lowers water quality, shrinks the distribution and abundance of native aquatic species, and compromises the flow of economic benefits to human communities that depend on aquatic resources (Beschta et al. 2004).

Karr, J. R., J. J. Rhodes, G. W. Minshall, F. R. Hauer, R. L. Beschta, C. A. Frissell, and D. A. Perry. 2004. The effects of postfire salvage logging on aquatic ecosystems in the American West. BioScience 54:1029-1033.

http://www.sierraforestlegacy.org/Resources/Conservation/FireForestEcology/SalvageLoggingScience/Salvage-Karr04.pdf *citing* Beschta, ,R.L., J. J. Rhodes, J. B. Kauffman, R. E. Gresswell, G. W. Minshall, J. R. Karr, D.A. Perry, F.R. Hauer, C. A. Frissell. 2004. Postfire Management on Forested Public Lands of the Western United States. Conservation Biology 18: 957–967.

Downloadable at:
https://www.researchgate.net/publication/227654964_Postfire_Management_on_Forested_Public_Lands_of_the_Western_United_States?ev=prf_pub

The quantity, quality, and rate of revegetation has a direct contribution to controlling erosion and sedimentation. USGS has described the role of vegetation in slope stability and erosion as follows:

> In a watershed, vegetation provides five major physical functions that help control soil erosion during rainfall events (Spittler, in press):
>
> - Interception of rainfall, which extends the time for water to reach the ground surface and absorbs raindrop impact energy.
> - Mulching of the ground surface to provide temporary water storage and slow release, slope roughness, and energy absorption.
> - Structural support of loose, surficial material.
> - Reinforcement of the deeper soil by roots, which increases the natural slope stability.
> - Maintains conditions necessary for soil micro-organisms that provide soil structure.
> -

http://web.archive.org/web/20040218052053/http://landslides.usgs.gov/html_files/ofr95-508/skrep2.html *citing* Spittler, T.E., in press, Fire and the debris-flow potential of winter storms, in, Proceedings of the Symposium on Brush Fires in California Wildlands: Ecology and Resource Management: International Association of Wildland Fire.

Wagenbrenner et al (2015) found that –

- Post-fire salvage logging increased soil compaction and decreased vegetative cover.
- Salvage logging greatly increased sediment production from more disturbed plots. ("Sediment production from the skidder plots was 10–100 times the value from the controls.")
- Salvage logging delayed post-fire recovery of vegetation and sediment production. ("The relative differences in sediment production between the disturbed plots and the controls tended to increase over time as the controls exhibited more rapid regrowth." Data were taken 2-8 years post-harvest.)
-

Joseph W. Wagenbrenner, Lee H. MacDonald, , Robert N. Coats, Peter R. Robichaud, Robert E. Brown. 2015. Effects of post-fire salvage logging and a skid trail treatment on ground cover, soils, and sediment production in the interior western United States. Forest Ecology and Management. Volume 335, 1 January 2015, Pages 176–193.
http://www.nrel.colostate.edu/assets/nrel_files/labs/macdonald-lab/pubs/Salvage-logging-Wagenbrenner%20et%20al-ForEcolMgmt-2015.pdf

Salvage logging will set back vegetative recovery that has already started and thereby retard attainment of riparian and aquatic management objectives. In research on post-fire logging on the Winema NF, Sexton (1998) found that salvage logged sites produced only about 38% of the

understory biomass of that on the unlogged site; and one year later produced only about 27% of the understory biomass of that on the unlogged site. In fact, Sexton's (1998) study comparing salvaged and unsalvaged areas of a fire on the Winema NF one and two years after logging showed:

Salvage Areas	**Unsalvaged Areas**
reduced vegetation biomass	greater vegetation biomass
reduced species diversity	greater species diversity
reduced species richness	greater species richness
reduced growth of planted seedlings	greater growth of planted seedlings
reduced survival of planted seedlings	greater survival of planted seedlings

Sexton, Timothy O. 1998. Ecological effects of post wildfire activities (salvage-logging and grass-seeding) on vegetation composition, diversity, biomass, and growth and survival of *Pinus ponderosa* and *Purshia tridentata*. MS Thesis Oregon State University. Corvallis, OR. 121p

Similarly, Dan Donato, looked at the effects of salvage logging at the Biscuit fire in SW Oregon and found that cutting down dead trees and hauling away logs killed 71 percent of the naturally established seedlings which were abundant after the fire but scarce after logging. D. C. Donato, J. B. Fontaine, J. L. Campbell, W. D. Robinson, J. B. Kauffman, B. E. Law. Post-Wildfire Logging Hinders Regeneration and Increases Fire Risk. www.sciencexpress.org. 5 January 2006. Shatford and Hibbs recently found similarly encouraging results of natural regeneration.

> Over the 2005 field season, natural regenerating conifers were sampled in 38 plots within 11 historic fires in the Klamath-Siskiyou Region … Years since stand replacing wildfire ranged from [18 years to 9 years] … The density of natural regenerating conifers ranged over three orders of magnitude … Although the abundance of natural regeneration was frequently high, the age and size of saplings ranged considerably … Frequently, the regenerating saplings were overtopped by shrubs and hardwoods. There was no evidence of recent conifer mortality (i.e. no dead or dying saplings) caused by competition … Saplings were generally in good condition with dominant trees having live crown ratios of 50% or greater.

Shatford, J., Hibbs, D.E. 2005. Predicting Post-fire Regeneration Needs: Spatial and Temporal Variation in Natural Regneration in Southwestern Oregonadn Northern California. Pp 29-32 *in* Cooperative Forest Ecosystem Research Program (CFER) 2005 Annual Report. http://www.fsl.orst.edu/cfer/pdfs/CFER_ar05.pdf. This data reveals that natural regeneration is not only demonstrably successful but also species diverse and variable both spatially and temporally. All of these attributes are highly beneficial in terms of both wildlife habitat and fuel hazard.

The adverse effects of salvage logging on vegetative recovery described by Sexton are not unique to the Ponderosa pine forest type. The results are in fact quite consistent with the results found by Michael Grifantini et al after salvage logging in Douglas fir forests in northwestern California. Grifantini, M.C., Stuart J.D., and L. Fox III, 1992. "Deer Habitat Changes Following Wildfire, Salvage, Logging and Reforestation, Klamath Mountains, California," Proceedings of

the Symposium on Biodiversity of Northwestern California, Oct 28-30, 1991, Santa Rosa, CA. UC Wildland Resource Center Report 29. December 1992.

Climate change is expected to increase the magnitude and intensity of rain events which can cause significant erosion, especially after disturbances such as fire and logging. It would be wise to retain extra material on site after fire in order to intercept and absorb the energy of rain drops, absorb and store water, stabilize soil, capture and store mobile sediment, etc. Garbrecht, J. D., J. L. Steiner, and C. A. Cox (2007), Climate change impacts on soil and water conservation, Eos Trans. AGU, 88(11), 136. http://www.agu.org/eos_elec/2007/11-136_climate.html. The agency needs to ensure that the hydrology and erosion models used in the NEPA analysis accurately account for the expected increase in storm impacts due to climate change.

The adverse effects described by Sexton appear to be long lasting. Busse at al 1996 found that the annual growth rate of pines was reduced by almost 20% where understory vegetation had been removed thirty years earlier. In addition, research has shown a direct relationship between the level of on-site coarse woody debris and the amount active ectomycorrhizal root tips. Graham, R. T., Harvey, A. E., Jurgensen, M., F., Jain T. B., Tonn, J. R., and Page-Dumroese, D. S. 1994. Managing coarse woody debris in forests of the Rocky Mountains. Res. Pap. INT-RP-477. Ogden, UT: U. S. Department of Agriculture, Forest Service, Intermountain Research Station, 13 p. See also Russell T. Graham, Theresa Benevidez Jain, and Alan E. Harvey FUEL: LOGS, STICKS, NEEDLES, DUFF, AND MUCH MORE. The Joint Fire Science Conference and Workshop
http://web.archive.org/web/20060829024013/http://jfsp.nifc.gov/conferenceproc/T-10Grahametal.pdf

Undisturbed litterfall after wildfire reduces soil erosion caused by both rain and overland-flow. By disturbing needle cover and effectively reducing the soil coverage, logging and yarding will cause increased in erosion compared to not logging. Pannkuk, C. D., and P. R. Robichaud. 2003. Effectiveness of needle cast at reducing erosion after forest fires, *Water Resources Research*, Vol. 39, No. 11, doi:10.1029/2003WR002318, 2003.
http://www.agu.org/pubs/crossref/2003/2003WR002318.shtml They found that a 50 percent ground cover of Douglas fir needles reduced water flow erosion by 20 percent and rain-induced erosion by 80 percent. A 50 percent ground cover of ponderosa pine needles reduced water flow erosion by 40 percent and rain-induced erosion by 60 percent.

VI. SALVAGE LOGGING IS INCOMPATIBLE WITH SPOTTED OWL RECOVERY

The Revised Recovery Plan for the northern spotted owl recommends retention and restoration of structure function and process across the dry forest landscape. This includes legacy retention after fires. The 2011 Final Revised Recovery Plan for the Northern Spotted Owl says,

> In general, we recommend that dynamic, disturbance-prone forests of the eastern Cascades, California Cascades and Klamath Provinces should be actively managed in a way that reconciles the overlapping goals of spotted owl conservation, responding to climate change and restoring dry forest ecological structure, composition and processes,

including wildfire and other disturbances (Noss et al. 2006, Spies et al. 2006, 2010a, Agee and Skinner 2005, Healey et al. 2008, Mitchell et al. 2009). …

…[O]ur intent in this Revised Recovery Plan is to embed spotted owl conservation and recovery within broader dry forest ecosystem restoration efforts to increase the likelihood spotted owl habitat will remain on the landscape longer and develop as part of this fire adapted community … To accommodate future disturbances and restore ecosystem resiliency, we believe it is essential to restore ecosystem structure, composition and processes. Restoring ecosystem structures that provide resiliency will necessitate maintaining and restoring the biological legacies that typically persist through disturbance events and influence the recovery process in the post-disturbance landscape (Franklin et al. 2000). With respect to the dry forest landscapes, structural legacies include not only the large trees that tend to be fire tolerant, but the snags and downed wood that were created as a result of the disturbance event. Structural legacies serve valuable functions such as reproductive structures that facilitate plant propagation, modifying microclimates, or improving connectivity through the disturbed area (Franklin et al. 2007). … These principles should be part of any dry forest restoration treatment: … Retain and restore heterogeneity within stands (i.e., manage for fine-scale mosaic within stands). This includes both vertical and horizontal diversity. …

… [P]ost-fire timber harvest activities "undermine many of the ecosystem benefits of major disturbances" (Lindenmayer et al. 2004:1303) and frequently "ignore important ecological lessons, especially the role of disturbances in diversifying and rejuvenating landscapes" (DellaSala et al. 2006:51). … studies of spotted owls in post-fire landscapes indicate that spotted owls use forest stands that have been burned, but generally do not use stands that have been burned and logged. Consistent with restoration goals, post-fire management in these areas should promote the development of habitat elements that support spotted owls and their prey, especially those which require the most time to develop or recover (e.g., large trees, snags, downed wood). Such management should include retention of large trees and defective trees, rehabilitation of roads and firelines, and planting of native species (Beschta et al. 2004, Hutto 2006, Peterson et al. 2009). We anticipate many cases where the best approach to retain these features involves few or no management activities. … Many researchers supported the need to maintain habitat for spotted owl prey. For example, Lemkuhl et al. (2006) confirmed the importance of maintaining snags, downed wood, canopy cover, and mistletoe to support populations of spotted owl prey species. Gomez et al. (2005) noted the importance of fungal sporocarps which were positively associated with large downed wood retained on site post-harvest. Carey et al. (1991) and Carey(1995) noted the importance of at least 10 to 15 percent cover of downed wood to benefit prey. The costs and benefits of post-fire harvest to the development of habitat for spotted owls and their prey should be evaluated by interagency teams (e.g., Level 1 teams) during the consultation process.

> · Recovery Action 12: In lands where management is focused on development of spotted owl habitat, post-fire silvicultural activities should concentrate on conserving and restoring habitat elements that take a long time to develop (e.g., large trees, medium and large snags, downed wood). Examples of areas where we

> believe this recovery action would greatly benefit future spotted owl habitat development include such fire-affected areas as the Biscuit fire, the Davis fire and the B&B complex.

USFWS 2011. Final Revised Recovery Plan for the Northern Spotted Owl. pp III-20, III-32 – III-34, III-48 – III-49. Note also, the 1994 Northwest Forest Plan ROD (page C-11, and 1994 FSEIS page F-146) says that " ... activities required by recovery plans for listed threatened and endangered species take precedence over Late-Successional Reserve standards and guidelines."

Also, keep in mind the FWS' June 28, 2011 Response-to-Comments on the Revised Recovery Plan says "Whether a burned area could support nesting spotted owls is not relevant to our recommending focusing on spotted owl habitat restoration and conservation of legacy habitat elements in areas where pre-fire management focused on developing spotted owl habitat. This recovery action is designed to provide for legacy habitat elements remaining after high-intensity fires which will contribute to future habitat development." http://web.archive.org/web/20130315193800/http://www.fws.gov/oregonfwo/Species/Data/NorthernSpottedOwl/Recovery/Library/Documents/Comments.Responses.pdf And, keep in mind "where pre-fire management focused on developing spotted owl habitat" includes all dry forests, e.g. "[O]ur intent in this Revised Recovery Plan is to embed spotted owl conservation and recovery within broader dry forest ecosystem restoration efforts"

The 2008 FRP (p 116) also says "Large and old trees, either living or dead, are important wherever they occur." The FWS response-to-comments on the draft recovery plan says "post-fire harvest recommendations stress the need to conserve large trees, both living and dead, as they are important components to the restoration of owl habitat after wildfire events." And recommends that after fire or other disturbance the agencies should "conserve the remaining large trees and snags." http://www.fws.gov/pacific/ecoservices/endangered/recovery/pdf/NSO_RPApp_F_Response_to_Comments_5_7_08.pdf. Since large snags take a very long time to grow and recruit, salvage logging should retain all large snags. Any salvage logging proposal must also carefully disclose and balance all detrimental effects and alleged beneficial effects of salvage logging and connected actions like road building.

Clark (2007) looked at post-fire habitat selection by spotted owls after several wildfires in southern Oregon and determined that low severity fire in nesting, roosting, foraging habitat appears to benefit spotted owl occupancy and colonization.

> Initial occupancy was positively influenced by the amount of roosting and foraging habitat with low severity burn within the core ($\beta = 0.08$, 95% C.I. = -0.02 – 0.17) … Colonization rates were positively influenced by the amount of nesting, roosting and foraging habitat that received a low severity burn within the core ($\beta = 0.08$, 95% C.I. = 0.02 – 0.15).

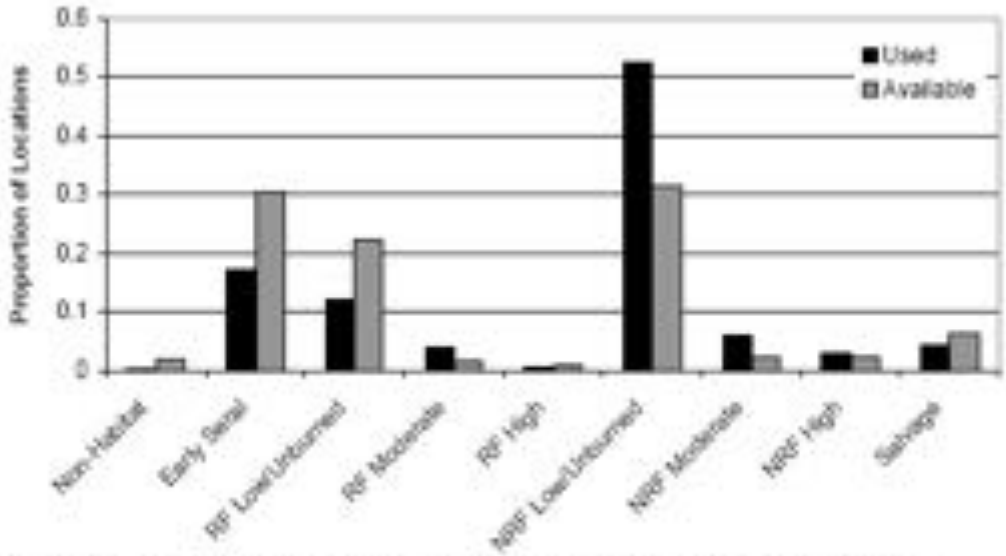


Figure 6.1. Proportions of used and available habitats for northern spotted owls monitored at the Timbered Rock Fire and surrounding areas from September, 2004 to August, 2006.

Darren A. Clark. 2007. Demography and Habitat Selection of Northern Spotted Owls in Post-Fire Landscapes of Southwestern Oregon. M.S. Thesis. Oregon State University. Robert Anthony, Advisor. Figure 6.1 shows that nesting, roosting, foraging habitat is used more frequently than random sites even after it has experienced moderate or high severity fire, while areas that were salvage logged were used less frequently than random sites.

See also, Clark, Anthony & Andrews 2013. Relationship Between Wildfire, Salvage Logging, and Occupancy of Nesting Territories by Northern Spotted Owls. The Journal of Wildlife Management 77(4):672–688; 2013; DOI: 10.1002/jwmg.523 ("Timbered Rock had a 64% reduction in site occupancy following wildfire (2003–2006) in contrast to a 25% reduction in site occupancy at South Cascades during the same time period. This suggested that the combined effects of habitat disturbances due to wildfire and subsequent salvage logging on private lands negatively affected site occupancy by spotted owls. In our second analysis, we investigated the relationship between wildfire, salvage logging, and occupancy of spotted owl territories at the Biscuit, Quartz, and Timbered Rock burns from 2003 to 2006. Extinction probabilities increased as the combined area of early seral forests, high severity burn, and salvage logging increased within the core nesting areas.")

VII. SALVAGE LOGGING WILL INCREASE FIRE HAZARD AND IS INCOMPATIBLE WITH FUEL MANAGEMENT OBJECTIVES

BLM should avoid salvage logging and replanting because it increases fire hazard by moving small hazardous fuels from the canopy to the ground where they are more available for combustion and replanting creates a dense continuous fuel profile that is conducive to fire severity and fire spread.

The DEIS needs to disclose that salvage logging will increase fire hazard, e.g.:

> "The slash created by the harvest and fuels treatments that is left on the ground for site protection and future site productivity, would create a short term (zero - eight years) fire hazard. The fuel-bed created by these treatments would be, in large part, comprised of material in the smaller size classes. These fuels would contribute to the flammability and continuity of fuels on a local level, as well as across the landscape. Under good burning conditions, fires burning in these slash fuel types have the potential to spread rapidly and extensively."

Bitterroot NF Burned Area Recovery DEIS, p. 3-12.

> "There's no science that demonstrates re-burn potential in areas where there is downed wood or decayed wood."

Craig Bobzien, Bitterroot NF Acting Supervisor (Missoula Independent, July 19, 2001)

> "We found no studies documenting a reduction in fire intensity in a stand that had previously burned and then been logged."

Environmental Effects of Postfire Logging (USDA Forest Service, 2000)

> "[We] are aware of no evidence supporting the contention that leaving large dead wood material significantly increases the probability of reburn."

Wildfire and Salvage Logging (Beschta, et al., Oregon State University, 1995)

> "The removal of large, merchantable trees from forests does not reduce fire risk and may, in fact, increase such risk."

Dept. of Agriculture and Interior, Report to the President (September 2000)

The best available science indicates that salvage logging increases small fuels that are most hazardous, and reduces large wood which is most valuable to wildlife.

> Our study examined fuel succession patterns by surveying downed woody fuels across a chronosequence of dry coniferous forest stands that burned with high fire severity (95–100% overstory tree mortality) within mixed- and high-severity wildfires in eastern Washington and Oregon, USA, between 1970 and 2007. We sampled forests in which ponderosa pine (*Pinus ponderosa*) and Douglas-fir (*Pseudotsuga menziesii*) are the dominant early-seral tree species … Relative to unlogged stands, post-fire logging initially increased surface woody fuel loads, increasing small diameter fuel loads by up to 2.1 Mg/ha during the first 5 years after fire and increasing medium diameter fuel loads by up to 5.8 Mg/ha during the first 7 years after fire. Logging subsequently reduced surface woody fuel loads, reducing large diameter fuel loads by up

> to 53 Mg/ha between 6 and 39 years after wildfire … The initial pulse of elevated surface fuels in logged stands was expected under our first hypothesis. Post-fire logging transfers woody debris in tree branches and tops from the canopies of fire-killed trees to the forest floor, producing well-documented conditions of higher surface woody fuels in logged stands than in unlogged stands in the first 1–4 years following logging (Donato et al., 2006, 2013; McIver and Ottmar, 2007; Monsanto and Agee, 2008; Keyser et al., 2009). Higher amounts of surface woody fuels – especially small and medium diameter woody fuels – can increase short-term fire hazards in logged stands by increasing potential rate of spread and fire-line intensity … Post-fire logging was most effective for reducing large diameter surface fuels, consistent with our second hypothesis. By removing tree boles, post-fire logging reduced maximum large diameter fuel loadings and produced a long period of reduced large diameter fuels, including both sound and rotten fuels. Although large diameter fuels may contribute little to fire spread rates (Hyde et al., 2011) and are typically disregarded in fire behavior modeling ….

David W. Peterson, Erich K. Dodson, Richy J. Harrod 2015. Post-fire logging reduces surface woody fuels up to four decades following wildfire. Forest Ecology and Management 338 (2015) 84–91.
http://www.firescience.gov/projects/06-3-4-16/project/06-3-4-16_Peterson_et_al_-_2015_-_FEM_-_post-fire_logging_and_fuels.pdf. This study showed that salvage logging is most effective at reducing large fuels, which contribute least to fire hazard, but the study strangely failed to consider the effect on habitat. Reducing large wood for 40 years or more will have a significant adverse effect on wildlife habitat. It s also notable that this study focuses on fuels, but failed to note whether any of the numerous fire areas they looked at across Oregon and Washington had actually reburned. Studies that have looked at this issue, show that the risk of reburn (with or without salvage logging) is small, while the risk to wildlife from salvage logging is great.

Similar results were found in a "NecroDynamics" model that looked at 7 fires in the eastern slopes of the Oregon Cascades.

> Salvage logging immediately increased surface fine woody fuel loadings by 160–237% above maximum loadings observed in unmanipulated stands, and were higher during the initial 18–22 years post-fire … [O]ur modeling results suggest salvage logging has mixed effects on reducing hazardous fuel conditions since it increases fine woody fuel loadings and decreases coarse woody fuel loadings. … [P]rescriptions can be altered. For example, [to] retain a higher abundance of snags which would reduce the magnitude of difference in fine woody fuels between salvaged and unmanipulated stands during early in post-fire succession …. Although salvage logging reduces coarse woody fuel loadings, alone it does not mitigate re-burn hazard because it increases fine woody fuel loadings …. Additionally, intensive reforestation typically substitutes conifer biomass for shrub biomass, limiting hazardous fuels reduction unless additional efforts are employed … Understory woody vegetation reestablishes rapidly in these dry-mixed conifer forests (Dunn and Bailey, in press) and can be a highly-flammable fuel layer (Weatherspoon and Skinner, 1995), as well as a source of post-fire fine woody fuels when shrub crowns die (Table 4). This suggests salvage logging alone will not mitigate contributions to re-burn hazard from dead biological legacies when the temporal dynamics of multiple fuelbeds

(e.g. fine woody fuels, coarse woody fuels, and regenerating vegetation) are evaluated. R … Salvage logging to enhance ecosystem resilience may not be appropriate if multiple ecosystem functions and resources are considered, including; coarse wood use by wildlife (Cahall and Hayes, 2009; Hutto, 1995; Fontaine et al., 2009; Saab et al., 2005), functional attributes of early seral vegetation (Swanson et al., 2010), compounding effects on soil and nutrient pools (Brais et al., 2000; Triska and Cromack, 1980) and reduced water and carbon storage (Harmon et al., 1986).

Christopher J. Dunn, John D. Bailey 2015. Modeling the direct effects of salvage logging on long-term temporal fuel dynamics in dry-mixed conifer forests. Forest Ecology and Management 341 (2015) 93–109. http://www.sierraforestlegacy.org/Resources/Conservation/FireForestEcology/SalvageLoggingScience/Dunn&Bailey2015.pdf The authors suggested modifying salvage logging prescriptions to retain more snags, which would help retain fine fuels in the canopy longer and reduce the amount of fine fuels that are moved from the canopy to the ground.

A study of the portions of the Biscuit fire that were previously burned by wildfire, reveals that salvage logging did not reduce the severity of subsequent fires, and in fact salvage logging appeared to increase the severity of subsequent wildfires. See Jonathan R. Thompson, Thomas A. Spies, and Lisa M. Ganio. 2007. **Reburn severity in managed and unmanaged vegetation in a large wildfire.** Proceedings of the National Academy of Sciences. *PNAS* published online Jun 11, 2007. http://www.fs.fed.us/pnw/pubs/journals/pnw_2007_thompson001.pdf ("In places that burned with high severity in the Silver Fire, areas that were salvage-logged and planted burned with even higher severity than comparable unmanaged areas.") http://www.fs.fed.us/pnw/research/PNAS_Biscuit_Author_Comments_PNW.doc. This represents significant new information about salvage logging. ("Some, including forest scientists, would have expected fire severity to be lower in the logged and planted sites, where large wood was removed, broadcast burning done to reduce fine surface fuels, and some vegetation management conducted possibly reducing the cover of flammable shrubs. That our findings were the opposite of this expectation indicates that the large diameter wood is not a major factor in flammability …").

A recent scientific study scientific study of post-fire logging (McIver and Ottmar 2007) showed that salvage logging causes a four-fold increase in fine fuels and that increase can last for 15 years. Fine fuels tend to cause wildfires to rapidly spread which is more likely to kill young trees and set back forest recovery. Unlogged fire areas (the controls) had lower levels of fine fuels but had higher levels of large fuels. Large fuels do not tend to exacerbate the spread of fire but they can heat the soil. However, soil heating is a patchy phenomena that forests have evolved with and can tolerate. Retaining the large wood is also important for wildlife habitat and soil conservation. The scientific consensus in the fuel management literature is that it is more important to control small fuels. J.D. McIver, and R. Ottmar. 2007. Fuel mass and stand structure after post-fire logging of a severely burned ponderosa pine forest in northeastern Oregon. Forest Ecology and Management. Volume 238, Issues 1-3 , 30 January 2007, Pages 268-279. http://www.sierraforestlegacy.org/Resources/Conservation/FireForestEcology/SalvageLoggingScience/Salvage-McIver07.pdf

Donato looked at the effects of salvage logging after the Biscuit fire and found that—

> Postfire logging significantly increased both fine and coarse downed woody fuel loads (Fig. 1B). This pulse was comprised of unmerchantable material (e.g., branches), and far exceeded expectations for postfire logging-generated fuel
> loads (5, 6). In terms of short-term fire risk, a reburn in logged stands would likely exhibit elevated rates of fire spread, fireline intensity and soil heating impacts (7). Postfire logging alone was notably incongruent with fuel reduction goals. Fuel reduction treatments (prescribed burning or mechanical removal) are frequently intended following postfire logging, including in the Biscuit plan, but
> resources are often not allocated to complete them (8). Our study underscores that, after logging, mitigation of short-term fire risk is not possible without subsequent fuel reduction treatments.

D. C. Donato, J. B. Fontaine, J. L. Campbell, W. D. Robinson, J. B. Kauffman, B. E. Law. Post-Wildfire Logging Hinders Regeneration and Increases Fire Risk. www.sciencexpress.org. 5 January 2006.

The 1987 Bland Mountain fire burned east of Canyonville and was heavily salvage logged. The same area then reburned in 2004 with high fire intensity. Salvage logging did not appear to save these plantations from intense fire, in fact, the removal of large logs and dense replanting may have made the fire more intense. One fact is unquestionable, that is that fire hazard is high in young plantations even when they are salvaged. Salvage logging does nothing to address this fact, and may in fact lead to increased density of conifer vegetation types that are more flammable than the mixed conifer-broadleaf vegetation types that may be less flammable.

The NEPA analysis asserts that leaving large numbers of snags is unsafe and the NEPA document describes an undesirable scenario with respect to the no action and action alternatives, but the NEPA document must acknowledge the fire risks associated with salvage logging including: (a) salvage logging will remove most of the largest logs that least prone to burn (because large logs hold the most water the longest and they have relatively high ratios of volume to surface area), (b) salvage logging leave behind almost all of the smallest material which is most prone to drying and burning (e.g., relatively low ratio of volume to surface area), (c) the proposed action may lop and scatter the tops of large trees that are too big for the ground-based harvest machinery, (d) salvage logging equipment and workers could start fires, (e) increased human access increases the risk of human caused ignition, (f) the replanting will create a fuel load that is dense, uniform, extensive, volatile, and close to the ground (During an extreme weather conditions this is one of the most extreme fire hazards in the forest).

There is little empirical support for the idea that salvage logging reduces the intensity or severity of subsequent fire. Recent data show an actual increase in fire severity where post-fire logging had occurred. McIver, James D.; Starr, Lynn; [Technical Editors] 2000. Environmental effects of postfire logging: literature review and annotated bibliography Gen. Tech. Rep. PNW-GTR-486. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 72 p. http://www.fs.fed.us/pnw/pubs/gtr486.pdf. Harma K., and P. Morrison. 2002. Analysis of Vegetation Mortality and Prior Landscape Condition, 2002 Biscuit Fire

Complex. Pacific Biodiversity Institute.
http://web.archive.org/web/20060518211529/http://www.siskiyou.org/issues/pbivegetative.pdf
Dennis C. Odion, Evan J. Frost, James R. Strittholt, Hong Jiang, Dominick A. Dellasala§, And Max A. Moritz. 2004. Patterns of Fire Severity and Forest Conditions in the Western Klamath Mountains, California. Conservation Biology. Volume 18 Issue 4 Page 927 - August 2004. http://www.blackwell-synergy.com/links/doi/10.1111/j.1523-1739.2004.00493.x.

Salvage typically removes the largest logs that act as water "reservoirs" and are least prone to drying. *See* Amaranthus, M.P.; Parrish, D.S.; and D.A. Perry. 1989. Decaying Logs as Moisture Reservoirs After Drought and Wildfire. In: Alexander, E.B. (ed.) Proceedings of Watershed '89: Conference on the Stewardship of Soil, Air, and Water Resources. USDA-FS Alaska Region. RIO-MB-77. p. 191-194. This study found that large down logs in a post-fire landscape contain 25 times more moisture than the surrounding soil. While the authors recommended preventing large accumulations of "woody residue" (which the author described as very small diameter material--branches, twigs, etc.), they also recommended leaving down logs after fires to PREVENT future fire severity. They concluded that, "When forest managers are analyzing for fire risk, they should take into account the high water content of fallen logs during the period in which wildfire potential is greatest... Fallen trees, in a range of decay classes, therefore provide a long-term reservoir of moisture. A continuous supply of woody material left on the forest floor, not only protects the productive potential of the forest soil, but also provides a sanctuary for ectomycorrhizae and a significant source of moisture in the event of prolonged drought or wildfire." The study was conducted in the Klamath region in an area with roughly 40 inches of annual rainfall. It was published in 1989 in Proceedings of Watershed '89: a conference on the stewardship of soil, air and water resources. USDA Forest Service, Alaska Region: pp. 191-194 (1989).

VIII. SALVAGE LOGGING IS INCOMPATIBLE WITH COMMUNITY STABILITY

The DEIS admits that the timber industry is inherently volatile and timber production causes community instability. Salvage logging amplifies these adverse effects by creating unpredictable temporary pulses in log supply.

The DEIS (p 277) assumed that salvage logging would occur at the rate of 359 acres per year. This is misleading because fires do not occur in a steady rate over time. This are highly episodic, with some years producing few wildfires and other years producing many thousands of acres of wildfires. Salvage logging would likely following this episodic, boom-bust pattern. The DEIS did not disclose this disruptive effect on community stability.

ROADS, TRANSPORTATION, AND TRAVEL MANAGEMENT

Approximately 30 percent of the [BLM] road mileage is in fair to poor condition, primarily due to depleted surfacing aggregate and worn-out minor culverts. Currently the deferred maintenance backlog exceeds $300 million.

All of the BLM developed action alternatives call for increasing the size of the transportation network[233] despite the fact that the BLM already has a $317 million-dollar deferred road maintenance backlog of which $127 million is within the Medford District. DEIS at 646. Hence the range of action alternatives is arbitrarily narrow and excludes consideration of a reasonable action alternative that would avoid new road construction.

Additionally, the proposed new road construction is likely to have disproportionately large impacts on watershed and wildlife values. As stated on page 317 of the DEIS, "within the sediment delivery distance (200 feet), newly constructed roads would primarily be constructed to provide access for forest thinning within the riparian reserves" thereby harming water quality and terrestrial wildlife habitat connectivity. Already 36% of the 14,330 miles of inventoried BLM logging roads (that the agency cannot afford to maintain to standard) are located within 200' feet of streams. DEIS page 314. Every action alternative will contribute to the road maintenance backlog to the detriment of aquatic and wildlife objectives and values.

As indicated on page 650 of the DEIS, the Medford District will be disproportionately impacted by the BLM's proposal to increase the size of the existing transportation system. The Medford District has be far the most projected new road construction to access timber harvest with the lowest comparative volume per acre. This strategy undercuts the sustainable harvest mandate of the O&C Act and the stated purpose of sustainable forest production for the RMP Revisions.

Please note that the BLM is deferring transportation management planning and analysis of environmental and social effects to a hypothetical future NEPA planning process[234] while preparing to authorize a significant increase in the size and impacts of its road system in this planning process. NEPA does not permit such an approach.

I. BLM MUST PROVIDE ADDITIONAL INFORMATION WHEN DEFERRING TRAVEL PLANNING DECISIONS

We are concerned that the Draft RMP does not go far enough to set the legal existing footprint of travel routes and curtail additional route proliferation while the travel planning process is in deferment. BLM's Travel and Transportation Manual (Manual 1626) requires BLM to complete certain tasks through the RMP if it is deferring travel planning, as it is here. Among these required tasks include producing a map of the known network of transportation linear features and defining interim management objectives for areas where route designations were not completed concurrent with the RMP.[235] According to both the TMP Manual and Handbook, delineating travel networks can be deferred for up to 5 years after signing the Record of Decision for the RMP.[236] However, BLM must also come up with an action plan and planning schedule to indicate areas that will have travel planning completed concurrently with the RMP process and which areas will be deferred.[237]

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[233] DEIS at 648.
[234] DEIS at 636.
[235] BLM Manual 1626.06(B)(2).
[236] BLM Manual 1626.06(B)(3); BLM Handbook 8342(I)(C)(ii).
[237] BLM Handbook 8342(IV)(B).

We appreciate the work that has been completed in Appendix P of the Draft RMP entitled "Off-highway Vehicle Management Guidelines." The Draft RMP explicitly states that BLM developed these guidelines consistent with BLM Handbook H-8342. We acknowledge that several of the guidelines of Handbook H-8342 have been met for a deferred travel plan, there are some outstanding measures that have yet to be taken. We urge BLM to incorporate the following documentation and information in the RMP:

II. BLM SHOULD MAP THE CURRENT SYSTEM OF AUTHORIZED EXISTING TRAVEL ROUTES.

BLM Handbook 8342 states that BLM must assess the current ground transportation linear feature database during the pre-planning stage for the RMP since it is essential that that a credible baseline inventory is available for eventual TMP efforts and to decide which areas are higher priority for designating routes.[238] Thus, even though BLM can defer designation of a travel network, it still must document the current system of existing authorized routes now, during the RMP stage. Appendix P of the Draft RMP states that BLM is "*currently working on an inventory of all user-created motorized and non-motorized routes within the decision area . . . as a baseline to guide future implementation-level route designations within the areas that are designated "Limited to Existing Routes."* [239](emphasis added). The Draft RMP goes on to state that *"[r]ecreation routes (authorized and unauthorized) have been created in response to demand for trail-based recreation*."[240]

We encourage gathering inventory data on all routes, including user-created and unauthorized, for the purposes of knowing what exists on the ground. However, BLM should not be adding user-created or unauthorized routes to its baseline inventory maps of the existing travel network as these routes were not authorized by the agency. The baseline route inventory should only include those that were legally created or authorized by the agency and all other routes should be slated for closure and rehabilitation.

III. BLM SHOULD SET CRITERIA FOR PRIORITIZING AREAS FOR TRAVEL PLANNING AND PROVIDE A CLEAR PLANNING SCHEDULE.

Handbook 8342 mentions that BLM should consider completing certain units for travel planning during the RMP process, such as smaller areas or sub-units that have sufficient travel and transportation information, areas that are most heavily used, or areas that have existing social conflicts, resource concerns, or a defined need for route definition or development for administrative, public access or other needs first.[241] The Handbook also states that RMPs should "provide a clear planning sequence, including public process (focusing on user groups and stakeholders), initial route selection criteria, and constraints for subsequent road and trail selection and identification." [242]

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[238] BLM Handbook 8342(IV)(A).
[239] DEIS at 1377.
[240] Id.
[241] BLM Handbook 8342(IV)(B).
[242] BLM Handbook 8342(IV)(H)(iv)(2).

While the Draft RMP describes the process for selecting a final road and trail network, it does not set areas that should be prioritized for travel planning after the ROD is signed. The Draft RMP also does not provide a clear planning sequence or schedule for completing travel planning for the planning area within 5 years of signing the ROD. Setting criteria, priority areas and a schedule for completion will provide both the agency and the public with the expectations that travel planning will occur in a reasonable and timely fashion, in addition to following the policy guidance of BLM Handbook 8342.

One good example of setting a schedule for deferred travel planning at the RMP level is in the Proposed RMP for the Lander Field Office. In the Lander Proposed RMP, Appendix W, Table W.1 sets forth priority ranking, timeframes for completion and interim and final restrictions for each travel management planning zone. This is an appropriate approach to deferred travel planning that BLM should adopt in this RMP.

BLM also has broad authority to close areas in the interim to protect public lands and resources.[243] In addition, BLM must immediately close any areas where the agency finds that off-road vehicles are or will cause considerable adverse effects upon natural or cultural resources.[244] BLM has policy guidance (IM 2013-035) that describes how RMPs and TMPs should address temporary closures including defining thresholds for when ORV related closures will take place. BLM should issue temporary closures for any area where ORVs are currently harming or may harm natural or cultural resources in the interim period before BLM can designate the appropriate travel network.

IV. BLM SHOULD GATHER INVENTORY DATA FROM THE PUBLIC RELATED TO NON-MOTORIZED TRAVEL ROUTES.

Handbook 8342 provides that the RMP should *"[o]utline additional data needs and a strategy for collection."*[245] *In addition, the Handbook states that "[i]t is essential that the BLM identify all existing routes to the extent feasible*." [246]

Historically, non-motorized trails have been an underrepresented linear feature through BLM travel planning. The same is true with considering non-motorized recreational experiences. However, BLM must ensure that it is incorporating all non-motorized trail data from the public. In order to do so, BLM should gather as much data from the public on non-motorized trails as possible including trail location, use, time of use and compatibility with other uses. BLM should make clear in its data calls that data should be submitted in line with the step-by-step process outlined in *BLM Technical Reference 9113-1, Planning and Conducting Route Inventories.*

The following guidance set out in BLM Handbook 8342 provides additional considerations for gathering data from non-motorized users of the public lands in the decision area:

[243] 43 C.F.R. § 8364.1.
[244] 43 C.F.R. § 8341.2.
[245] BLM Handbook 8342(IV)(H)(iv)(1).
[246] BLM Handbook 8342(V)(D).

While the BLM should collect as much relevant information as possible during the RMP planning process, the data collection should be informed and guided by the issues and concerns identified by the ID team and through public scoping. Transportation data at the RMP level may tend to overlook the most recently created routes and fail to identify trails to a greater degree than roads. Input and collaboration with trail user groups, research through guidebooks and online trail information sources may be helpful in identifying areas where additional field data collection is important. Areas that are important local or regional destinations for trail use, or where dispersed recreation activities are highly popular (e.g., rockhounding) may require an interactive approach to data collection and public review of the transportation inventory.

The importance of making effective use of GIS technology cannot be overemphasized. For example, GIS can be utilized in the public involvement process to allow the public to have an interactive interface with the route data being presented. This can greatly facilitate the public's ability to understand and comment on the accuracy of the data that will be evaluated for possible inclusion in the designated route network (see Appendix 9 for examples of how GIS can facilitate the TTM process.)

Recommendations: BLM must map and document the existing authorized route system as of the date of this RMP and clarify that user-created or unauthorized routes will not be considered as part of the baseline inventory. BLM should prioritize areas for comprehensive travel planning with interim closures and restrictions and specific timeframes for completion, no later than 5 years from the signing of the ROD. BLM should gather inventory data from the public related to non-motorized travel routes to inform the travel planning process.

V. BLM HAS A DUTY TO MINIMIZE IMPACTS OF ROUTE DESIGNATIONS.

In response to the growing use of ORVs and corresponding environmental damage, Presidents Nixon and Carter issued executive orders mandating that BLM only allow ORV use on the public lands if certain conditions were met.[247] Pursuant to those orders, BLM regulations require that designated ORV "areas and trails shall be located:

(1) "to minimize damage to soil, watershed, vegetation, air, or other resources of the public lands, and to prevent impairment of wilderness suitability;"
(2) "to minimize harassment of wildlife or significant disruption of wildlife habitats;" and
(3) "to minimize conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors."[248]

[247] Exec. Order No. 11,646, 37 Fed. Reg. 2877 (Feb. 9, 1972); Exec. Order No. 11,989, 42 Fed. Reg. 26,959. May 25, 1977.
[248] 43 C.F.R. § 8342.1(a)-(c); *see also* Exec. Order 11,644, § 3(a) (similar language).

BLM's Travel Management Manual 1626 states that BLM must pay particular attention to thoroughly documenting how the minimization criteria was considered in making both ORV designations (Manual 1626.06(A)(2)(a)) and route designations (Manual 1626.06(B)).

Together these mandates impose a rigorous process and high threshold for BLM to designate OHV areas and travel routes in the planning area. BLM must carefully assess and document how *each* designated area or route will: (1) minimize impacts to the soil, watershed, vegetation, air, wilderness or other resources, and (2) minimize conflicts between motorized users and the visitors engaging in quiet, non-motorized forms of recreation. BLM must be sure to address those and other impacts through careful application of the minimization criteria on a route-by-route basis.[249]

The Draft RMP provides that *"[t]he BLM applied designation criteria in 43CFR 8342 when designating lands as open, limited, or closed to off-road vehicles. All designations are based on the protection of the resources of the public lands, the promotion of the safety of all the users of the public lands, and the minimization of conflicts among various uses of the public lands.*" [250] However, the Draft RMP provides no information on how the criteria were applied.

A number of federal courts have held that BLM and other federal land management agencies must *apply* these so-called "minimization criteria" to area and trail designations and *articulate* a reasonable basis for concluding that the designation minimizes impacts to important resources. For example, in addressing a BLM planning process, one federal court held that *"[a]cknowledging the minimization standards is not the same as applying them.*" [251] Further, BLM must provide sufficient information "*for someone other than the BLM to know why or how the routes were chosen.*" [252] "[*r]ecord does not demonstrate whether or how [the agency] implemented and incorporated the minimization criteria*" (under analogous Forest Service regulations);[253] (detailed survey and inventory of routes inadequate where "there is nothing in the record to show that the minimization criteria were in fact applied when OHV routes were designated").

The Ninth Circuit Court of Appeals recently struck down a plan for failing to properly apply the minimization criteria. [254] In *WildEarth Guardians*, the Ninth Circuit held that, *"[w]hat is required is that the Forest Service document how it evaluated and applied the data on an area-by-area basis with the objective of minimizing impacts*." [255] "Moreover, as various district courts have held, "*mere consideration of the minimization criteria is not sufficient to comply with the regulation."*[256]

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[249] *See, e.g.*, *SUWA*, 981 F. Supp. 2d at 1105 (BLM must apply minimization criteria "at the route specific level" to assess "the effects of route designations," and must provide sufficient information "for someone other than the BLM to know why or how the routes were chosen").
[250] DEIS at 638.
[251] *S. Utah Wilderness Alliance v. Burke*, 981 F. Supp. 2d 1099, 1104-06 (D. Utah 2013).
[252] *Id.* at 1105. *See also, Idaho Conservation League v. Guzman*, 766 F. Supp. 2d 1056, 1071-74 (D. Idaho 2011)
[253] *Ctr. for Biological Diversity v. BLM*, 746 F. Supp. 2d 1055, 1071-81 (N.D. Cal. 2009)
[254] *WildEarth Guardians v. USFS*, No. 12-35434 (9th Cir. June 22, 2015).
[255] *Id*., slip op. at 24.
[256] *Id*., slip op. at 25.

Thus, it is unequivocally clear that BLM cannot designate OHV areas or routes without applying the minimization criteria and documenting how it was applied for individual designations. The draft has nothing to show how the criteria was applied to the decision area.

***Requested Remedy*:** BLM must design OHV areas in the plan that minimizes conflicts among users and damage to natural resources. Areas must be evaluated to ensure that they are located and bounded to meet the minimization criteria for purposes of BLM management and enforcement. We request that BLM apply the minimization criteria by showing how it is specifically minimizing impacts to resources and conflicts to other uses for each route as required by law.

VI. BLM MUST PROVIDE A RANGE OF ALTERNATIVES FOR OHV AREA DESIGNATIONS.

The range of alternatives is "*the heart of the environmental impact statement*."[257] NEPA requires BLM to "*rigorously explore and objectively evaluate*" a range of alternatives to proposed federal actions.[258] "*An agency must look at every reasonable alternative, with the range dictated by the nature and scope of the proposed action.*" [259]An agency violates NEPA by failing to "*rigorously explore and objectively evaluate all reasonable alternatives*" to the proposed action.[260] This evaluation extends to considering more environmentally protective alternatives and mitigation measures.[261]

In regards to OHV area designations, BLM has not met its obligation to consider a reasonable range of alternatives. As stated in the Draft RMP, *"[e]ven under the most restrictive alternative for OHV use (Alternative C), the BLM would close less than 1 percent of BLM-administered lands in the decision area to OHV use.*"[262] This is the same analysis that was overturned by the district court and upheld by the 9th Circuit Court of Appeals five years ago for the BLM RMP for Southeastern Oregon. The 9th Circuit held:

The ORV analysis is also flawed . . . It considered no alternative that proposed closing more than a fraction of the planning area to ORV use, as opposed to merely designating areas for "limited" use. As ONDA observes, the BLM did not consider any alternative that would have closed more than 0.77% of the planning area to ORVs. Indeed, every alternative would have reduced the extent of closed areas from that in effect previously. It is precisely this sort of "uncritical[ ]" privileging of one form of use over another that we have held violates NEPA. Closures, not just "limited" designations, must be considered to comply with NEPA.

Or. Natural Desert Ass'n. v. BLM, 625 F.3d 1092, 1123-1124 (9th Cir. Or. 2010) (citations omitted).

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[257] 40 C.F.R. § 1502.14.
[258] *See* 40 C.F.R. §§ 1502.14(a), 1508.25(c).
[259] *Nw. Envtl. Defense Center v. Bonneville Power Admin*., 117 F.3d 1520, 1538 (9th Cir. 1997).
[260] *City of Tenakee Springs v. Clough*, 915 F.2d 1308, 1310 (9th Cir. 1990) (quoting 40 C.F.R. § 1502.14).
[261] *See, e.g., Kootenai Tribe of Idaho v. Veneman*, 313 F.3d 1094, 1122–23 (9th Cir. 2002) (and cases cited therein).
[262] DEIS at 640.

The BLM nonetheless maintains that its analysis of ORV designations is adequate because it considered a wide range of use allocations between open and limited ORV designations, and because it could implement emergency closures if necessary. We disagree. Limited ORV use is simply not identical to no ORV use. A limited designation, even with the possibility of closure, does not provide protection equivalent to a straightforward closure.[263]

Here, as in the RMP for Southeastern Oregon, the BLM has not considered closing more than 0.7% of the planning area to OHV use.[264] This does not meet BLM's legal obligation to consider a reasonable range of alternatives as discussed by the 9th Circuit in the case cited above.

Recommendation: BLM must consider alternatives that consider closing more than a very small fraction of the planning area to OHV use.

SOCIOECONOMICS

The draft RMP and DEIS are based on flawed economic reasoning and analysis that attempt to justify an expanded timber sale program that creates more economic harm than good.

The most significant economic and social effects of the preferred RMP alternative (Alternative B) will be associated with a 60% increase in timber harvests over current levels at a time when markets are severely distorted by negative externalities and logging subsidies and affected communities are evolving away from an unhealthy dependence on the timber industry.[265] The DEIS fails to provide an explanation of why the increase in logging proposed under alternatives A, B, and C is economically justified and why the no harvest and natural selection alternatives were rejected when they represent the only alternatives that can fulfill statutory sideboards that specify under what conditions BLM timber should be offered for sale.

I. BLM'S NEEDS AN ECONOMICALLY RATIONAL TIMBER SALE PROGRAM.

The BLM has misconstrued its legal mandate as one that requires an increase in logging. While there are dozens of statutes, regulations, and executive orders that have bearing on management of western Oregon BLM lands the controlling authority with respect to timber supply is the Oregon and California Railroad and Coos Bay Wagon Road Grant Lands Act (O&C Act; 43 U.S.C. 1181a et seq.).

In pertinent part, the O&C Act requires that western Oregon O&C lands be managed "for permanent forest production, and the timber thereon shall be sold, cut, and removed in conformity with the princip[le] of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities."[266] The O&C Act also provides that "timber from said lands in an amount not less than . . . the

[263] *Or. Natural Desert Ass'n. v. BLM*, 625 F.3d 1092, 1123-1124 (9th Cir. Or. 2010) (citations omitted).
[264] Draft RMP, Table 3-220, p. 639
[265] The timber harvest baseline in the DEIS is 144.3 million board feet (mmbf) in 2012. Alternative B, the preferred alternative, would increase this cut to 230.2 mmbf.
[266] 43 U.S.C. § 1181a.

annual sustained yield capacity . . . shall be sold annually, or so much thereof as can be sold at reasonable prices on a normal market."[267]

BLM has invoked this legal mandate as the primary purpose and need for the RMP revision process. In particular, the driving force behind the RMP revision and the proposed increase in timber harvest is to respond to what the agency has determined to be a "substantial, long-term departure from the timber management outcomes predicted under the 1995 RMPs." The 1995 RMP estimated a sustained yield allowable sale quantity, and current harvest levels are roughly 1/3 of that. However, there is nothing in the O&C Act that requires the BLM to actually sell that amount of timber each year. Indeed, the O&C Act puts significant conditions on BLM's timber sale program: (1) it must be offered at reasonable prices; (2) under normal market conditions, and (3) to achieve a variety of purposes, including community stability. If none of these conditions can be met, then no timber sale program much less an expanded one need be implemented. Against this backdrop, it is clear that the proposed increase in logging cannot be justified.

II. REASONABLE PRICES PRECLUDE ANY ADDITIONAL TIMBER SALES DURING THIS PLANNING CYCLE

In developing the RMP and DEIS, the BLM has not discussed the process the agency intends to use to ensure that when offered for sale, its timber receives reasonable prices. While current practice is to offer timber for sale at or below a fair market value based on current market prices for comparable timber,[268] there is nothing to suggest that this price setting method is reasonable, especially when the agency has at its disposal other methods for determining fair market value that are designed to cover all costs of production from the seller's (BLM) perspective. The issue of sales below fair market value from the seller's perspective is an issue that has plagued the agency for decades, and one that could be remedied in this planning cycle. As stated succinctly in 1997 in a PEER white paper on the subject, "[b]ecause no seller would perpetually sell a product for less than its cost, this suggests that Congress intended that BLM appraisals insure cost-recovery when the fair market value of timber is estimated."[269]

For a private entity a reasonable price that covers the costs of production includes direct material costs, labor costs, sale and administration costs, and provisions for markup to achieve a desired internal rate of return on investment plus markup for profits. This is simply known as full cost pricing. But the BLM is not a private firm. It also bears responsibility for the economic, social and environmental costs it may pass on to society – negative externalities. OMB Circular A-94 ("General Principles" Section 5) is explicit in this requirement for federal programs:

> Analyses should include comprehensive estimates of the expected benefits and costs to *society* based on established definitions and practices for program and policy evaluation. Social net benefits, and not the benefits and costs to the Federal Government, should be the basis for evaluating government programs or policies that have effects on private citizens or other levels of government. Social benefits and costs can differ from private

[267] Id.
[268] DEIS at 479.
[269] Public Employees for Environmental Responsibility (PEER). 1997. Land of No Return$. Bankruptcy of the BLM Public Domain Forestry Program. White Paper Number 13. Hood River, OR: PEER.

> benefits and costs as measured in the marketplace because of imperfections arising from: (i) *external economies or diseconomies* where actions by one party impose benefits or costs on other groups that are not compensated in the market place; (ii) monopoly power that distorts the relationship between marginal costs and market prices; and (iii) taxes or subsidies (emphasis in original).[270]

The Department of Interior (DOI) has fully embraced OMB's mandate to consider negative externalities in planning decisions:

> *In many cases the benefits provided by the raw materials and products that flow from DOI managed lands, as well as the production, distribution and use of these products, also may cause adverse effects on the environment, economy, or society. Economists typically characterize these adverse effects as* negative externalities…. *The ability to evaluate these negative externalities is an important component to strengthening the set of information available to decision makers" (emphasis in original).*[271]

To correct for the presence of negative externalities, the DOI has stated its commitment to full cost accounting to "help promote more cost-effective investments on public lands."[272] The BLM has further reinforced this mandate through an agency-wide directive to account for all of the market and non-market values affected by management activities with a strong preference for quantitative methods when certain criteria are met: (a) when significant non-market values are at risk; (b) when alternatives present a strong contrast between extractive and non-extractive uses of the land, and; (c) when the magnitude of the proposed change in management is large.[273] The draft RMP meets each of these.

In the draft RMP, there are no provisions for or even discussion of how the BLM intends to go about offsetting both the federal financial costs and negative externalities of an increased timber sale program. The range of negative externalities associated with BLM timber sales includes a wide array of costs associated with diminished recreational and commercial fish landings, sediment removal, increased flooding, loss of water quality, increased habitat restoration costs, loss of tourism revenues, and social costs of carbon emissions, to name a few.[274] The most logical way to account for these and one most consistent with market principles, DOI commitments, and BLM guidance is to incorporate these costs into minimum bid prices. The methods and sources of information needed to meet the reasonable price standard and set minimum bid prices that reflect all agency and social costs are well established, and have been

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[270] The full text of Circular A-94 is available online at: https://www.whitehouse.gov/omb/circulars_a094#6.
[271] US Department of Interior (DOI). 2012. The Department of The Interior's Economic Contributions. Fiscal Year 2011, Chapter 7 – The Externalities of DOI Activities: Moving Towards Full Cost Accounting. Washington, DC: US DOI.
[272] Id.
[273] Bureau of Land Management. 2013. Instruction Memorandum 2013-131, Change 1, attachment 1, "Economic Methods for Estimating Nonmarket Environmental Values. Accessible online at: http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2013/IM_2013-131__Ch1.print.html.
[274] *See, e.g.* Niemi, Ernie and Ed Whitelaw. 1999. Assessing Tradeoffs in Forest Management. General Technical Report PNW-GTR-403. Portland, OR: USDA Forest Service, Pacific Northwest Research Station; Talberth, John and Karyn Moskowitz. The Economic Case Against National Forest Logging. Santa Fe, NM: Forest Conservation Council and Forest Guardians.

for decades. To illustrate, consider the negative externalities associated with lost recreation value and carbon emissions and what they imply for reasonable prices of BLM timber.

The value of recreation on BLM and other public lands is typically expressed in terms of consumer surplus – or the amount people are willing to pay over and above the costs of travel, supplies, lodging, fees, and other financial outlays they make in association with particular recreation experiences. For all BLM administered lands in western Oregon, the DEIS estimates consumer surplus associated with outdoor recreation to be $222,872,000 per year ($232,676,040 in 2015 dollars).[275] Although a significant portion of this value is generated on lands allocated to Recreation Management Areas (RMA), recreation use is widely dispersed because many of those who participate in recreation activities seek access to the secluded sites and old growth forests provided by even small and isolated patches of BLM lands in an otherwise heavily logged landscape for uses such as wildlife viewing, camping, hunting, and nature study.[276] So recreation value is spread out on all BLM lands, included those allocated to timber management.

The BLM administers roughly 2.5 million acres of land. This implies that an average acre yields $93.07 in recreation related consumer surplus benefits each year. Even aged management as planned under all action alternatives destroys this recreation value since such stands are in abundance while mature and old growth forests are increasingly scarce and so substitute sites are already in short order. This is especially true because the greatest scarcities in the western Oregon region are for camping, trails, and other recreation opportunities that bring people closest to nature and provide solitude.[277] The most suitable sites for expansion of camping opportunities and trail use are in these unmanaged forests. Assuming this value is destroyed for all future years (50) in the analysis period yields an average present value cost to recreation of $2,395 per acre at a 3% discount rate. This is a cost of providing federal timber that must be factored into the BLM's determination of reasonable price, or minimum bid.

Historically, minimum bids are set close to current appraised values – roughly $300 per thousand board feet (mbf) anticipated under this RMP. An average acre of mature forest in the suitable timberland base on BLM lands in western Oregon yields roughly 46.2 mbf and so minimum bids will probably be close to $13,860 per acre.[278] Adding the recreation externality to this would boost the minimum bid needed to cover costs to $16,255 per acre or $351/mbf – an increase of 17.3%.

As another example, consider the social costs of carbon dioxide emissions (SCC) associated with logging activities. A typical acre of mature or old growth forest in the Pacific Northwest stores roughly 500 metric tons of carbon per acre.[279] The DEIS estimates 150 metric tons per acre on

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[275] DEIS at 494, Table 3-150.
[276] DS Consulting. 2013. Summary and Key Findings for the Bureau of Land Management Recreation Outreach and Public Participation of the Resource Management Plans for Western Oregon. Portland, OR: DS Consulting, Prepared for the Oregon BLM.
[277] ECONorthwest. 2015. Outdoor Recreation Scarcity and Abundance in Western Oregon: A Spatial Analysis. Portland, OR: ECONorthwest.
[278] Department of Interior. 1992. Report of the Secretary of the Interior to the Endangered Species Committee. Related to the Application by the Bureau of Land Management for Exemption from the Requirements of Section 7(a)2 of the Endangered Species Act.
[279] DellaSala, Dominick. 2015. Comments on Revised Draft CEQ Guidelines on Greenhouse Gas (GHGs) Emissions and Climate Change NEPA analysis. Ashland, OR: Geos Institute.

western Oregon BLM lands – a figure that includes clearcuts, plantations, and natural forests.[280] When logged, about half of this is released as a carbon dioxide CO^2 pollutant after accounting for the amount temporarily stored in wood products before they decay.[281] The emissions associated with a typical mature or old growth logging unit thus generates 917.5 metric tons of carbon dioxide equivalent (CO^2-e) per acre.[282] The social cost of these carbon dioxide emissions (SCC) have been well studied, and incorporated into federal agency decision making as the BLM notes in the DEIS.[283] At a SCC price of $42.77 per metric ton CO^2-e[284], this means $39,241 per acre in social costs. If the BLM minimum bid price is adjusted to offset both the social costs of carbon dioxide and the cost to recreation values it would thus have to be set at $55,496 per acre or $1,201/mbf – an increase of 400% over present minimum bid levels.

Another approach for internalizing negative externalities of logging into minimum bid requirements would be to incorporate the growing body of literature on ecosystem service values and studies on how logging affects them. This is the "lost services" approach and may present a more tractable alternative to estimating negative externalities on a case-by-case basis. For example Niemi (2015) quantified the annual ecosystem service benefits associated with provision of biological diversity (northern spotted owl habitat), water quantity, water quality, and carbon storage and then estimated the effects of an increase in industrial logging activities proposed on western Oregon BLM lands. He found that "[t]he value of these lost services likely would average at least $50,000 per acre and perhaps more than $100,000 per acre, especially on lands with large trees."[285] By the same methods used above, this would translate into minimum bid prices between 1,382/mbf and $2,465/mbf needed to offset these negative externalities.

Regardless of which approach is used – lost services or case-by-case estimation of the negative externalities associated with logging – the BLM has an obligation to incorporate this information into the design of its timber sale program so that minimum bids received reflect the true social cost of providing timber from federal land and thus reflect a reasonable price. But offering BLM timber sales at minimum bid prices of $1,200/mbf or more would be prohibitive for buyers now purchasing logs on the open market at roughly half this amount, at best. But this is a reasonable outcome, by law, since the O&C Act sets conditions on whether or not (reasonable prices and normal markets) BLM timber must be offered for sale at all. Thus, by the reasonable price standard alone, the BLM should adopt the no-harvest alternative. The DEIS and draft RMP must be revised to consider this outcome.

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[280] Calculated by multiplying the teragrams carbon figure from DEIS Table 3-23 (373.02) x 1,000,000 (metric tons per teragram) divided by the 2.5 million acres of western Oregon BLM lands.
[281] DellaSala. 2015. Note 6.
[282] Converting carbon to carbon dioxide equivalent (CO2-e) units requires multiplication by an adjustment factor of 3.67. The 500 metric tons carbon thus represents 1,835 metric tons of CO2-e. If half of this is lost to logging it thus represents a per acre emission factor of 917.5.
[283] DEIS at 483.
[284] This is the 2007 average social cost of carbon figure of $37 per metric ton CO2-e (DEIS at xx) converted into current (2015) dollars.
[285] Niemi, Ernie. 2013. Economic Value of Goods and Services Produced by the O&C Lands With and Without Industrial Logging. Eugene, OR: Natural Resource Economics.

III. NORMAL TIMBER MARKET CONDITIONS DO NOT EXIST

The second condition Congress set on the offering of timber from O&C lands is the condition that BLM only participate in "normal" markets. The concept of normal markets is a precise term for economists. It means markets that are not distorted by one or more market failures that take the form of externalities, public goods, missing markets, subsidies, monopoly power, barriers to competition, and asymmetrical information.[286] Markets for BLM timber are severely distorted by many of these market failures. The presence of negative externalities has been discussed above. In particular, each acre of BLM timber offered for sale may generate negative externalities of up to $100,000.[287]

Timber subsidies also abound. These subsidies take the form of numerous federal, state, and local government programs and policies that result in more timber being cut than would be in the absence of such programs and policies. The BLM and US Forest Service, for example, help supply timber from private lands through right of way and log haul permits that grant private logging companies unlimited use of federal roads to bring their logs to markets. The State of Oregon offers tremendous tax breaks to logging companies. In 1999, former Governor Kitzhaber rescinded the timber harvest privilege tax, which has now led to a $60 million a year shortfall in school funding. Timber companies do not have to pay property taxes at the rate most landowners pay. Instead, they pay based on what is known as "current use valuation" that translates into property taxes of just 10% of what other private landowners pay.

Another major subsidy takes the form of unemployment insurance paid by other businesses to compensate for the timber industry's failure to maintain community stability by overcutting its lands, exporting wood, and engaging in other practices harmful to labor. As noted by Niemi and Whitelaw (1999):

> *The amount of benefits paid to workers in the lumber and wood products industry often has exceeded the industry's premiums. Between 1980 and 1991, for example, the unemployment-insurance benefits paid to workers laid off from Oregon's lumber and wood products industry exceeded the total premiums paid by more than $221 million (1992 dollars).[288] Business owners in other industries, and their workers, bore the burden of making up this difference.*

The problem of missing markets is, perhaps, the greatest market failure in play with respect to BLM timber sales. While clean water, carbon storage, recreation, pollination, scenery, and biological diversity are public goods with vastly more value than timber they are not paid for because they are non-exclusive and non-rivalrous.[289] The typical results are:

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[286] Various forms of market failure are discussed in depth in most intermediate level macroeconomics courses. But a more accessible list has been compiled by Economics Online at: http://www.economicsonline.co.uk/Market_failures/Types_of_market_failure.html.

[287] Niemi, 2013, Note 21.

[288] ECONorthwest with data provided by the Oregon Employment Division. Data on file with: ECONorthwest, 99 W. Tenth, Suite 400, Eugene, OR 97401.

[289] This is also known as the public goods market failure. Public goods are goods that are non-exclusive (meaning no one can be excluded from enjoying them) and non-rivalrous (meaning one person's use does not diminish the next). Because of these characteristics, private markets cannot supply them. The outcome is that they are under-provided. For a useful synopsis, see: http://www.pitt.edu/~upjecon/MCG/MICRO/GOVT/Pubgood.html.

> *...underprovision of a good, service, or amenity relative to the efficient level of provision; excessive levels of discommodities and disamentities, relative to the efficient level; overexploitation of a resource, relative to the efficient level of exploitation; and underinvestment in the management, conservation, and productive capacity of a resource.*[290]

This is an accurate portrayal of what is occurring on Oregon's federal, state, and private timberlands. While development of missing markets in the form of payments for ecosystem services (PES) is forthcoming, the lack of PES markets at this time is one of the key explanatory factors in the dramatic overcutting of Oregon's state and private timberlands (see below) and use of techniques such as short rotation clearcutting that are so damaging to soils, watersheds, long term forest productivity, wildlife, scenery, biological diversity.[291] Adding more BLM timber to the mix in this context of missing markets is unjustified. Despite Congress's unambiguous language, the draft RMP and DEIS are silent on the entire concept of normal markets, these market failures, and how the proposed increase in logging is justified in the presence of them.

Additional timber sales will not meet the purpose of protecting watersheds, regulating stream flow, and contributing to economic stability. Congress also put constraints on BLM's timber sale program in the form of a set of purposes that a sustained yield supply of timber is supposed to serve alongside the purpose of a permanent source of timber supply. These include "protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities."[292] But the proposed increase in logging of 60% and 688 new miles of road[293] (Alternative B) runs counter to these purposes.

As demonstrated elsewhere in these comments, all remaining tracts of mature and old growth forest need protection because they are key landscape components for regulating stream flow, water quality, and water temperature and for responding to increasing scarcities of campsites, trails, and other recreation needs that depend on unlogged forests. Putting more of these stands on the chopping block is thus inconsistent with O&C Act requirements. So is the plan to build new logging roads. It is remarkable that the BLM is proposing new road construction when, in fact, forest roads in western Oregon already represent an extreme disruption of healthy watershed function.[294] The dominant effects of these high road densities on stream and riparian networks are well known and involve "alteration of routing of water, water-born chemicals, sediment, and mass movements to and through native stream networks."[295]

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[290] Randall, Alan. 1981. Resource Economics: An Economic Approach to Natural Resource and Environmental Policy. Columbus, OH: Grid Publishing.
[291] Zwick, Steve. 2010. Oregon Company Taps California Protocol to Earn More by Logging Less. Published online at Ecosystem Marketplace: http://www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page_id=7520&section=home
[292] 43 U.S.C. § 1181a.
[293] DEIS at 648.
[294] *See, e.g.*, Oregon Department of Forestry (ODF). 2000. Report of the Ad Hoc Forest Practices Advisory Committee on Salmon and Watersheds to the Oregon Board of Forestry. Section B: Forest Roads. Salem, OR: ODF.
[295] Swanson, Fred, Julia Jones, Beverly Wemple and Kai Snyder. 1999. "Roads in Forest Watersheds – Assessing Effect from a Landscape Perspective." Published in Proceedings of the Seventh Biennial Watershed Management Conference, Charles W Slaughter, editor. Water Resources Center Report No. 98. Davis, CA: University of California.

With respect to community stability, even the DEIS concedes that additional BLM timber supplies make no sense: "[b]ecause the timber industry has a long, national history of high volatility, alternatives with harvest volumes that exceed current levels are likely to introduce greater instability into local economies, based on past business cycles."[296] Thus, not a single one of the criteria Congress cited as purposes of a timber sale program on lands managed under the proposed RMP can be met through an increase in logging over current levels.

IV. OVERCUTTING ON PRIVATE LANDS DEMANDS A REDUCTION IN BLM TIMBER SALES

To the extent that BLM timber sales are offered during this planning cycle, Congress requires the timber sale program to be consistent with permanent forest production and the principle of sustained yield. In making this consistency determination, it is essential for the BLM to account for logging on non-BLM ownerships and consider how the pattern of logging on those lands relates to the demand and supply of goods and services provided by BLM lands. This duty is amplified by NEPA's requirement to take connected actions and cumulative effects into account.[297] Moreover, there is nothing in the O&C Act that limits the concepts of forest production and sustained yield to timber only. Indeed, as noted by DellaSala et al. (2005) "the O&C term 'forest production' interpreted in today's climate means more than timber volume and includes multiple natural resource objectives related to watershed health, carbon sequestration, fish and wildlife habitat, recreation, endangered species, and other values inherent to BLM lands that also contribute to community stability."[298]

In light of this, if the rate of harvest on private timberlands is unsustainable then BLM must adjust its allowable sale quantities (ASQ) calculations downward to ensure that the overall supply of timber and other goods and services from all Oregon's forestlands comes closer to a level that is commensurate with maintaining permanent forest production and the principle of sustained yield. If BLM fails to do this, then it will be exacerbating rather than countering the effects of overharvesting on lands outside its jurisdiction.

Unsustainable logging is indeed the situation in Oregon on state and private forestlands within the western Oregon BLM ownership matrix. Using a GIS dataset provided through World Resources Institute's Global Forest Watch Program[299] CSE conducted a watershed-by-watershed analysis of the rate of forest cover loss versus forest cover gain during 2000-2013.[300] Net forest cover change is a more important indicator of sustainability than volume-based measures such as growth versus removal since it is forest cover that determines the overall ability to provide a suite of ecosystem goods and services. The results indicate a significant overcutting on state and private forestlands. In particular, as compared with 2000, there are 452,364 fewer acres that meet minimum definitions (30% canopy closure of trees 5 meters in height). This is a result of forest

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[296] DEIS at 568.

[297] Connected actions include private timber harvests facilitated by BLM's programs such as road right of way and log haul permits (40 CFR § 1508.25(a)1) Cumulative impacts analysis requires consideration of non-federal actions affecting the planning area (40 CFR § 1508.7).

[298] DellaSala, Dominick, Nancy Staus and Erik Fernandez. 2005. Importance of Western Oregon BLM Lands and Reserves to Fish and Wildlife Conservation. Ashland, OR: World Wildlife Fund.

[299] Available online at www.globalforestwatch.org.

[300] Talberth, John and Erik Fernandez. 2015. Deforestation, Oregon Style. Lake Oswego, OR: Center for Sustainable Economy. Available online at:

loss (1,476,209 acres) exceeding acres of forest cover gain (1,023,845 acres). If sustained yield is measured by sustained forest cover (forest gain = forest loss) than this implies an overall rate of overcutting of 42%. In some watersheds the rate overcutting is much worse. In the McKenzie River's Quartz Creek drainage, since 2001, nearly 7,200 acres (2,913 ha) of forest cover have been lost to extensive clearcutting while only 2,576 acres (1,043 ha) have been gained through natural afforestation or reforestation – an overcutting rate of 279%.[301]

Federal timber sale planners have often adjusted ASQ to compensate for overcutting on private lands, as they should. For example, in 1991 the Lolo National Forest had to adjust its ASQ downward to compensate for "higher than anticipated" rates of logging on private industrial timberlands within its checkerboard ownership pattern.[302] The BLM should follow suit and revise the ASQ during this planning cycle to compensate for dramatic overcutting on Oregon's state and private forestlands. To compensate adequately, the ASQ should be set close to zero.

The BLM arbitrarily rejected analysis of the no-harvest and natural selection alternatives when they represent the only economically rationale choices. As the foregoing suggests, neither a continuation of nor an increase in BLM's timber sale program can be economically justified during this planning cycle. A reasonable price for BLM timber that offsets agency costs and internalizes the negative externalities of logging would too high at current market prices to attract timber sale purchasers. But the law, DOI policy, and BLM guidance all require such a reasonable price. Nor can the BLM justify its timber sale program in the face of markets that are not normal but severely distorted by negative externalities, subsidies, missing markets, and other well-known sources of market failure. Nor can the BLM demonstrate that its timber sale program meets Congressionally imposed sideboards designed to ensure that the timber sale program protects watersheds, water flow, economic stability, and recreation. Because of this, BLM's decision to reject the no harvest and natural selection alternatives is groundless.[303] Overcutting on adjacent state and private lands underscores not only the need to consider in detail, but need to select one of these reasonable alternatives.

V. REMEDIES THAT MUST APPEAR IN THE FINAL RESOURCE MANAGEMENT PLAN

To remedy these deficiencies in the DEIS's socioeconomic analysis, we request that the following:

1. A detailed explanation of the process the agency intends to use to ensure that when offered for sale, its timber receives reasonable prices that compensate for all agency costs and negative externalities.
2. A detailed assessment of the negative externalities generated by timber sales under each action alternative. As discussed above, the methods and sources of information are readily available.

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[301] Talberth, John and Catherine Koehn. 2015. The Liquidation of Forests in McKenzie's Quartz Creek, Oregon. Lake Oswego, OR: Center for Sustainable Economy. Available online at: http://sustainable-economy.org/forest-liquidation-in-quartz-creek/.

[302] Hirt, Paul W. 1994. A Conspiracy of Optimism. Management of the National Forests Since World War Two. Omaha, NE: University of Nebraska Press.

[303] DEIS at 77, 79.

3. A detailed assessment of the ecosystem service values generated by BLM forestlands in their natural state. Again, the agency has at its disposal both the methods and sources of information to do so.
4. A detailed assessment of externalities, subsidies, missing markets and other timber market failures in the planning area that distort normal market conditions. In light of these market failures, the FEIS should discuss how the final RMP offers corrections.
5. A detailed assessment of the rate of harvest on adjacent state and private forestlands and the implications this has for the relative value of goods and services from BLM lands. As part of this analysis, the BLM should discuss adjustments needed to its long term allowable sale quantity estimates (ASQ) needed to compensate for unsustainable timber harvesting on these lands and meet the goal of sustainable forest cover.
6. A detailed consideration of both the no-harvest and natural selection alternatives.

VI. TIMBER SUPPLY AND DEMAND

> *[An] upward shift in the [BLM] timber supply curve would lead to lower stumpage prices (between 1 and 9 percent) and reductions in private harvests as timberland owners adjust their harvest downwards as prices fall." -DEIS page 516.*

Downward market pressure on timber prices from increased harvesting on public lands negatively impacting private timberland owners is an inappropriate outcome from this planning process.

VII. ECONOMIC STABILITY

> *Because the timber industry has a long, national history of high volatility, alternatives with harvest volumes that exceed current levels are likely to introduce greater instability to local economies, based on past business cycles." –DEIS page 568.*

Introducing greater instability to local economies is an inappropriate outcome for BLM land management. The O&C Act specifically mandates that BLM forest management must have the objective of "contributing to the stability of local communities and industries."[304] Selecting an alternative that will increase instability in local communities will violate the O&C Act.

VIII. THE TIMBER YIELD PROJECTIONS

BLM must have a reduction factor determined to reduce to reduce modeled timber volume on lands that are at high risk for erosion and subsequent sediment pollution into streams. Similarly, timber yield must exclude salvage from riparian reserves, critical spotted owl habitat, and black-backed woodpecker breeding range located generally east of I-5.

[304] 43 USC 1181(a).

Many BLM timber stands have not been logged because the areas have low standing volume and are too steep and erosion prone for building roads. Timber yield projections need to make a large reduction in timber harvest on the Medford District due to high erosion risk lands, economics of building long risky roads for low timber volumes, and ecological risks to coho salmon. The analysis needs to be explicit (quantitative) when it creates sediment risks to coho salmon critical habitat while providing certainty for timber volumes. We believe this unanalyzed trade-off is illegal because of the ESA. Many medium and large scale mass erosion incidents will deliver sediment to streams because they are "in-channel" events and not likely to be effectively buffered by proposed riparian reserves (e.g. debris flows, stream-side slides) thus the need for full one tree protection buffers on headwater channels, erosion prone swales, unchanelled valleys and unstable erosion prone headwalls. Analysis needs to take a hard look at choosing for the outcome of reduced mass erosion with wider no cut riparian buffers since many if not most smaller streamside slides occur within a few hundred feet of the stream. Models exist for predicting mass erosion due to geology, slope and morphology (Lee Benda attachment) but these features are best determined during site specific project analysis. Nevertheless, timber yield needs to be reduced using these mass erosion models. Economics of road construction to low volume and very steep areas on the Medford District is also a limiting factor. Timber yield cannot assume all trees can be equally accessed with roads.

IX. INCREASED LOGGING ON BLM LAND WILL UNDERMINE COMMUNITY STABILITY.

The O&C Act provides that O&C lands:

> *shall be managed . . . for permanent forest production, … for the purpose of … contributing to the economic stability of local communities and industries …*

The Oregon Department of Forestry recognizes that conservation of federal lands helps provide regulatory stability for non-federal lands

> [T]he Northwest Forest Plan … serves as the conservation *anchor for the Oregon Plan for Salmon and Watersheds. The Northwest Forest Plan in turn took pressure off of private lands to provide for recovery of spotted owls, murrelets, and salmonids listed under the ESA. Our fear is that a leaner forest plan would no longer provide adjacent non-federal forest lands protection from added land use restrictions to comply with federal environmental laws.*- Roy Woo, Oregon Department of Forestry letter to Forest Service regarding new forest planning rules, 4-7-03.

BLM should not threaten regulatory stability on non-federal lands by increasing timber harvest in older forests or using controversial regeneration harvest methods.

"Because the timber industry has a long, national history of high volatility, alternatives with harvest volumes that exceed current levels are likely to introduce greater instability into local economies, based on past business cycles." DEIS (p 568).

DEIS at 472 concludes:

> *Over the long-term (1969-2007), timber-based industries nationally exhibited low or negative growth rates with high volatility compared with the United States economy as a*

whole, indicating that these industries tend to be inherently volatile. Increases in timber industry activity in the planning area could bring additional exposure to greater economic instability.

The DEIS acknowledges that the timber industry is far more volatile than other industries so boosting timber jobs does not necessarily translate to community stability. This new information requires a fundamental shift in thinking and must be a significant factor in making a final decision on this Plan revision.

DEIS at 568-569 states "*The expansion of existing timber-based firms or the addition of new ones would bring additional jobs and earnings to the planning area, but could make the whole planning area more vulnerable to large fluctuations inherent in domestic and international timber markets."* This statement seems to imply that volatility may adversely affect the region but benefit local communities. This is exactly backwards. The EIS needs to look at the adverse effects of volatility at the local level. Volatility would have its greatest effect in local communities that have the lowest levels of economic diversity, the greatest dependence on commodity production, and would therefore see the greatest fluctuations in jobs and income. The gain and loss of jobs caused by timber industry volatility would cause a variety of social problems related to job insecurity, depression, substance abuse, health care insecurity, domestic abuse, etc. which would in turn cause an increase in the demand for social services that are not adequately funded. If BLM would emphasize development of less volatile economic sectors through provision of amenities instead of commodities, the social problems described above would be diminished and the demand for social services would be reduced.

Proponents of more logging on federal land still subscribe to the outdated view that logging is good for communities. The evidence does not bear this out.

NWFP monitoring results found that -

> *Assumptions were challenged regarding both socioeconomic and ecological relationships, with implications for both. One of the more important set of findings concerns the role of the federal lands. From a socioeconomic perspective, it was assumed that timber flow from federal lands was a key determinant of community well-being. This turns out to be true in some communities, but not in most.*[305]
>
> *Historically, employment in solid-wood products manufacturing (SIC 24) has been volatile. ... Over the entire period of 1965 through 2000, employment positively or negatively changed more than 5 percent 13 times between successive years. Since 1991, changes in employment between years have generally varied between 1 and 2 percent, with a high of a 4-percent decline in 1996.* [306]

The DEIS needs to disclose that increasing federal timber supply will not prevent the overall declining trend of employment in the timber industry. Only "[*a]bout 400 of the 11,000 jobs lost in the timber industry since 1994 were based on reductions in timber harvesting on federal*

[305] Draft synthesis of the NWFP 10-year monitoring reports. 4-15-05. Pps 13-14.

[306] USDA/USDI. 5-volume Northwest Forest Plan, 10-Year Socioeconomic Monitoring Report, http://www.fs.fed.us/pnw/publications/gtr649/pnw-gtr649_vol3_pt5.pdf pp 40-41

lands. The remaining 10,600 job losses occurred during a period of an increased log supply and were the result of less efficient mills closing and mills continuing to invest in labor-saving technologies. ... The FS and BLM no longer play significant roles in the supply of timber in the Plan area as a whole."[307]

All things being equal, a more diversified economy is a more stable economy. Oregon will always have a timber industry based on non-federal forest lands. The highest and best use of BLM lands, in terms of community stability, is to conserve the resources on those lands to provide a stable flow of ecosystem services such as clean water, carbon storage and recreation opportunities, that will help diversify the economy, and mitigate the economic instability caused by logging on non-federal lands.

Increased logging threatens the economic stability of local communities by: recoupling counties to the boom-bust timber industry, by increasing local communities dependence on a volatile and declining industry, and by reducing the quality of life that helps sustain and grow a more healthy and diverse economy. Logging is a boom-bust industry that undermines community stability rather than enhancing it. The final decision should uphold the O&C Act (43 USC 1181a) mandate to foster community stability through increased forest conservation which helps stabilize communities by enhancing quality of life and helping to diversify the economy so communities are less dependent on the inherently volatile timber industry.

The Sonoran Institute has conducted a study of rural economies in the west and identified some insightful correlations. "*It turns out there is an inverse relationship between resource dependence and economic growth; the more dependent a state's economy is on personal income earned from people who work in the resource extractive industries, the slower the growth rate of the economy as a whole."* When one looks at resource dependence, Douglas County looks a lot like Wyoming whose economic performance is at the bottom of the pack. Given BLM's mandate for community stability, they should be trying to steer the economy *away* from commodities and toward a more diverse economic base. [308]

The Sonoran Institute's Report also found that proximity to "protected public lands" is positively correlated with economic growth. Other growth factors include access to education, transportation, airports, entertainment, and mountains. Western Oregon's economic assets are notable: proximity to Interstate 5, numerous airports and sea ports, diverse cities with lots of high wage jobs in "producer services," good educational infrastructure, high rates of in-migration, proximity to public lands, ready public access to both mountains and the Pacific coast, etc. All these factors reinforce the idea that the highest and best economic use of BLM lands is to help diversify the economy, not turn the clock back toward commodity dependence. The best way to do this is to protect the best (mature & old-growth) and restore the rest (thin the plantations).

Ray Rasker makes a compelling case for an economic stability strategy based on non-consumptive uses of public lands -

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[307] 10-Year Socio-Economic Report. pp 46-47. http://www.fs.fed.us/pnw/publications/gtr649/pnw-gtr649_vol3_pt5.pdf

[308] Ray Rasker. Prosperity in the 21st Century West. Sonoran Institute. 2004. http://www.sonoran.org/pdfs/Prosperity%20Report.pdf

The fallacy of the community stability policy can be exposed at two levels. First, as learned from lessons of the former Soviet Union, centrally planned economies do not work. Even if it were possible to manipulate natural ecosystems- of which we know very little-to produce a steady and predictable flow of grazing, mineral, energy, and timber resources, it is unlikely that the economy of nearby communities would remain stable. Factors such as price, the application of labor-saving technologies, international competition, the availability of capital, and the changing preferences of consumers all play as much a role in determining the health of local resource dependent industries as does the supply of raw materials from public lands.

Second, the premise that public resources such as forage, timber, minerals, and energy can stimulate local economic stability presumes that the local economy is indeed dependent on federally-owned resources. All too often the role public land managers play in community development is based on an antiquated, mythical view of the economy.

Three forces are at work in shaping the world economy. First, the industrial economy is becoming uncoupled from the primary products economy (i.e., raw materials). Many of the most valuable "products" in today's economy, like computer software and medical technology, require few raw materials. Second, within the industrial economy itself, employment has become uncoupled from production. Manufacturing efficiency has decreased the demand for physical labor. Instead, human resources are increasingly applied in research, design, engineering, finance, marketing, and other "knowledge-based" or "value-added" applications. Third, capital has become "footloose"-money follows good ideas, no matter where they occur on the globe.

Today, where the final product rolls off the assembly line is less important than who adds the most value to production. And, if most of a finished product's value lies in the amount of human ingenuity and modern technology that is applied, then those countries with the best-trained and educated work force will command the largest piece of the economic pie.

Lester Thurow points out that the seven key industries of the next few decades are all "brainpower" industries: microelectronics, biotechnology, new materials industries, civilian aviation, telecommunications, robots and machine tools, and computers and software. An important aspect of these industries is that they are "footloose"-they can locate anywhere in the world. According to Thurow:

Where they will be located depends upon who can organize the brainpower to capture them. In the century ahead comparative advantage will be man-made."

[T]he common mythology of the region is that the extraction and export of raw materials are what matter. A commonly heard phrase is that "true wealth comes from the ground." [I]t is clear that a "rear-view mirror" approach to economic development will not suffice. Communities in the West must shift their focus from what worked in the past, and ask

instead what will work in the future. Economic wealth consists of much more than raw materials. There is also wealth in the quality of the environment for non-consumptive uses.

… For many rural communities, the economic benefit of living adjacent to public lands has historically been access to vast repositories of raw material. Because of this economic history there has been a tremendous bias on the part of public agencies to equate quantitative expansion in commercial activities with social and economic well-being. Lacking is a perspective on economic development that measures the role of quality of life as provided to community residents living next to public lands: the mountains, scenery, wildlife, clean water, wilderness, and other non-commercial amenities.

Community stability can best be assured by economic diversity.

The cornerstone of an economic diversity strategy is the creation of a favorable business climate and the protection of the cultural, social, and environmental qualities that make a community a pleasant place to live and do business. In addition, the strategy should include investment in the infrastructure, such as education and telecommunications facilities, in order to promote entrepreneurial activity. In many instances, the most economically productive role of public lands is not in resource extraction or tourism, but in protecting the landscape, the wildlife, the rivers and streams, and the scenery-all those things that collectively enhance the quality of life for local residents.

In the 1800's the challenge for the West was to promote growth-to make the most use of the natural resource endowments of the region. In the 1990's, the challenge is to use this endowment intelligently, without despoiling the quality of life for the region's residents, and without foreclosing opportunities for economic diversification. Simply put, if scenery is part of what attracts and retains modern business activity, beyond tourism, then an unsightly clearcut will have more than ecological costs; it will be bad for the economy.

[A] community stability strategy which emphasizes commodity extraction has been shown to be counter-productive, particularly when those activities threaten the amenity-based foundation of the new economy.[309]

A study in Finland showed that the employment effects of forest conservation are not adverse, and this study did not even consider the long-term stabilizing effect from the quality of life provided by healthy forests.[310]

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[309] Raymond Rasker. A New Look at Old Vistas: The Economic Role of Environmental Quality in Western Public Lands. Colorado Univeristy Law Review. 1994. http://www.sonoran.org/programs/pubs/Rasker%20-%20CU%20Law%20Review%201994.pdf

[310] Kniivilä, M. & Saastamoinen, O. 2002. The opportunity costs of forest conservation in a local economy. Silva Fennica 36(4): 853–865. http://www.metla.fi/silvafennica/full/sf36/sf364853.pdf

BLM should emphasize forest conservation and restoration as the best way to ensure community stability. BLM can meet the social and economic objectives by focusing their efforts on forest restoration, including thinning dense young tree farms that were established following clearcutting. This will help meet the restoration objectives of the Northwest Forest Plan, while also creating jobs and producing some woods projects.

The FEIS needs to consider the economic impacts of shifting the regulatory burden to non-federal lands, and the economic costs of increasing communities' dependence on the inherently boom-bust timber industry. The Northwest Forest Plan and ESA protections allow private timber owners to continue logging with fewer environmental restrictions. If BLM disengages from the Northwest Forest Plan, then private logging may have to be restricted. This could cause uncertainty and instability for local communities and industries. BLM's NEPA analysis must explicitly address this cause-effect relationship on community stability.

Global warming and ocean acidification caused by more logging will also cause community instability, as reflected in part by the Social Cost of Carbon (SCC). To meet the O&C Act mandate for community stability, BLM should adopt the alternative that emits the least greenhouse gases and stores the most carbon in the forest.

Intact forests provide a wide variety of ecosystem services that contribute to community stability. These include: clear drinking water, carbon sequestration & climate stability, recreation opportunities, scenic beauty, viable populations of a wide variety of wildlife functional groups such as pollinators, nitrogen fixers, non-timber commodities such as salmon, mushrooms, & greenery, habitat for socially valued imperiled species, hunting and fishing opportunities.

REGENERATION HARVEST IS NOT NEEDED

BLM should not be managing forests in a way that makes rare old forests even more rare, and makes over abundant young forests even more common. Logging proponents say that regeneration harvest of mature forest is needed to enhance early seral forest, which is in short supply, but this assertion is not well supported.

> *The amount of early-successional forest on the landscape within the range of the northern spotted owl is probably greater now than at any time in the past. ... Any species that find optimum habitat in burned forests must have had the dispersal and reproductive capabilities to find and reproduce in these dispersed and infrequent patches of habitat. In general, species associated with early-successional conditions are good dispersers, have high reproductive rates, and are able to persist in small patches of habitat that result from small-scale disturbance* (Hunter 1990, Smith 1966)....

Compared to their historic populations, species associated with these early-successional conditions have increased in abundance. For example, Raphael et al. (1988) estimated that populations of 11 species of birds have probably tripled over historic numbers, and another 4 species have more than doubled. Raphael et al. (1988) and Raphael (1988) compared the estimated abundance of amphibians, reptiles, birds, and mammals from historic times to their present abundance and concluded that the early-successional associates that have increased over

time were associated with more open, drier conditions; were widely distributed (larger total geographic ranges than species associated with late-successional conditions); and, had wider ecological tolerances (i.e., they occupy a greater variety of habitat types). As noted by Harris (1984), birds associated with early-successional forest are more often migrants whereas late-successional associates are generally permanent residents. These studies also show that whereas some species associated with early-successional conditions reach their maximum abundance in early-successional forest, none of the species were restricted to that successional stage.

The creation of early-successional conditions as a result of logging has produced a different pattern on the landscape than the pattern that likely would have resulted solely from natural disturbance. Patches of early-successional forest are now more evenly distributed across the landscape, and sizes of patches are smaller. This pattern may have resulted in a more widespread distribution of early-successional species than in the past.

[T]here is currently additional acreage of early-successional forest intermixed in a fragmented pattern within all of the Late-Successional Reserves and Riparian Reserves on federal lands within the range of the northern spotted owl. As well, natural disturbances will continue to create early-successional conditions. The federal forest lands occur within a broader landscape of nonfederal lands where additional early-successional forest will be created through logging and other management activity. These lands will contribute to the maintenance of early-successional forest over time.[311]

Also, there is no shortage of early seral forest. In fact, thre's already too much early seral in the Oregon Coast Range.[312]

BLM's analysis for the 2015 RMP Revisions DEIS (Vol 1, p 183) indicates that the "current condition" shows no shortage of "early seral forest" across 1.3 million acres of dry Douglas fir forests.

[311] 1994 NWFP FSEIS, pp 3&4-203 – 204.
[312] . Janet Ohmann. Trends in Early Seral Forest at the Stand and Landscape Scale. http://www.slideshare.net/ecoshare/janet-l-ohmann-trends-in-early-seral-forest-at-the-stand-and-landscape-scale. (Slides 12, 29 show there is "no shortage of early seral" in Coastal Oregon, and early seral "exceeds the HRV" [historic range of variability].)

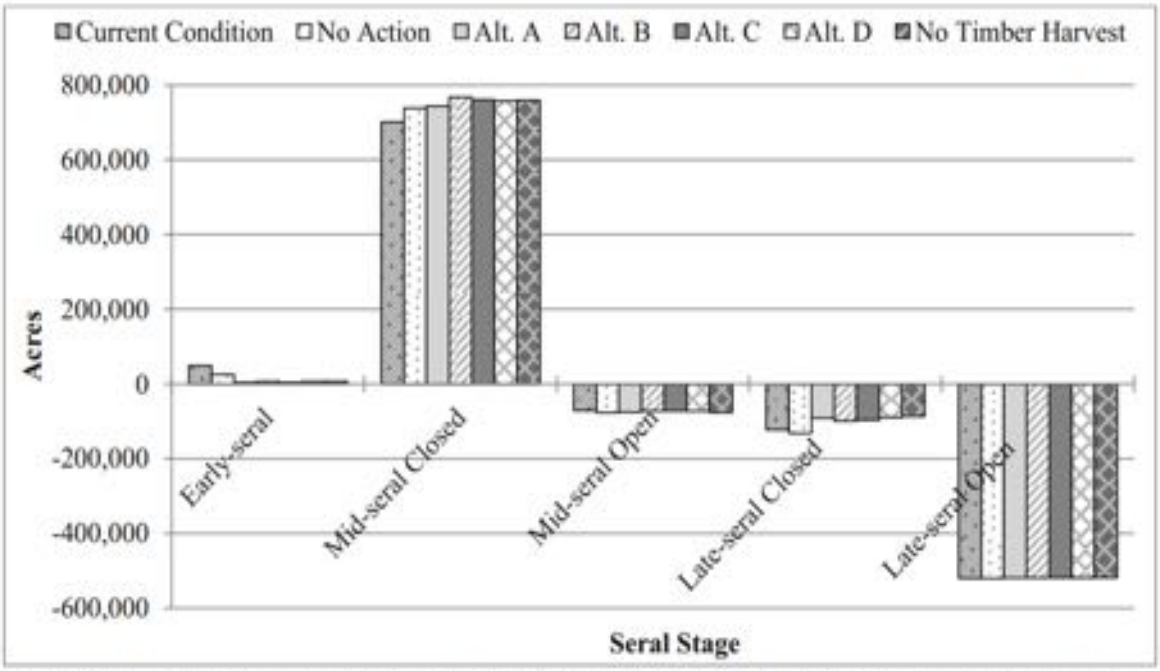

Figure 3-32. Departure from reference conditions in the Douglas-fir/dry vegetation type by seral stage; current conditions and by alternative and the No Timber Harvest Reference Analysis in 2063.

[313] This figures shows that the biggest shortage is late seral and BLM's main focus should remain transitioning over-abundant mid-seral stands to help mitigate the persistent deficit of late-seral stands.

There are many ways of enhancing early-seral habitat without sacrificing mature forests, for instance, we could:

- Modify the way we fight fire and how we react after fire, e.g., leave areas to recover naturally after fire instead of salvage logging and replanting which more closely resembled industrial clearcutting;
- Modify practices on non-federal lands to encourage greater retention of live and dead trees during harvest, tolerate slower conifer re-establishment and greater diverse of native vegetation, e.g., discourage herbicide spraying to control competing native vegetation;
- Embed structure-rich "gaps" (e.g. patches of very heavy thinning) in young stand thinning projects. See Miller, Randall. 2014. Practitioners Approach to Early Seral Habitats on Lands Managed Primarily for Older Forest, or There is More to Healthy Forests than Conifer Trees. Siuslaw NF.[314]
- Extend the early seral character of existing very young stands that are starting to become dominated by conifers.

[313] http://www.blm.gov/or/plans/rmpswesternoregon/files/draft/RMP_EIS_Volume1_pg_173-235.pdf
[314] http://www.slideshare.net/ecoshare/09-practitionersapproachtoearlyseralhabitatsonlandsmanagedprimarilyforolderforestorthereismoretohealthyforeststhanconifertreesmiller; Cheryl Friesen and Norm Michaels 2010. Effects of Incorporating Gaps into Commercial Thinning Prescriptions: Best Available Science, 3-30-2010, Central Cascades Adaptive Management Partnership (CCAMP). http://ecoshare.info/projects/central-cascade-adaptive-management-partnership/synthesis-papers-tools/

Oregon Wild's scoping 2011 comments on the Coos Bay Wagon Road and Roseburg BLM Secretarial Pilot Projects shed further light on this issue.

I. COMPLEX EARLY SERAL FOREST

One of the primary restoration objectives we keep hearing for these projects is the need to restore complex early seral forest. This may well be an important goal. However, this goal needs to be validated and if valid, alternative means of meeting the goal must be explored. With a little thought and creativity one can see that many ways to increase rare early seral habitat without sacrificing rare mature & old-growth forests.

Validation of the early seral habitat objective requires, among other things, asking if the current and projected amount of early seral habitat might be adequate to meet the needs of the opportunistic and generalist species that tend to occur in those areas. Only the interior valleys (and a few ridgetops) of western Oregon likely had persistent early seral conditions, while most of the federal forest landscape had transient early seral conditions associated with disturbances. Early seral wildlife species likely evolved to take advantage of early seral conditions when and where it could be found in the shifting mosaic of seral conditions.

Natural disturbance processes continue to operate across the landscape, including fire, wind, ice storms, landslides, floods, volcanoes, native insects, native disease, etc. Each of these helps create various sized patches of early seral forests every year. Many predict that climate change will increase the frequency of these natural events, suggesting that any shortage of early seral conditions might just take care of itself. "Ecologically, increased distribution and frequency of disturbances may result in increased distribution and dominance of early successional ecosystems dominated by fire adapted species..." [315] Conversely, it may become harder to maintain existing late-seral ecosystems and species, so existing late-successional old-growth forests should be retained in order to avoid making the shortage of late seral forest worse.

There is widespread recognition that early seral forest is produced in abundance on non-federal lands (through industrial clearcutting). Current industrial forest practices do not produce *high quality* or *long-lasting* early seral forest. It is also true, but not widely recognized that the *absolute abundance* of early seral forest on non-federal lands might partially mitigate for its lack of quality.

Early seral vegetation also exists along many streams, rock outcrops, meadows, as well as roadsides, landings, and other disturbed sites throughout the forest. An honest assessment of the early seral shortage must account for the quantity, quality and functionality of all these early seral forest elements.

If there is indeed a shortage of complex early seral forest, we must evaluate a full range of alternative ways of increasing either the quantity and/or quality of such features. Alternatives that have been suggested include:

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[315] Lemieux, Christopher J., Daniel J. Scott, Rob G. Davis and Paul A. Gray. 2008. Changing Climate, Challenging Choices: Ontario Parks and Climate Change Adaptation. University of Waterloo, Department of Geography: Waterloo, Ontario http://web.archive.org/web/20101023221023/http://www.fes.uwaterloo.ca/geography/faculty/danielscott/PDFFiles/NRCAN-Report-FINAL.pdf

Possible policy changes---- Private Lands

Goal: create more diverse early seral forest without increasing landowner cost or regulatory burden

Ideas:

- Remove free-to-grow requirement
- Remove regeneration requirement in its entirety
- Allow substitution of an invasives eradication plan, enhanced wildlife tree plan, or logging debris retention plan

(a) Reform forest practices on non-federal lands to retain more legacy structures and allow a longer period of conifer establishment and more vegetation diversity after harvest, as suggested by Norm and Debora Johnson in 2007. [316]

(b) Rely on natural processes such as fire, wind, insects, etc. Since the public has been misinformed that natural forest mortality processes are undesirable, this approach would work best if we increase public tolerance for natural processes. This approach may also require reform of fire suppression policies and post-fire salvage logging and replanting, as suggested by Norm Johnson, Jerry Franklin, and others in 2007 Early Seral Forest Symposium. [317]

(c) Aggressive pre-commercial thinning in existing very young stands or failed plantations to extend the early seral stage, as suggested in the Chalk Parker Project on the Middle Fork District of the Willamette NF;

(d) Create patches of heavily-thinned, structure-rich "gaps" in variable density thinning projects in dense planted stands <80 years old, as suggested by numerous projects around the region.

All these alternative methods would allow meaningful restoration of early seral forest conditions without unnecessarily sacrificing mature forests.[318]

Another reason that regeneration logging is not needed is because climate change may increase early seral. Efforts to artificially enhance early seral should recognize that climate change might take care of this for us, and in fact might make it much harder to hang on to the mature forests we have. "Ecologically, increased distribution and frequency of disturbances may result in increased distribution and dominance of early successional ecosystems dominated by fire

[316] K. Norm Johnson, Debora L. Johnson. 2007. Policies to Encourage Diverse, Early Seral Forest in Oregon: What Might We Do? http://www.reo.gov/ecoshare/ccamp/good_forest_opening/powerpoints/Early%20seral%20talkrevfinal.ppt

[317] http://www.reo.gov/ecoshare/ccamp/Good_Forest_Opening.shtml.

[318] Oregon Wild 2011. Scoping Comments on the Wagon Road and Roseburg BLM Secretarial Pilots. http://www.oregonwild.org/oregon_forests/forest-management/in-your-forests/files-for-eyes-on-the-agencies/Wagon_Road_and_Roseburg_Pilots_scoping_6-29-2011_BLM.pdf

adapted species..."[319] Conversely, it may become harder to maintain existing late-seral ecosystems and species, so existing late-successional old-growth forests should be retained in order to avoid making the LSOG shortage worse.

II. CURRENT RESTORATION THINNING PROGRAMS ARE MEETING OBJECTIVES

There is a pervasive misconception circulating among many people including local, state, and federal politicians and journalists that environmental restrictions have shut-down logging on our federal forests. It has become popular to repeat this misinformation and it has become nearly a full-time job refuting it. The facts speak for themselves.

The most recent data from the Forest Service and BLM on timber offered for sale under the Northwest Forest Plan between 1995 and 2010 reveal that the agencies have offered for sale 8.7 billion board feet of timber. This is equivalent to 1.74 million log truckloads. If parked end-to-end, these trucks would stretch along Interstate 5 from Seattle to San Diego more than 14 times. This is not gridlock – far from it.

Furthermore, any suggestion that a "promise" of timber was made and not kept is highly misleading. The timber industry likes to say that the NWFP promised them 1 billion board feet per year. However, the timber volumes described in the NW Forest Plan are clearly presented as "estimates," not hard targets. "*The PSQ [probable sale quantities] levels shown are estimates. ... They represent our best assessment of the average amount of timber likely to be awarded annually in the planning area over the next decade, following a start-up period."*[320] *"PSQ levels are presented as an effect, not a goal, of the standards and guidelines. Therefore, harvests within areas specified for habitat protection will be greatly curtailed."*[321]

The real timber targets are set each year by Congress. Data provided by the FS and BLM show that since 1995 the agencies have met 82% of the cumulative timber targets established by Congress. The small short-fall is primarily the result of two major legal blunders that agencies brought upon themselves (i.e., failure to comply with Survey and Manage and the Aquatic Conservation Strategy requirements). It is unfair to blame conservationists when the agencies simply failed to protect streams and wildlife as promised in the plan.

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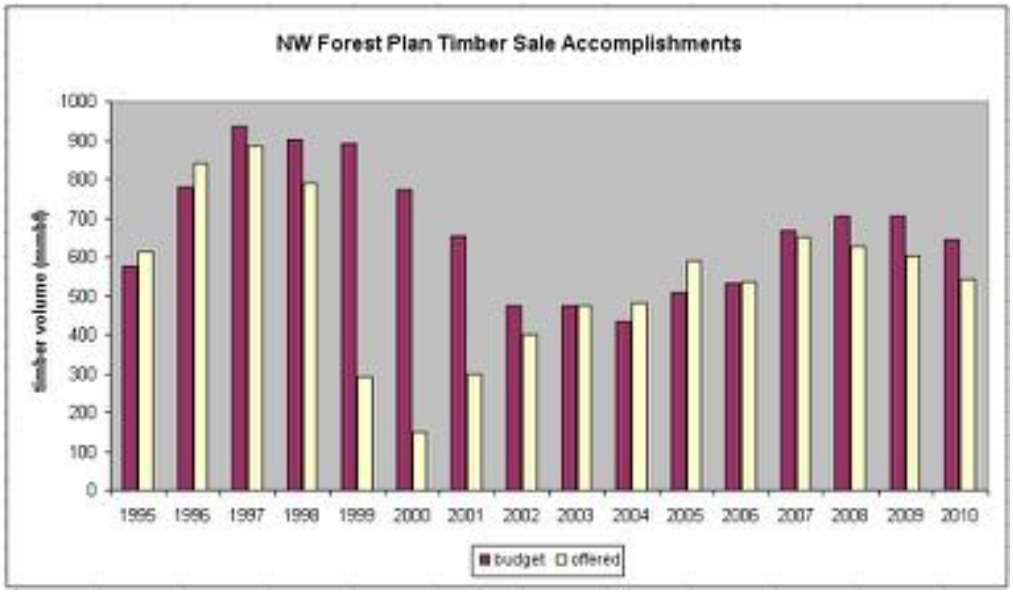
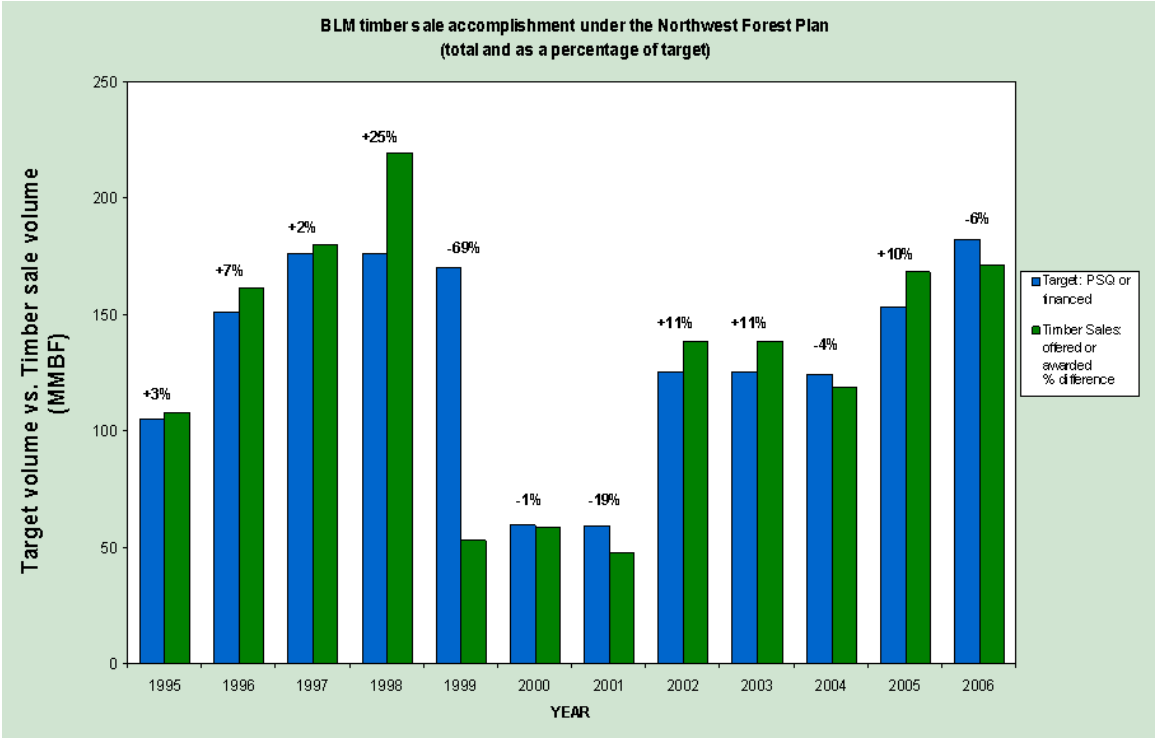
[319] Lemieux, Christopher J., Daniel J. Scott, Rob G. Davis and Paul A. Gray. 2008. Changing Climate, Challenging Choices: Ontario Parks and Climate Change Adaptation. University of Waterloo, Department of Geography: Waterloo, Ontario.http://web.archive.org/web/20101023221023/http://www.fes.uwaterloo.ca/geography/faculty/danielscott/PDFFiles/NRCAN-Report-FINAL.pdf

[320] 1994 NWFP ROD, p 19.

[321] 1994 NWFP ROD, p 66.

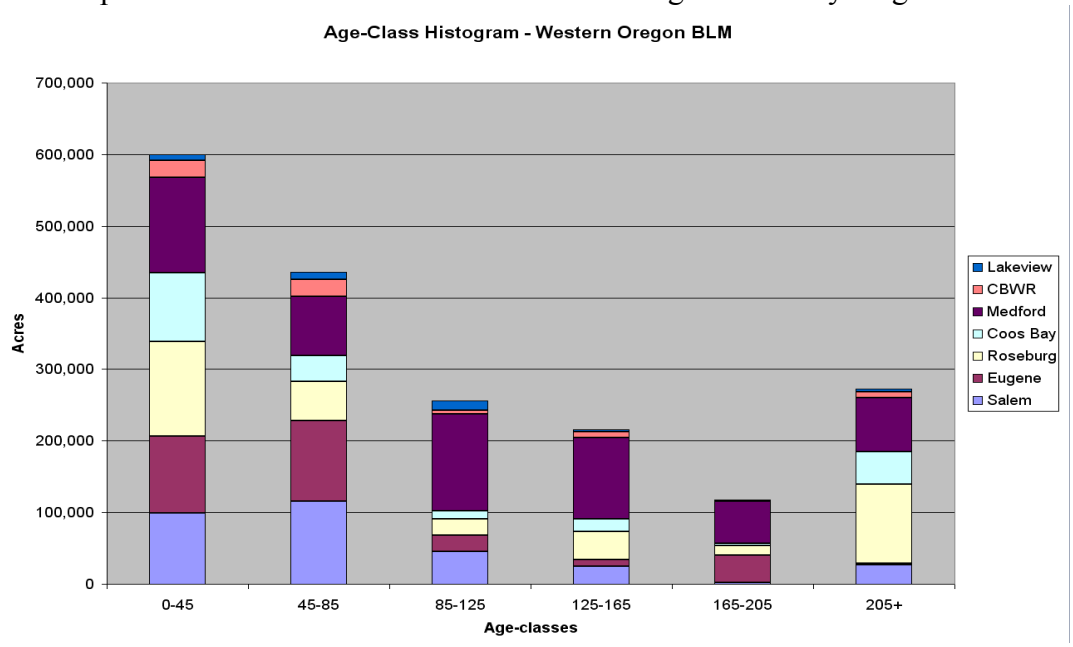


Timber Sale Accomplishments of USFS And BLM (Regionwide) Under The Northwest Forest Plan

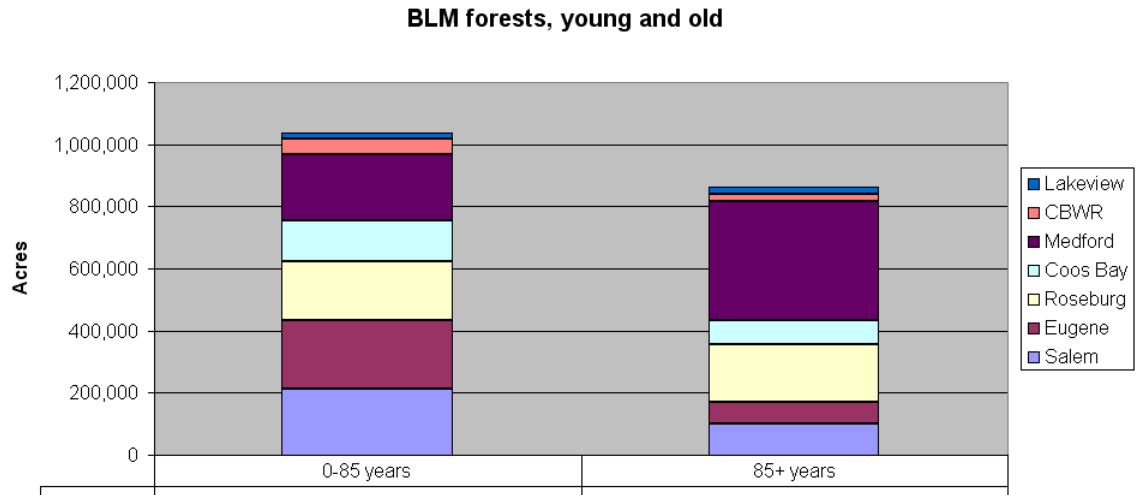


Timber Sale Accomplishments For Western Oregon BLM Districts Under The Northwest Forest Plan

The following age-class histogram created using BLM data shows that older forests are relatively under-represented and the bulk of the needed thinning work is in young stands.



This is the same data showing young versus old forests, split at 85 years.



	0-85 years	85+ years
Lakeview	18,660	22,519
CBWR	47,263	23,981
Medford	215,659	382,826
Coos Bay	132,714	76,680
Roseburg	186,901	185,587
Eugene	219,917	71,618
Salem	214,483	99,795

FIRE AND FUELS

The DEIS at page 10 indicates that restoring fire-adapted ecosystems to increase fire resiliency is part of the purpose of the RMP revisions. Page 10 additionally acknowledges that the "owl recovery plan recommends active management within the dry forest landscape to restore ecosystem resiliency," and that "under the O&C Act, BLM management must account for potential loss of this timber to fire." Hence "the purpose of this action includes restoring fire-adapted ecosystems to increase fire resiliency."

The fire resiliency purpose of the RMP revisions is directly thwarted by the BLM proposal to conduct:

> *"management such as thinning and regeneration harvest with no retention and rapid reforestation on a relatively short rotation. This management approach would result in continuous horizontal and vertical fuel profiles and conditions more closely aligned with high severity fire." DEIS page 194.*

It appears that every action alternative developed by the BLM will include logging techniques known by the agency to increase fire hazard. This directly inhibits the alleged purpose and need of increasing fire resiliency stated on page 10 of the DEIS. "The purpose of the action includes restoring fire-adapted ecosystems in increase fire resiliency." DEIS page 10.

The BLM's proposal to utilize logging techniques to known to increase fire resiliency in some instances while concurrently utilizing logging techniques to decrease fire hazard in other instances is arbitrary and capricious.

The DEIS fails to analyze or disclose an action alternative that would codify the dry forest restoration developed by Franklin and Johnson and successfully implemented in the BLM "pilot projects."

I. INCREASE FIRE RESISTANCE BY MAXIMIZING THE EXTENT OF LATE SUCCESSIONAL RESERVES

One of the purposes of this EIS is to restore fire-adapted ecosystems to increase fire resiliency. Recognizing that all forests in western Oregon are "fire-adapted," this purpose should be clarified to maintain fire resistance in mature and old growth forests, and to avoid regeneration harvest that creates dense young plantations that represent a very hazard fuel condition. BLM should pursue this important purpose across all forest types.

In the final decision on this RMP revision, BLM should avoid both high- and moderate-intensity timber harvest because DEIS (p 194) admits that:

The High Intensity Timber Area includes management such as thinning and regeneration harvest with no retention and rapid reforestation on a relatively short rotation. This management approach would result in continuous horizontal and vertical fuel profiles and conditions more closely aligned with high severity fire. ... [T]here currently exists an overabundance of young and closed conditions and the likelihood of large, high severity fire has increased. Large areas of no retention are not representative of the prevailing

vegetative patterns and structure associated with frequent fire, low-severity or mixed-severity fire regimes.[322]

Moderate Intensity Timber Area includes thinning and regeneration harvest with 5-15 percent basal area retention, and longer rotations and rapid reforestation. This management approach would result in more continuous horizontal and vertical fuel profiles and conditions more closely aligned with high severity fire. Additionally, contiguous fuel profiles have reduced stand-level fire resistance.

Adopting high- or moderate-intensity timber harvest is therefore inconsistent with the purpose and need for this EIS to *"restore fire-adapted ecosystems to increase fire resiliency."*

Figures 3-40 and 3-41 clearly show that areas with less logging (i.e. the reserves) create conditions that are much more fire resistant, while areas with more logging (i.e., the harvest land base) creates conditions that present much greater fire hazard.

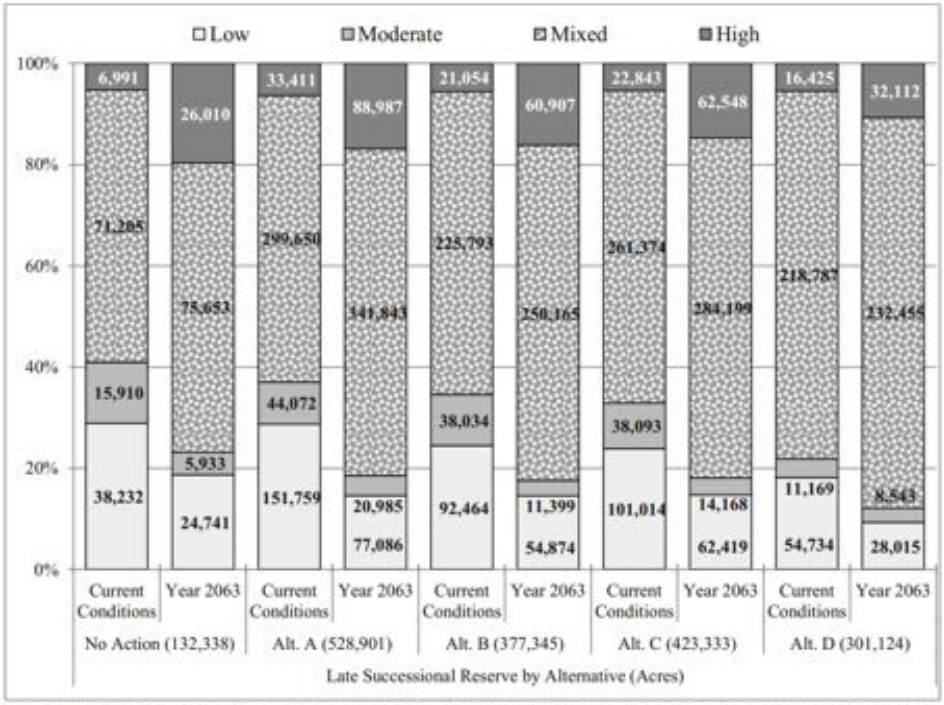


Figure 3-40. Stand-level fire resistance categories in the Late-Successional Reserves in the dry forest in the interior/south for the current condition and each alternative in 50 years.

[322] Taylor and Skinner 2003, Larson and Churchill 2012.

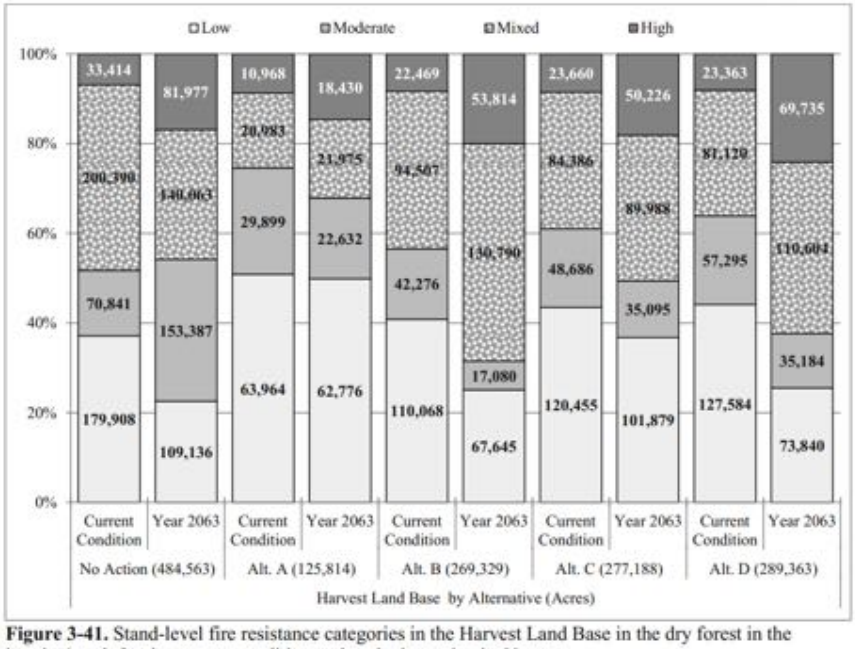


Figure 3-41. Stand-level fire resistance categories in the Harvest Land Base in the dry forest in the interior/south for the current condition and each alternative in 50 years.

Furthermore, the harvest land base probably has a greater fire hazard than this analysis recognizes given the fact that the EIS relies on some faulty assumptions about the effects of thinning on forest structure and fire hazard (explained below).

II. FOREST CONSERVATION HELPS MODERATE FIRE BEHAVIOR

DEIS 187 says that lower density stands tend to have higher fire resistance. The DEIS also adopts the notion that fire exclusion increases fire hazard. DEIS (p 194) says:

Uneven-Aged Timber Area [and] the Owl Habitat Timber Area … Both of these management scenarios would result in the greatest reduction of low and moderate stand-level resistance and the largest increase in the mixed- and high-resistance acres.

However, these DEIS assertions are not supported by the evidence from SW Oregon. The EIS needs to reflect the best available science which indicates that open stands (such as those resulting from thinning) tend to have more surface and ladder fuels (over time), as well as greater wind penetration, lower humidity, dryer fuels, longer flame lengths, and higher fire intensity at the flame front. Forests with a dense canopy tend to have a more cool, moist, and less windy fire microclimate, and the canopy helps suppress the growth of surface and ladder fuels.

Table 3-41 (DEIS p 187) needs to reflect the fact that complex older forests tend to be more fire resistant and resilient compared to young forests and logged forests. “Mixed” resistance is not described or defined. It would be useful for the public and the decision-maker to understand the complex old forests have several characteristics making them more fire resistant (e.g., thick bark, high canopies, hardwood understory that acts as a heat sink, canopy that suppresses ladder fuels and helps maintain cool-moist-les-windy microclimate) and know that this mixed-resistance old forest is the condition that historically dominated the forest landscape, and this is the condition

that results in the mixed severity fires that wildlife evolved with. Logging complex old forests is likely to reduce fire resistance and increase fire hazard.

The DEIS (p 187) says that only single-storied mature forests have HIGH resistance to wildfire. The EIS needs to disclose that open canopy forests tend to have more severe fire effects and that logging to create open forest conditions on large areas of BLM land (such as by logging to simplify complex forests) will have significant trade-offs for wildlife that need more complex forests. Forests lacking complex dead wood and complex understory do not provide high quality habitat for spotted owls and numerous other species.

The EIS needs to reflect the best available information (provided below) indicating that greater time-since-fire actually increases fire resistance. That is, fires are likely burn more severely in forests that have been more recently logged or burned, and are likely to burn less severely in closed-canopy forests that have not been recently logged or burned. This may be related to the fact that closed canopy forests maintain a cool-moist microclimate that helps retain higher fuel moisture and more favorable fire behavior. Canopy cover also helps suppress the growth of ladder fuels. The significance of this is that it may make sense to variably retain more canopy cover while thinning and don't focus on treatment of canopy fuels except to provide some well-spaced "escape hatches" for hot gases generated by surface fires.

Odion et al (2004) studies fire in the Klamath Mountains region and found -

> *Long absence of fire predicts low severity fire effects. Absence of fire enables closed canopy forest vegetation to replace shrub and open forest vegetation through succession. Shade reduces available fuel below the canopy as well as its potential surface heat output during fire events, making canopy fires less likely to occur. Therefore, severe fire effects are not correlated with the age of woody fuels. Instead, weather and climate dictate canopy fire behavior in closed canopy forests.*
>
> *Tree plantations, which typically follow high-severity fires under traditional forestry practices, exhibited "twice the burn severity" of closed canopy forests (20 percent), even though they accounted for only four (4) percent of the study area. The relative combustibility of structurally homogeneous tree plantations supports a self-reinforcing "feedback" dynamic of high-severity fires, and the authors anticipate continued high-severity fires in roaded and planted portions of the landscape.*

IMPLICATIONS- The central conclusion of the paper is that long absence of fire predicts low-severity fire effects in Klamath mixed evergreen forests. This conclusion has four management implications:

1. The fuel build-up model formulated for southwestern ponderosa pine forests does not apply to Klamath mixed evergreen forests, and fuel treatments intended to prevent crown fires based on this model are misdirected.

2. Fuel treatments designed to impose a low-severity fire regime may be ecologically detrimental because highly severe fire effects, to some degree, support diverse vegetation community structures and habitats for which the Klamath region is globally unique. Some fuel treatments also may adversely affect soils, water quality, wildlife habitat, and spread noxious weeds.

3. Fuel treatments may be ecologically beneficial in tree plantations where past logging left behind unnatural fuel profiles.

4. Naturally ignited wildland fires may be beneficial to a variety of conservation objectives in Klamath forests. Home ignitability mitigation in the wildland-urban interface may increase options for backcountry wildland fire use.

Fuel reduction projects in SW Oregon must consider the implications of Odion, D.C., E.J. Frost, J.R. Strittholt, H. Jiang, D.A. DellaSala and M.A. Moritz. 2004. Patterns of fire severity and forest conditions in the western Klamath Mountains, California. Conservation Biology 18(4): 927-936. [323]

In a mixed-conifer, mixed-severity fire regime study area in SW Oregon, Crystal Raymond found that,

> *Fire severity was greater in thinned treatments than untreated. … The additional fine wood left from the thinning operation (despite whole-tree yarding) most likely caused higher fire intensity and severity in the thinned treatments*."
>
> *… [T]he presence of activity fuels increased potential surface fire intensity, so increases in canopy base height did not decrease the potential for crown fire initiation. … [C]rown fire is not a prerequisite for high fire severity; damage and mortality of overstory trees in the wildfire was extensive despite the absence of crown fire, and the low predicted crown fire potential before and after the fuel treatment. Damage to and mortality of overstory trees were most severe in thinned treatments (80 – 100% mortality), least severe in the thinned and under-burned treatment (5% mortality), and moderate in untreated stands (53-54% mortality) following a wildfire in 2002. Fine fuel loading was the only fuel structure variable significantly correlated with crown scorch of overstory trees. Percentage crown scorch was the best predictor of mortality 2 years post-fire. Efforts to reduce canopy fuels through thinning treatments may be rendered ineffective if not accompanied by adequate reduction in surface fuels*. [324]
>
> *A greater percentage of pre-fire fine wood was consumed in the thinned plots than in the unthinned plots during the Biscuit fire suggesting that fine fuel moisture may have been lower in the thinned plots*." And "*the Biscuit Fire was observed to have more moderate fire behavior in stands with a sub-canopy tree layer compared to more open stands, suggesting that the sub-canopy trees did not function as ladder fuels. … Higher foliar moisture of broad-leaved species could have dampened fire behavior, inhibiting rather than aiding crown fire initiation."*

Similarly, Hanson and Odion (2006) compared wildfire behavior in seven previously thinned mixed-conifer forests vs. adjacent unthinned forest in the Sierra Nevada and found —

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[323] http://nature.berkeley.edu/moritzlab/docs/Odion_etal_2004.pdf.

[324] Crystal L. Raymond. 2004. The Effects of Fuel Treatments on Fire Severity in a Mixed-Evergreen Forest of Southwestern Oregon. MS Thesis. http://depts.washington.edu/nwfire/publication/Raymond_2004.pdf.

> *Contrary to our hypothesis, the mechanically thinned areas had significantly higher fire-induced mortality (p =.016, df = 6) and combined mortality (p =.008, df = 6) than the adjacent unthinned areas. Thinned areas predominantly burned at high severity, while unthinned areas burned predominantly at low and moderate severity … Possible explanations for the increased severity in thinned areas include persistence of activity fuels, enhanced growth of combustible brush post-logging, desiccation and heating of surface fuels from increased insolation, and increased mid-flame windspeeds. Given that sampling transects in thinned versus unthinned areas were only 100 m apart in each experimental unit, fire weather should have been the same for the thinned and unthinned areas sampled in each site. Thus, mechanical thinning on these sites appears to have effectively lowered the fire weather threshold necessary for high severity fire occurrence.*[325]

A study in mixed-conifer forests in California showed that forest reserves were more effective than logging in terms of reducing fire hazard.

> *[T]he efficacy of seven traditional silvicultural systems and two types of reserves used in the Sierra Nevada mixed conifer forests is evaluated in terms of vegetation structure, fuel bed characteristics, modeled fire behavior, and potential wildfire related mortality. The systems include old-growth reserve, young-growth reserve, thinning from below, individual tree selection, overstory removal, and four types of plantations. These are the most commonly used silvicultural systems and reserves on federal, state, and private lands in the western United States. Each silvicultural system or reserve had three replicates and varied in size from 15 to 25 ha; a systematic design of plots was used to collect tree and fuel information. The majority of the traditional silvicultural systems examined in this work (all plantation treatments, overstory removal, individual tree selection) did not effectively reduce potential fire behavior and effects, especially wildfire induced tree mortality at high and extreme fire weather conditions. Overall, thinning from below, and old-growth and young-growth reserves were more effective at reducing predicted tree mortality.*[326]

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[325] Hanson and Odion. 2006. Fire Severity In Mechanically Thinned Versus Unthinned Forests of the Sierra Nevada, California 2006 Fire Congress Proceedings. ftp://ftp2.fs.fed.us/incoming/r5/VMS/reference_library/Fire%20and%20Fuels%20References/Hanson%20and%20Odion%20%202006%20Fire%20severity%20in%20thinned%20vs%20unthinned%20forests%20.pdf

[326] Scott L. Stephens and Jason J. Moghaddas. 2005. Silvicultural and reserve impacts on potential fire behavior and forest conservation: Twenty-five years of experience from Sierra Nevada mixed conifer forests. Biological Conservation 125 (2005) 369–379. See also Morris Johnson, David L. Peterson, and Crystal Raymond 2009. Fuel treatment guidebook: illustrating treatment effects on Fire hazard. Fire Management Today 69(2) http://www.fs.fed.us/fire/fmt/fmt_pdfs/FMT69-2.pdf p 32-33

III. BLM NEEDS TO REFLECT THAT WILDFIRE MAY BE MORE CONTROLLED BY WEATHER THAN FUELS

DEIS p 175 discusses the effects of fire exclusion in dry forests. This analysis over-emphasizes the effects of fuel and under-emphasizes the effects of weather on fire. Forests throughout BLM lands in western Oregon almost always have enough fuel to carry fire. Weather conditions are a large determinant of the extent and severity of fire. Protecting homes and communities require treatments in the "structure ignition zone" immediately around structures, not across the forest landscape.

The agencies must recognize that most large fires are climate driven, not fuel driven.

> *Within forests, annual burned area correlated at least as strongly with spring–summer vapour pressure deficit (VPD) as with 14 other drought-related metrics, including more complex metrics that explicitly represent fuel moisture. Particularly strong correlations with VPD arise partly because this term dictates the atmospheric moisture demand."* [327]

Littell et al (2009) looked at a large number of fires that occurred in the western U.S. during the 20th Century and found -

> *Our analyses indicate that year-of-fire climate is the strongest influence on area burned in forested ecosystems, but fire size may be limited secondarily by fuel continuity between or within forest stands (Rollins et al. 2002). For example, continuity may be less limiting for fire regimes in which crown fires are the dominant mechanism than in lower-elevation forests characterized by surface fires…*
>
> *[R]elationships described in Westerling et al. (2006) hold for more of the 20th century than previously shown.... These relationships all support our claim that drying of fuels is the primary mechanism for large WFAB [Wild fire area burned] in the higher-elevation and northern mountainous ecoprovinces. Wild fire area burned in these ecoprovinces thus appears to be limited by climate rather than fuel availability, ...*
>
> *Our analyses indicate that year-of-fire climate is the strongest influence on area burned in forested ecosystems, but fire size may be limited secondarily by fuel continuity between or within forest stands (Rollins et al. 2002). For example, continuity may be less limiting for fire regimes in which crown fires are the dominant mechanism than in lower-elevation forests characterized by surface fires, ...*
>
> *Climate controls on the area burned by wildfire in the western United States are strong, even during the dominant period of fire suppression and exclusion in the last two-thirds of the 20th century. Roughly 39% (1916–2003) to 64% (1977–2003) of the fire area burned can be related directly to climate. The variance explained by climate implies that fuel treatments, for example, might be tailored to specific ecosystems and climate–fire relationships. Recognizing that most ecoprovinces have significant ecological variability,*

[327] A. Park Williams, Richard Seager al 2014. Correlations between components of the water balance and burned area reveal new insights for predicting forest fire area in the southwest United States. International Journal of Wildland Fire 24(1) 14-26 http://dx.doi.org/10.1071/WF14023 http://www.publish.csiro.au/?paper=WF14023

climate-limited ecoprovinces may be less influenced by fuel treatment than fuellimited ecoprovinces (at least for area burned, if not fire severity).[328]

The fire and fuels analysis does disclose trade-offs associated with logging. The DEIS says that forest management is a surrogate for fire, but wildfire creates complex forest structures that wildlife evolved with, while logging causes far different effects than fire. Logging requires roads and removes forest structure. The EIS needs to disclose the many ways in which logging is not a surrogate for fire.

IV. LOGGING HABITAT TO "SAVE" IT FROM FIRE COULD DEGRADE HABITAT

The DEIS (p 195) says "*BLM assumed that the restoration approach taken in the Late Successional Reserve in the dry forest would include stand density reductions, cultivation of large trees with old-growth characteristics, and introductions of heterogeneity into increasingly uniform stands, and treatments to reduce fire risk adjacent to high-value habitat."* The DEIS does not adequately disclose the adverse effects of these habitat-modifying treatments that will likely be conducted with commercial logging that removes primary constituent elements of spotted owl habitat.

DEIS (p 158) describes for thinning as a "no regrets" approach to climate adaptation. This is misleading. No regrets describes strategies that are beneficial whether or not climate driven disturbance occurs. This is not the case here. Forest thinning involves complex trade-offs that could help or harm the forest and its inhabitants, and the alleged benefits often accrue only if treated areas subsequently burn during the brief window that fuel reduction treatments may be effective. This is not a no regrets strategy.

A more specific example is the spotted owls that prefers to live in fuel-rich forests with high canopy cover. Thinning to reduce climate stress will likely result in adverse effects on spotted owls. Thinning is therefore NOT a "no regrets" strategy for spotted owls. In fact, leaving suitable spotted owl habitat unmanaged is probably the closest thing to a no regrets climate strategy for the spotted owl. The EIS fails to make this important point clear. Even when logging is conducted with an intention to reduce fire effects, such logging will still cause net negative effects on spotted owls and other wildlife that prefer to live in forests with dense canopy cover and complex structure. The DEIS failed to adequately disclose trade-offs between the needs of wildlife and the adverse effects of logging for fire resiliency. The net effects of logging plus wildfire are far worse for wildlife than the effects of fire alone.

Logging intended to benefit dense forest habitat will also reduce the quality of habitat by removing various constituent elements of their preferred habitat, and the NEPA analysis must therefore include some evaluation of ecological costs and benefits — e.g., the high probability that logging will degrade habitat vs. the low probability that fuel reduction logging will interact favorably with fire and thus benefit habitat. This evaluation requires an estimate of the probability of future wildfire. To assume, as many analyses do, a 100% chance of future wildfire

[328] Jeremy S. Littell, Donald McKenzie, David L. Peterson, Anthony L. Westerling (2009) Climate and wildfire area burned in western U.S. ecoprovinces, 1916–2003. Ecological Applications: Vol. 19, No. 4, pp. 1003-1021. http://naldc.nal.usda.gov/download/34676/PDF.

over-estimates the likelihood of treatments will interact with fire, thus over-estimating the ecological value of fuel treatments, and under-estimating the ecological effects of logging on habitat.[329]

There is a strong interest among the federal land management agencies to conduct widespread logging in suitable spotted owl habitat in order to reduce the effect of fire. The agencies view fuel reduction logging as beneficial to owl habitat because modeling shows that fire behavior is moderated by fuel reduction, but proponents never seem to conduct a careful evaluation of the relative probability, and the relative harms, of logging versus wildfire. Strangely, the probabilistic aspects of this issue have been largely ignored in the owl science literature, but recently explored in the forest-carbon literature which recently showed that although thinning can modify fire behavior, logging to reduce fire effects is likely to remove more carbon by logging than will be saved by modifying fire.[330] The reason for this seemingly counterintuitive outcome is a result of the "law of averages." As explained by Cathcart et al 2009 —

> *The question is—if the implementation of fuels treatments within the Drews Creek watershed had the beneficial effect of reducing the likelihood of wildfire intensity and extent as simulated in this study, why is the expected carbon offset from fuels treatment so negative? The answer lies in the probabilistic nature of wildfire. Fuels treatment comes with a carbon loss from biomass removal and prescribed fire with a probability of 1. In contrast, the benefit of avoided wildfire emissions is probabilistic. The law of averages is heavily influenced that given a wildfire ignition somewhere within the watershed, the probability that a stand is not burned by the corresponding wildfire is 0.98 (1 minus the average overall conditional burn probability …*
>
> *Thus, the expected benefit of avoided wildfire emissions is an average that includes the predominant scenario that no wildfire reaches the stand. And if the predominate scenario for each stand is that the fire never reaches it, there is no avoided CO2 emissions benefit to be had from treatment. So even though severe wildfire can be a significant CO2 emissions event, its chance of occurring and reaching a given stand relative to where the wildfire started is still very low, with or without fuel treatments on the landscape.*[331]

Both carbon and spotted owl habitat tend to accumulate in relatively dense forests with intermediate or longer fire return intervals. Thus, we can likely read these studies and replace the word "carbon" with the word "spotted owl habitat" and the results will likely hold.

DEIS pp 773-774 identifies "Issue 3" whether the alternatives will help reduce the loss of habitat due to wildfire, but the DEIS says no additional analysis is required, and the reasons given are

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[329] See Heiken, D. 2010. Log it to save it? The search for an ecological rationale for fuel reduction logging in Spotted Owl habitat. Oregon Wild. v 1.0. May 2010. http://dl.dropbox.com/u/47741/Heiken_Log_it_to_Save_it_v.1.0.pdf.

[330] Mitchell, Harmon, O'Connell. 2009. Forest fuel reduction alters fire severity and long-term carbon storage in three Pacific Northwest ecosystems. Ecological Applications. 19(3), 2009, pp. 643–655 http://www.fs.fed.us/pnw/pubs/journals/pnw_2009_mitchell001.pdf.

[331] Jim Cathcart, Alan A. Ager, Andrew McMahan, Mark Finney, and Brian Watt 2009. Carbon Benefits from Fuel Treatments. USDA Forest Service Proceedings RMRS-P-61. 2010. http://www.fs.fed.us/rm/pubs/rmrs_p061/rmrs_p061_061_079.pdf.

confusing: "As explained in **Appendix S**, the relative habitat suitability surfaces the BLM developed to address Conservation Needs 1, 2 and 4 include forecasts of habitat change from wildfire. Thus, the evaluations of Conservation Needs 1, 2 and 4 also address Conservation Need 3. The BLM needed no additional analysis." We could find no analysis in Appendix S or elsewhere in the EIS explaining that alternatives with more logging will create hazardous fuel condition and expose spotted owls to greater risk from wildfire.

In an effort to advance the discussion and help the agencies conduct better risk assessments in the NEPA context we have prepared a white paper in an attempt to clarify the critical considerations in a probabilistic risk assessment that compares the risk of logging versus wildfire.[332] Log it to save it? The search for an ecological rationale for fuel reduction logging in Spotted Owl habitat.[333] This report is most relevant in SW Oregon but the proposed evaluative framework is applicable in the east Cascades, northern California, and elsewhere. This report focuses on carbon and spotted owl habitat, but the analysis is relevant for any species or forest value that requires relatively dense forest cover, such as American marten, Pacific fisher, pileated woodpecker, northern goshawk, etc.[334]

To justify such fuel reduction logging in suitable owl habitat on ecological grounds requires several findings: (1) that wildfire is highly likely to occur at the site of the treatment, (2) that if fire does occur it is likely to be a severe stand-replacing event, and (3) that spotted owls are more likely to be harmed and imperiled by wildfire than by logging at a scale necessary to reduce fire hazard. Available evidence does not support any of these findings, which raises serious questions about the need for and efficacy of logging to reduce fuels in western Oregon and other forests lacking frequent fire return intervals.

The probabilistic element of the risk equation demands careful consideration. Both logging and fire have meaningful consequences, so the issue really boils down to a comparative probabilistic risk assessment where risk is characterized by two quantities: (1) the magnitude (severity) of the possible adverse consequence(s), and (2) the likelihood (probability) of occurrence of each consequence.

Framework for Assessing the Risk of Wildfire vs. Fuel Reduction Logging			
	Likelihood of event	Magnitude of harm	Net Benefit
Wildfire	LOW: Stand replacing wildfire is not common in western Oregon. Fire suppression policy prevails. The chance that any given acre of forest will experience wildfire is low.	LOW: The majority of wildfire effects are not stand replacing. Fire is a natural process to which native wildlife are adapted. There is still a deficit of natural fire processes on the landscape.	Fire is likely less harmful to habitat than fuel reduction logging.

[332] Heiken, D. 2010.
[333] Oregon Wild. v 1.0. May 2010. http://dl.dropbox.com/u/47741/Heiken_Log_it_to_Save_it_v.1.0.pdf.
[334] See for instance, Aubry et al 2013. Meta-Analyses of Habitat Selection by Fishers at Resting Sites in the Pacific Coastal Region. The Journal of Wildlife Management 77(5):965–974; 2013; DOI: 10.1002/jwmg.563.

Logging	HIGH: To be effective in controlling fire, logging must be very extensive, and sustained. Many more acres would need to be logged than would burn.	HIGH: Widespread logging will have significant impacts on canopy, microclimate, understory vegetation, down wood, and long-term effects on recruitment of large trees and snags.	Fuel reduction logging is likely more harmful to habitat than wildfire.

The white paper is organized around these risk evaluation parameters.

In spite of what we often hear, that federal forests are not at imminent risk of destruction by wildfire. Fire return intervals remain relatively long, due to both natural factors and active fire suppression policies. Wildfire severity also remains moderate. Most wildfires are NOT stand replacing. Most fires are in fact low and moderate severity.

The location, timing, and severity of future fire events cannot be predicted making it difficult to determine which forests will benefit from treatment - consequently fuel treatments must be extensive and many stands will be treated unnecessarily, thus incurring all the costs of fuel logging, but receiving none of the beneficial effects on fire behavior.

Furthermore, logging for purposes of fuel reduction has impacts on owl and prey habitat that remain under-appreciated, especially the reduction of complex woody structure, and the long-term reduction in recruitment of large snags and dead wood. Fuel reduction logging also has complex effects on fire hazard with potential to increase fire hazard, especially when fuel reduction efforts involve removal of canopy trees.

When all this evidence is put together, it becomes clear that "saving" the spotted owl by logging its habitat to reduce fuels often does not make any sense.

Similar conclusions were reached is several studies, reviews, and expert commentaries, such as:

Odion et al. 2014, who looked at the relative effects of fire versus thinning and fire on spotted owl habitat in two regions of interest: the Klamath and dry Cascades --

> *Using empirical data, we calculated the future amount of spotted owl habitat that may be maintained with these rates of high-severity fire and ongoing forest regrowth rates with and without commercial thinning. Over 40 years, habitat loss would be far greater than with no thinning because, under a "best case" scenario, thinning reduced 3.4 and 6.0 times more dense, late-successional forest than it prevented from burning in high-severity fire in the Klamath and dry Cascades, respectively. Even if rates of fire increase substantially, the requirement that the long-term benefits of commercial thinning clearly outweigh adverse impacts is not attainable with commercial thinning in spotted owl habitat. It is also becoming increasingly recognized that exclusion of high-severity fire may not benefit spotted owls in areas where owls evolved with reoccurring fires in the landscape.*

We found that the habitat recruitment rate exceeded the rate of severe fire by a factor of 4.5 in the Klamath and 10 in the dry Cascades, leading to a deterministic increase in dense forest habitat over time, assuming no other disturbance events. In contrast, previous published assessments of fire on spotted owls have not explicitly considered fire and forest regrowth rates (Wilson and Baker 1998, Lee and Irwin 2005, Roloff et al. 2005, 2012, Calkin et al. 2005, Hummel and Calkin 2005, Ager et al. 2007, Lehmkuhl et al. 2007). Not including the probability of high-severity fire, which is low, leads to highly inflated projections of the effects of thinning versus not thinning on high-severity fire (Rhodes and Baker 2008, Campbell et al. 2012).

Our calculations of thinning effects included rates of forest regrowth along with high-severity fire. The calculations illustrate how the requirement that the long-term benefits of thinning clearly outweigh adverse impacts (USFWS 2011) is not attainable as long as treatments have adverse impacts on spotted owl habitat. This is because the amount of dense, late-successional forest that might be prevented from burning severely would be a fraction of the area that would be thinned.

This would not be a concern if thinning effects were neutral, but the commercial thinning prescriptions being implemented call for forests with basal area reduced by nearly half to 13.5-27.5 m2/ha, which is mostly well below the minimum level known to function as nesting and roosting habitat (ca. 23 m2/ha) (Buchanan et al. 1995, 1998). … Even an immediate doubling of fire rates due to climate change or other factors would result in far less habitat affected by highseverity fire than thinning. In addition, much of the highseverity fire might occur regardless of thinning, especially if the efficacy of thinning in reducing high-severity fire is reduced as fire becomes more controlled by climate and weather (Cruz and Alexander 2010). Clearly, the strategy of trying to maintain more dense, late-successional forest habitat by reducing fire does not work if the method for reducing fire adversely affects far more of this forest habitat than would high-severity fire, and the high-severity fire might occur anyway because it is largely controlled by climate and weather.

While much of the concern about fire and thinning in dry forests of the Pacific Northwest has focused on spotted owls, it may also apply to other biota associated with dense, old forests, including species of conservation concern, such as Pacific fisher (Martes pennanti pacifica), which research indicates may benefit from mixed-severity fire (Hanson 2013), the Northern Goshawk (Accipiter gentilis), and, following fire, the Black-backed Woodpecker (Picoides arcticus), … Our findings highlight the need to be cautious about conclusions that thinning treatments are needed for species found in dense forest and that they will not have unintended consequences (e.g., Stephens et al.2012) until long-term, cumulative impacts are better understood. As we found with spotted owls, long-term and unintended consequences may be substantial for species that rely on dense, late-successional forests.[335]

[335] Dennis C. Odion, Chad T. Hanson, Dominick. A. DellaSala, William L. Baker, and Monica L. Bond. 2014. Effects of Fire and Commercial Thinning on Future Habitat of the Northern Spotted Owl. The Open Ecology Journal, 2014, 7, 37-51 37. http://benthamopen.com/toecolj/articles/V007/37TOECOLJ.pdf.

V. REGENERATION HARVEST REDUCES FIRE RESILIENCY

The DEIS did not adequately disclose the extent to which regeneration logging will convert naturally resistant and resilient mature forests into tree plantations which have a dense homogenous fuel structure close to the ground and represents a significant fire hazard.

Logging in many cases will actually increase fire hazard, but the EIS does not fully account for the impacts on wildlife. DEIS Figure 3-40 and 3-41 clearly show that timber management areas tend to have fuel conditions with greater fire hazard compared to the reserves where forests are better conserved. The DEIS does not carry this analysis forward into the analysis of effects on the northern spotted owl habitat (and numerous other wildlife that prefer to live in dense forests). Based on the fuel conditions created by logging, fires will likely be larger and more severe. There will likely be spill-over effects from the harvest areas to the reserves. The EIS needs to more fully disclose the adverse effects of logging on spotted owls

DEIS at 159 states,

> *In dry forests under all action alternatives, management would emphasize increasing fire resistance and resilience, which would often also increase resistance to drought, insects, and pathogens. The No Action alternative does not explicitly prohibit management to increase fire resistance and resilience, but does not have the same emphasis as in the action alternatives, especially within the Late-Successional Reserve and the Riparian Reserve*."

This is flawed for several reasons.

- First, BLM seems to assume that active management to reduce fire, insects, and drought will provide net benefits. In reality, fire and insects are natural processes that forests evolved with. Logging removes important features of wildlife habitat and is far more likely to cause adverse effects on wildlife compared to natural processes like fire and insects.
- Second, BLM seems to assume that active management (i.e. logging) will provide net ecological benefits. In reality, active management will interfere with these natural processes and cause more harm than good. For instance, beetle mortality is likely to kill the trees most susceptible to beetles, while sparing those trees that are best adapted to defend themselves from beetle attack. Logging removes trees without regard to their adaptive capacity. Logging will be removing adaptive genes from the forest, while natural processes recruit those individuals most likely to offer adaptive traits.
- Third, logging for resistance and resilience to fire and other natural disturbance agents will most often involve dramatic reduction in stand densities. This will imperil many species that prefer to live in dense forests, including spotted owls, and primary prey such as flying squirrels and red tree voles. In short, increasing resilience to fire, reduces resilience for spotted owls.
- Fourth, risk reduction logging is allowed in LSRs under the Northwest Forest Plan (as long as the benefits of action are clear and compelling) so BLM cannot cast aspersions on the no action alternative. In fact, BLM needs to give the action alternatives lower marks because they grant BLM more discretion to conduct active management In reserves that is not properly conditioned on ensuring net ecological benefits.

DEIS at 159 also says, "*Comparing recent satellite imagery of western Oregon with that collected in the mid-1990s, Reserves with minimal or no active management tended to become homogeneous with respect to stand density, age, and condition. Such landscapes appear to be increasingly vulnerable to large, stand-replacing fire*." This is highly speculative, misleading, and not supported by any evidence.

- First, reserves were intended to be spatially distributed and redundant, so that the system of reserves could absorb large disturbance events and still function. See Jerry Franklin's statements following the Biscuit Fire.
- Second, mature forests are less vulnerable to fire, while dense stands of young trees are more vulnerable to fire, so it's really the timber management areas with abundant areas of young reproduction that pose the greatest fire hazard. (See the science excerpts below.)
- Third, the assertion that large reserves are more vulnerable is contradicted in the DEIS. DEIS (p 194) admits that:

> *The High Intensity Timber Area includes management such as thinning and regeneration harvest with no retention and rapid reforestation on a relatively short rotation. This management approach would result in continuous horizontal and vertical fuel profiles and conditions more closely aligned with high severity fire. … [T]here currently exists an overabundance of young and closed conditions and the likelihood of large, high severity fire has increased. Large areas of no retention are not representative of the prevailing vegetative patterns and structure associated with frequent fire, low-severity or mixed-severity fire regimes*.[336]

Moderate Intensity Timber Area includes thinning and regeneration harvest with 5-15 percent basal area retention, and longer rotations and rapid reforestation. This management approach would result in more continuous horizontal and vertical fuel profiles and conditions more closely aligned with high severity fire. Additionally, contiguous fuel profiles have reduced stand-level fire resistance.

Contrary to popular belief, old forests present much less of a fire hazard compared to dense young plantations resulting from regenharvest. Older forests spend most of their lifecycle in a condition of tall trees where most of the fuels are held high above the ground and relatively unavailable for combustion by surface fires. Mature forest canopies also help maintain cool, moist conditions, reduce wind speeds, and suppress the growth of ladder fuels. Regeneration harvest results in young forests of short-stature where the fuels are densely packed and close to the ground where they are available for combustion and present more of a hazard.

> *Large blocks of old-growth forests – rather than large contiguous blocks of young growth or highly simplified forests – are the best scenario for reducing catastrophic wildfire.*[337]

Lindenmayer et al (2009) say –

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[336] Taylor and Skinner 2003, Larson and Churchill 2012.

[337] Jerry Franklin, David Perry, Reed Noss, David Montgomery, Christopher Frissell. Simplified Forest Management To Achieve Watershed And Forest Health: A Critique. National Wildlife Federation. http://www.coastrange.org/documents/forestreport.pdf

> *Contrary to claims by some commentators (e.g., National Association of Forest Industries 2009a,b,c), industrial logging is likely to make some kinds of forests more, not less, prone to an increased probability of ignition (Krawchuk & Cumming 2009) and increased fire severity and/or fire frequency (Uhl & Kauffman 1990; Thompson et al. 2007; Bradshaw et al. 2009; Malhi et al. 2009).*[338]

The 1992 Draft Recovery Plan for the Northern Spotted Owl says, "*High surface fire potential during early succession in Douglas fir was identified by Isaac (1940) as a 'vicious cycle' of positive feedback...*"[339] while "Mature to old-growth forests [in the west Cascades subregion] have a low surface fire behavior potential (Agee and Huff (1992)."[340]

Cochrane et al (2012) recently showed that a patchwork of small clearcuts in areas of the Umpqua National Forest actually increased the size and spread of recent fires. *"[T]he simulated exacerbation of overall fire spread rates is still realistic owing to increased crown fire prevalence caused by the continuous, even-aged fuel complexes of the treated areas.*"[341]

The 2000 National Forest Roadless Area Conservation FEIS (p 3-92 -93) noted the fire hazard associated with regeneration logging:

> *[E]arly successional vegetative growth often forms into dense thickets that create a highly flammable situation. New tree growth, whether from natural regeneration or planted nursery stock, produces needles and twigs that become the fine fuel that contributes to wildland fire spread. ... Post-harvest fuel conditions commonly found in some managed forests prompt many scientists to conclude that harvested forests have a higher propensity for large, severe wildland fires than forests that have not been harvested. A recent report by the National Research Council (2000) speaks to the issue of post-harvest fuel management in Pacific Northwest forests.*
>
> *"Logging has been proposed as a possible surrogate for fire in reducing fuel accumulation with the added benefit of economic return (Agee 1993), but logging and clearcutting do not necessarily reduce flammable fuels…rapid regeneration of early-successional shrubs and trees can create highly flammable fuel conditions within a few years of cutting. Without adequate treatment of small woody residues, logging may exacerbate fire risk rather than lower it (Agee 1993)…"*

Two fires in 2002 on the Umpqua National Forest were evaluated for their effect on the forest. Excerpts from the March 2003 Wildfire Effects Evaluation Project by the Umpqua N.F. make clear the impact of creating more tree plantations:

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[338] David B. Lindenmayer, Malcolm L. Hunter, Philip J. Burton, & Philip Gibbons. 2009. Effects of logging on fire regimes in moist forests. Conservation Letters xx (2009) 1–7. http://soln.org/wp-content/uploads/2010/01/effects-of-logging-on-fire-regimes-in-moist-forests.pdf

[339] 1992 NSO Recovery Plan page 444

[340] 1992 NSO Recovery Plan page 452

[341] M. A. Cochrane, C. J. Moran, M. C. Wimberly, A. D. Baer, M. A. Finney, K. L. Beckendorf, J. Eidenshink, and Z. Zhu. 2012. Estimation of wildfire size and risk changes due to fuels treatments. International Journal of Wildland Fire. http://dx.doi.org/10.1071/WF11079. http://www.publish.csiro.au/?act=view_file&file_id=WF11079.pdf

> *"Plantations had a tendency to increase the rate of fire spread and increased the overall area of stand-replacement fire effects by spreading to neighboring stands." Page 4*
>
> *"Fire burned most plantations with high intensity and spread rapidly through the canopy of these young stands." Page 20.*
>
> *"Plantation mortality is disproportionately high compared to the total area that plantations occupied within the fire perimeter. Page 26-27.*
>
> *"Crown fire spreads readily through these young stands: rates of fire spread can be high, and significant areas or mortality can occur in and adjacent to these stands." Page 32.*

Finally, the report says that the fire behavior in forest that had not been converted to tree farms was normal. "*The pattern of mortality in the unmanaged forest resembles historic stand-replacement patch size and shape*."[342]

The 2013 BAER Report for the Douglas Complex Fires in SW Oregon said "While the severity varied throughout the fire area, young timber plantations carried the fire while older stands tended to be more resistant. This is mostly due young timber plantations having a high density of ground fuels."[343]

VI. FIRE AND FUEL IN THE WILDLAND URBAN INTERFACE

The EIS should provide a map showing the Wildland Developed Areas, including the one-mile buffer. Where BLM intends to protect people and property from fire, we urge BLM to focus fuel treatments on the structure ignition zone, which is generally within 100 feet of structures. Treatment beyond the structure ignition zone should focus on harmonious goals including ecological restoration, carbon storage and clean water.

We urge BLM to focus fuel treatments on dense young plantations that are the most hazardous rather than mature forests that tend to be much more fire resistant and resilient.

The DEIS (p 202) says –

> *The extent of the Harvest Land Base under each alternative and the associated changes in vegetation due to differing management direction would influence the overall patterns in stand-level fire hazard, rather than changes within the reserves. … all alternatives would have similar effects on fire resistance within the Late-Successional Reserve.*

The EIS should do more to highlight the fact that alternatives with greater timber harvest, especially regeneration timber harvest and logging in mature forests, will result in greater fire hazard to homes and communities, while greater forest conservation in reserves would result in greater fire safety for communities.

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[342] Page 64. Umpqua NF. Wildfire Effects Evaluation Project. March 2013. http://web.archive.org/web/20041118062947/http://www.fs.fed.us/r6/umpqua/publications/weep/weep.html.

[343] HSG9 – Douglas Complex Fire Burned Area Emergency Rehabilitation Plan. BLM Douglas Complex BAER Team. Sept 5, 2013. (p 12).

SOIL RESOURCES

I. DETRIMENTAL SOIL DISTURBANCE.

"Detrimental soil disturbance could result in some reduction in future tree growth."[344] Detrimental soil disturbance directly inhibits the "sustained yield of timber" that forms part of the purpose and need for this planning process.

As stated on page 608 of the DEIS:

> *"The alternatives would increase the acreage of detrimental soil disturbance from timber harvest, road construction and fuels treatments by 13 to 30 percent of current amounts during the first decade."*

Further, on page 616 of the DEIS the BLM acknowledges that increased soil compaction and organic matter removal "*have the greatest potential to reduce forest productivity*."

Hence the BLM should have developed a reasonable action alternative that would have reduced, as opposed to increased the amount of detrimental soil disturbance associated with intensive harvest activities and road construction that are emphasized in the action alternatives. Such a reasonable action alternative would best meet the alleged planning purpose of sustained forest production in the long-term while avoiding significant harm to soil resources.

II. MACHINE SLASH PILING

On page 618 of the DEIS the BLM appears to indicate that machine piling may occur within logging units (and not just on log landings). This comes as a surprise to our organizations. The impacts of machine piling on soil resources, and hence on long-term forest productivity, are significant and avoidable.

Please note that the impacts of additional machine piling in logging units located in forest stands currently protected (under the NWFP) as Riparian Reserves or as known Survey and Manage sites is not disclosed or analyzed in the DEIS.

Machine piling increases the disturbance to groundcover and soil. Soil displacement results from the ground-based machine use when the heavy equipment turns and pushes the slash throughout logging units. This displacement has many impacts. First, it removes the organic debris and exposes the soil. This in turn can cause surface sealing and crusting. Erosion and decreased infiltration can also result from this. Second, displacement results in the loss of important soil biota, like mycorrhizal fungi, which assists plant nutrient uptake. It is not an unreasonable request to ask for the BLM to consider the other methods of slash treatment. Most project planners on public lands in the Klamath Siskiyous tend to avoid post-harvest machine piling because of the known impacts and availability of other slash reduction practices.

Please note that recently federal timber planners in the Six Rivers National Forest concluded:

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[344] *DEIS at 615.*

"Machine piling/burn piles would increase ground disturbance and soil displacement when the machine turns."[345]

Please note how the Medford BLM recently responded to requests from the timber industry to authorize machine piling on federal lands:

> *Comment 4: We asked that BLM provide some flexibility in how fuels would be treated by focusing on the desired goals. The BLM has restricted fuels treatments to handpiling and burning. Contractors could use lightweight equipment to treat fuels without detrimentally compacting soils.*
>
> *Response: The commenter has not provided details on methodology or supporting science that would support the claim that machine piling could be done without detrimentally compacting soils in excess of RMP standards for percent area compacted by current activities.*
>
> *Resource management plans call for limiting compaction in harvested areas in order to minimize soil productivity losses. Therefore, no additional use of mechanical equipment for fuels reduction was proposed, as ground-based logging would compact up to 12 percent of the harvest units. This is particularly important in the Cottonwood planning area as the majority of soils contain high rock content. It was identified that ripping the soils in this area would bring rocks and cobbles to the surface. The priority was given to minimizing the soil area compacted instead of trying to mitigate the effects. Additionally, the harvest prescription resulting in relatively few trees per acre being cut minimizes the slash, and consequently, also reduces the need for mechanical fuel treatment.*[346]

Mechanical piling is universally recognized as an outdated practice that has disproportionately harmful significant impacts on watershed and soil resources.

Please see:

> *Evelyn Bull et al. Trees and Logs Important to Wildlife in the Interior Columbia River Basin PNW-GTR-391 (1977).*
>
> *BLM, USGS, Biological Soil Crusts: Ecology and Management (Technical Reference 1730-2 (2001) (Available from BLM Publication Management Distribution Service, Bldg 41, E-16 (BC-650B) Denver, CO 80255*

Please note that machine slash piling will condense soil and decrease its porosity. This leads to a decrease in the productivity of that soil which affects the plant life. This can reduce root growth, timber volume, and tree height.[347] These impacts can come as a result of as little as one pass by

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[345] *Little Doe and Low Gulch Timber Sale DEIS p 110.*

[346] Medford BLM Cottonwood Project EA Appendix A, Response to Comments Page 3-2: http://www.blm.gov/or/districts/medford/plans/files/Revised_EA_Final.pdf

[347] Greacen and Sands 1980; Froehlich and McNabb 1984.

the logging equipment across a site.[348] This loss in productivity can impact individual trees (Froehlich 1979,[349] Helms and Hipkin 1986)[350] or whole sites (West and Thomas 1981)[351]. Even the microbial population in the soil can be adversely impacted (Amaranthus et al. 1996)[352].

BLM should examine the monitoring reports on soil compaction from 1985 through 1997, on the Payette National Forest. The study area in that planning effort contains different soil and ecotypes than those covered by the BLM RMP, but the documented long-lasting effects are still relevant to the DEIS at hand.

We also encourage the agency to review the findings of Geppert, R.R., Lorenz, C.W., and Larson, A.G., 1984. Cumulative Effects of Forest Practices on the Environment: A State of the Knowledge. Wash. For. Practices Board Proj. No. 0130, Dept. of Natural Resources, Olympia, Wash.

Manual piling or underburning is far preferable to tractor piling. Manual piling and underburning have none of the negative impacts to soils associated with tractor piling, and they provide an increased opportunity for local employment while significantly reducing long-term damage to soil health and productivity. Hence manual piling or underburning would better achieve the stated purpose and need for the RMP revisions. Given that these practices can reduce fuels without the negative impacts associated with machine piling, they are reasonable to implement and reasonable to consider and analyze as an action alternative.

MODELING CONCERNS

Several recent scientific publications and government reports refute some of the important but controversial modeling assumptions in the DEIS. The BLM fails to identify existing scientific information that answer the stated questions. The BLM must use the best available science for managing fish and wildlife on public lands.

The BLM examined several existing models for analyzing timber growth and harvest and selected a proven model for use (Woodstock). But for most other ecologically important issues, simplistic and untested models (often lifted from failed 2008 WOPR) when sophisticated and tested peer reviewed models already exist. For example, the BLM identifies a novel and untested model for large wood recruitment to streams when a sophisticated wood recruitment model developed by regional government scientists already exists[353]. Similarly, the untested and simplistic model for analyzing fine sediment delivery to fish streams is not an appropriate

[348] Wronski 1984.
[349] Froehlich, HA. 1979. Soil compaction from logging equipment: effects on growth of young ponderosa pine. *Journal of Soil and Water Conservation* 34:276-278.
[350] Helms, JA, and C Hipkin. 1986. Effects of soil compaction on tree volume in California ponderosa pine plantation. *Western Journal of Applied Forestry.* 1:121-124.
[351] West, S and BR Thomas. 1981. Effects of skid roads on diameter, height, and volume growth in Douglas-fir. *Soil Science Society of America Journal* 45:629-632.
[352] Amaranthus, MP, and DA Perry. 1989. Rapid root tip and mycorrhizal formation and increased survival of Douglas-fir seedlings after soil transfer. *New Forests* 3:77-82.
[353]Spies et al. 2013.

starting point when many more sophisticated and tested models exist for modeling sediment delivery to streams[354].

In the RMP Planning Criteria at 76, the BLM reports that "[Northern spotted owl] Conservation Need 3 includes "a monitoring program to clarify whether these risk reduction methods are effective and to determine how owls use habitat treated to reduce fuels However, *the creation of such a monitoring program is not a BLM responsibility and will not be included in the BLM evaluation."* (emphasis added) It is not appropriate for BLM to ignore FLPMA, NEPA and Congress, which also call for the stated effectiveness monitoring. Why is BLM spending millions on reducing fire risk if it does not work or is harmful to spotted owl recovery? In the absence of monitoring, it would at least seem logical and prudent for BLM to employ modeling to determine the trade-offs between logging impacts to owl habitat, when reducing fuels, and loss of spotted owl habitat to fires. Two independent studies (i.e. new information) have found that the BLM's commonly asserted assumption (that logging to reduce fuels in fire prone spotted owl habitat is beneficial) have found that fuels reduction at a landscape scale is actually harmful to spotted owl habitat[355]. Each of these studies is relevant to dry forests in the Medford and Lakeview Districts. Thus, the science finds that thinning resulted in much larger losses to owl habitat over a 40 and 100 year period than living with more fire killed habitat. Several other studies soon to be published are also finding that the spotted owls are better off with fire and no pre-emptive fuels reduction logging. Add to this the need for large patches of fire killed snag forests for "status review" black-backed woodpeckers in these same districts and logging to reduce fires is not a win-win technique as once thought. Large scale fuels reduction projects have now been shown to be lose-lose for the wildlife on at least the Medford and Lakeview Districts.

SPECIAL DESIGNATIONS

We support the Illinois Valley as a "salmon and botanical area" because this unique area has extraordinary potential for wilderness recreation, Wild and Scenic River recreation, botanical recreation, unmatched steelhead fishing opportunities, and high value conservation of rare and endangered wildlife, rare plants, and native fishes. The free flowing Illinois River basin hosts one of the largest remaining Coho salmon populations of the SONCC. The BLM needs to initiate cooperative and coordinated management of the Eight Dollar Mt. complex with the Forest Service, Oregon parks and recreation and nature conservancy similar to management agreements in place at Table Rock complex.

The Illinois Valley is a large interior valley of the Rogue River basin in the Klamath-Siskiyou ecoregion of southwestern Oregon/northwestern California. The BLM managed lands have exceptional plant and animal diversity because of elevation gradients, a hierarchy of perennial streams, and complex serpentine geology. A large number of the endemic plant species of the Klamath Siskiyou ecoregion are found in the Illinois Valley. Some of these plants are found nowhere else in the world and two are federally listed due to limited range. Plant protection is the focus of three existing ACECs, two Research Natural Areas, and two proposed ACECs. ACEC's and RNA's often abut similar Forest Service botanical area designations and require

[354] See BLM Timber Rock Final EIS.
[355] See Hanson et al. 2009 and Raphael et al. 2013.

close coordination to prevent damage from off road vehicles, mining, and undesirable introductions of alien species such as Alyssum. The Eight Dollar Mountain Area is a complex of BLM ACEC, Forest Service Botanical Areas, Oregon State Parks Lands, and Nature Conservancy lands with numerous Darlingtonia fens, associated rare plants and recreational facilities. The BLM manages a boardwalk that provides handicapped access to a Darlingtonia fen at the base of Eight Dollar Mountain. Coordinated management is needed to protect fragile ecosystems and provide appropriate recreational opportunities for plant areas and the Wild and Scenic Illinois River. Additional recreational areas are identified along the West Fork Illinois and for the 80 acre BLM parcel within Forks State Park.

In addition to the exceptional plant diversity of the Serpentine Siskiyous, large areas of oak woodlands and mixed evergreen forests provide high tree and shrub diversity in the Oak Savanna Foothills and Inland Siskiyous ecoregions of the Illinois Valley. Neotropical and resident bird species diversity is high. The endemic Del Norte salamander occupies talus areas. Rare Pacific fishers and federally listed northern spotted owls inhabit these forested areas. Beaver create ponds for declining western pond turtles (e.g. a beaver dam occupied by pond turtles is at proposed Logan Cut recreation area)

Illinois Valley streams and rivers support robust runs of native winter steelhead, Chinook salmon, coho salmon, cutthroat trout, and Pacific lamprey. Anadromous fishes can access nearly all historical habitat because the mainstem Illinois River and its major tributaries have no high dams. All fish species sustain themselves with natural production and with no hatchery fish supplementation, thus assuring a high degree of genetic integrity. The Illinois Valley is a major stronghold for the federally listed coho salmon because several tributaries have viable populations. High elevation headwater areas have dependable snowpacks that provide cool perennial water through the long hot summers. Winter Steelhead that spawn and rear in BLM streams are caught in a recreational fishery as adults in the mainstem Illinois. Selmac Lake, an artificial impoundment, near Selma provides year round fishing for primarily non-native fishes such as bass and perch.

Timber harvest is primarily directed at upland forests that have been categorized as “dry” forests where thinning young trees is the principal silvicultural technique. High priority for harvest are densely stocked plantations and encroaching Douglas-fir trees that have invaded oak woodlands and are a threat to plant biodiversity because they shade out understory shade intolerant species. Fuels treatments to break up dense shrub patches and remove flammable small trees are augmented with controlled fires.

ACECS

We hereby incorporate by reference KS Wild et al. comments on ACECs submitted on the DEIS.

WILD AND SCENIC RIVERS

The BLM should identify streams being considered by congress for inclusion in the national wild and scenic rivers system and also seek out candidate streams with mixed BLM and Forest Service management.

The BLM cannot pre-empt the will of Congress by failing to protect streams currently being considered in federal legislation. Specifically the streams identified for Wild and Scenic designation in Senator Wyden's O&C Bill must be treated as candidate wild and scenic rivers. The O&C Bill identifies the Nestucca River, Walker Creek, North Fork Silver Creek, Jenny Creek, Spring Creek, Lobster Creek, Wasson Creek and Franklin Creek. These streams and adjacent ¼ mile must be reserved from timber harvest modeling and any management actions that would damage wild and scenic characteristics. These streams and adjacent lands would also need to be identified for mineral withdrawal in the RMP. Additionally the BLM must coordinate with the Forest Service to conduct a geospatially explicit analysis to identify potential BLM wild and scenic streams that are adjacent existing Forest Service candidate wild and scenic streams. Some examples are Rough and Ready Creek, West Fork Illinois River, Sucker Creek, and Althouse Creek in the Medford District.

CARBON AND CLIMATE CHANGE

Global climate change is a new and significant threat to humanity and forests. We have a moral and legal obligation to minimize and mitigate this threat.[356] Climate change is caused by excess CO_2 and other greenhouse gases transferred to the atmosphere from other pools. All temperate and tropical forests, including those in this project area, are an important part of the global carbon cycle. Since all forests are an important part of the global carbon cycle, the agency must do its part by managing forest to maintain and increase carbon storage. Global warming is caused by the *cumulative* build-up of greenhouse gases, especially carbon, in the atmosphere. Logging will add to the cumulative total carbon emissions so it is clearly part of the problem and must be minimized and mitigated. Logging will not only transfer carbon from storage to the atmosphere but future regrowth is unlikely to ever make up for the effects of logging, because carbon storage in logged forests will lag carbon storage unlogged forests for decades or centuries. Since the time the resource management plan was written, there is significant new information reinforcing the need to conserve all existing large stores of carbon in mature & old-growth forests in order to keep carbon in forests and out of the atmosphere in order to mitigate climate change. Please review the report on "Forests, Carbon & Global Warming" prepared by Oregon Wild. The report explains how climate change is likely to affect Pacific Northwest forests as well as how forest conservation and restoration (including sensible changes to this project) may help mitigate climate change.[357] And see this related slideshow that helps debunk some of the flawed arguments used by logging advocates: http://www.slideshare.net/dougoh/forest-carbon-climate-myths-presentation/.

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[356] See 2015 Oslo Principles on Global Climate Change Obligations. http://www.osloprinciples.org/.

[357] https://dl.dropboxusercontent.com/u/47741/Oregon%20Wild%20Report%20on%20forests%2C%20carbon%2C%20and%20global%20warming%2C%20ver.%201.4.pdf.

On June 25, 2013, President Obama released his Climate Action Plan which includes forest conservation among the "first pillar"[358] of efforts to reduce emissions, saying: "**Preserving the Role of Forests in Mitigating Climate Change:** *America's forests play a critical role in addressing carbon pollution, removing nearly 12 percent of total U.S. greenhouse gas emissions each year. … Conservation and sustainable management can help to ensure our forests continue to remove carbon from the atmosphere …* " [359] "[A]dvancing efforts to protect our forests" is also mentioned in the 6th U.S. Climate Action Report under the United Nations Framework Convention on Climate Change (UNFCCC). The agency should advance this national climate goal by conserving public forests. Carbon emissions from logging public lands directly conflict with this important national goal and indicate potential significant impacts requiring an EIS.

The Copenhagen Accord recognizes the need to avoid dangerous climate change and the role of forests in climate mitigation. *"…To achieve the ultimate objective of the Convention to stabilize greenhouse gas concentration in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system, we shall, recognizing the scientific view that the increase in global temperature should be below 2 degrees Celsius… We recognize the crucial role of reducing emission from deforestation and forest degradation and the need to enhance removals of greenhouse gas emission by forests and agree on the need to provide positive incentives to such actions*"[360] This likely requires reducing atmospheric CO_2 concentrations below 350 ppm[361] and avoiding logging that would increase atmospheric carbon emissions.

In the DEIS, "key points" described under "climate change" include: "*Carbon storage would increase under all alternatives. … Greenhouse gas emissions associated with BLM-administered lands would increase under all Alternatives…*" This is misleading. It is more useful to provide the public and the decision-maker with information on what distinguishes the alternatives. Which alternative would store the most carbon in the forest? Which alternatives would cause the most GHG emissions? How does carbon storage compare to the baseline of natural forests growing without being logged? These are the key points that need to be disclosed. We applaud BLM for preparing a "No Timber Harvest Reference Analysis" and this should have been reflected in the "key points" to highlight the fact that logging sacrifices carbon storage.

The DEIS (p 136) says "*harvesting removes carbon and shifts stand characteristics, such as mean diameters and heights, in more of the landscape to smaller trees and younger age classes that store less carbon*." This is good, but the EIS analysis needs to clearly disclose the carbon consequences of the various discrete policy choices that the decision-maker is facing. For instance, the EIS needs to disclose that:

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[358] U.S. Dept of State 2013. draft 6th Climate Action Report http://www.state.gov/e/oes/climate/ccreport2014/index.htm (page 12).
[359] http://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf
[360] http://www.climatesciencewatch.org/file-uploads/Copenhagen_Accord.pdf.
[361] Rockström, J., W. Steffen, K. Noone, Å. Persson, F. S. Chapin, III, E. Lambin, T. M. Lenton, M. Scheffer, C. Folke, H. Schellnhuber, B. Nykvist, C. A. De Wit, T. Hughes, S. van der Leeuw, H. Rodhe, S. Sörlin, P. K. Snyder, R. Costanza, U. Svedin, M. Falkenmark, L. Karlberg, R. W. Corell, V. J. Fabry, J. Hansen, B. Walker, D. Liverman, K. Richardson, P. Crutzen, and J. Foley. 2009. Planetary boundaries:exploring the safe operating space for humanity. *Ecology and Society* **14**(2): 32. [online] URL: http://www.ecologyandsociety.org/vol14/iss2/art32/. http://www.stockholmresilience.org/download/18.1fe8f33123572b59ab800012568/pb_longversion_170909.pdf. http://www.ecologyandsociety.org/vol14/iss2/art32/figure6.html.

- Wider stream buffers store more carbon than narrow stream buffers;
- Forest reserves store more carbon that timber management areas;
- Large reserves store more carbon than smaller reserves;
- Reserves with strict limits on logging store more carbon than reserves that allow logging;
- Thinning stores more carbon that regeneration harvest;
- Regeneration harvest with ≥30% retention stores more carbon than regeneration with little of no retention;
- Logging to try to limit carbon emissions from fire will likely emit more carbon from logging than will be prevented via fire control. Law, B. & M.E. Harmon 2011. Forest sector carbon management, measurement and verification, and discussion of policy related to mitigation and adaptation of forests to climate change. Carbon Management 2011 2(1). [362]
- Meeting RA 32 by protecting all forests over 80 years old will store more carbon than meeting RA 32 by conserving forests 150 years and older.

Similarly, wider stream buffers and large, well-protected reserves, will better prepare forests for the extremes of climate change. In most cases, logging will reduce forest resilience, not increase it. The DEIS (p 132) says "*Active management would provide opportunities to implement climate change adaptive strategies*." However, there is strong evidence that unmanaged forests have great capacity for self-correction and self-organization. BLM should look carefully at all the evidence, including competing experts viewpoints before concluding that logging is beneficial. Complex native forests are more resilient to climate change than logged forests and simplified plantations. The IPCC recognizes that –

> *... [R]educing emissions from deforestation and degradation may also yield co-benefits for adaptation by maintaining biodiversity and other ecosystem goods and services, while plantations, if they reduce biological diversity may diminish adaptive capacity to climate change (e.g., (Chum et al., 2011). Primary forests tend to be more resilient to climate change and other human-induced environmental changes than secondary forests and plantations (Thompson et al., 2009).*[363]

BLM should maintain the existing Aquatic Conservation Strategy and its wider riparian buffers because it will help make hydrologic systems and aquatic ecosystems more resilient to climate change by moderating cumulative watershed effects, reducing the extent of the road system, emphasizing maintenance of riparian areas, shade, floodplain processes, recruitment of large wood from both near stream areas and unstable slopes, and connectivity and fish passage.

DEIS (p 133) says "*the potential error in the estimate for any one alternative likely exceeds the amount of variance between the alternatives*." This should be clarified to say that in spite of these uncertainties, confidence the relative effects of alternatives remains strong, i.e., alternatives

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[362] http://terraweb.forestry.oregonstate.edu/pubs/lawharmon2011.pdf;

[363] IPCC AR5, Working Group III, Mitigation of Climate Change, Chapter 11 Agriculture, Forestry and Other Land Use (AFOLU) (Final Draft 2014) pp 46-47.http://report.mitigation2014.org/drafts/final-draft-postplenary/ipcc_wg3_ar5_final-draft_postplenary_chapter11.pdf

with less logging and larger reserves will result in relatively greater carbon store, while alternatives with more logging and small reserves will result in greater GHG emissions.

The DEIS does not explain how BLM arrived at the conclusions presented in Figure 3-24, the pie chart showing that fire emits more carbon than "harvest operations." The DIES does not say what kinds of emissions are include in harvest operations. Is it just the fuel used for machinery and transport? Does it include carbon removed from the forest via logging and slash fires? Does it account of the decay of wood products removed from the forest in current and prior years? Etc.

The "affected environment section" of the climate change section of the DEIS needs to describe the forest carbon cycle (pools and flows), how carbon flows into and out of the forest, the fate of carbon removed via logging, processes that control the net gain/loss of carbon,

The effects analysis needs to disclose the different consequences of carbon emissions in different time periods (e.g., near-term emissions are not compensated by delayed carbon uptake because global climate change and ocean acidification were made worse during the timber that extra carbon was in the atmosphere and future uptake cannot effectively mitigate for that). BLM should incorporate the concept of "carbon debt" and lag time associated with logging related carbon emissions in the near terms, and carbon recapture via forest regrowth over the long-term.

DEIS Figure 3-26 shows that all alternatives will increase carbon emissions but Alt. D will emit much less than the other alternatives. This makes sense based on the fact that Alt D allows more forests to continue growing and storing carbon, but this result requires further explanation in light of the DEIS assertion that carbon emissions are dominated by by wildfire, rather than logging. Does this result imply that forest growth dominates the net carbon balance of BLM forests regardless of wildfire effects, or that Alt D is expected to maintain more forests that are resistant to wildfire and therefore cause less carbon emissions from both logging and fire? If so, this should be made more explicit.

DEIS (p 145) describes a pattern of increased tree mortality related to climate change. The EIS should explain that this is a beneficial system-level adaptation to increasing climate stress. Trees that die free up resources so that surviving trees have a better chance of survival. This is an example of forests' self-correcting, self-organizing behavior common to many complex systems that are far from equilibrium.

DEIS (p 149) says "*analysis of Oregon large fires using data from the Monitoring Trends in Burn Severity site (http://mtbs.gov/index.html) indicates that the proportion of high-severity fire in forests generally has increased by 11 percent since 1984, with much of the increase since 2000.*" This appears to be contradicted in DEIS Appendix D which

> *… examined the MTBS data for any obvious temporal trends in wildfire severity, but did not detect a strong signal (Figure D-6). Over the course of 25 years, there appears to be a slight increase in the percentage of area burned by low and moderate severity wildfire, and a slight decrease in the percent of area burned in high severity wildfire, although these trends are not statistically significant. … While several studies have indicated that high severity fires are increasing across the western United States (Westerling et al.*

2006, Dillon et al. 2011a, Miller et al. 2012), no such trends were apparent in the observed record within the range of the northern spotted owl (Figure D-6).[364]

DEIS (pp 149-150) describes increasing stream temperatures as a result of climate change. The DEIS does not fully disclose the likely consequences on cold-water fish and other temperature-sensitive aquatic organism. For instance, stream temperatures are increasing most during summer when fish are most vulnerable. BLM should attempt to mitigate this by avoiding any shade loss caused by logging, and by reducing other anthropogenic stresses such as sediment from logging and roads and grazing.

DEIS Figure 3-28 shows that climate change seems to be causing an increase precipitation during spring. This is a significant concern for spotted owl nest success, which is inversely related to spring precipitation. DEIS (p 150) has a brief discussion of climate change and spotted owl declines, but the DEIS effects analysis (p 157) needs to consider alternative ways of mitigating the likely effects of climate change, such as by maintaining more suitable habitat which will support a larger owl population that is less vulnerable to stochastic variation and uncertainty caused by climate change and other factors.

DEIS (p 156) says "in the Northwest, warming air temperatures and declining summer base flows are strongly associated with warming stream temperatures" BLM needs to disclose how this trend intersects with the proposed reduction in stream protection and increases sin logging near streams. BLM should maintain wide stream buffers to maintain maximum shade and mitigate for global warming.

DEIS (p 157) says climate change will result in "*changes in disturbance regimes [that] could disfavor species associated with old-growth forests, by shifting more of the landscape into earlier seral stages, altering species compositions to ones less preferred, reducing the extent of large trees and structurally-complex forest, and decreasing patch sizes preferred for different life stages, such as nesting…*" The NWFP assumed that eventually 80% of the reserves would grow old and provide late successional habitat, while at any given time approximately 20% of the reserves might be affected by disturbance. As a result of climate change these proportions are likely to shift toward greater disturbance and more younger forests. BLM should mitigate for this by adopting a final alternative that protects all suitable owl habitat, not just a subset of high quality habitat, and by protecting larger LSRs and riparian reserves so that there is a larger part of the landscape given a chance to grow old and provide complex habitat.

To meet legal requirements including those under the O&C Act related to watersheds and community stability, BLM should adjust the purpose and need for this plan revision to include carbon storage and climate change adaptation. BLM should therefore strive to maintain and increase carbon storage and maintain biodiversity, not just focus on recovery of ESA-listed species. Maintaining biodiversity is an important way to prepare for global climate change, because the diversity of organisms and genes represent the complete range of evolutionary adaptations to past (and near future) climate change.

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[364] Ray Davis et al 2015. RMP Revisions for Western Oregon BLM DEIS. Appendix D – Modeling Wildfires and Fire Severity. http://www.blm.gov/or/plans/rmpswesternoregon/files/draft/RMP_EIS_Volume3_appd.pdf

I. THE FEDERAL LAND POLICY & MANAGEMENT ACT REQUIRES BLM TO TAKE ACTION ON CLIMATE CHANGE

BLM has a duty to prepare a current and up-to-date inventory of public lands and their new and emerging resource values.[365] This requires BLM to carefully inventory all the carbon stored in forests and soils on western Oregon BLM lands and the value of BLM lands to store more carbon if managed appropriately to grow more mature & old-growth forest forests.

BLM must give priority to identifying ACECs where special management is needed to prevent irreparable damage and protect life and safety from safety from natural hazards. This requires BLM to identify all mature & old-growth forest forests as ACECs because they must be conserved in order to avoid and mitigate climate change which is a natural hazard predicted to cause irreparable harm to important natural systems that need protection.

BLM must consider "potential uses of public lands." [366] This requires BLM to consider an alternative that uses BLM lands for carbon storage and climate mitigation, arguably the highest and best use of the highly productive forest lands in western Oregon. The analysis will reveal significant complementary benefits for water quality, quality of life, fish & wildlife habitat, community stability, etc.

FLMPA requires BLM to consider scarcity of values and available alternatives.[367] This requires BLM to recognize that western Oregon BLM lands are capable of growing very high levels of biomass per acre and such places are relatively rare. This also requires BLM to consider and compare the carbon consequences of various alternative management schemes.

Some forests are far better at sequestering carbon than others. And BLM has some great ones — low elevation forests with long growing seasons and mild winters and disturbance regimes that allow longer periods of growth and carbon accumulation. Forests on the westside of the PNW (where BLM's western Oregon holding are located) are twice as productive as forests in other parts of the country. Western Oregon forests can grow 100 cubic feet of wood per acre per year, while forests of the NE, SE, and mid-west generally produce half or less than that.[368] In addition to prodigious growth, westside forests are able to store that carbon for long periods. The "carbon density" of Westside forests exceed that of any forests in North American[369], possibly the world. This means that BLM lands are uniquely suited for sequestering carbon.[370] These highly

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[365] 43 USC § 1711.
[366] 43 USC § 1712.
[367] Id.
[368] Powell, Douglas S.; Faulkner, Joanne L.; Darr, David R.; Zhu, Zhiliang; MacCleery,l Douglas W. 1993. Forest resources of the United States, 1992 Gen. Tech. Rep. RM-234. Fort Collins, CO: U.S. Department of Agriculture, Rocky Mountain Forest and Range Experiment Station. 132 p. + map. [Revised, June 1994]. http://www.fs.fed.us/rm/pubs_rm/rm_gtr234.html
[369] Carbon density is a measure of the carbon in live and dead vegetation plus soil carbon measured on a per-acre basis. The westside of the Pacific Northwest is uniquely suited to growing and storing carbon in forests. See Figure 6 in Ingerson, Ann L. 2007. U.S. Forest Carbon and Climate Change. Washington, D.C.:The Wilderness Society. http://www.wilderness.org/Library/Documents/upload/ForestCarbon-ClimateChange.pdf

[370] See Christine L. Goodale, Michael J. Apps, Richard A. Birdsey, Christopher B. Field, Linda S. Heath, Richard A. Houghton, Jennifer C. Jenkins, Gundolf H. Kohlmaier,

productive forests of the northwest are losing carbon due to short-rotation forestry. From 1990 to 2010 western Oregon and western Washington are expected to lose 97.4 million tons of carbon under business-as-usual forest management.[371] There is a great potential to adopt new forest practices to reverse this trend. In fact, the Northwest Forest Plan reserves are already recognized as a step toward wise management of forest carbon. "Federal forest management policies are already contributing significantly to this goal with the extensive series of forest reserves established in the Northwest Forest Plan. Tens of thousands of acres of cutover federal forest land are being managed for restoration of late-successional forest conditions and, coincidentally, much higher levels of carbon stocks." [372] If BLM reduces the extent of the reserves and reduces protection of the carbon in large trees, and reduces the goals for restoration of previously logged sites, then these recognized carbon storage values will be lost. The EIS must address the impacts of this on climate, ecology, and social systems.

Recent studies show that northern forests are experiencing "A trend toward hotter and drier conditions is likely to exacerbate the effects of fire by increasing the frequency, intensity, and size of burns."[373] Some northern forests are also facing unprecedented mortality from insects, which could cause large-scale changes in boreal forest systems. These changes point to the very real possibility that boreal forests may be entering a positive feedback that shifts the northern forests from net carbon sinks to net carbon sources. This highlights the "scarcity" of forest sites with high potential to store carbon and the dwindling alternatives to storing carbon on BLM lands.

Scientists and policy-makers recognize that forests can play a significant role in mitigating climate change by storing more carbon. The UN says that 35% of the global opportunity to store carbon in forests is outside the tropics. Scientists have estimated that compared to other forest types, temperate conifer forests are likely to be one of the most persistent forest types in the face of climate change.[374] This makes old-growth on BLM land a potentially very rare and valuable reserve in terms of carbon storage.

Compared to other sectors, the forestry sector has a high benefit/cost ratio for carbon mitigation actions. That means that carbon storage in forests is a relatively efficient way to mitigate climate change. BLM must consider this in the EIS.

Werner Kurz, Shirong Liu, Gert-Jan Nabuurs, Sten Nilsson, And Anatoly Z. Shvidenko. 2002. Forest Carbon Sinks In The Northern Hemisphere. Ecological Applications, 12(3), 2002, pp. 891–899q 2002. http://www.whrc.org/resources/published_literature/pdf/GoodaleEcolAppl.02.pdf
("Over 80% of the estimated sink occurred in one-third of the forest area …")

[371] Haynes, Richard W.; Adams, Darius M.; Mills, John R. 1995. The 1993 RPA timber assessment update General Technical Report RM-259. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 66 pp. http://www.treesearch.fs.fed.us/pubs/20058

[372] LAURIE A. WAYBURN, JERRY F. FRANKLIN, JOHN C. GORDON, CLARK S. BINKLEY, DAVID J. MLADENOFF, NORMAN L. CHRISTENSEN, JR. 2007. Forest Carbon in the United States: Opportunities & Options for Private Lands. Pacific Forest Trust. http://www.pacificforest.org/publications/pubpdfs/ForestCarbonReport-07Update.pdf

[373] Jill Sakai. 2007. Wildfire drives carbon levels in northern forests. University of Wisconsin News. Oct. 31, 2007. http://www.news.wisc.edu/14399 *citing* work by Dr. Tom Gower and others.

[374] Staley, TNC Climate Conference 2007.

BLM must consider long-term vs short-term benefits.[375] This requires BLM to recognize that the benefits of logging are very short-term, while the benefits of climate mitigation through conserving and restoring mature & old-growth forests are both short-and long-term.

II. BLM MUST MANAGE FOR COMPLEMENTARY MULTIPLE USES

The O&C Act's mandate to correct market failures and sell timber only at "reasonable prices on a normal market" is an implicit acknowledgement of the multiple use concepts in the Federal Land Policy and Management Act. The O&C Act does not conflict with multiple use or FLPMA because Congress sought to further the public interest by normalizing markets. FLPMA requires that BLM produce appropriate amounts of public goods like watersheds, fish & wildlife, scenery, and scientific values. FLPMA's multiple use mandates require consideration of future generations and harmonious management of the multiple values, without any one use impairing the others.[376] This is accomplished in part by correcting market failures so that appropriate amounts of public goods are produced and prices reflect the full costs of production (including the cost of mitigating climate change and impaired water quality, and the cost of replacing old growth habitat where it has been lost).

III. O&C ACT REQUIRES BLM TO TAKE ACTION ON CLIMATE CHANGE

BLM views the forest as just trees and they view the O&C Act as a simple mandate to cut them down as fast as they grow. This grossly over-simplified view of the forest is inconsistent with the current understanding of forests and inconsistent with the O&C Act itself.

The O&C Act of 1937 provides: *"[T]imberlands … shall be managed … for permanent forest production, and the timber thereon shall be sold, cut, and removed in conformity with the principal of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities … [T]imber from said lands … shall be sold annually, or so much thereof as can be sold at reasonable prices on a normal market."* [377]

> *Forests are not just trees, but part of ecosystems that underpin life, economies and societies. …[A]ll forests provide a wide range of ecosystem services. These services include prevention of soil erosion, maintenance of soil fertility, and fixing carbon from the atmosphere as biomass and soil organic carbon. Forests host a large proportion of terrestrial biodiversity, protect water catchments and moderate climate change. Forests also support local livelihoods, provide fuel, traditional medicines and foods to local communities, and underpin many cultures. The harvesting of forest products is putting severe stress on the world's forests. … {Ecosystem] services have been reduced by the decline in total forest area and by continued forest degradation, especially in production and multipurpose forests … Greater emphasis on conservation of biodiversity may lead*

[375] 43 USC § 1712.
[376] 43 USC § 1702(c).
[377] http://www.blm.gov/or/plans/wopr/files/OCAct.pdf

to increased benefits in terms of resilience, social relations, health, and freedom of choice and action.[378]

The best way to safely store carbon and mitigate climate change to achieve permanent forest production, sustained yield, regular water flow, protect watersheds, and community economic stability is to protect all mature & old-growth forest forests and allow young forests to grow while increasing their diversity through variable density thinning, while maintaining forests that are prone to drought stress below their water-limited carrying capacity through thinning small trees and prescribed fire. This should have been considered as an alternative.

IV. BLM MUST HELP MITIGATE CLIMATE CHANGE TO REGULATE WATER FLOW AND TO PROTECT WATERSHEDS

"*Forest ecosystem services are threatened by increasing human demands. Exploitation of forests has been at the expense of biodiversity and natural regulation of water and climate…* "[379]

Logging mature & old-growth forests will exacerbate climate change and cause altered precipitation patterns, reduced snow pack, and increased evaporative demand which will violate the O&C Act's mandate to regulate water flow and protect watersheds. Logging mature and old-growth forest will tend to make water flow less regular and watersheds less protected from hydrologic extreme hydrologic events. If BLM protects mature & old-growth forest forests and grows more, water flow will be more regular and watersheds will be more protected.

Climate change is expected to increase winter precipitation and more of that precipitation will fall as rain instead of snow. This will increase peak flows in the winter and spring. Peak flows that exceed the natural pattern are harmful to watershed values. Peak flows cause erosion of stream banks and bottoms and cause landslides by undercutting slopes.

The forests and watersheds have had 2 million years to adapt to the climatic swings between glacial and interglacial periods, but now climate change threatens to push the pendulum beyond the normal interglacial into new territory that is warmer than the earth has experienced for millions of years. Both the rate and magnitude of climate change are unprecedented.

Warming will increase evaporative water demand and soil water deficit ,which will decrease late summer stream flow. Low stream flow harms not only fish but also agriculture, communities, and industries that rely on summer water supply.

There has been progressively more information highlighting the hydrologic consequences of climate change:

- The IPCC Second Assessment Report in 1995 predicted that "Warmer temperatures will lead to a more vigorous hydrological cycle; this translates into prospects for more severe

[378] Dent, David. Chapter 3 – Land *in* Global Environment Outlook (GEO4). http://www.unep.org/geo/geo4/report/03_Land.pdf
[379] Dent, David. Chapter 3 – Land *in* Global Environment Outlook (GEO4). http://www.unep.org/geo/geo4/report/03_Land.pdf

droughts and/or floods in some places and less severe droughts and/or floods in other places. … Potential North American climate change impacts include increased winter/spring runoff and decreased summer soil moisture and runoff."[380]

- IPCC's 2001 Third Assessment Report found "It is likely that summer continental drying and associated risk of drought will increase over most mid-latitude continental interiors [leading to] decreased crop yields, increase forest fire risk, decreased water quality/quantity."[381]
- An analysis of water run-off using the climate models in the IPCC Fourth Assessment Report projected a 10-30% decreases in runoff in western North America by the year 2050 "Such changes in sustainable water availability would have considerable regional-scale consequences for economies as well as ecosystems" C. Milly et al. 2005 Global pattern of trends in streamflow and water availability in a changing climate. Nature.
- In summary, "Air temperatures are virtually certain to warm further [and] Warmer air temperatures would probably severely reduce the quantity of water resources." Martin Hoerling and Jon Eischeid. Emerging Issues for Water in the West: 21st Century Drought. Climate Action Panel. 20 Nov 2006. [382]

"*[M]odel results indicate that severe droughts (5% frequency today) will occur about 50% of the time by the 2050…..due primarily to temperature increase".* [383]

Small changes in stream flow can have large impacts on water storage and power generation. *"A 20% reduction in natural runoff would cause mean annual reductions in storage of 60 to 70% reductions in power generation of 60%…"* [384]

V. BLM MUST HELP MITIGATE CLIMATE CHANGE TO STABILIZE COMMUNITIES AND INDUSTRIES

The economic and social impacts of climate change are widely recognized. "Global warming could have impacts right here in the Rogue Valley, boosting the number and size of wildfires, harming salmon and reducing the snowpack people rely on for drinking water and irrigation." [385]

The Oregon Legislature passed a bill in 2007 with the following findings[386]:

> *(3) Global warming poses a serious threat to the economic well-being, public health, natural resources and environment of Oregon.*
> *(4) Oregon relies on snowpack for summer stream flows to provide energy, municipal*

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[380] IPCC. 1995. The Regional Impacts of Climate Change: An Assessment of Vulnerability.
[381] IPCC Third Assessment Report, Climate Change 2001
[382] http://www.resourcesaver.com/ewebeditpro/items/O14F10014.pdf
[383] David Rind, Jim Hansen et al. 1990. Potential Evapotranspiration and the Likelihood of Future Drought. Journal of Geophysical Research.
[384] L. Nash and P. Gleick. The Colorado River Basin and Climate Change: The sensitivity of streamflow & water supply to variations in temperature & precipitation. EPA Report, Policy, Planning and Evaluation 1993.

[385] Vickie Aldous. 2007. Global warming could alter Valley life. Ashland Daily Tidings. October 29, 2007. http://www.dailytidings.com/2007/1029/stories/1029_climate1.php.
[386] Oregon Legislature - House Bill 3543 http://www.leg.state.or.us/07reg/measpdf/hb3500.dir/hb3543.en.pdf

water, watershed health and irrigation. Also, a potential rise in sea levels threatens Oregon's coastal communities. Reduced snowpack, changes in the timing of stream flows, extreme or unusual weather events, rising sea levels, increased occurrences of vector-borne diseases and impacts on forest health could significantly impact the economy, environment and quality of life in Oregon.
(5) Oregon forests play a significant role in sequestering atmospheric carbon, and losing this potential to sequester carbon will have a significant negative effect on the reduction of carbon levels in the atmosphere.
(6) Global warming will have detrimental effects on many of Oregon's largest industries, including agriculture, wine making, tourism, skiing, recreational and commercial fishing, forestry and hydropower generation, and will therefore negatively impact the state's workers, consumers and residents.
(7) There is a need to ... take necessary action to begin reducing greenhouse gas emissions in order to prevent disruption of Oregon's economy and quality of life and to meet Oregon's responsibility to reduce the impacts and the pace of global warming.

Governor Kulongoski's Advisory Group On Global Warming says:

Absent decisive actions across the globe of the sort proposed in this report, the warming already underway is expected to lead to changes in the earth's physical and biological systems that would be extremely adverse to human beings, their communities, economies and cultures. ... The impacts of such changes on Oregon citizens, businesses and environmental values are likely to be extensive and destructive." The Governor of Oregon is being urged by a broad cross-section of advisors to think of the economic costs of addressing climate change as "investments" that result in net gains relative to the economic costs of failing to make those investments, or the costs of addressing climate change can be thought of as buying an insurance policy that reduces future expenses related to coping with climate change. Forest conservation is among the committee's recommendations for addressing the climate problem: "The Advisory Group recommends actions to increase the amount of carbon that can be captured and fixed in new or restored forest and field growth and in the soil beneath. ... While we will continue to work the lands that must feed, clothe and shelter us, there are still land management choices that will restore much of this natural sequestration capability.[387]

The West Coast Governors' Global Warming Initiative Report says:

The world's scientists are clear: Global warming is happening, and the world must act now to reduce greenhouse gas emissions. Global warming will have serious adverse consequences on the economy, health and environment of the West Coast states. While these consequences are not entirely predictable, the effects of global warming are already evident in the form of higher temperatures, reduced snow pack, insect infestation and increased fire danger in our forests, and rising sea levels on our ocean shores. These

[387] Oregon Strategy for Greenhouse Gas Reductions - Governor's Advisory Group On Global Warming. State of Oregon, December 2004. http://www.oregon.gov/ENERGY/GBLWRM/docs/GWReport-Final.pdf

impacts will grow significantly in coming years if we do nothing to reduce greenhouse gas emissions.

VI. THE COSTS AND IMPACTS OF INACTION

In addition to the direct economic benefits of investing in low-carbon energy sources, acting against global warming hedges against the risks posed by global warming itself. The economic costs of unchecked global warming are projected to be immense.

Sea level rise, coupled with more frequent and severe storm events, would threaten beaches, ports, low-lying towns and cities, and other coastal resources, causing severe disruption for people and ecosystems. The increased frequency and severity of storm surges may be more significant for low-lying areas than sea level rise alone. Increased storms and wave height could lead to saturated ground, increased erosion, and more slope failure in the coastal bluffs and hills.

A reduction in the mountain snowpack will exacerbate already tight water supplies, restrict agricultural production, and alter the pattern of power generation. For example, in California, the $30 billion agriculture industry is one of the sectors most vulnerable to changes in climate and water supply.

With an increased proportion of winter precipitation falling as rain, winter flooding is more likely. Ski areas at lower elevations will likely disappear. Scenarios of future climate change in the Northwest from the University of Washington Climate Impacts Group show a snow pack decline by 2090 that could reach 72 percent below the base period of 1960 to 1990.4

Energy generation, salmon recovery, and infrastructure operations, including roads, bridges, and dams, are likely to be directly affected by climate change impacts, according to the Climate Impacts Group. Many of these changes may be felt within 20 years. (See Appendix D.)

Forest fires, smog, and extreme weather events, along with the attendant costs of fighting fires and protecting public health, will worsen. There have been high fluctuations in wet-dry climate cycles for the last 30 years in the Northwest. Climate change may increase the annual and decadal variability of precipitation. Climate variability, far more than fire suppression, has led to the sudden rise and severity of wildfires in recent years. In fact, climate variability is the primary determinant of fire occurrence, location, and timing.[388]

Logging that exacerbates climate change will violate the O&C Act's mandate to foster stability of industries and communities in other ways.

- Climate change will likely lead to social unrest and economic upheaval at a global scale that will reverberate at a local level in western Oregon. Extreme weather events and rising sea levels will displace millions of people who will seek refuge in new lands. Our borders are only marginally effective in controlling economic refugees from the south today. This could become must worse in the future. "Climate change is the largest environmental change expected this century. It is likely to intensify droughts, storms and floods, which will undoubtedly lead to environmental migrations and potential conflicts in the areas migrated to. … People facing environmental disasters have no choice but to leave the affected area.

[388] West Coast Governors' Global Warming Initiative; Staff Recommendations to the Governors; November, 2004. http://www.oregon.gov/ENERGY/GBLWRM/docs/WCGGWINov04Report.pdf

The larger the migration and the shorter the period over which it occurs, the harder it is to absorb the migrants, raising the likelihood of conflict. For instance, migrants clash over jobs, resources and way of life, and violent interactions such as theft, beating, armed scuffles, seizure of resources and property, murders and insurgencies are likely." Springer (2007, November 28)[389]

- Climate change will alter growing conditions and displace agricultural and forest industries. Climate change will increase forest disturbance and impair seedling establishment and harm the timber industry.
- Warming is expected to lead to denser vegetation, higher fuel loads, as well as more frequent and intense droughts which is a recipe for more wildfire.[390] Increasing wildland fires will threaten the stability homes and communities located within or adjacent to fuel-rich wildlands. Climate change is expected to increase the length of fire seasons. Communities will have to spend more money preparing for and fighting fires. Wildfire in the urban interface is disruptive to communities and climate change will increase fire hazard in the community zone. U.S. Forest Service Chief Gail Kimbell said that warming globe and urban sprawl are making fires increasingly dangerous. "Fires are burning hotter and bigger, becoming more damaging and dangerous to people and to property," she said. "Each year the fire season comes earlier and lasts longer." Nation's Forest Chief warns of 'hotter and bigger' fires[391], BLM must store more carbon in mature & old-growth forest forests in order to reduce this hazard to communities and industries.
- Climate change will increase competition for limited water resources, which will adversely impact community and economic stability in western Oregon. Increasing frequency and duration of droughts caused by climate change will limit water supply for electricity generation, as well as municipal, industrial, and agricultural uses causing a destabilizing influence on communities and industries that rely on snow, water, energy, and a stable climate. Reduced snow pack will destabilize the agricultural industry, the winter recreation industry, the reservoir recreation industry, and municipal and industrial water supply. "Human well-being and ecosystem health in many places are being seriously affected by changes in the global water cycle, caused largely by human pressures. … The warming of the ocean, in particular its surface waters, and the feedback of heat to the atmosphere are changing rainfall patterns, affecting the availability of freshwater and food security, and health. Due to the ocean's great heat storage capacity and slow circulation, the consequences of its warming for human well-being will be widespread." [392] "The 2000 report by the Global Water Partnership calls upon the international community to work towards 'Water Security'

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[389] Climate Change Likely To Result In Eco-migration: What Can Be Done?. ScienceDaily. Retrieved November 29, 2007, from http://www.sciencedaily.com- /releases/2007/11/071126134703.htm *citing* Reuveny R (2007). Ecomigration and violent conflict: case studies and public policy implications. Human Ecology (DOI 10.1007/s10745-007-9142-5)

[390] Joint Fire Science Program. The Fire-Climate Connection. Fire Science Digest Issue 1, October 2007. http://www.firescience.gov/Digest/Fire_Science_Digest_1.pdf

[391] Thursday, October 25, 2007. By Erik Robinson, Columbian staff writer. http://www.columbian.com/news/localNews/2007/10/10252007_Nations-forest-chief-warns-of-hotter-and-bigger-fires.cfm

[392] Russell Arthurton, Sabrina Barker, Walter Rast, and Michael Huber. Chapter 4 – Water *in* Global Environment Outlook (GEO4). http://www.unep.org/geo/geo4/report/04_Water.pdf

as an overarching goal at all levels from local through to global."[393] This will require urgent action to avoid and mitigate climate change.

- The agricultural sector is particularly vulnerable to water supply constraints caused by climate change. For instance, "In most areas of the Willamette Basin, surface water supplies have been fully allocated — no further water is available for new surface water rights and in dry years more junior water rights are not satisfied."[394] Climate change will only make this situation worse. Warming is expected to raise temperatures, increase evaporative demand, reduce water stored as snowpack, and reduce water availability during summer periods when water supplies are already in short supply and over appropriated. Summers are expected to get warmer and dryer. The irrigation season in western Oregon overlaps with periods of expected increasing water scarcity.[395] Water availability is also a major factor in the value of farm land, so climate change is likely to decrease land values where water supply is limited.[396] BLM should analyze the expected impact of climate change on agricultural water supply[397] and use that information to inform its decision whether it is wise to make climate change worse by logging more mature and old-growth forest.
- Climate change will alter the incidence of diseases affecting humans, crops, and forests potentially impacting community health and stability.

Consider the following maps showing the examples of watersheds that are expected to suffer from low summer streamflows (even without considering climate warming).[398] These areas are likely to become even more water stressed under a warmer climate. What happens to the farmers, community water supplies, and fish if BLM does not stop logging mature and old-growth forests?

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[393] Motoyuki Suzuki. Water in Our Future, Chapter 11, Global Water Crisis. http://202.253.138.71/ENV/Files/Global%20Water%20Crisis%20Suzuki.doc

[394] J. Baker J. Van Sickle D. White. Water Sources and Allocation. *in* Willamette River Basin Atlas 2nd Edition. Chapter 3 - Water Resources. http://www.fsl.orst.edu/pnwerc/wrb/Atlas_web_compressed/3.Water_Resources/3h.water_sources_alloc_web.pdf

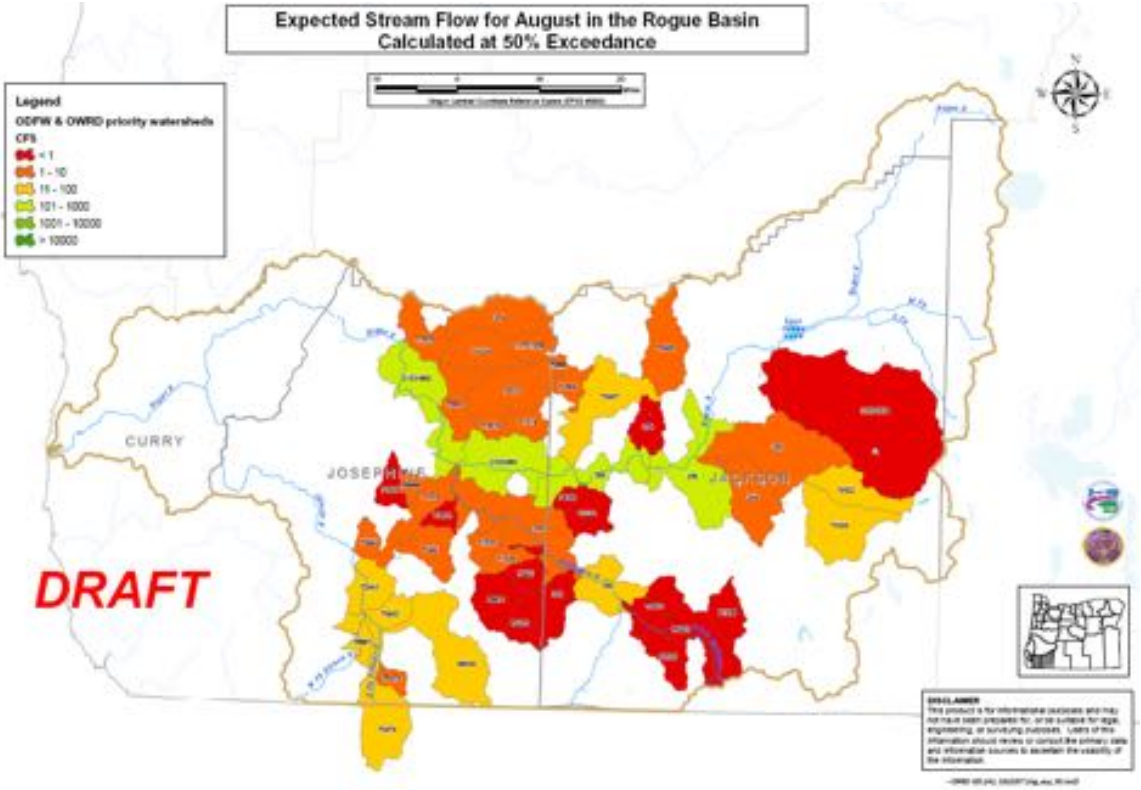
[395] Richard M. Cooper, PE. Determining Surface Water Availability in Oregon. State of Oregon Water Resources Department. Open File Report SW 02-002. Appendix E http://www1.wrd.state.or.us/pdfs/reports/SW02-002.pdf

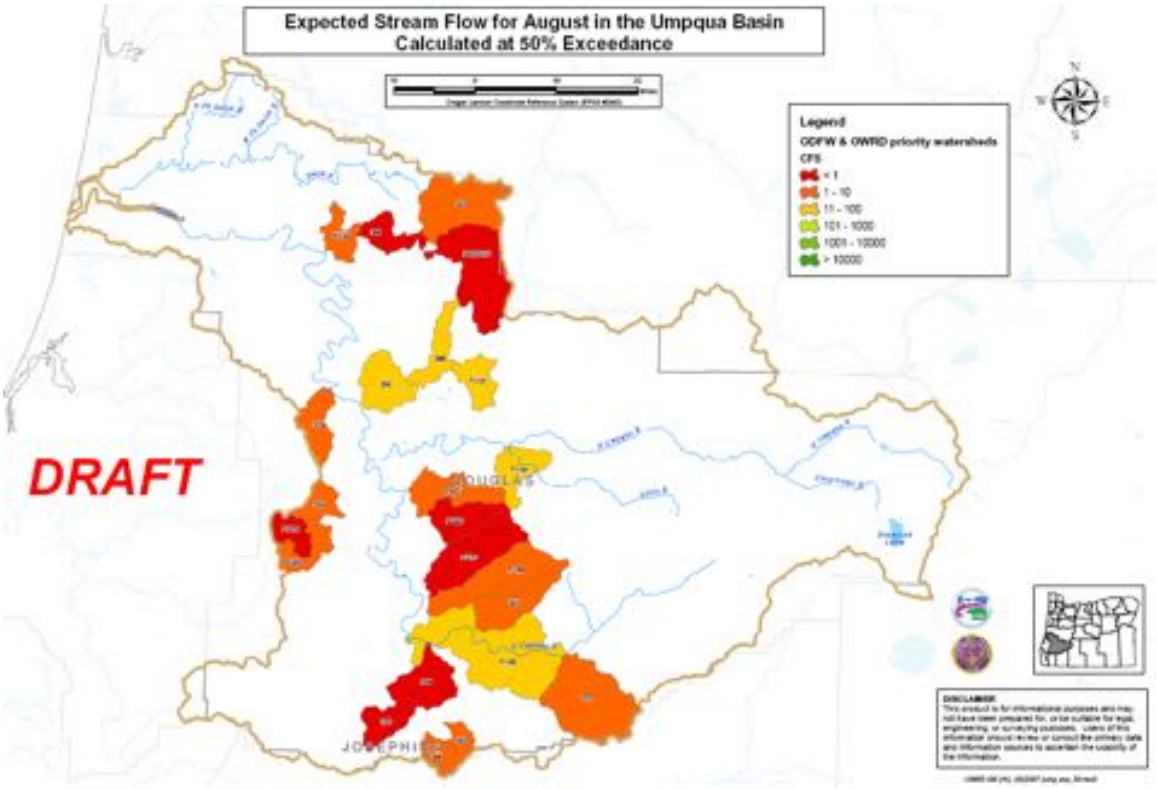
[396] Wolfram Schlenker, W. Michael Hanemann, and Anthony C. Fisher. 2005. Water Availability, Degree Days, and the Potential Impact of Climate Change on Irrigated Agriculture in California. April 2005. http://are.berkeley.edu/~fisher/ClimateChange.pdf

[397] Here are some tools that may be useful to conduct this analysis:

- Wolfram Schlenker, W. Michael Hanemann, and Anthony C. Fisher. 2005. Water Availability, Degree Days, and the Potential Impact of Climate Change on Irrigated Agriculture in California. April 2005. http://are.berkeley.edu/~fisher/ClimateChange.pdf,
- Guobin Fu 2005. Modeling Water Availability And Its Response To Climatic Change For The Spokane River Watershed. PhD Dissertation Washington State University. December 2005. https://research.wsulibs.wsu.edu:8443/dspace/bitstream/2376/413/1/g_fu_120605.pdf

[398] Oregon Water Resources Department. 2007. Strategic Measurement Plan Approved by Water Resources Commission 2000-2001. Information Provided by OWRD March 8, 2007 http://www1.wrd.state.or.us/pdfs/reports/Priority_WAB_Report03-2007.pdf


Expected Stream Flow for August in the Rogue Basin
Calculated at 50% Exceedance
Legend
ODFW & OWRD priority watersheds
CFS
< 1
1 - 10
11 - 100
101 - 1000
1001 - 10000
> 10000
CURRY
JOSEPHINE
JACKSON
DRAFT


Expected Stream Flow for August in the Umpqua Basin
Calculated at 50% Exceedance
Legend
ODFW & OWRD priority watersheds
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< 1
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Maps showing "summer stream flow restoration priorities" established by the Oregon Water Resources Department for all watersheds in Oregon are available here: http://nrimp.dfw.state.or.us/nrimp/default.aspx?p=297. BLM must disclose that climate change that is exacerbated by continued logging of mature & old-growth forests will spread and intensify water shortages in these watersheds and destabilize communities and industries that rely on plentiful clean water.

The IPCC 4th Assessment Report Synthesis described a variety of highly relevant social and economic impacts from climate change. See IPCC Table SPM.3 below which shows just a sample of the relevant impacts. These impacts would clearly tend to destabilize local communities and industries in violation of the O&C Act and the EIS must disclose that continued loss of older forests on BLM lands will exacerbate climate change and contribute to causing these destabilizing impacts.

Table SPM.3. Examples of possible impacts of climate change due to changes in extreme weather and climate events, based on projections to the mid- to late 21st century. These do not take into account any changes or developments in adaptive capacity. The likelihood estimates in column two relate to the phenomena listed in column one. (Table 3.2)

Phenomenon[a] and direction of trend	Likelihood of future trends based on projections for 21st century using SRES scenarios	Examples of major projected impacts by sector			
		Agriculture, forestry and ecosystems	Water resources	Human health	Industry, settlement and society
Over most land areas, warmer and fewer cold days and nights, warmer and more frequent hot days and nights	*Virtually certain*[b]	Increased yields in colder environments; decreased yields in warmer environments; increased insect outbreaks	Effects on water resources relying on snowmelt; effects on some water supplies	Reduced human mortality from decreased cold exposure	Reduced energy demand for heating; increased demand for cooling; declining air quality in cities; reduced disruption to transport due to snow, ice; effects on winter tourism
Warm spells/heat waves. Frequency increases over most land areas	*Very likely*	Reduced yields in warmer regions due to heat stress; increased danger of wildfire	Increased water demand; water quality problems, e.g. algal blooms	Increased risk of heat-related mortality, especially for the elderly, chronically sick, very young and socially isolated	Reduction in quality of life for people in warm areas without appropriate housing; impacts on the elderly, very young and poor
Heavy precipitation events. Frequency increases over most areas	*Very likely*	Damage to crops; soil erosion, inability to cultivate land due to waterlogging of soils	Adverse effects on quality of surface and groundwater; contamination of water supply; water scarcity may be relieved	Increased risk of deaths, injuries and infectious, respiratory and skin diseases	Disruption of settlements, commerce, transport and societies due to flooding; pressures on urban and rural infrastructures; loss of property
Area affected by drought increases	*Likely*	Land degradation; lower yields/crop damage and failure; increased livestock deaths; increased risk of wildfire	More widespread water stress	Increased risk of food and water shortage; increased risk of malnutrition; increased risk of water-and food-borne diseases	Water shortage for settlements, industry and societies; reduced hydropower generation potentials; potential for population migration
Intense tropical cyclone activity increases	*Likely*	Damage to crops; windthrow (uprooting) of trees; damage to coral reefs	Power outages causing disruption of public water supply	Increased risk of deaths, injuries, water- and food-borne diseases; post-traumatic stress disorders	Disruption by flood and high winds; withdrawal of risk coverage in vulnerable areas by private insurers, potential for population migrations, loss of property
Increased incidence of extreme high sea level (excludes tsunamis)[c]	*Likely*[d]	Salinisation of irrigation water, estuaries and freshwater systems	Decreased freshwater availability due to saltwater intrusion	Increased risk of deaths and injuries by drowning in floods; migration-related health effects	Costs of coastal protection versus costs of land-use relocation; potential for movement of populations and infrastructure; also see tropical cyclones above

Notes:

a) See WGI Table 3.7 for further details regarding definitions.

b) Warming of the most extreme days and nights each year.

c) Extreme high sea level depends on average sea level and on regional weather systems. It is defined as the highest 1% of hourly values of observed sea level at a station for a given reference period.

d) In all scenarios, the projected global average sea level at 2100 is higher than in the reference period. The effect of changes in regional weather systems on sea level extremes has not been assessed.

Table SPM.3 IPCC 2007. 4th Assessment Report Synthesis. [399]

[399] http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf

The uncertain effects of climate change is not a valid excuse for inaction because: (a) uncertainty itself has a cost, making it more difficult and expensive to plan for the future and make rational investments. For instance, the cost of insurance will likely increase; and (b) change itself has adverse impacts; in many cases the likelihood of change is fairly certain. it is only the direction and/or magnitude of change that is uncertain.

VII. O&C ACT – BLM MUST HELP MITIGATE CLIMATE CHANGE TO ENSURE PERMANENT FOREST PRODUCTION AND SUSTAINED YIELD

Logging that exacerbates climate change will cause increases in insects, fire, possibly wind, and will make some marginal sites potentially incapable of maintaining permanent forest cover thereby violating the O&C Act's requirement to maintain permanent forest production.

The Northwest Forest Plan, 10-Year Monitoring Program Synthesis Report (Haynes 2006) says "[*C]limate change effects within the Plan area are most likely to be at lower elevations, in drier provinces at ecotones between forest and nonforest areas. Many of these effects would be manifest as increases in disturbance frequency and severity of fires, wind, disease, and insect outbreaks*."[400] Because BLM's western Oregon forest lands are relatively low-elevation and include eco-tones between forest and non-forest habitats, Haynes' summary descriptions of climate change impacts have direct relevance to BLM's legal obligations under the O&C Act. Even small changes in BLM's ability to maintain forest cover at the margins of ecotones, implicates BLM's obligation to maintain "permanent forest production."

BLM must take seriously the O&C Act mandate to maintain permanent forest production. Marginal sites that are currently on the biological edge between forest and other vegetation types are particularly vulnerable to climate change. Increased disturbance and increased drought stress will push some sites over the edge from forest to shrub or grassland.

Scientists predict that seedling establishment will become more difficult under a warmer climate. After fire (and logging) some sites will simply not be able to re-establish forest cover. To the extent that BLM continues to log mature and old-growth forests they will be exacerbating climate change and contributing to the root cause of the forest establishment problem thus violating the "permanent forest production" mandate of the O&C Act.

Well-established forests are generally more resilient to drought and disturbance than young forests. Clearcutting reduces fire resiliency, which sets the stage for forest establishment problems described above. BLM must not conduct activities that increase the risk that the site will be unable to re-establish forest cover in the future. In simple terms, clearcutting and climate change are incompatible because it is uncertain that forest can be re-established after any loss of forest cover. Existing forests have a much better chance of maintaining permanent forest production than non-forested sites.

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[400] Haynes, Richard W.; Bormann, Bernard T.; Lee, Danny C.; Martin, Jon R., tech. eds. 2006. Northwest Forest Plan—the first 10 years (1994-2003): synthesis of monitoring and research results. Gen. Tech. Rep. PNW-GTR-651. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 292 p. http://www.fs.fed.us/pnw/publications/gtr651/

After tracking 21,000 trees over 22 years USGS researchers found - "*Mortality rates increased in both of two dominant taxonomic groups (Abies and Pinus) and in different forest types (different elevational zones). The increase in overall mortality rate resulted from an increase in tree deaths attributed to stress and biotic causes, and coincided with a temperature-driven increase in an index of drought. Our findings suggest that these forests (and by implication, other water-limited forests) may be sensitive to temperature-driven drought stress, and may be poised for die-back if future climates continue to feature rising temperatures without compensating increases in precipitation.*"[401] Apparent climatically induced increase of mortality rates in a temperate forest.[402] "*This study is important because ... modeling studies suggest that, over a period of decades, even small changes in mortality rates can profoundly change a forest*," said USGS scientist Dr. Nate Stephenson, the study coauthor.[403] Even with no discernible trend in precipitation levels, increasing temperatures will increase evaporative demand and increase annual water deficit, which leads to stress, mortality, and reduced tree establishment. This study showed a very close correlation between average annual rate of tree mortality in undisturbed old forests and the three-year running average of the water deficit index.

VIII. O&C ACT – BLM MUST HELP MITIGATE CLIMATE CHANGE TO ACHIEVE "REASONABLE PRICES ON A NORMAL MARKET" FOR ITS TIMBER SALES

The O&C Act requires sale of timber at reasonable prices in a reasonable market. BLM cannot argue that O&C Act requires them to cut and sell trees in today's market because doing so would be adverse to the other goals of the O&C Act (permanent forest production, regulate water flow, protect watersheds, and community economic stability). The way the O&C Act is structured, BLM may only sell timber sales if they take steps to correct market failures by among other things internalizing market externalities. Unfortunately, the market has many imperfections that remain unaddressed.

Due to various economic externalities, prices are not reasonable and markets are not normal. A normal market requires that all costs and benefits involved in the transaction are internal to the buyer and seller. If costs of the transaction are externalized and born by someone other than the buyer and seller (such as CO_2 emissions and water pollution that are borne by the public), then the price will not reflect the full costs of production and consequently the price will be artificially low. Prices are supposed to reflect all costs and benefits because we rely on prices to send accurate signals to the market about rational investments in capacity and how much of any given product to produce or consume relative to substitutes.

Since the price of wood products derived from mature & old-growth forests is artificially low, then investors are receiving bad signals form the market and are maintaining excess capacity which produces an irrationally high level of wood products from mature & old-growth forests relative to market substitutes such as wood products from thinned young stands. In other words, externalities lead to market failure, unreasonably low prices, and abnormal markets. This is elementary college economics.

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[401] Van Mantgem, P.J., and N.L. Stephenson. 2007.
[402] Ecology Letters 10:909–916.
[403] http://www.usgs.gov/newsroom/article.asp?ID=1716

The UK's Stern Report said *"When people don't pay for the consequences of their actions we have market failure. [Climate change] is the greatest market failure the world has seen*."[404] The Stern Report states, "*human-induced climate change is at its most basic level an externality. Those who produce greenhouse-gas emissions are bringing about climate change, thereby imposing costs on the world and on future generations, but they do not face directly, neither via markets nor in other ways, the full consequences of the costs of their actions. ... [GHG] emitters do not have to compensate those who lose out because of climate change. In this sense, human-induced climate change is an externality, one that is not 'corrected' through any institution or market, unless policy intervenes*."[405] Stern warns that the externalities of climate change are unique because the consequences of climate change are long-term and potentially irreversible.

Other externalities that contribute to market failure and unreasonably low prices for large logs include: degraded water quality, loss of wildlife habitat, loss of ecosystem services like pollination, nutrient cycling, etc. The economic costs of addressing climate change due to the release of carbon caused by logging mature & old-growth forests are not reflected in the prices of BLM timber sales, and the costs of addressing the climate change caused by such logging are not born by the buyers and sellers of those logs but rather they are born by the public at large and by other industries that are harmed by climate change. *"[Climate change] is the greatest and widest-ranging market failure ever seen. ... policy must promote sound market signals, overcome market failures and have equity and risk mitigation at its core."*[406]

The ecosystem services provided by BLM's western Oregon forest lands are "public goods" that present another economic problem that leads to unreasonable prices and abnormal markets for BLM timber sales. Water quality, livable climate, and wildlife habitat are public goods which have undisputed value to people and communities, but because no one can be excluded from enjoying those resources when they fail to pay, the market fails to provide investors with incentives to produce rational and necessary quantities of those services. As a result the market provides too little of those ecosystem services.

The climate is a public good: those who fail to pay for it cannot be excluded from enjoying its benefits and one person's enjoyment of the climate does not diminish the capacity of others to enjoy it too. Markets do not automatically provide the right type and quantity of public goods, because in the absence of public policy there are limited or no returns to private investors for doing so: in this case, markets for relevant goods and services (energy, land use, innovation, etc) do not reflect the consequences of different consumption and investment choices for the climate. Thus, climate change is an example of market failure involving externalities and public goods.

> *... The impacts [of climate change] are likely to have a significant effect on the global economy if action is not taken to prevent climate change, so the analysis has to consider*

[404] http://www.hm-treasury.gov.uk/media/A/8/stern_speakingnotes.pdf
[405] Stern Report, Chapter 2. http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm
[406] Stern Report http://www.hm-treasury.gov.uk/media/4/3/Executive_Summary.pdf

potentially non-marginal changes to societies, not merely small changes amenable to ordinary project appraisal.[407]

The total social and economic return on carbon storage in mature & old-growth forests is higher than the total social and economic return on logging those forests, but the abnormal market does not reflect this reality. BLM's plans to increase logging of older forest represents rational behavior only from the perspective of the internal returns to BLM and the timber industry, but BLM is not behaving rationally when one considers total social welfare. In a normal market the interests of the timber industry, the public and the BLM would converge. The market failures described above (externalities and public goods) cause the interests of the public and the BLM to diverge. The O&C Act requires BLM to intervene to correct market failures and sell timber only when the market is normalized, when prices are reasonable, and when the market sends accurate price signals that further the public interest.

The IPCC 4th AR Synthesis finds that "A wide array of tools exist, or will soon be available, to adapt to climate change and reduce its potential effects. One is to put a price on carbon emissions." This is another means of internalizing externalities, normalizing markets, and making prices reasonable.

IX. ESA – BLM MUST HELP MITIGATE CLIMATE CHANGE TO CONSERVE LISTED SPECIES

Climate change is a threat to listed species because all the cascading effects of warming: drought, peak flows, low flows, fire, insects, disease, etc. will alter the quality and quantity of habitat, predator prey interactions, plant/pollinator relations, plant/herbivore interactions, etc. The stress of these cascading impacts is added to the existing stresses that lead each species to be listed. The cumulative impacts will be significant and must be fully disclosed and considered in the FEIS.

The Marbled Murrelet Recovery Plan recommends conserving stands over 80 years old because climate change may increase forest disturbance placing habitat at risk and because it may not be possible to replicate suitable habitat for the murrelet under the climate of the future.

Oregon Wild and others raised several issues during scoping related to the effect of climate change on spotted owls:

Spotted Owl new information includes the potential effect of climate change on regional vegetation patterns; **Implications**: Under a new climate regime, we may not be able to regrow new owl habitat in the reserves as assumed in the NW Forest Plan. Existing old forests are relatively resilient to climate change. It is risky to be conducting regeneration harvest and expect to be able grow new owl habitat in the reserves under an uncertain climate regime.

The FWS 5- Year Review of the Status of the Northern Spotted Owl says:

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[407] Stern Report, Chapter 2. http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm

The Northwest Forest Plan was adopted in 1994, and significantly altered management of Federal lands. The substantial increase in reserved areas and associated reduced harvest (approximately 1 percent per year to 0.24 percent per year) has substantially reduced this threat to northern spotted owls. However, the plan allows some loss of habitat and assumed some unspecified level of continued decline in northern spotted owls. The SEI panel noted that many, but not all of the scientific building-blocks of the Northwest Forest Plan have been confirmed or validated in the decade since adoption, though one major limitation appears to be the inability of a reserve strategy to deal with invasive species. Reserves provide no protection against viruses, fungi or invasive owls. ***Climate change is an additional threat to northern spotted owls that was not explicitly addressed in the Northwest Forest Plan*** *and, more generally, is not readily addressed by a reserve-based conservation strategy. Neither of these issues reduces the important contribution of the Northwest Forest Plan to northern spotted owl conservation"*[408]

Jerry Franklin's summarized the "findings" of the Northern Spotted Owl Status Review scientific review panel as follows:

... in view of current uncertainties, such as the eventual outcome of the Spotted Owl/Barred Owl competition, West Nile Virus, and Sudden Oak Death, and whatever else comes along -- such as global change and other kinds of introductions -- existing suitable habitat could be important to the persistence of the Northern Spotted Owl. [repeated with emphasis] Existing suitable habitat could be important to the persistence of the Northern Spotted Owl, i.e., risk to Northern Spotted Owl may increase if additional suitable habitat is removed. It is not clear where the Spotted Owl may find the refuge or refuges from new threats within existing suitable habitat. Barred Owl intrusions do not negate the need for structurally complex forest habitat to sustain Northern Spotted Owl based on existing knowledge.[409]

X. ESA – BLM MUST HELP MITIGATE CLIMATE CHANGE TO TAKE STEPS TO AVOID FUTURE LISTINGS

Scientists predict that a large fraction of species are potentially imperiled by climate change. BLM must consider not only the species within western Oregon, but those all over the world that could be adversely impacted by climate change. The IPCC's 4th Assessment Report synthesis says that "Climate change is likely to lead to some irreversible impacts. There is medium confidence that approximately 20- 30% of species assessed so far are likely to be at increased risk of extinction if increases in global average warming exceed 1.5-2.5oC (relative to 1980-1999). As global average temperature increase exceeds about 3.5oC, model projections suggest significant extinctions (40-70% of species assessed) around the globe. {3.4}"[410]

Climate change may even threaten the survival of many species. Detailed research into the possibility of species extinctions due to climate change, published in the respected American

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[408] FWS Status Review p 43 [http://pacific.fws.gov/ecoservices/endangered/recovery/pdf/NSO_5-yr_Summary.pdf].

[409] U.S. Fish & Wildlife Service Scientific Review Panel for the Northern Spotted Owl. June 22, 2004 Public Hearing. Washington State University, Vancouver campus. Transcript of proceedings at 121. http://www.sei.org/owl/meetings/minutes/june-meeting-transcripts.pdf

[410] IPCC 2007. 4th Assessment Report Synthesis. http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf

journal Nature in 2004, used climatic modelling to examine possible impacts on a total of 1,103 terrestrial plant and animal species found in many different regions of the world.

Precise predictions could not be made, since the climatic models contain many uncertain factors, but the resultant scenarios nevertheless indicated that global warming would have clear impacts on biodiversity. The more temperatures rise, the more species will be driven into extinction. Some species may become extinct due to the disappearance of their natural habitats, while others could vanish because they are unable to move rapidly enough into new regions where conditions would still meet their requirements.

The research results also indicated that 15– 21% of the species endangered by climate change could be saved if we are able to limit the extent and impacts of climate change through rapid reductions in greenhouse gas emissions combined with improvements in the sequestration of carbon.

The more average global temperatures rise, the more species will be threatened with extinction.[411]

[411] Thomas, C.D., et al. 2004

Rise in average global temperature by 2050	Proportion of the studied 1,103 species facing extinction	
	mean value	range values
0,8– 1,7°C	18%	9– 31%
1,8– 2,0°C	24%	15– 37%
>2,0°C	35%	21– 52%

[412]

XI. CLEAN AIR ACT — BLM MUST PREVENT AND CONTROL CO_2 AIR POLLUTION.

Logging mature and old-growth forests causes the emission of CO_2 pollution to the atmosphere. The Clean Air Act supersedes the O&C Act and requires BLM to control CO2 emissions through on-site carbon storage and management. Since this RMP Revision is a long-term plan, BLM should anticipate changes in water pollution regulations. DEQ is currently taking public comment on reporting requirements for GHG emissions. 42 USC § 7402(b) requires all federal agencies to use their authorities to further the goals of the Clean Air Act. Sections 7401(b)(1) and 7470(1) set forth clear goals to protect the public welfare by limiting air pollution such as CO_2.

XII. CLEAN WATER ACT — BLM MUST PREVENT AND CONTROL CO_2 WATER POLLUTION.

Logging mature and old-growth forests causes the emission of CO_2 pollution to the atmosphere with is ultimately absorbed by the ocean where it is converted to carbonic acid. Slight alterations of the pH of the ocean alters mineralization processes like calcification which can have serious adverse consequences on marine ecosystems. Since this RMP Revision is a long-term plan, BLM should anticipate changes in water pollution regulations.

[412] Finnish Environment Institute. 2005. The impacts of climate change on biodiversity. 9/21/2005 (Updated).

http://www.ymparisto.fi/default.asp?node=17418&lan=en#a3 *citing* Thomas, C.D. et al. 2004. Extinction risk from climate change. Nature 427, p.145-148. http://www.ymparisto.fi/download.asp?contentid=32647&lan=fi

In August 2007 the Center for Biological Diversity officially requested that the ocean waters off Oregon be declared impaired under the Clean Water Act due to ocean acidification caused by the absorption of human-produced carbon dioxide. Listing a water body as "impaired" allows states to limit the discharge of pollutants that are contributing to impairment.

The atmosphere and ocean freely exchange carbon dioxide, and as atmospheric levels of carbon dioxide increase, so does the absorption of carbon dioxide by the ocean. The ocean takes up about 22 million tons of carbon dioxide each day and has absorbed about half of the carbon dioxide released into the atmosphere by human activities. This excess carbon dioxide changes the chemistry of seawater, making it more acidic: Ocean acidity, measured in pH, has already changed 0.11 pH on average due to human-generated carbon dioxide since preindustrial times — a significant, approximately 30-percent rise in acidity. If current emissions trajectories continue, an additional change of 0.5 units is predicted by the end of the century. These changes will be irreversible on human timescales.

Already, ocean acidification is damaging surface waters and having an impact on marine ecosystems. It makes unavailable the compounds necessary for marine organisms to build shells and skeletons, thus impeding the growth of plankton, starfish, urchins, oysters and other shelled organisms as well as coral. Due to ocean acidification, coral reefs will begin to erode more quickly than they can rebuild. And these changes are occurring so quickly that marine life will have great difficulty adapting to changing seawater chemistry.[413]

XIII. LOGGING TO REDUCE FIRE-INDUCED GREENHOUSE GAS EMISSIONS WILL BACKFIRE

The DEIS claims that logging provides climate benefits but this is not supported (in fact refuted) by the best available science. DEIS (158-159) says

Many studies have found that active management, particularly in forests adversely affected by fire suppression, could reduce both carbon losses and increases in greenhouse gas emissions from wildfires. Results from various thinning and burning prescriptions indicate that the short-term reductions in carbon result in long-term benefits to carbon storage and greenhouse gas emissions by reducing fire-induced mortality, maintaining a higher fraction of carbon in live trees, increasing drought resistance, and reducing competition for water, nutrients, and light.[414]

This is an incomplete, erroneous, and misleading description of the carbon consequences of logging and the interaction of logging with fire. BLM needs to critically review the sources cited. Do these studies really support what BLM is suggesting? Are there distinguishing features? Are the study designs sound? Are the study conclusions really supported by the study results?

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[413] Center for Biological Diversity. "Seven Coastal States Petitioned to Address Ocean Acidification: Clean Water Act Requires Regulation of Carbon Dioxide That Could Drive Ocean Species Extinct." August 15, 2007 Press Release.

[414] Stephens et al. 2009, Hurteau and North 2010, North and Hurteau 2011, Stephens et al. 2012, Hurteau et al. 2014, Loudermilk et al. 2014, Volkova et al. 2014.

Some of the studies cited by the DEIS (158-159) directly contradict BLM's assertion that logging has climate benefits. Many of these studies are generally not applicable to western Oregon because they are from different biophysical settings, and they generally fail to properly account for the low probability that fuel reduction logging will interact with wildfire --

- Volkova et al (2014)[415] This study does not support BLM's assertion that logging provides climate benefits. This study looked at forest carbon after fire occurred, so it selected for areas where there was 100% overlap between treatments and fire. This fails to account for the real world (low) probability of fuel treatments interacting with fire, and all the GHG emissions caused by fuel treatments that did not subsequently burn. Also, this study was in a completely different (eucalyptus) forest type.
- Stephens et al (2009)[416] This study does not support BLM's assertion that logging provides climate benefits. This study appears to assume a 100% chance that fire will interact with treatments, which is not a real world probability that treatments will interact with wildfire. Drawing conclusions about the carbon benefits of fuel reduction logging requires consideration of the relative extent and probability of emissions from logging and wildfire. Also, the study cautions readers to limit conclusions to young stands in the Sierra Nevada that are recovering from past timber harvest.
- Hurteau & North (2010)[417] This study does not support BLM's assertion that logging provides climate benefits, saying -
  In the absence of wildfire or if wildfire emissions are lower than the carbon stock reduction necessary to mitigate high-severity fire risk, fuels treatments could have a net negative impact on carbon stocks and thus reduce the forest's potential to mitigate climate change (Mitchell et al., 2009). … . The higher intensity overstory thinning treatments will require longer periods of time before they sequester the carbon removed and emitted during treatment. By removing large overstory trees that often contain >65% of the aboveground carbon, these treatments incur a substantial immediate carbon stock reduction and require a much longer recovery period. While large tree percent changes in C were high in these treatments (Table 1), there are simply fewer large trees ha−1 to store C. In earlier research we also found overstory thinning did not substantially decrease the risk of high-severity fire compared to understory thinning treatments (North et al., 2009).

This study made no attempt to quantify the probability that fire would interact with fuel treatments. Other studies that have attempted to estimate these probabilities show that fuel reduction logging results in greater GHG emissions than doing nothing. See below. This study also failed to account for the climate consequences of the extra carbon in the atmosphere while the forest is recovering from logging related carbon loses. Even if the carbon is later recaptured by the forest as a result of regrowth after logging, that does not neutralize the adverse climate effects suffered during the lag time.

Loehman et al (2014) have criticized Hurteau and North (2008) (and others) saying:

Recent studies (Hurteau and North, 2008, 2010; Hurteau et al., 2008a; North et al., 2009; *Reinhardt and Holsinger, 2010) have focused on carbon responses to fire in individual forest*

[415] http://www.publish.csiro.au/nid/114/paper/WF14009.htm
[416] http://nature.berkeley.edu/stephenslab/wp-content/uploads/2015/04/Stephens-et-al.-FFS-Carbon-CJFR-8-09.pdf
[417] http://www.fs.fed.us/psw/publications/north/psw_2010_north(hurteau)002.pdf

stands as a basis for gaining insight into terrestrial-atmospheric carbon fluxes. Suggested management treatments to protect, maintain, or enhance forest carbon stocks forest carbon stores include mechanical fuels treatments, prescribed fire, and suppression of wildfires (Canadell and Raupach, 2008; Hurteau and North, 2008, 2010; Hurteau et al., 2008b; McKinley et al., 2011; Stephens et al., 2012). Results from these studies suggest that fuel treatments can reduce wildfire severity and protect forest carbon stocks from future loss from severe wildfires (Hurteau and North, 2008; Hurteau et al., 2008b; Stephens et al., 2009b), but management of carbon in fire-prone and fire-adapted forests is more complex than simply minimizing wildfire carbon emissions and maximizing stored carbon in individual stands. The stochastic and variable nature of fires, the relatively fine scale over which fuels treatments are implemented, and potentially high carbon costs to implement them suggest that fuel treatments are not an effective method for protecting carbon stocks at a stand level (Reinhardt et al., 2008; Reinhardt and Holsinger, 2010).

Rachel A. Loehman, Elizabeth Reinhardt, Karin L. Riley 2014. Wildland fire emissions, carbon, and climate: Seeing the forest and the trees – A cross-scale assessment of wildfire and carbon dynamics in fire-prone, forested ecosystems. Forest Ecology and Management 317 (2014) 9–19.[418]

- Hurteau et al (2014)[419] This study does not support BLM's assertions that logging provides climate benefits, saying –
  Fire effects on the forest can be managed by altering forest structure and fuel loads, thereby reducing the risk of carbon loss due to wildfire (Hurteau et al., 2009). However, this risk reduction measure carries a carbon stock reduction cost and the carbon balance of a specific treatment is dependent upon a wildfire burning in the treated area, the end-use of the trees harvested during treatment, among other factors … Generally, the probability of a fire event occurring at most forest locations in any given year is quite low."

This study speculated about how trees in the Sierra Nevada Mountains of California may become mal-adapted as a result of global warming, but this study found wide variation in the effects on forest carbon depending on various future climate scenarios for the Sierra Nevada. ("The large influence of GCM on carbon storage suggests that reducing uncertainty in modeling forest growth response to wildfire mitigation treatments will require further refinement of climate projections") Refinement of climate scenarios should of course be region-specific. BLM should not be using wild speculations from dry/open forests of California to set policy for moist/dense forests of western Oregon. ("our findings highlight the need to overcome the scale mismatch between GCMs and the typical forest management unit. Recent research suggests the substantial influence of local terrain on mediating climate (Dobrowski, 2011) making even downscaled climate projections too coarse to capture the fine scale climate variability that can influence tree growth.") Finally, this study highlights uncertainty. It does not make concrete recommendations to conduct logging to help store carbon or help forests adapt to climate change. ("[T]he current variability in downscaled global climate projections adds considerable uncertainty to projecting how management actions to alter forest structure and composition and climate will interact in the future.")

[418] http://www.fs.fed.us/rm/pubs_other/rmrs_2014_loehman_r001.pdf
[419] http://www.fs.fed.us/psw/partnerships/tahoescience/documents/p029_Hurteau2014Tahoe.pdf

- Loudermilk et al (2014)[420] This study does not support BLM's assertion that logging provides climate benefits. Figures 4 and 5 in this publication clearly show that not logging results in greater forest carbon storage than any of the fuel reduction scenarios.
  Over the near future, more forest C would be removed from the system than would be released without treatment (i.e., from ecosystem respiration); creating a net C 'cost' … . Eventually, reduced fire severity and enhanced forest re-growth would lead to a net gain in C storage at the management area and landscape level. … Our simulated fuel treatments … controlled wildfire C emissions, and in the long run resulted in a net C gain. These positive outcomes far outweigh the intermediary loss in forest C from biomass removal,…

However, this conclusion is not supported by the study results or any other evidence. While the carbon density of the treatment and no treatment scenarios appear to converge in the year 2100, the study fails to account of the climate consequences associated with the excess carbon in the atmosphere in the decades prior to 2100. This is sloppy accounting that does not meet NEPA standards. The near-term climate effects caused by logging-related carbon emissions are not neutralized by carbon uptake that occurs decades in the future. This study also recognized that carbon benefits depend on the probability of future fire but made no attempt to quantify that probability.

Achievement of a net C gain … depended on wildfire activity: Fuel treatments were more effective in a more active fire environment, where the interface between wildfires and treatment areas increased and caused net C gain earlier than as compared to our scenarios with less wildfire activity … regulation of C emissions may force forest managers to balance the use of fuel treatments for reducing wildfire risk against goals to maintain or increase C sequestration (Hurteau et al., 2008). This will require consideration of the net balance between the immediate loss of C from live and detrital matter during fuels management (e.g., mechanical thinning and prescribed burning) against the long-term C sequestration potential associated with reduced C emissions from lower intensity wildfires.

This study also assumed that wildfire activity would increase thus increasing the probability that treatments would interact with fire. This assumption may or may not hold on BLM lands where aggressive fire suppression remains the norm. Furthermore, this study looked at fuel reduction targeted close to homes and communities, not across the landscape as BLM proposes.

BLM should then conduct a much more thorough review of credible opposing viewpoints. In virtually all cases, commercial logging will increase GHG emissions relative to not logging, even after accounting for emissions related to wildfire. Numerous experts have carefully studied the issue and conclude that logging to reduce fire and reduce carbon emission will actually make matters worse, not better.

Law & Harmon conducted a thorough literature review and concluded …

Thinning forests to reduce potential carbon losses due to wildfire is in direct conflict with carbon sequestration goals, and, if implemented, would result in a net emission of CO2 to the atmosphere because the amount of carbon removed to change fire behavior is often far larger

[420] http://www.fs.fed.us/psw/partnerships/tahoescience/documents/p049_Loudermilk2014.pdf

than that saved by changing fire behavior, and more area has to be harvested than will ultimately burn over the period of effectiveness of the thinning treatment.[421]

XIV. BLM NEEDS TO ACCURATELY DESCRIBE THE PROBABILISTIC NATURE OF THIS ISSUE

- Premises:
  - Fire and logging both emit GHG;
  - No one can predict where or when fire will occur, therefore logging to modify fire behavior must be spatially extensive;
  - Fuels regrow after logging, so treatments will have to be repeated;
  - Fire is relatively infrequent, so fire will rarely interact with fuel reduction treatments during the period they are presumed effective. Many acres will be treated and few acres will actually interact with fire, so fuel treatments and associated GHG emissions will occur "unnecessarily" (i.e., without any fire benefits to offset the GHG emissions caused by logging);
  - Fire is mostly controlled by weather (e.g., temperature, humidity, wind), not by fuel conditions.
  - Logging has complex effects of fire behavior. Logging might make fire worse in some cases.
  - Logging will have only marginal effects on fire in most cases – slightly reducing fire intensity and fire size.
  - Logging will very rarely be perfectly timed, perfectly located, perfectly scaled, and perfectly implemented to result in meaningful fire control and significant GHG benefits.
- Conclusion: Logging to control fire does not provide climate benefits, because, the combined GHG emissions associated with logging plus emissions associated with wildfire are highly likely to be far greater than the GHG emissions associated with fire alone.
- Note: The limited exception to this conclusions involve cases where three conditions are met: (i) smallest fuels are removed (ii) from forests with the most frequent fire return interval, and (iii) where fire suppression is not being practiced. These conditions do not occur on BLM lands in western Oregon. "Smallest fuels" means non-commercial thinning, not removal commercial-sized logs that store a lot of carbon. BLM emphasizes commercial logging. Forests in western Oregon have an intermediate-to-long fire return interval, and BLM cooperates with the state to aggressively suppress every fire.

Logging proponents often claim that logging will increase carbon storage controlling carbon emissions caused by natural processes such as fire and insect-induced mortality. This is simply counter-factual. In most cases, managing forests in an effort to control natural processes that release carbon will only make things worse by releasing MORE carbon. This is mostly because no one can predict where fire or insects will occur, so the treatments must be applied to broad landscapes, yet the probability of fire or insects at any given location remains low, and only a

[421] Law, B. & M.E. Harmon 2011. Forest sector carbon management, measurement and verification, and discussion of policy related to mitigation and adaptation of forests to climate change. Carbon Management 2011 2(1). http://terraweb.forestry.oregonstate.edu/pubs/lawharmon2011.pdf.

small fraction of the treated areas will actually experience fire or insects. As a result, many acres will be treated "unnecessarily" and therefore the cumulative carbon emissions from logging to control fire and insects (plus the carbon emissions from fire and insects that occur in spite of control efforts) are greater than emissions from fire and insects alone.
Before attributing carbon benefits to fuel reduction logging please consider numerous credible opposing viewpoints, including:

- John L Campbell, Mark E Harmon, and Stephen R Mitchell. 2011. Can fuel-reduction treatments really increase forest carbon storage in the western US by reducing future fire emissions? Front Ecol Environ 2011; doi:10.1890/110057[422] (Results suggest that the protection of one unit of C from wildfire combustion comes at the cost of removing three units of C in fuel treatments.)
- Mitchell, Harmon, O'Connell. 2009. Forest fuel reduction alters fire severity and long-term carbon storage in three Pacific Northwest ecosystems. Ecological Applications. 19(3), 2009, pp. 643–655. [423]
- Reinhardt, Elizabeth, and Lisa Holsinger 2010. Effects of fuel treatments on carbon-disturbance relationships in forests of the northern Rocky Mountains. Forest Ecology and Management 259 (2010) 1427–1435.[424] ("Although wildfire emissions were reduced by fuel treatment, the fuel treatments themselves produced [carbon] emissions, and the untreated stands stored more carbon than the treated stands even after wildfire. … Our results show generally long recovery times …")
- Jim Cathcart, Alan A. Ager, Andrew McMahan, Mark Finney, and Brian Watt 2009. Carbon Benefits from Fuel Treatments. USDA Forest Service Proceedings RMRS-P-61. 2010.
- Law, B. & M.E. Harmon 2011. Forest sector carbon management, measurement and verification, and discussion of policy related to mitigation and adaptation of forests to climate change. Carbon Management 2011 2(1).
- Dina Fine Maron 2010. FORESTS: Researchers find carbon offsets aren't justified for removing understory (E&E Report 08/19/2010, reporting on the WESTCARB Project)[425]
- Restaino, Joseph C.; Peterson, David L. 2013. Wildfire and fuel treatment effects on forest carbon dynamics in the western United States. Forest Ecology and Management 303:46-60.[426] ("… C costs associated with fuel treatments have can exceed the magnitude of C reduction in wildfire emissions, because a large percentage of biomass stored in forests (i.e., stem wood, branches, coarse woody debris) remains unconsumed, even in high-severity fires (Campbell et al., 2007; Mitchell et al., 2009). … Wildfire occurrence in a given area is uncertain and may never interact with treated stands with reduced fire hazard, ostensibly negating expected C benefits from fuel treatments. Burn probabilities in treated stands in southern Oregon are less than 2%, so the probability that a treated stand encounters wildfire and creates C benefits is low (Ager et al., 2010).)"

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[422] http://nnrg.org/files/CampbellJohn-65945.pdf; http://scholarsarchive.library.oregonstate.edu/xmlui/bitstream/handle/1957/26174/CampbellJohn.Forestry.CanFuelReductionTreatments.pdf.
[423] http://www.fs.fed.us/pnw/pubs/journals/pnw_2009_mitchell001.pdf.
[424] http://www.fs.fed.us/rm/pubs_other/rmrs_2010_reinhardt_e002.pdf
[425] https://pacificforest.org/pft-in-the-media-2010-climatewire-8-19-10.html.

[426] http://www.fs.fed.us/pnw/pubs/journals/pnw_2013_restiano001.pdf

- Goslee, K., Pearson, T., Grimland, S., Petrova, S., Walls, J., Brown, S., 2010. Final Report on WESTCARB Fuels Management Pilot Activities in Lake County, Oregon. California Energy Commission, PIER. CEC-500-XXXX-XXX; AND Pearson, T.R.H., Goslee, K., Brown, S., 2010. Emissions and Potential Emission Reductions from Hazardous Fuel Treatments in the WESTCARB Region. California Energy Commission, PIER. CEC-500-XXXX-XXX. (Summarized by Restaino & Peterson (2013) as follows: "Pearson et al. (2010) and Goslee et al. (2010) developed methodologies to evaluate C dynamics associated with fuel treatment projects in low to mid-elevation forest in northern California and Oregon. The authors, with consultation from teams of scientists, quantify C storage and release within the context of a six-point conceptual framework: annual fire risk, treatment emissions, fire emissions, forest growth and re-growth, re-treatment, and the shadow effect (i.e., treatment effect outside the treated area). Results indicate that the mean annual probability of wildfire for the study region is less than 0.76%/year, and treatments reduce C stocks by an average of 19%. Where timber is removed, 30% of extracted biomass is stored in long-lasting wood products. Wildfire emissions in treated stands, quantified with the Fuel Characteristic Classification System, are reduced by 6% relative to untreated stands. Growth estimates for a 60-year simulation horizon, derived from FVS, indicate that in the absence of wildfire, untreated stands sequester 17% more C than treated stands. However, in simulations that include wildfire, treated stands sequester 63% more C than untreated stands. The shadow effect is unlikely to be large enough to affect net GHG emissions. In summary, initial reductions in C stocks (e.g., thinning), combined with low annual probability of wildfire, preclude C benefits associated with fuel treatments, even if harvest residues are used for biomass energy.")
- Chiono, Lindsay 2011. Balancing the Carbon Costs and Benefits of Fuels Management. Research Synthesis for Resource Managers. Joint Fire Science Program Knowledge Exchange.[427] ("[T]he net carbon impact of fuel treatments is further complicated by the probabilistic nature of wildfire occurrence and the impermanence of post-treatment stand conditions … [T]reatment activities produce an immediate carbon emission while future wildfire emissions are uncertain … Depending on the intensity of treatment, the quantity of carbon removed may be substantial enough to negate gains from avoided wildfire emissions. … cumulative emissions from fuels reduction activities repeated in order to maintain low hazard conditions over time can overwhelm avoided wildfire emissions, resulting in a net carbon loss.")

Mitchell, Harmon, O'Connell. 2009. Forest fuel reduction alters fire severity and long-term carbon storage in three Pacific Northwest ecosystems. Ecological Applications. 19(3), 2009, pp. 643–655 [428]

ABSTRACT:... *Our simulations indicate that fuel reduction treatments in these ecosystems consistently reduced fire severity. However, reducing the fraction by which C is lost in a wildfire requires the removal of a much greater amount of C, since most of the C stored in forest biomass (stem wood, branches, coarse woody debris) remains unconsumed even by high-severity wildfires. For this reason, all of the fuel reduction treatments simulated for the west Cascades*

[427] https://static.squarespace.com/static/50083efce4b0c6fedbca9def/t/51632bf8e4b00b25a8fa21d3/1365453816037/CFSC_Chiono_Carbon_and_Fuel_Mngmt.pdf
[428] http://www.fs.fed.us/pnw/pubs/journals/pnw_2009_mitchell001.pdf

and Coast Range ecosystems as well as most of the treatments simulated for the east Cascades resulted in a reduced mean stand C storage. One suggested method of compensating for such losses in C storage is to utilize C harvested in fuel reduction treatments as biofuels. Our analysis indicates that this will not be an effective strategy in the west Cascades and Coast Range over the next 100 years. We suggest that forest management plans aimed solely at ameliorating increases in atmospheric CO2 should forego fuel reduction treatments in these ecosystems, with the possible exception of some east Cascades Ponderosa pine stands with uncharacteristic levels of understory fuel accumulation. Balancing a demand for maximal landscape C storage with the demand for reduced wildfire severity will likely require treatments to be applied strategically throughout the landscape rather than indiscriminately treating all stands.

Notes on Mitchell & Harmon:

- The authors assumed that fire severity was determined exclusively by fuel variables but not weather. This may over-estimate the efficacy of fuel treatments on fire severity. The conclusion that fuel manipulation leads to reduced fire behavior may be an unavoidable result of the assumptions, rather than a reflection of reality.

- The only treatment that showed some promise was understory removal (not canopy removal) in fire-suppressed dry pine stands, but the carbon storage benefit from reduced fire severity in this best case scenario was minuscule, only about 0.6-1.2%. The modeled treatments on the eastside of the Cascades failed to include canopy removal which is a common practice in fuel reduction efforts and one that removes more carbon than understory treatments. Also, this analysis might give too much credit to fuel treatments because they excluded climatic variation from the analysis (meaning that in their analysis the treated stands never burned uncharacteristically <u>in spite</u> of the treatments.

Similar results were found at the stand scale by Reinhardt and Holsinger (2010):

> *We simulated effects of fuel treatments on 140 stands representing seven major habitat type groups of the northern Rocky Mountains using the Fire and Fuels Extension to the Forest Vegetation Simulator (FFE-FVS). Changes in forest carbon due to mechanical fuel treatment (thinning from below to reduce ladder fuels) and prescribed fire were explored, as well as changes in expected fire behavior and effects of subsequent wildfire. Results indicated that fuel treatments decreased fire severity and crown fire occurrence and reduced subsequent wildfire emissions, but did not increase post-wildfire carbon stored on-site. Conversely, untreated stands had greater wildfire emissions but stored more carbon. ... The results do not support the use of fuel treatments soley to protect carbon stocks or reduce emissions. Although wildfire emissions were reduced by fuel treatments, the fuel treatments themselves produced emissions, and the untreated stands stored more carbon than the untreated stands even after wildfire. [and even considering carbon stored in wood products derived from treated stands.]*[429]

And by Campbell, Harmon & Mitchell 2011:

[429] Reinhardt, Elizabeth, and Lisa Holsinger 2010. Effects of fuel treatments on carbon-disturbance relationships in forests of the northern Rocky Mountains. Forest Ecology and Management 259 (2010) 1427–1435.

Abstract: *It has been suggested that thinning trees and other fuel-reduction practices aimed at reducing the probability of high-severity forest fire are consistent with efforts to keep carbon (C) sequestered in terrestrial pools, and that such practices should therefore be rewarded rather than penalized in C-accounting schemes. By evaluating how fuel treatments, wildfire, and their interactions affect forest C stocks across a wide range of spatial and temporal scales, we conclude that this is extremely unlikely. Our review reveals high C losses associated with fuel treatment, only modest differences in the combustive losses associated with high-severity fire and the low-severity fire that fuel treatment is meant to encourage, and a low likelihood that treated forests will be exposed to fire. Although fuel-reduction treatments may be necessary to restore historical functionality to firesuppressed ecosystems, we found little credible evidence that such efforts have the added benefit of increasing terrestrial C stocks.*

Summary:

• Carbon (C) losses incurred with fuel removal generally exceed what is protected from combustion should the treated area burn

• Even among fire-prone forests, one must treat about ten locations to influence future fire behavior in a single location

• Over multiple fire cycles, forests that burn less often store more C than forests that burn more often

• Only when treatments change the equilibrium between growth and mortality can they alter long-term C storage

Conclusions

Across a range of treatment intensities, the amount of C removed in treatment was typically three times that saved by altering fire behavior.

the protection of one hectare of forest from wildfire required the treatment of 10 hectares, owing not to the low efficacy of treatment but rather to the rarity of severe wildfire event.

Long-term simulations of forest growth, decomposition, and combustion illustrate how, despite a negative feedback between fire frequency and fuel-driven severity, a regime of low-frequency, high-severity fire stores more C over time than a regime of high-frequency, low-severity fire.

John L Campbell, Mark E Harmon, and Stephen R Mitchell. 2011. Can fuel-reduction treatments really increase forest carbon storage in the western US by reducing future fire emissions? [430] It is important to recognize that "the equilibrium between growth and mortality" must consider all forms of mortality, not just that caused by fire, but also mortality caused by logging.

Restaino & Peterson (2013) conducted a literature review of this issue and reported:

[430] Front Ecol Environ 2011; doi:10.1890/110057
http://scholarsarchive.library.oregonstate.edu/xmlui/bitstream/handle/1957/26174/CampbellJohn.Forestry.CanFuelReductionTreatments.pdf

All studies agree unequivocally that untreated stands release more emissions to the atmosphere during wildfire than treated stands…. However, most studies in this review include assumptions of future wildfire frequency and probability that skew long-term trade-off analyses by overestimating the ability of fuel treatments to reduce wildfire emissions over long time scales. For example, fuel treatments have a finite life expectancy, and fire hazard increases over time as fuels accumulate in treated areas. Repetition and maintenance of fuel treatments are necessary in order to effectively maintain reduced fire hazard over time (Peterson et al., 2005; Johnson et al., 2007, 2011) and thus must be included in analyses of long-term C storage. Although Rhodes and Baker (2008) suggest that 2.0–4.2% of areas treated to reduce surface fuels are likely to encounter wildfires that would otherwise be high or moderate-high severity without treatment, most studies assume future wildfire probability of 100%, reporting inferences that essentially detail a ''best-case scenario'' for wildfire missions mitigation. Annual probability of wildfire in dry temperate forests for a given stand is approximately 1% (Ager et al., 2010; Pearson et al., 2010; Campbell et al., 2011). … To benefit total ecosystem C storage, the removal and release of C through fuel treatments must not exceed the expected reductions in wildfire emissions. Substantial treatment costs through timber harvest, prescribed fire, and milling waste exceed observed and simulated reductions in wildfire emissions. … The ability of fuel treatments to mitigate future fire behavior and move forest structure to a more fire-resistant condition is well documented. However, C costs associated with fuel treatments have can exceed the magnitude of C reduction in wildfire emissions, because a large percentage of biomass stored in forests (i.e., stem wood, branches, coarse woody debris) remains unconsumed, even in high-severity fires (Campbell et al., 2007; Mitchell et al., 2009). … Wildfire occurrence in a given area is uncertain and may never interact with treated stands with reduced fire hazard, ostensibly negating expected C benefits from fuel treatments. Burn probabilities in treated stands in southern Oregon are less than 2%, so the probability that a treated stand encounters wildfire and creates C benefits is low (Ager et al., 2010).)[431]

Lindsay Chiono (2011) of the Wildland Fire Science Laboratory at UC Berkeley prepared a synthesis of the research for resource managers and said:

[T]he net carbon impact of fuel treatments is further complicated by the probabilistic nature of wildfire occurrence and the impermanence of post-treatment stand conditions … [T]reatment activities produce an immediate carbon emission while future wildfire emissions are uncertain … Depending on the intensity of treatment, the quantity of carbon removed may be substantial enough to negate gains from avoided wildfire emissions. East of the Cascade crest in Oregon, a modeling study of carbon dynamics that included modeled wildfires found that while understory removal treatments slightly enhanced carbon storage over the long term, higher levels of biomass removal reduced mean ecosystem carbon (Mitchell et al., 2009)." … [W]hen treatments must be repeated in the interim between wildfires in order to maintain low hazard conditions. Similarly,

[431] Restaino, Joseph C.; Peterson, David L. 2013. Wildfire and fuel treatment effects on forest carbon dynamics in the western United States. Forest Ecology and Management 303:46-60. http://www.fs.fed.us/pnw/pubs/journals/pnw_2013_restiano001.pdf

> *when wildfire frequency is low, the quantity of carbon removed in treatments over time can overwhelm likely wildfire losses. Net emissions were most pronounced in the west Cascades where historical fire return intervals were very long… [I]n southern Oregon and northern California, Goslee and others (2010) took an approach that incorporates the stochastic nature of wildfire occurrence. Rather than scheduling a wildfire event soon after fuel treatment, a calculation that maximizes treatment benefits, they used an estimate of the local fire return interval for the period of 2001 to 2008 -- an annual burn probability of 0.6% -- to assess carbon emissions. Partly owing to this low wildfire risk, they found that fuel treatments, which included commercial timber harvest and pile burning of noncommercial biomass, produced an effective immediate net emission of 10-20.8 tons of carbon per acre. … [S]ome general principles have begun to emerge. Achieving a net carbon gain appears more likely when the quantity of carbon removed during treatment is minimized, when harvested biomass is converted to long-lived wood products, and where the risk of wildfire occurrence is high… Conversely, cumulative emissions from fuels reduction activities repeated in order to maintain low hazard conditions over time can overwhelm avoided wildfire emissions, resulting in a net carbon loss.*[432]

Even the Chief of the Forest Service recognizes these trade-offs. "[M]anagement practices, designed to restore ecosystem health, may in the near-term reduce total stored carbon below current levels."[433]

Hudiburg et al (2001 state:

> *Strategies for reducing carbon dioxide emissions include substitution of fossil fuel with bioenergy from forests, where carbon emitted is expected to be recaptured in the growth of new biomass to achieve zero net emissions, and forest thinning to reduce wildfire emissions3. Here, we use forest inventory data to show that fire prevention measures and large-scale bioenergy harvest in US West Coast forests*
>
> *Lead to 2–14% (46–405 Tg C) higher emissions compared with current management practices over the next 20 years.*
>
> *In our study region, we found that thinning reduced NBP under all three treatment scenarios for 13 of the 19 ecoregions, representing 90% of the region's forest area. The exceptions where NBP was not reduced were primarily due to high initial fire emissions*

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[432] Chiono, Lindsay 2011. Balancing the Carbon Costs and Benefits of Fuels Management. Research Synthesis for Resource Managers. Joint Fire Science Program Knowledge Exchange. https://static.squarespace.com/static/50083efce4b0c6fedbca9def/t/51632bf8e4b00b25a8fa21d3/1365453816037/CFSC_Chiono_Carbon_and_Fuel_Mngmt.pdf

[433] Gail Kimball, March 2009 Testimony before House Committee On Natural Resources, Subcommittee On National Parks, Forests, And Public Lands. http://www.fs.fed.us/congress/111thCongress/Documents/CY%202009%20Hearings/HNRC%202009-03-03%20Climate%20Change/2009-03-03A.Kimbell.pdf.

compared to NEP (for example, Northern Basin and North Cascades; Supplementary Fig. S2). The dominant trend at the ecoregion level was mirrored at the regional level, with the bioenergy production scenario (highest thinning level) resulting in the region becoming a net carbon source (Supplementary Table S2 and discussion of state-level estimates). Regionally, forest biomass removals exceeded the potential losses from forest fires, reducing the in situ forest carbon sink even after accounting for regrowth, as found in previous studies with different approaches or areas of inference8,18.

Because we have assumed high reductions in fire emissions for the areas treated in each scenario, it is unlikely we are underestimating the benefit of preventive thinning on NBP.[434]

North and Hurteau (2009) note that the carbon costs of fuel reduction may be mitigated by focusing on small fuels -

When evaluating carbon released by different fuels treatments, managers will need to weigh tradeoffs between immediate prescribed burn emissions, increased fuel reduction with thinning and an increase in milling waste, and potential future wildfire emissions. … Previous Teakettle studies (Innes et al. 2006, North et al. 2007, Hurteau and North 2009) coupled with this research suggest treatments could be modified to more effectively minimize carbon stock reductions while still significantly reducing fuels and promoting large tree development. Significant increases in wildfire resistance can be achieved by thinning only smaller ladder fuels and fire-sensitive intermediate trees without reducing the majority of the live-tree carbon pool in intermediate pines and large trees of all species. … Thinning and prescribed fire treatments that reduce small tree densities may influence stand development by redirecting growth resources and carbon storage into more stable stocks such as large, long-lived fire-resistant pines (Hurteau and North 2009). … Our research suggests most of the benefits of increased stand-level fire resistance can be achieved with small reductions in carbon pools.[435]

XV. THE DEIS UNDERESTIMATES THE SOCIAL COST OF CARBON

NEPA's requirement to take a "hard look" requires BLM to consider the effects of logging-related GHG emissions. This includes disclosing the social cost of carbon (SCC) as a proxy for the impacts of GHG emissions. GHG emissions from logging (and other land management activities) impose significant costs on society, such as the cost of damage caused by climate

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[434] Tara W. Hudiburg, Beverly E. Law, Christian Wirth, and Sebastiaan Luyssaert. 2011. Regional carbon dioxide implications of forest bioenergy production. Nature - Climate Change. Letters. 23 OCTOBER 2011 | DOI: 10.1038/NCLIMATE1264.
http://www.dnr.wa.gov/Publications/em_fp_biomass_regional_carbon_dioxide_implications_of_forest_bioenergy_production.pdf

[435] North, Hurteau, Innes. 2009. Fire suppression and fuels treatment effects on mixed-conifer carbon stocks and emissions. Ecological Applications, 19(6), 2009, pp. 1385–1396.
http://www.plantsciences.ucdavis.edu/affiliates/north/Publications/Eco%20Apps%20article%20North%20et%20al%20Fuel%20treatments%20forest%20carbon.pdf

change and ocean acidification, the costs of adapting to climate change, and the cost of sequestering carbon to mitigate emissions. CEQ's draft guidance on NEPA and Climate Change recognizes that the social cost of carbon ("SCC") is a "harmonized, interagency metric that can provide decision-makers and the public with some context for meaningful NEPA review." 79 Fed. Reg. 77802, 77827. "The SCC estimates the benefit to be achieved, expressed in monetary value, by avoiding the damage caused by each additional metric ton (tonne) of carbon dioxide (CO2) put into the atmosphere. Ruth Greenspan and Dianne Callan, World Resources Institute, More than Meets the Eye: The Social Cost of Carbon in U.S Climate Policy, in Plain English (July 2011) at 1. The EIS should carefully disclose these social costs. The express purpose of SCC analysis is to provide an apples-to-apples basis for comparing a project's economic benefits (e.g. timber receipts) with GHG pollution impacts (Social Cost of Carbon). Where SCC is not analyzed and disclosed, these impacts (costs) are hidden from the public and, in fact, often "paid for" by the broader environment and public in the form of degraded ecological resiliency, public health impacts, and more.

The DEIS (p 483) made two estimates of the Social Cost of Carbon Dioxide ($37/tonne and $109/tonne based on the expected *average* SCC and the *95th percentile* case) and concludes "Of the two estimates presented, the BLM considers the "average" scenario to be more likely." BLM needs to explain why they think the average case is more likely. There is a lot of evidence that the average case vastly under-estimates the true social cost of carbon pollution. The Interagency Working Group that developed these estimates admits that they did not include all the costs of greenhouse gases emissions in their estimates, (e.g. ocean acidification). Furthermore, the IPCC report-writing process tends to be conservative in estimating the effects of climate change. Extreme outcomes tend to be discounted until the evidence supporting them is highly compelling. Nevertheless, there is a real and significant possibility that extreme climate outcomes will occur and high social costs will manifest. Several sources support this:

- Glenn Scherer and DailyClimate.org 2012. Climate Science Predictions Prove Too Conservative - Checking 20 years worth of projections shows that the Intergovernmental Panel on Climate Change has consistently underestimated the pace and impacts of global warming. December 6, 2012. http://www.scientificamerican.com/article/climate-science-predictions-prove-too-conservative/ ("Across two decades and thousands of pages of reports, the world's most authoritative voice on climate science has consistently understated the rate and intensity of climate change and the danger those impacts represent, say a growing number of studies on the topic.").

- Chris Mooney 2014. The world's climate change watchdog may be underestimating global warming. October 30, 2014. http://www.washingtonpost.com/blogs/wonkblog/wp/2014/10/30/climate-scientists-arent-too-alarmist-theyre-too-conservative/ ("According to a number of scientific critics, the scientific consensus represented by the IPCC is a very conservative consensus. IPCC's reports, they say, often underestimate the severity of global warming, in a way that may actually confuse policymakers (or worse). The IPCC, one scientific group charged last year, has a tendency to "err on the side of least drama." And now, in a new study just out in the Bulletin of the American Meteorological Society, another group of researchers echoes that point. In scientific parlance, they charge that the IPCC is focused on avoiding what are called "type 1" errors -- claiming something is happening when it really is not (a "false positive") --

rather than on avoiding "type 2" errors -- not claiming something is happening when it really is (a "false negative"). The consequence is that we do not always hear directly from the IPCC about how bad things could be.”).

- SkepticalScience.com. How the IPCC is more likely to underestimate the climate response http://www.skepticalscience.com/ipcc-scientific-consensus.htm (“A recent study (Freudenburg 2010) investigated what it calls 'the Asymmetry of Scientific Challenge', the phenomenon in which reports on science fail to evaluate all outcomes, favoring certain probabilities while ignoring others. In the case of the IPCC, the researchers found that the media steadfastly challenge the predictions on the basis that they are exaggerated, worst-case scenarios. What they fail to speculate on is whether the opposite is true; that it may be equally correct to suggest that things might be far worse.

Niemi (2015) prepared a critique showing that BLM under-estimated the Social Cost of Carbon and explained how the analysis can be improved:

> **Summary**
> *Actions that reduce the amount of carbon stored in federal forests contribute to disruption of the global climate by increasing atmospheric concentrations of carbon dioxide. The climate disruption raises the risk of economic harm—locally, nationally, and globally—from extreme weather events, higher temperatures, changes in precipitation, rising sea levels, acidification of oceans, and changes in ecosystems. Laws and executive orders require managers of federal forests to account for these risks. This paper describes the recent failure of the Bureau of Land Management (BLM), to satisfy the requirements. It also describes the steps the BLM must take to meet its obligations, and illustrates the method the BLM and other federal forest management agencies should use to account for carbon-related risks in the future.*
>
> *The BLM failed to account for climate-related risks when it selected its Preferred Alternative for managing federal forests in western Oregon. If implemented, this alternative would yield more timber but less forest carbon than another alternative. Using old data and a conservative view of risk, the BLM provided information that indicates the additional climate-related costs may:*
> *• Outweigh the additional timber-related benefits by 2-to-1.*
> *• Equal $91,000 per additional timber-related job.*
> *• Equal $4 for every $1 of additional timber-related payments to local counties.*
> *Current data, plus a widely accepted view of risk indicates the additional climate-related costs may:*
> *• Outweigh the additional timber-related benefits by more than 30-to-1.*
> *• Equal $1.6 million per additional timber-related job.*
> *• Equal $68 for every $1 of additional timber-related payments to local counties.*
> *The BLM disregarded this information when choosing its Preferred Alternative. To satisfy its legal and administrative requirements, the BLM should fully and clearly describe the climate related risks that accompany the Preferred Alternative, and explain its justification for imposing these risks on the individuals, households, businesses, and communities that would bear them. This justification should address both the reduction in overall economic wellbeing that would result from implementing the Preferred*

Alternative and the moral issues that arise from imposing climate-related risk on those that would not enjoy the timber benefits.[436]

Niemi (2015) explained that, "Moore and Diaz (2015) found that accounting for the impacts of climate on economic growth increases the Interagency Working Group's estimates of the social cost of carbon by a factor of six." [437]

One way that economists deal with uncertain outcomes with high social costs is to account for uncertainty itself as a cost. The DEIS (p 502) says the analysis "addresses the value of carbon storage from a social perspective, where the value of carbon storage is derived from nonmarket valuation techniques such as avoided cost and avoided risk." However, the EIS does not fully account for uncertainty so it underestimates the value of conserving forests to avoid risk.

The agency must recognize that the federal estimate of SCC likely underestimates—perhaps significantly—the climate impacts of GHG pollution. As the U.S. Environmental Protection Agency has concluded:

> *Given current modeling and data limitations, [the federal SCC values] do[] not include all important damages. As noted by the IPCC Fourth Assessment Report, it is "very likely that [SCC] underestimates" the damages. The models used to develop SCC estimates, known as integrated assessment models, do not currently include all of the important physical, ecological, and economic impacts of climate change recognized in the climate change literature because of a lack of precise information on the nature of damages and because the science incorporated into these models naturally lags behind the most recent research.*[438]

Ackerman & Stanton (2010) do not support using the average or "central estimate":

> *Agencies seeking to incorporate climate change considerations in rules and regulations often rely on a cost-benefit analysis, weighing the cost of curbing emissions against the expected damages from every ton of carbon dioxide (CO2) that goes into the atmosphere*

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[436] Niemi, E. 2015. Accounting for Climate-Related Risks In Federal Forest-Management Decision, 10 May 2015 [draft]. Federal Forest Carbon Coalition Background Paper 2015–2. http://static1.1.sqspcdn.com/static/f/551504/26259333/1432605642583/SocialCostsOfCarbonOClandsNiemiMay2015.pdf?token=wDqoa5RkP8EoBLlsRWIPPRuahzg%3D

[437] c*iting* Moore, F.C., and D.B. Diaz. 2015. "Temperature Impacts on Economic Growth Warrant Stringent Mitigation Policy." Nature Climate Change. 12 January. http://www.eenews.net/assets/2015/01/13/document_cw_01.pdf ("Optimal climate policy in this model stabilizes global temperature change below 2 ◦C by eliminating emissions in the near future and implies a social cost of carbon several times larger than previous estimates. A sensitivity analysis shows that the magnitude of climate change impacts on economic growth, the rate of adaptation, and the dynamic interaction between damages and GDP are three critical uncertainties requiring further research. In particular, optimal mitigation rates are much lower if countries become less sensitive to climate change impacts as they develop, making this a major source of uncertainty and an important subject for future research.")

[438] EPA, The Social Cost of Carbon, http://www.epa.gov/climatechange/EPAactivities/economics/scc.html.

— a value known as the "social cost of carbon" (SCC). … While no definite SCC has been set so far, an interagency working group has endorsed a "central" estimate of $21 per ton of CO2 in 2010, or roughly 20 cents per gallon of gasoline — far too small a price incentive to prompt substantive mitigation measures.

In the United Kingdom, which started estimating prices for carbon emissions several years ago, the government's latest calculation is a range of $41 – $124 per ton of CO2, with a central case of $83. An expanded calculation of carbon prices for the United States should at least explore prices in this range …[439]

The 2006 "Stern Review" from the UK Treasury concluded that each ton of carbon dioxide emitted will cause $85 worth of damage to the world's economy.[440] According to the Congressional Research Service, capturing and storing most of the carbon from coal as it is combusted costs between $43-89/ton of CO_2, and this price will likely increase after the many safety, environmental, and efficiency problems with carbon capture and storage (CCS) are fully accounted for. [441] That's another good indication of the value of a storing a ton of carbon in forests.

ABSTRACT: The 2013 Interagency Working Group on the Social Cost of Carbon (IWG) updated the U.S. social cost of carbon (SCC) for 2015 from a central value of $24 to $37 using three integrated assessment models (IAMs): DICE-2010, FUND 3.8, and PAGE09. The SCC is the additional economic damage caused by one ton of carbon dioxide. While some have questioned the increase in the SCC as too high, a thorough examination of the latest scientific and economic research shows that $37 should be viewed as a lower bound. This is because the studies available to estimate the SCC omit many climate impacts—effectively valuing them at zero. Where estimates are available for a given type of impact, they tend to include only a portion of potential harms. This paper represents the first attempt to systematically examine and document these omissions for the latest versions of the three IAMs used by the IWG, as well as earlier versions when they are used in calibrating the updated models. … [H]ot spot damages include[e] increases in forced migration, social and political conflict, and violence; weather variability and extreme weather events; and declining growth rates. A better accounting of catastrophic damages is also needed, as well as many other impacts.[442]

We reestimate the values from the models (1) using a range of discount rates and methodologies considered more appropriate for the very long time horizons associated with climate change and (2) using a methodology that assigns "equity weights" to

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[439] Frank Ackerman, Elizabeth A. Stanton. 2010. The Social Cost of Carbon - A Report for the Economics for Equity and the Environment Network. April 1, 2010. http://www.e3network.org/papers/SocialCostOfCarbon_SEI_20100401.pdf.

[440] http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_index.cfm.

[441] Parker, Folger & Stine. 2008. Capturing CO2 from Coal-Fired Power Plants: Challenges for a Comprehensive Strategy. CRS Report for Congress. http://www.fas.org/sgp/crs/misc/RL34621.pdf *citing* S. Julio Friedmann, Carbon Capture and Sequestration As a Major Greenhouse Gas Abatement Option (November 2007), p. 11.

[442] Howard, P. 2014. OMITTED DAMAGES: What's Missing From the Social Cost of Carbon. http://costofcarbon.org/files/Omitted_Damages_Whats_Missing_From_the_Social_Cost_of_Carbon.pdf

damages based upon relative income levels between regions—i.e., a dollar's worth of damages occurring in a poor region is given more weight than one occurring in a wealthy region. Under our alternative discount rate specifications, we find an SCC [social cost of carbon] 2.6 to over 12 times larger than the Working Group's central estimate of $21"…[443] [444]*, If the agency chooses to disclose the economic and other benefits of logging, they must also disclose the social costs.* [445]

ENVIRONMENTAL JUSTICE

In spite of the DIES admission that the timber industry is inherently volatile and increased timber harvest may have an adverse effect on community stability, as well as the high social cost of carbon, the DEIS (p 472) still concludes that alternatives with more logging (e.g., alternatives B and C) will provide greater benefits in terms of "community capacity and resiliency" and environmental justice. BLM chose 13 metrics of community capacity and resiliency, but these were chosen among a larger set of metrics. We are concerned that the subset of metrics chosen failed to accurately reflect the community benefits of forest conservation. BLM's analysis of these issues need to better reflect the adverse effects of timber industry volatility and the fact that the cost of climate change will fall disproportionately on the poor and disadvantaged communities. BLM also limited it's analysis to communities in the planning area even though the adverse effects of climate change and ocean acidification will be felt far beyond that limited geographic scope.

University of California-Berkeley environmental health scientist Rachel Morello-Frosch studied low-income communities in the U.S. and found something she calls a "climate gap" -

> *The effects of climate change would likely hit hardest in places with the fewest resources to adapt. And we're not just talking about the developing world or tiny island nations. …*
>
> *… the climate gap describes a hidden pattern that we have found that indicates that communities of color and poor households within the United States are gonna be suffering more from the economic and health consequences of climate change than other Americans. In other words the climate gap is not only an international question, which has been the focus of a lot of climate change debates over the years, it's also very much an acute domestic problem within the United States.*[446]

Morello-Frosch's reports includes:

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[443] Laurie T. Johnson & Chris Hope, 2012. The social cost of carbon in U.S. regulatory impact analyses: an introduction and critique, J Environ Stud Sci. DOI 10.1007/s13412-012-0087-7. http://www.springerlink.com/content/863287021p06m441/fulltext.pdf?MUD=MP

[444] See *High Country Conservation Advocates v. U.S. Forest Service*, — F.Supp.3d —, 2014 WL 2922751 (D. Colo. June 27, 2014) (holding that BLM's NEPA analysis of climate change impacts was inadequate, and that the EIS must provide a justification for not using the social cost of carbon as a protocol to evaluate impacts).

[445] See *Sierra Club v. Sigler*, 695 F.2d 957, 979 (5th Cir. 1983), *Hughes River Watershed Conservancy v. Glickman*, 81 F.3d 437, 448 (4th Cir. 1996); *Columbia Basin Land Prot. Assn v. Schlesinger*, 643 F.2d 585, 594 (9th Cir. 1981).

[446] Climate Change and America's Poor. Living on Earth Radio Transcript. Air Date: Week of June 12, 2009.

http://loe.org/shows/segments.html?programID=09-P13-00024&segmentID=2.

Key Findings

> *There is a climate gap. The health consequences of climate change will harm all Americans—but the poor and people of color will be hit the worst.*
>
> ***What hasn't made headlines—yet—is the climate gap: the disproportionate and unequal impact the climate crisis has on people of color and the poor.*** *Unless something is done, the consequences of America's climate crisis will harm all Americans—especially those who are least able to anticipate, cope with, resist and recover from the worst consequences. This analysis is of California, which in many ways is a microcosm of the entire United States.*
>
> *Climate change is an issue of great importance for human rights, public health, and social fairness because of its profound consequences overall and the very real danger that poor neighborhoods and people of color will suffer even worse harms and hazards than the rest of Americans. This "climate gap" is of special concern for California, home to one of the most ethnically and economically diverse populations in the country.*
>
> ***The climate gap means that communities of color and the poor will suffer more during extreme heat waves.*** *For instance, African Americans in Los Angeles are nearly twice as likely to die from a heat wave than other Los Angeles residents, and families living below the poverty line are unlikely to have access to air conditioning or cars that allow them to escape the heat.*
>
> ***The climate gap means that communities of color and the poor will breathe even dirtier air.*** *For example, five of the smoggiest cities in California also have the highest densities of people of color and low-income residents. These communities are projected to suffer from the largest increase in smog associated with climate change.*
>
> ***The climate gap means that communities of color and the poor will pay more for basic necessities.*** *Low-income and minority families already spend as much as 25 percent of their entire income on just food, electricity and water—much more than most Americans.*
>
> ***The climate gap is likely to mean fewer job opportunities for communities of color and the poor.*** *The climate crisis may dramatically reduce or shift job opportunities in sectors such as agriculture and tourism, which predominantly employ low-income Americans and people of color.* [447]

California's Office of the Attorney General prepared a report on the "unequal impacts" of global climate change, saying -

> *Global warming will not affect everyone equally. As the Office of Environmental Health Hazard Assessment stated in its 2010 report, the adverse impacts of climate change are expected disproportionately to affect those who are socially and economically*

[447] Rachel Morello-Frosch, Ph.D., MPH | Manuel Pastor, Ph.D. | James Sadd, Ph.D. | Seth B. Shonkoff, MPH. The Climate Gap - Inequalities in How Climate Change Hurts Americans & How to Close the Gap. http://loe.org/images/content/090612/ClimateGapReport_full_report_web.pdf (emphasis in original).

disadvantaged, including the urban poor, the elderly, children, traditional societies, agricultural workers and rural populations. Disproportionate impacts can occur where certain groups lack the social and economic resources necessary to relocate to avoid impacts, or to purchase the technology necessary to adapt to our changing climate. According to a 2009 report by California's Climate Change Center, "[w]ithout proactive policies to address these equity concerns, climate change will likely reinforce and amplify current as well as future socioeconomic disparities, leaving low-income, minority, and politically marginalized groups with fewer economic opportunities and more environmental and health burdens."[448]

Lynn et al (2011) state:

The effects of climate change are expected to be more severe for some segments of society than others because of geographic location, the degree of association with climate-sensitive environments, and unique cultural, economic, or political characteristics of particular landscapes and human populations. Social vulnerability and equity in the context of climate change are important because some populations may have less capacity to prepare for, respond to, and recover from climate-related hazards and effects. Such populations may be disproportionately affected by climate change. … [C]onsiderations that pertain to the effects of climate change on socially vulnerable populations are identified.[449]

BLM's analysis of environmental justice must include the full geographic scope of the impacts of climate change. Many of the adverse social impacts of climate change will occur elsewhere in the U.S. and the world.

One important way to avoid unequal distribution of the costs of climate change is to avoid those costs in the first place. EPA just released a report on the impacts of climate change and the value of mitigation. They only looked at environmental justice in one section of the report dealing with coastal property impacts such as sea level rise, but they found that many disadvantaged communities along the west coast are especially vulnerable and would benefit from mitigation efforts (such as optimizing carbon storage in BLM forests). "Areas of higher social vulnerability are more likely to be abandoned than protected in response to unmitigated sea level rise and storm surge." The basic message is that taking action to store carbon today helps avoid imposition of high costs of adaptation on communities least able to afford those costs.[450] The example of coastal property damage is just a small part of the environmental justice implications of climate change. As another example, the cost of any adverse health impact associated with

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[448] State of California Department of Justice - Office of the Attorney General. https://oag.ca.gov/environment/climate-change/unequal-impacts *referencing* Linda Mazur, Carmen Milanes, Karen Randles, David Siegel, 2010. INDICATORS OF CLIMATE CHANGE IN CALIFORNIA: ENVIRONMENTAL JUSTICE IMPACTS December 2010. http://oehha.ca.gov/multimedia/epic/pdf/ClimateChangeEJ123110.pdf

[449] Kathy Lynn, Katharine MacKendrick, and Ellen M. Donoghue. 2011. Social Vulnerability and Climate Change: Synthesis of Literature. General Technical Report, PNW-GTR-838, August 2011. http://www.fs.fed.us/pnw/pubs/pnw_gtr838.pdf

[450] EPA 2015. Climate Change in the United States: Benefits of Global Action. http://www2.epa.gov/cira/downloads-cira-report; http://www2.epa.gov/sites/production/files/2015-06/documents/coastalproperty.pdf

climate change will fall disproportionally on poor people with limited access to health care. In fact, nearly all future adaptation costs caused by global climate change will fall unfairly on those least able to pay.

BLM should adopt an alternative that minimizes carbon emissions and timber harvest and maximizes forest carbon store and other non-consumptive ecosystem services.

I. BLM SHOULD OPTIMIZE FOREST CARBON STORAGE TO HELP MEET CLIMATE MITIGATION GOALS

The DEIS should disclose whether the cumulative effects of logging-related GHG emissions are consistent with emissions reduction goals established by state and federal government and international agreements.

In 2007, the Oregon legislature passed HB 3543 that codifies greenhouse gas reduction goals for the state: namely, by 2010 to begin to reduce greenhouse gas emissions, by 2020 to achieve greenhouse gas levels 10% less than 1990 levels and by 2050 to achieve greenhouse gas levels 75% below 1990 levels. ORS § 468A.205. Logging-related GHG emissions will conflict with attainment of these goals. Greater conservation of BLM forests will help meet these goals.

BLM should also strive to harmonize with State of Oregon statewide land-use planning goals (adopted in administrative rules) that prohibit land use activities that exceed the "carrying capacity" of air and water resources. OAR 660-015-0000(5) - (6). The Department of Land Conservation and Development (DLCD) defines "carrying capacity" as a "Level of use which can be accommodated and continued without irreversible impairment of natural resources productivity, the ecosystem and the quality of air, land, and water resources." There is a large body of science indicating that we are already beyond the level of CO2 in our atmosphere that can be described as safe or reversible.

> *In November 2014, in a historic joint announcement with China, President Obama laid out an ambitious but achievable target to reduce greenhouse gas emissions in the United States in the range of 26 to 28 percent below 2005 levels by 2025.* [451]

On June 25, 2013, President Obama released his Climate Action Plan, which includes forest conservation among the "first pillar"[452] of efforts to reduce emissions, saying:

> *Preserving the Role of Forests in Mitigating Climate Change: America's forests play a critical role in addressing carbon pollution, removing nearly 12 percent of total U.S. greenhouse gas emissions each year. … Conservation and sustainable management can help to ensure our forests continue to remove carbon from the atmosphere…* [453]

Advancing efforts to protect our forests" is also mentioned in the 6th U.S. Climate Action Report under the United Nations Framework Convention on Climate Change (UNFCCC). The agency should advance this national climate goal by conserving public forests. Carbon emissions from

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[451] https://www.whitehouse.gov/climate-change; https://www.whitehouse.gov/the-press-office/2014/11/11/fact-sheet-us-china-joint-announcement-climate-change-and-clean-energy-c

[452] U.S. Dept of State 2013. draft 6th Climate Action Report http://www.state.gov/e/oes/climate/ccreport2014/index.htm (page 12).

[453] http://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf

logging public lands directly conflict with this important national goal and indicate potential significant impacts requiring an EIS.

Logging related GHG emissions (and forgone opportunities for increased storage of carbon in forests) will conflict with these state, federal and international GHG reduction goals.

COMMUNITY STABILITY AND PROSPERITY

BLM appears to be emphasizing "sustained yield" for its own sake, while sacrificing opportunities to increase carbon storage and recreation, even though the DEIS clearly shows that the economic value of recreation and carbon storage on BLM lands greatly exceed the value of wood products. This makes no sense. BLM needs to consider alternatives that do more to optimize carbon storage, provide more low-impact recreation opportunities, and produce other ecosystem services and non-commodities. Sustained yield should not be a goal unto itself, but an outcome of sound forest conservation.

Goals related to timber production and carbon storage are in direct conflict with each other. Alternatives that increase logging and increase timber revenue, sacrifice economic benefits of carbon storage that vastly exceed the value of wood products. Furthermore, increased logging tends to be destabilizing to local communities, while emphasizing non-consumptive ecosystem services will tend to have a stabilizing economic influence. All these economic factors should play an important role in BLM's final choice among alternatives. BLM should maximize economic benefits for public lands management by minimizing logging and emphasizing non-consumptive values like clean water, carbon storage, biodiversity conservation, and low impact recreation.

The DEIS creates the appearance of a false dichotomy: timber jobs vs recreation jobs, e.g., Table 3-177 (DEIS p 536). The EIS needs to reflect the fact that "recreation" is far too narrow view of the economic alternative to logging, because forest conservation provides economic benefits across virtually every sector of the economy. It is more accurate to recognize that Oregon's greatest economic asset is our quality of life which offers a "second paycheck" to every Oregonian and attracts high quality workers and diverse new businesses that want to hire those people. The DEIS needs to accurately reflect the fact that conserving BLM forest contributes to Oregon's quality of life, while timber harvest degrades habitat, water quality, climate stability, scenic views, and harms Oregon's quality of life. The choice is not timber versus recreation, but rather, timber versus every other economic sector in the state that depends very much on the flow of these ecosystem services to support its diversified economy.

The DEIS (p 545) says "Changes in timber harvest are the primary influences on projected future BLM-based employment and earnings in local economies in the planning area. This is because changes by alternative for other resources are either unavailable or very small." There are several problems with this analysis:

- The conclusion that BLM can positively influence the local timber economy is brought into question by the fact that the timber industry is volatile, declining, and subject to a wide range of forces beyond BLM's control, e.g., "commodity-based industries are subject to the highs

and lows of business cycles not only in the United States, but also internationally." DEIS (p 568).

- BLM assumes inappropriately that recreation and other economic sectors are insensitive to logging on BLM lands. This ignores the fact that logging degrades not only the recreation experience, but also degrades a wide variety of ecosystem services and amenity values that must be carefully conserved in order to sustain and grow other sectors of the economy. BLM needs to disclose the fact that the overall economy is likely to thrive, not just "in spite" of reductions in federal log supply caused by increased emphasis on conservation, but "because" of greater conservation of public lands.[454]
- This conclusion also ignores the adverse effects of volatility in the wood products sectors, which diminishes the social value of jobs in those sectors and adds to a variety of social problems related to job insecurity. "If industries increase that exhibit historic instability, they may inject greater economic instability into their host communities." DEIS (p 568).

DEIS (p 569) says "Industrial specialization can be beneficial to an area, though it may, at the same time, subject the area to greater volatility. Growth and stability are both important though sometimes competing concepts in a portfolio of economic growth and development considerations." This seems to imply that BLM can stimulate increased rates of economic growth by increasing federal timber supply. The DEIS fails to recognize that this is highly unlikely given the fact that the timber industry is a mature industry that is stagnant and declining relative to other sectors that are growing much faster.

The DEIS failed to adequately consider trends. For instance, timber jobs are trending down; recreation (and other) jobs are trending up.

> *Between 1990 and 2000, employment grew by 29 percent in the 72 counties in the Plan area. During the same period, manufacturing grew by 3 percent, compared to 56 percent employment growth in the services sector. Most of the other major industries grew at rates varying between 23 and 32 percent (fig. 3-1). [p 37]*
>
> *Federal forests were becoming highly valued for recreation, visual quality, and the protection of water, wildlife, and fish. The regional economy was also maturing. Agriculture and industries based on the extraction of forest resources showed little growth. The percentage of people in the region whose livelihood was based on the extraction of goods and services from federal lands shrank. [p 38]*
>
> *The total decline of 30,000 jobs in the primary processing industries (SIC 24 and SIC 26) [during the 1990s] is contrasted to changes in total employment across all industries in the Plan area. During the 1990s, there was an increase in total employment of 1.4 million jobs. Primary wood-products processing accounted for 2 percent of all jobs in the Plan area in 1990 and dropped to 1 percent by 2000. [p 41]*[455]

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[454] See Neimi, Whitelaw, & Johnston 1999. The Sky Did NOT Fall. ECONorthwest. http://pages.uoregon.edu/whitelaw/432/articles/SkyDidNotFallFull.pdf

[455] USDA/USDI. 5-volume Northwest Forest Plan, 10-Year Socioeconomic Monitoring Report, http://www.fs.fed.us/pnw/publications/gtr649/pnw-gtr649_vol3_pt5.pdf.

Other notable economic trends include:

- Declining real wages in the timber industry, especially when compared to other industries. It does not makes sense to encourage growth in an industry that is systematically trying to break-up unions, reduce wages, reduce benefits, etc.
- Declining jobs per million board feet of timber harvest. If the goal is to create jobs, it does not make much sense to feed more public wood to an industry that uses more machines and computers and fewer people.
- Shrinking share of total employment in the timber industry relative to the economy as a whole. It is unwise economic policy to prop up declining/polluting industries like timber. It is better to focus limited public resources on clean, growing industries.
- Increasing consolidation in the industry. Jobs are becoming concentrated in areas near the I-5 corridor, where communities have more options for economic growth and diversification. BLM cannot stop this trend by increasing the wood supply.
- "Areas with high levels of natural amenities have enjoyed growing populations and income levels in the past decade. Much of this growth has come from the immigration of people with income from self-employment or investments. These new migrants are usually well-educated and often work as executives or professionals or in such industries as finance, insurance, and real estate or business services. Communities may find that policies that enhance the quality of life (better schools, environmental protection, etc) can attract more of these people who are in a financial position to act upon their residential preferences. This in turn can stimulate economic development." [456]

Many of the tables in the socio-economic section of the DEIS are labelled "total jobs" even though the DEIS really only looked at timber jobs and recreation jobs, and failed to disclose amenity-induced job creation. "Total jobs" should not be used to describe jobs in just two sectors of the economy.

The DEIS makes several statements about conservation alternatives causing "disproportionately negative economic effect" for certain counties, but these conclusions do not consider all of the economic factors or even all of the job creation factors.

The DIES implicitly recognizes that lands close to communities are disproportionately valuable for recreation. DEIS (p 489) says that BLM manages about 50% of the land located within 30-minute driving time of the 12 largest communities in western Oregon, and 34% within 60-minute driving time. However, the DEIS also implies that the economic value of recreation is similar across alternatives. DEIS (p 526) says that the economic value of $250 million for recreation is "consistent across all alternatives." This fails to recognize that logged over lands are far less desirable for recreation. Logged areas are unsightly and tend to have a lot of trip-hazards from brush and logging debris, plus a lot of thistles and blackberries which are barriers to recreation. The EIS should disclose how much of the BLM land within 30 and 60-minute driving time is in timber harvest land allocation versus reserve land allocations. The EIS must disclose the adverse

[456] Peter B. Nelson. 1999. Quality of Life, Nontraditional Income, and Economic Growth New Development Opportunities for the Rural West. Rural Development Perspectives, vol. 14, no. 2. http://www.ers.usda.gov/publications/rdp/rdpsept99/rdpsept99e.pdf

economic impact of increased timber harvest within a 60 minute drive of communities large and small.

The DEIS uses economic multipliers from OFRI which tend to inflate the economic importance of the timber industry.

To understand local communities, the ID Team interviewed elected officials. These people have a clear economic conflict of interest, so they are unlikely to provide unbiased information about the overall wants and needs of the county with respect to public lands.

The DEIS does not accurately represent the relationship between big cities/small cities. Money flows from big cities to small, so small cities will enjoy trickle down benefits if BLM emphasizes conservation and amenity-based economic growth, even if those effects are felt first in larger cities.

BLM's attempt to switch from thinning back toward regeneration might gain some economic efficiency in terms of sale preparation and logging implementation, but it also creates uncertainty in terms of social acceptability of clearcutting and risk of litigation. The DEIS did not account for this.

The analysis assumes that BLM is a "price taker." This means that BLM has such a minor effect on supply that the market does not notice if they supply more or less timber and prices do not change. This has a variety of implications in terms of "leakage" in the carbon storage analysis, etc.

I. DEIS ANALYSIS OF NON-MARKET ECONOMIC VALUES NEEDS IMPROVEMENT

DEIS Tables 3-159 and 3-173 provides some information on non-consumptive and non-market economic values but this analysis is inadequate:

- The DEIS failed to quantify many economic benefits of conservation even though there are tools available to do so, such as surveys inquiring about people's "willingness to pay" for endangered species recovery, old growth restoration, biodiversity, etc...
- The DEIS failed to recognize variation among alternatives, and thus failed to recognize the value of conservation. The DEIS (P 480) says "it is not possible to calculate how BLM actions could affect the values of these goods and services using market prices." For instance, Table 3-173 seems to indicate that all the alternatives have similar economic values for recreation, which ignores the fact that logged lands are far less desirable for recreation. (See recreation comments) BLM can provide quantitative estimate of these economic impacts or at least predict the relative economic values based on each alternative's relative emphasis on logging versus conservation. The EIS must clearly reflect that fact that alternatives with greater conservation will tend to provide greater non-market economic benefits.
- The DEIS failed to integrate the extensive analysis of timber economics with these non-consumptive and non-market economic values. It is critical that the EIS provide some way of comparing the economic value of conservation versus logging. If the EIS puts a dollar value on timber, but leaves non-market values unquantified, the unavoidable effect will be to artificially elevate the importance of timber and devalue non-market economic benefits of conservation.

- The value of water quality protection is likely underestimated. The DEIS focused on source water protection for drinking watersheds. High quality water is valuable for many purposes other than drinking water, including: swimming, fishing, supporting biodiversity, diluting downstream pollution, etc. The DEIS needs to disclose the value of providing water quality that goes beyond the bare minimum necessary to meet legal requirements. The law allows some pollution, and BLM timber sales often contribute sediment to streams, but BLM can provide social and economic benefits by preventing any degradation of water quality.
- The DEIS fails to quantify and underestimates the economic value of conserving biodiversity. Maintaining biodiversity is critical for climate change mitigation, maintaining the genetic resources for developing future crops sources of medicine, preserving genes and proteins that could be useful in future technology, conserving pollination services, hunting/fishing/wildlife-watching, etc. The DEIS needs to disclose the value of providing biodiversity that goes beyond the bare minimum necessary to meet legal requirements. Instead of just striving to conserve threatened and endangered species, BLM should strive to prevent other species from being listed, and should strive to maintain and restore healthy populations of native wildlife. The law may allow some degradation of wildlife resources, and BLM regeneration timber sales often degrade habitat, but BLM can provide social and economic benefits by preventing degradation of biodiversity.

Table 3-159. Summary of economic value of goods and services derived from BLM-administered lands in western Oregon, 2012.

Good or Service	Type of Valuation	Economic Value in 2012
Biodiversity and Sensitive Species	Qualitative	Not Monetized
Carbon Storage	Non-Market	$99 million
Cultural Meaning	Qualitative	Not Monetized
Energy Production	Market	$0.032 million
Grazing	Market	$0.022 million
Minerals	Market	$0.015 million
Recreation	Non-Market	$222.8 million
Scenic Amenities	Qualitative	Not Monetized
Source Water Protection	Qualitative	Not Monetized
Special Forest Products	Market	BLM Revenue: $0.2 million; Market Value Low $0.4 million, Market Value High $6.5 million
Timber	Market	$20.8 million (Harvest Value)

[DEIS p 508]

Table 3-173. Table summary of effects on economic value of goods and services derived from BLM-administered lands in Western Oregon.

Good/Service	Type of Valuation	Economic Value in 2012	Impact by Alternative				
			No Action	Alt. A	Alt. B	Alt. C	Alt. D
Biodiversity and Sensitive Species	Qualitative	Not Monetized	-	Lower valueless increase associated with less increase in structurally-complex forest.	Higher increase associated with more increase in structurally-complex forest.	Less increase associated with less increase in structurally-complex forest.	Higher increase associated with more increase in structurally-complex forest.
			-	Diminished economic well-being associated with less butterfly habitat. Economic values associated with species generally protected or enhanced in the long run.			
Carbon Storage	Non-Market ($ millions)	$99	$131.4	$179.3	$165.0	$54.6	$232.8
			Average per year 2013 - 2022				
Cultural Meaning	Qualitative	Not Monetized	Value of cultural sites and artifacts protected across all alternatives. Overall effect on cultural meaning impossible to assess at the present scale of analysis.				
Energy Production	Market	$0.032 million	Value of energy production across all alternatives limited by lack of demand. Supply of biomass would increase; Supply of land available for wind/ROW development would decrease.				
Grazing	Market	$0.022 million	No change in supply or value of grazing.				No grazing would reduce value to $0.
Minerals	Market	$0.015 million	Small change in acres available for quarry development would not likely be large enough to change quantity or value of minerals produced. No change in value of locatable or leasable minerals.				
Recreation	Non-Market ($ millions)	$222.8	$250.1 (Consistent under all alternatives)				
Scenic Amenities	Qualitative	Not Monetized	Potential 77% reduction in VRI Class II could reduce value of aesthetic resources	Potential 75% reduction in VRI Class II could reduce value of aesthetic resources	Potential 82% reduction in VRI Class II could reduce value of aesthetic resources	Potential 82% reduction in VRI Class II could reduce value of aesthetic resources	Potential 90% reduction in VRI Class II could reduce value of aesthetic resources
Source Water Protection	Qualitative	Not Monetized	No change under any alternative.				
Special Forest Products	Market	BLM Revenue: $0.2 million; Market Value Low $0.4 million, High $6.5 million	Changes in supply of lands suitable for the production of Category 1 and Category 2 species produce relatively small changes and would likely have a small effect on the overall supply, and thus the value, of each category of special forest product in the planning area.				
Timber	Market ($ millions)	$20.8	$93.0	$56.2	$72.9	$134.9	$37.4
			Average per year 2013 - 2022				

[DEIS p 526]

Several sources support our recommendation to take a broader view of the economic value of biodiversity, and the need for BLM to strive to do much more than just conserve species that are already listed:

> *Preserving biodiversity also means preserving a reservoir of as-yet-undiscovered medical treatments and cures. … Ecological policies that seek to preserve biodiversity and limit human influences on ecosystem organization may thus be in the best interest of public health, both because biodiversity can yield treatments for existing diseases and*

provide a buffer against exposure to emergent ones. … Conservation makes good sense in just the same way that preventive medicine does.[457]

[B]iodiversity is positively related to the ecological functions that underpin the provision of ecosystem services. … [E]cological restoration is likely to lead to large increases in biodiversity and provision of ecosystem services, offering the potential of a win-win solution in terms of combining biodiversity conservation with socio-economic development objectives.[458]

Recently, some scientists have expressed renewed interest in natural products research following the failure of alternative drug discovery methods to deliver lead compounds in key therapeutic areas such as immunosuppression, anti-infectives and metabolic diseases.

"Natural products research remains invaluable when it comes to providing that initial lead," Wani said. "Before we explored the Pacific Yew tree we had no idea that we could treat cancer and other diseases through microtubule overproduction."

Wani said such discoveries support his contention that "nature is the best chemist."

Another proponent of natural products research at RTI, Dr. David Kroll researches milk thistle compounds as a possible way to treat prostate cancer.

"The natural world has 10 times more chemical diversity than synthetic compounds," said Kroll, a senior research pharmacologist. "We just have to get to it in time." [459]

It is also important to conserve biodiversity because it could prove useful to humans in was that have not yet been investigated. Only a fraction of plant species have been tested for activity against cancer, AIDS, Alzheimer's, infectious bacteria, etc. For example, Research Triangle Institute International (RTI.org) is funded by a grant from the American Cancer Society, to test more than 10,000 mushroom extracts for the presence of chemicals that have potential as chemotherapy drugs. BLM forests harbor tremendous fungal diversity, much of which remains unsurveyed and unrecognized when logging projects are proposed.

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[457] American Council on Science and Health. Why Biodiversity Is a Public Health Issue. November 2, 2005. http://www.acsh.org/factsfears/newsID.658/news_detail.asp.

[458] José M. Rey Benayas, Adrian C. Newton, Anita Diaz, and James M. Bullock. 2009. Enhancement of Biodiversity and Ecosystem Services by Ecological Restoration: A Meta-Analysis. Science 28 August 2009: 1121-1124.

[459] Taxol Pioneer Calls for Greater Emphasis on Natural Products Research , Feb 18, 2005.

http://www.rti.org/newsroom/news.cfm?obj=9BB6E900-3E77-4CEC-9EB6321166A3E61C.

THE COQUILLE LANDS

Reading the DEIS, we do not see clearly what BLM is proposing to do with the lands surrounding the Coquille Tribal Forest, but we do know that the BLM has been trying to decouple tribal management from BLM management standards.

In 1995, Congress granted the Coquille Tribe approximately 5,400 BLM lands with explicit conditions on forest management. It is Congress's intent, as written in law, that management of the Coquille Tribal Forest shall be managed "subject to the standards and guidelines of Federal forest plans on adjacent or nearby Federal lands, now and in the future." [460] BLM says it's purpose is to coordinate with the Coquille Tribe on management of "adjacent and nearby" BLM lands. This purpose will undermine Congressional intent by weakening standards on adjacent federal lands, for the express purpose of ensuring the Tribal forest is managed different than the rest of BLM lands. Congress' intent was to manage lands *similarly*, but the purpose of BLM's effort here is to ensure that tribal trust lands are managed *different* than most of BLM lands in western Oregon.

DEIS at 582 expressly states that, "The Tribe specifically wants to decouple management of the Coquille Forest from BLM management practices." BLM must not accommodate this decoupling because it very clearly violates Congressional intent that management of the tribal forest be coupled to management of BLM lands. Congress explicitly said management of the tribal forest shall be managed "subject to the standards and guidelines of Federal forest plans on adjacent or nearby Federal lands, now and in the future."[461] The phrase "subject to" makes clear that BLM management standards lead, and tribal forest management must follow.

We encourage BLM to coordinate with the Coquille Tribe (and others), especially developing and considering alternatives that will lead to meaningful advances in conservation and community stability.

DEAD AND DOWN WOOD STANDARDS

Dead wood habitat is associated with the abundance or presence of approximately one quarter to one third of vertebrate wildlife in Northwest forests. At least 47 species deemed sensitive or special-status have associations with dead wood such as downed logs and snags, and at least 20% of birds in the western Oregon Doug-fir forests depend on snags for feeding or nesting.[462] Pileated woodpeckers play a crucial keystone species role in Oregon's forests, and are directly affected by snag habitat availability. Over two dozen bird species have been shown to use cavities that have been previously excavated by Pileated woodpeckers. Species which subsequently use pileated-created cavities to nest or roost include the flammulated owl, the bufflehead, and Vaux's swifts, which are on sensitive species lists or are considered priority species in Oregon or Washington. Other vertebrate species include the northern flying squirrel,

[460] 25 U.S.C. 715c(d).
[461] Id.
[462] Hagar 2007, Cline et al. 1980.

which is the primary prey of the northern spotted owl, as well as the common merganser, silver haired bat, and fisher, and American marten.[463]

Many BLM special status bat species are also dependent on standing dead trees. These bats are associated with decadent live trees and large snags with sloughing bark, which are used variously as solitary roosts, maternity roosts, and hibernacula by bat species associated with Douglas-fir forests.

Over the past 100 years, most of Oregon's native old-growth forests have been logged, taking with them their potential to grow large, die naturally and become snags that provide essential wildlife habitat, and many parts of the management area are currently in a deficit of large snags. To protect this essential wildlife habitat, the Northwest Forest Plan establishes mandatory minimum snag retention standards for timber sales on federal public lands, which has been incorporated in to the existing BLM District RMPs: Retain snags in a timber harvest unit at levels sufficient to support species of cavity nesting birds at 40% of potential population levels. This 40% requirement must be met throughout the Matrix with per acre requirements met on areas averaging no larger than forty acres. *See e.g., Salem BLM RMP at 21*

The BLM's draft RMP for Western Oregon does away with this biologically-driven snag retention standard, replacing it with draft standards that treat existing and newly created snags as interchangeable, and averages the snag density standards across the "scale of the harvest unit" which could be hundreds, if not thousands, of acres.

While each alternative offers a slightly different quantification for snags, both existing and created, the approach is essentially the same: no specific snag retention standards – just a vague direction to "retain existing snags and existing down woody material during silivicultural treatments except for safety or operational reasons." This is coupled with the direction to create new snags at the time of harvest. *See RMP EIS at 962, 974, 984*. The lack of quantified retention standards coupled with a reliance on human-created snags poses the threat of significant habitat loss for snag-dependent species.

As large snags are required for the habitat requirements of many species but are in short supply due to past and present management the Western Oregon RMP should exclude stands with high snag densities from harvest, or utilize buffers in order to protect snags, particularly legacy snags.[464]

Ease of human access, along with timber harvest, has a significant negative impact on snag density.[465] Forest stands which are thinned retain snag densities approximately three times lower than in stands with no history of logging, and snag densities in forest stands adjacent to roads are approximately three times lower than those not adjacent to roads. [466]

None of the draft RMP EIS alternatives take the necessary steps to protect or retain existing snags, and so will exacerbates the current deficit of legacy snags. Since all alternatives allow for

[463] Aubrey & Raley 2002.
[464] Cline et al. 1980, Windom and Bates 2008.
[465] Windom and Bates, 2008.
[466] Id.

snags to be cut as needed for "safety or operational reasons" and do not include any protective buffers for legacy snags, the alternatives do not ensure that essential snag habitat will be protected. Most snags could be considered a safety hazard if logging takes place nearby, or they could simply be knocked over during logging. This draft RMP fails does not explain how the BLM will maintain adequate snag density to provide for even minimum wildlife habitat needs. This is especially crucial because many of the management areas already exist in a state of insufficient snag density due to past management practices and numerous recent timber sales. A general statement of 'trying' to retain snags, which lacks any numeric standards or actual accountability, is insufficient to address the current snag deficiency crisis, or to ensure that existing snags are protected and retained.

I. CREATED SNAGS CANNOT BE RELIED ON TO PROVIDE QUALITY HABITAT

All the alternatives rely on the creation of new snags, rather than the specific retention of existing snags, to provide adequate wildlife habitat. There are two key problems with the approach that the draft RMP EIS did not adequately address. First, while snag density may be augmented by killing live trees, the range of diameters of the trees available in young stands from which to create snags may not be adequate for many cavity-using species. Snags < 50cm dbh are infrequently used as nest or roost sites by cavity-using wildlife in western Oregon (Mellen et al.: DecAID).

Second, there is a significant time lag between the creation of snags and their utility as habitat. A study that monitored 1,267 created snags in Willamette National Forest found trees killed within the last 10 years had little decay and had neither ant colonies nor adequate nesting roosting cavities. (Boleyn, et. al., 2002). Regarding the keystone snag species pileated woodpeckers, the study found foraging use in only 1.5% of created snags after 10 years. *Id.* A created snag is *not* interchangeable with an already existing snag as regards wildlife habitat needs and the RMP EIS should reflect this time lag and its impacts on species distribution after management actions that remove existing snags.

II. DEADWOOD RETENTION STANDARDS ARE NECESSARY IN RIPARIAN RESERVES

The draft RMP EIS does not seem to include snag and deadwood retention standards specific to Riparian Reserves. In fact, removing dead trees as needed for safety or operational reasons is explicitly allowed in Riparian Reserves, without any limitations on size of the tree or proximity to the waterbody.[467] A recently published peer-reviewed study by two research scientists from the National Oceanic and Atmospheric Administration (NOAA) directly addressed the need to retain large dead wood in Riparian Reserves, as it is the key driver of attaining riparian biodiversity.[468] The final management guidelines of the RMP should require a specific numeric standard for retention of large dead wood, both standing and downed, in Riparian Reserves.

[467] Draft RMP EIS at 917.
[468] Pollack & Beechie, 2014.

III. ADEQUATE SOURCES OF DEADWOOD ARE ESSENTIAL FOR SOIL PRODUCTIVITY

Retaining adequate sources of deadwood is also essential for long term soil health – an issue not addressed in the draft RMP's Management Direction for Soil, which focus primarily on limiting soil compaction and disturbance and does not include protecting the sources of long-term soil productivity.[469]

Soil and soil productivity are fundamental aspects of forested ecosystems that influence the composition and condition of vegetation, rates of vegetative recovery after disturbance, sediment flux, and the quantity, timing, and quality of water produced by watersheds, which, in turn, affect aquatic populations and habitats. [470]Large woody debris (LWD) provides important sources of organic matter and nutrients in soils, which are vital to the long-term maintenance and protection of soil productivity.[471]

Despite these the well-known importance of LWD to soil productivity the draft RMP EIS fails to disclose that scientific information has repeatedly noted that one of the most effective, efficient and important ways to restore degraded soil productivity is to retain all sources of LWD and organic matter and prevent additional soil disturbances in degraded areas. (Kattlemann, 1996; Beschta et al., 2004). The final RMP EIS should include specific numeric standards for retention of existing LWD in all management areas sufficient to provide for both habitat and long-term soil productivity.

LANDS WITH WILDERNESS CHARACTERISTICS

Pursuant to the Federal Land Policy and Management Act (FLPMA), "The Secretary shall prepare and maintain on a continuing basis an inventory of all public lands and their resource and other values (including, but not limited to, outdoor recreation and scenic values), giving priority to areas of critical environmental concern. This inventory shall be kept current so as to reflect changes in conditions and to identify new and emerging resource and other values." 43 U.S.C. §1711(a). Wilderness character is a resource for which BLM must keep a current inventory. As the U.S. Court of Appeals for the Ninth Circuit recently held: "wilderness characteristics are among the 'resource and other values' of the public lands to be inventoried under § 1711. BLM's land use plans, which provide for the management of these resources and values, are, again, to 'rely, to the extent it is available, on the inventory of the public lands, their resources, and other values.' 43 U.S.C. § 1712(c)(4)." *Oregon Natural Desert Ass'n v. Bureau of Land Management*, 531 F.3d 1114, 1119 (9th Cir. 2008). Therefore, BLM is required to consider "whether, and to what extent, wilderness values are now present in the planning area outside of existing WSAs and, if so, how the Plan should treat land with such values." *Id*. at 1143.

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[469] RMP EIS 929-30.
[470] Beschta et al., 2004.
[471] Beschta et al., 2004; Karr et al., 2004.

BLM now has current guidance requiring updating its inventory of lands with wilderness characteristics and considering protection of those values. Instruction Memorandum (IM) 2011-154 and Manuals 6310 and 6320 contain mandatory guidance on implementing that requirement. The IM directs BLM to "conduct and maintain inventories regarding the presence or absence of wilderness characteristics, and to consider identified lands with wilderness characteristics in land use plans and when analyzing projects under the National Environmental Policy Act (NEPA)." BLM must update its inventory of lands with wilderness characteristics as part of this land use planning process. Manual 6310 provides detailed guidance on conducting inventories of lands with wilderness characteristics. The manual identifies situations when BLM must update its inventory:

1. The public or the BLM identifies wilderness characteristics as an issue during the National Environmental Policy Act (NEPA) process.
2. The BLM is undertaking a land use planning process.
3. The BLM has new information concerning resource conditions, including wilderness characteristics information submitted by the public that meets the BLM's minimum standard described in the Wilderness Characteristics Inventory Process section of this policy.
4. A project that may impact wilderness characteristics is undergoing NEPA analysis.
5. The BLM acquires additional lands. (6310.06.A).

Many of these conditions apply to lands under consideration, which have not been actively re-inventoried by the BLM using the detailed standards and procedures set out in the current guidance. Once there is new information that meets the general submission standards, then "as soon as practicable, the BLM shall evaluate the information," including field checking as needed and comparing with existing data to see if previous conclusions remain valid. BLM is also required to document its rationale and *make it available to the public*. 6310.06.B.2 (emphasis added).

Further, BLM Manual 6310 also sets out detailed guidance on how to identify wilderness characteristics, including how to define "naturalness," "roads," "outstanding opportunities for solitude or primitive and unconfined recreation," and "supplemental values." The guidance explicitly cautions that, "undeveloped possessory interests (e.g., mineral leases) are not treated as impacts to wilderness characteristics because these rights may never be developed." 6310.06.C.3.d. Furthermore, the BLM is supposed to consider "existing conditions as opposed to potential future conditions" when evaluating lands for wilderness characteristics. 6310.06.B. Thus, BLM should not rule out lands as having wilderness characteristics (or for management to protect those characteristics) either because there are valid existing rights or the lands are in proximity to an area with other development or rights-of-way.

The current guidance was not available during BLM's previous evaluation of potential lands with wilderness characteristics and requires that the BLM update its inventory to comply with the agency's official interpretation of FLPMA.

BLM needs to identify wilderness areas being considered by congress, unroaded areas adjacent to forest service wilderness, and unroaded areas adjacent to forest service inventoried roadless areas.

The BLM cannot pre-empt the will of Congress by damaging areas currently being considered in wilderness legislation. Specifically the areas identified as "Wild Rogue Wilderness" and "Devils Staircase Wilderness" in Senator Wyden's O&C legislation must be reserved from timber harvest modeling and any management actions that would damage wilderness characteristics. These areas would also need to be identified for mineral withdrawal in the RMP. Additionally the BLM must conduct a geospatially explicit analysis to identify potential BLM wilderness adjacent to existing Forest Service wilderness and large inventoried roadless areas such as the South Kalmiopsis Roadless Area. For example, lands adjacent Forest Service lands in the Rough and Ready Creek drainage need to be evaluated for wilderness and mineral withdrawal. Other ultramafic lands on the west side of the Illinois Valley also need to be considered for eventual wilderness designation as a combined unit with Forest Service roadless areas.

BEST MANAGEMENT PRACTICES

Use of Best Management Practices traces its origins to the Clean Water Act as an approach to minimize impacts from nonpoint sources of water pollution. As defined by the CWA: Best Management Practices (BMPs), are methods, measures or practices selected by an agency to help minimize its nonpoint source control needs. BMPs include but are not limited to structural and nonstructural controls and operation and maintenance procedures. BMPs can be applied before, during and after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters. 40 CFR §130.2(m).

Environmental advocacy group Bark has surveyed many timber sales for compliance with Best Management Practices and found several violations. For example, in the Salem BLM's Missouri Ridge Timber Sale, the BMPs limit "ground based operations to relatively dry soil conditions". Based on what we saw on the ground we are confident in highlighting that soils were not dry while operations were taking place. The degree of soil damage on the roads, skid trails and landings, including deep ruts and compacted mud are good indicators that this BMP was not followed. A local resident also reported that logging and hauling occurred during rainy conditions when he visited the unit in fall 2013.

Similarly, when Bark staff and volunteers surveyed the Annie's Cabin Timber Sale after logging, they found that BMPs were not followed, specifically regarding erosion control measures were to be placed on the roads post-implementation. Bark found that the only such measures included shallow earthen waterbars, which were not effective in preventing channelization along the roads, carrying sediment down the roadbed (pictured at right). This road is obviously NOT fully stabilized.

These findings point to both the inability of the BLM timber sale administrators to ensure BMPs and timber contract specifications are fully complied with, and the insufficiencies of BMPs in preventing environmental harm. Thus, when the BLM asserts that resource extraction projects

will not have significant environmental impacts because of the BMPs, it can offer no assurance that these BMPs will be fully implemented, or will be effective at minimizing or mitigating the known environmental impacts.

Not only is the BLM unable to assure that the BMPs will, in fact, be followed and/or mitigate the adverse impacts, recent studies disclose that even if followed, BMPs do not consistently reduce adverse environmental effects. In the context of road construction BMPs, there is reliable data indicating that BMPs cannot always reduce the adverse impacts of road building on aquatic resources to ecologically negligible levels, especially within the context of currently pervasive watershed and aquatic degradation.[472] The nationwide assessment of BMP effectiveness commissioned by the USEPA performed by the Great Lakes Environmental Center (GLEC) specifically noted that BMPs aimed at reducing road impacts are not 100% effective, and, in particular, that efforts to prevent road drainage to streams have considerable potential for failure, especially in the Pacific Northwest. [473]

In its report, GLEC found that in the Pacific Northwest, "conventional BMPs for road construction may not be sufficient to prevent adverse effects on stream channels and fish habitat."[474] Activities implemented with somewhat effective BMPs still often contribute to negative cumulative effects on aquatic systems.[475] Espinosa et al. (1997) documented that aquatic habitats were severely damaged by roads and logging in several watersheds despite BMP application, and that blind reliance on BMPs in lieu of limiting or avoiding activities that cause aquatic damage serves to increase aquatic damage.

Not only is the effectiveness of the BMPs included unsupported by field data, the draft BLM RMP fails to include the most effective BMPs:

- avoidance of implementing damaging logging, landing, and road activities in high hazard, sensitive, or degraded areas, such as stream crossings, Riparian Reserves, and unstable terrain, such as earthflows; and
- full protection of an adequate width of riparian areas to prevent or reduce the transmission of upslope impacts to streams.

The management practice of avoiding high impact activities in sensitive terrain has long been recognized to be far more effective than attempting to reduce such impacts via other BMPs with limited effectiveness. Avoidance of sensitive areas is critical, because as GLEC (2008) noted with respect to road impacts, "in some cases, however, control of the problem may not be feasible: location 'trumps' management practice." It has long been recognized that full protection of the area of vegetation within 200 to >300 ft of the edge of all stream types is one of the most important and effective ways to limit the impacts from upslope logging-related disturbances, as numerous independent scientific assessments have repeatedly concluded.

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[472] Ziemer and Lisle, 1993; Espinosa et al., 1997; Beschta et al., 2004; GLEC, 2008
[473] GLEC, 2008.
[474] Id.
[475] Ziemer et al., 1993; Rhodes et al., 1994; Espinosa et al. 1997; Beschta et al., 2004; GLEC, 2008.

3P FALL BUCK AND SCALE

Page 39 of the DEIS indicates that the BLM intends to conduct pre-decisional falling of trees in proposed logging units as a timber cruising mechanism. The impacts of this proposed practice are not disclosed or analyzed in the document. Federal courts have already rejected pre-decisional falling as an irretrievable commitment of resources. No other state or federal land management agency finds it necessary to rely upon pre-decisional timber felling to achieve accurate timber cruise data. The proposal to revive 3P Fall Buck and Scale is arbitrary and capricious.

SUDDEN OAK DEATH

The DEIS analysis of the no action alternative is inaccurate because it assumes no treatment of SOD, even though it is routinely conducted under the no action alternative. This makes the effects analysis unrealistic and inaccurate.

BLM should consider the fact that SOD treatments have limited effectiveness because SOD continues to expand in spite of ongoing treatments. Does BLM know how much (if any) SOD treatments slow the spread of the disease? The pathogen has survived eradication treatments in many sites and 8 of the previously know sites expanded in spite of aggressive eradication efforts. The size of the Curry County quarantine area expanded from 9 to 11 square miles.[476]

DEIS at 746 indicates that BLM did not consider the effects of Sudden Oak Death (SOD) on spotted owls. ("The BLM analysis did not address these conservation needs because they are habitat-independent and would be unaffected by RMP decisions. ") This is inadequate. BLM specifically says they intend to adopt a RMP Revision that minimizes the spread of SOD (DEIS p 76). SOD treatment involves aggressive logging and burning of infected sites. This is a habitat effect that must be considered in the FEIS.

SOD eradication efforts pose their own threat to spotted owl habitat, because eradication means cutting all vegetation in infested sites (plus a buffer) and burning it in place. Thus eradication removes potential owl habitat and the burn intensity harms soils and retards the future growth of owl habitat. We are not suggesting that eradication should not be done, only that before the "SOD war" is over, lots of owl habitat may be lost to the cause.

Whether or not BLM adopts an alternative that does not aggressively treat SOD with logging, BLM should still consider the cumulative habitat effects of logging plus SOD-induced mortality among tree species that provide habitat for spotted owls and their prey. SOD adds to the cumulative uncertainty faced by the spotted owl and reinforces the need to conserve all suitable owl habitat. Jerry Franklin's summarized the "findings" of the Northern Spotted Owl Status Review scientific review panel as follows:

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[476] See ODF, Forest Log, Summer 2004. http://web.archive.org/web/20041109114540/http://www.odf.state.or.us/Portal/forestlogs04/ForestLogSum2004.pdf.pdf

The implications of the scientific findings with regards to conservation strategies. … … in view of current uncertainties, such as the eventual outcome of the Spotted Owl/Barred Owl competition, West Nile Virus, and Sudden Oak Death, and whatever else comes along -- such as global change and other kinds of introductions -- existing suitable habitat could be important to the persistence of the Northern Spotted Owl. [repeated with emphasis] Existing suitable habitat could be important to the persistence of the Northern Spotted Owl, i.e., risk to Northern Spotted Owl may increase if additional suitable habitat is removed. It is not clear where the Spotted Owl may find the refuge or refuges from new threats within existing suitable habitat. Barred Owl intrusions do not negate the need for structurally complex forest habitat to sustain Northern Spotted Owl based on existing knowledge.[477]

CONCLUSION

The proposal to abandon the unified cohesive forest, watershed and wildlife strategy of the NWFP is unwise and undermines many of the assumptions relied upon to facilitate recovery plans, habitat conservation plans, critical habitat designations, and ESA listing determinations throughout Oregon and the Northwest. A forest plan that increases riparian reserve logging, clearcutting, and the logging of known survey and manage habitat will create less certainty, not more, concerning timber harvest on BLM managed public forestlands.

[477] U.S. Fish & Wildlife Service Scientific Review Panel For The Northern Spotted Owl. June 22, 2004 Public Hearing. Washington State University, Vancouver Campus. Transcript Of Proceedings, page 121. http://www.sei.org/owl/meetings/minutes/june-meeting-transcripts.pdf.

Note: If any of web links in this document are broken, they may be resurrected using the Wayback Machine at Archive.org. http://wayback.archive.org/web/

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16. Appendix C – Annotated Bibliography of Literature Describing the Effects of Riparian Management on Stream Shade and Stream Temperature
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18. Nawa, R.K. Six page letter dated August 25,201 from R. Nawa (Siskiyou Project) to A. Jossie (BLM) concerning placer mining pit impacts to coho critical habitat on Sucker Creek, Medford District.
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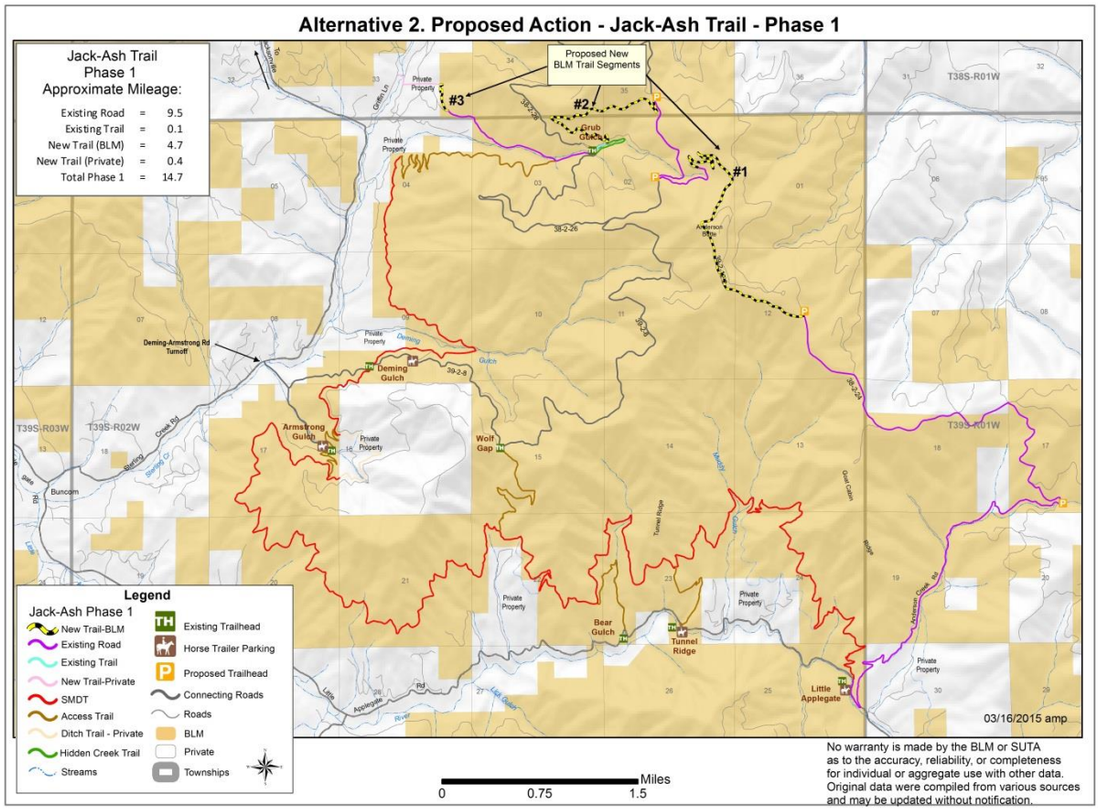
SISKIYOU
UPLAND
TRAILS
ASSOCIATION

Siskiyou Upland Trails Association Comments on the BLM Draft Resource Management Plan for Western Oregon

Introduction. Interactions of the Siskiyou Upland Trails Association with the BLM

The Siskiyou Upland Trails Association (SUTA) is a non-profit public interest group dedicated to developing and maintaining a community trail system for non-motorized recreation in Jackson County, Oregon. In partnership with the US BLM Medford District, we have been revitalizing the historic Sterling Mine Ditch Trail since late 2009. Due to the commitment of the community and the Medford BLM's tremendous support and help, this unique trail now has almost thirty miles of non-motorized trail opportunities for hikers, runners, equestrians and bicyclists. In addition, SUTA is actively working on the proposed Jack-Ash Trail which will connect the non-motorized trail system of Jacksonville, Oregon to that of Ashland, Oregon and is planned to ultimately connect into the Pacific Crest Trail. This trail will provide a backcountry feel yet be easily accessible from both the population centers of the Rogue and Applegate Valleys. The proposed trail route roughly follows the ridgelines from Wagner Gap to Anderson Butte and then will go into Jacksonville. Nearly all of the proposed trail is on BLM land. The Jack-Ash Trail will also link up with the Applegate Trail Association's proposed Applegate Ridge Trail system, extending from Jacksonville to Grants Pass. Oregon. Combined, these trail systems will provide a connected network of scenic trails providing a backcountry experience but will also be easily accessible. This trail system will add to the growing economic value in both employment and revenue that recreation and tourism bring to Southern Oregon.

SUTA has a Memorandum of Understanding (MOU) with the Medford BLM guiding our volunteer community work on these trail systems. We have been extremely conscientious to follow the BLM requirements required to re-open and maintain the Sterling Mine Ditch Trail. We have also complied with BLM's environmental review process in proposing new access trails for the Sterling Mine Ditch trail and the proposed Jack-Ash Trail. In 2013 we proposed two new access trails for the Sterling Mine Ditch trail, following the scoping and environmental assessment required and working with the Medford BLM engineering staff and recreation staff in order to ensure we designed and constructed sustainable trails. These new access trails have been completed since 2014 and are wonderful additions to the SMDT. The scoping document for the first phase of the Jack-Ash trail was issued in December 2015 and the Medford BLM and SUTA are currently in the midst of completing the environmental assessment. We are hopeful that approval for Phase one of the Jack-Ash trail will be completed by fall 2015 with construction beginning soon after. Development of Phase I of the Jack-Ash Trail will create a huge looped trail system with almost 50 miles of trails plus the entire network of BLM roads open to further long-distance recreation activities such as running. (See map)



SUTA has also advocated for expanding the types of non-motorized recreation allowed on the Sterling Mine Ditch Trail. Historically this trail was only open to hikers and equestrians. BLM granted our request that mountain bikes be added to the user groups for the SMDT opening up a whole new trail system to cyclists.

In addition, we now have a Memorandum of Understanding with the Motorcycle Riders Association of Southern Oregon so that we can cooperate on developing trail systems in the lands from around Anderson Butte to Wagner Gap (Jackson County). Our goal is to provide recreational opportunities for both motorized and non-motorized users. To the extent we can, we hope to share facilities such as parking or other amenities, saving money and resources for other trail needs. Another goal of our MOU is to tackle issues common to all recreational users on the ridge complex between Anderson Butte and Wagner Gap, such as reducing problems associated with target shooting or illegal dumping. We feel strongly that all forms of recreation should be respected and learn to co-exist as indicated in specific comments below. While we may not always agree on all details, our preference is to work cooperatively to reach solutions for any user conflicts and to combine efforts to address issues or policies that may threaten the quality of recreational experiences.

Our comments are divided into three parts:

1. General comments applicable to the overall approach of the recreation section of the RMP
2. Specific comments regarding the RMP's proposed recommendations for the Sterling Mine Ditch Trail and the Jack-Ash trail system
3. Comments related to the forestry management component of the RMP

Because SUTA is working on a trail system within the Rogue and Applegate Valleys that will connect with the trails of the Applegate Trails Association (ATA), we have coordinated with ATA on the broad policy recommendations regarding recreation and other issues in the RMP. In addition, each organization provides comments specific to its trails.

Before we begin our comments we would like to acknowledge the time and effort the BLM staff put into this RMP effort. To produce a four-volume document as well as the supporting online information was not an easy task and it would be a miracle if no errors or issues were found. However, because of the importance of these documents to set long-term management direction and policy for Western Oregon,

we are submitting comments on anything we found that might create a problem in the future. We have no way of knowing what is a data input error versus a planned management approach. So our apologies if some of our comments appear as unfair criticism. That is not our intent. Rather we are hoping to make sure management guidelines provide clear, fair, and productive approaches to managing our public lands. Finally, the bulk of our specific recreation management comments, especially in Part 2, are related to the Medford BLM district

Part 1. General Comments applicable to the RMP's proposed management approach to recreation:

1. **Recreation should be a top priority for BLM's management of public lands:**
   Recreation is of huge importance to Oregon's economy and BLM land in Western Oregon plays a major role in providing recreational opportunities. Recreation provides extremely important quality of life benefits to the public and it also is a sustainable source of jobs and economic growth for Oregon counties. This view guides our recommendations for how recreation should be managed in the future.

   All forms of non-motorized recreation in Oregon, as reported in the just-released recreation survey by Oregon Parks and Recreation, represent over 162 million activity days per year and contribute $2.1 billion annually to the state's economy.[1] This same survey indicates there are 2.6 million activity days of motorized activity per year, also with a large economic benefit to the economy. Thus the ratio of non-motorized activity to motorized activity is 62:1. Combined, non-motorized and motorized recreation are of high value to Oregon's population and economy.

   As federal, state, and private studies indicate, the economic benefits from recreation far exceed the contribution from timber production to Oregon's employment picture. BLM's own RMP statistics point this out on page 567. Yet the proposed RMP actually reduces the lands managed for recreation relative to the 1995 RMP. We do not see any significant indication in the draft RMP that the management focus on timber production is being adjusted to reflect today's economic realities about the most beneficial and sustainable use of these public lands.

   We do feel that the draft RMP's proposed priorities used to guide decisions about forestry management activities are the reverse of what the public and sheer economics would dictate. The public clearly wants healthy, fire-resilient forests that are managed to protect a host of important ecological values and provide a rich array of recreational opportunities appropriate to each area and the specific environmental conditions. A sustainable level of timber production would be the by-product of such an approach, instead of having the driving force be timber production with token efforts to make it appear that it includes consideration of sustainability, recreation and other values the public desires.

   In light of recreation's growing importance, we urge the BLM in its final Western Oregon RMP to place even more emphasis on managing public lands for recreation. This means not reducing the acreage designated as special recreation management areas which is the case for most districts under all alternatives. The Medford District is one of the few districts where at least one of the alternatives (D) increases SRMA acreage. While we understand the management realities of not having all non-SRMA lands classified Extensive RMAs (ERMAs), it appears that the BLM is going in the opposite direction it needs to, by minimizing or reducing the importance of recreation. We provide specific recommendations for The Medford District SRMAs and ERMAs in Section 2.

2. **Make all non-motorized trails special recreation management areas:** In light of the public interest in non-motorized recreational opportunities, SUTA encourages the BLM to designate all existing and proposed non-motorized trails as special recreation management areas in the final RMP. In the Medford BLM District this includes non-motorized trails such as the Sterling Mine Ditch Trail, the proposed Jack-Ash Trail, the Jacksonville trail system, the Applegate Ridge Trail, the

[1] **Oregon Non-Motorized Trail Participation and Priorities,** Report in support of the 2015-2024 Oregon Trails Plan Conducted by Oregon State University for the Oregon Parks and Recreation Department, July 2015, pg. 45.

PCT, the Enchanted Forest Trail and the others listed in the RMP. All trails should have a meaningful corridor providing a buffer against activities that might degrade the quality of the recreational experience, such as clearcutting, new roads or target shooting. We support the half-mile buffer being proposed by the national Pacific Crest Trail, to be managed with specific guidelines for various types of activities within that buffer. For all other non-motorized trails, SUTA recommends a 250 foot buffer on each side of the trail that would be subject to specific management treatment including a forest management as detailed below. In addition, the type of timber harvest activities on lands adjacent to SRMAs should be carefully selected to minimize adverse impacts on recreational values. A clear cut in plain view of a popular hiking trail may provide short-term economic gain to someone, but in Southern Oregon it would mean an 80-100 year loss of value from a recreational amenity which compounded over that time period is of much larger economic significance to the local economy than the value of the timber. If Oregon becomes known as the state of clear-cuts, our recreation and tourism industries will be severely adversely impacted. On the other hand, if the RMP advocates forest management policies that enhance forest health, build fire resiliency and requires the use of sustainable timber harvest management practices, both our forests and recreation will flourish and complement each other.

3. Clear commitment needed to complete Travel Management Plans: For over a decade we have been promised a Travel Management Plan for the Medford District but none has materialized. The proposed RMP states these plans will be completed with five years. In light of the failure to meet previous deadlines we suggest the final RMP contain a clear schedule showing the list of travel management plans needed for each BLM district with their completion dates over the next five years. Travel Management Plans for high priority areas should be completed as soon as possible but preferably no later than one year after the ROD. For example, for a wide variety of reasons we would highly recommend Anderson Butte ridge complex, which would include the Anderson Addition RMA and the ridge complex all the way to Wagner Gap, be completed within one year of ROD or no later than December 2017, whichever is earlier. Travel management plans for high-use recreation areas are particularly important in order to provide all users with certainty about the future of the trails they use.

4. Environmental Review of all trails: BLM's authorized process for gaining approval of a new trail – the environmental assessment – has been in place for decades. If BLM would like to see recreational trails developed in a planned and sustainable fashion, it is important to enforce its requirements for environmental review of all trails as well as clear trail design and construction requirements. This has not been the policy at least in the Medford BLM district over the past several decades. Considering that the BLM's focus has largely been on timber production, it is not surprising that little attention was given to whatever the public was doing to create recreation opportunities on these public lands. However, times have changed.

As discussed above, recreation is now more important to Oregon's economy than timber production – with steady growth the public's participation in all forms of recreation but especially non-motorized recreation. This raises the importance of ensuring that trail systems are carefully planned in order to minimize future problems or costs while still meeting recreation needs.

The RMP cannot change whatever has happened with unauthorized or user-created trails in the past but BLM's new RMP policy should address how these trails will be dealt with in the future. There will be some catching up to do to make sure all trails meet NEPA requirements and have been constructed sustainably. Some trails will need to be closed, some re-routed, some may have their use changed and so forth. It is our strongly held view that pushing responsibility for addressing this issue into the future is no longer an option. This is why we insist that a definite schedule and funding commitment be made to completing travel management plans for top priority areas as soon as possible.

Some trail groups such as SUTA, have chosen to develop trails using BLM's full review process to insure our trails create minimal environmental damage and meet trail standards. The RMP proposal to allow the unauthorized, user-created trails to remain in use until a Travel Management Plan is

developed essentially rewards illegal and resource-damaging behavior. We recognize that the unauthorized trails are there and recreation users now have a sense of entitlement about being able to continue using them. This is to a large degree because the Medford BLM has essentially condoned this behavior by not making any serious effort to curb illegal trail building, by not closing at least the trails causing significant resource damage, and by not completing the travel management plans promised for over a decade in the Medford District.

However, we are now in a new era with a new RMP being drafted and SUTA strongly advocates a consistent management approach to all trails – motorized or non-motorized. Aside from completing the travel management plans as soon as possible we would make the following recommendations that will temporarily address these issues while travel management plans are being developed.

4.1 The final RMP should require retroactively to April 2015 (when the draft RMP was released) that new trails any users wish to build on BLM lands must go through the environmental review process and meet pertinent trail design and construction standards or risk fines for illegally creating new trails. Unless there are repercussions to users from violating these policies, the review process and design standards will be meaningless. Therefore, for motorized and non-motorized users alike, the creation of any unauthorized trails after April 2015 would mean closure of all trails for that user group in the affected RMA or if it is outside of an RMA – within the nearest RMA, until the Travel Management plan is completed. Any illegally created trails should be decommissioned immediately.

4.2 BLM should publish an inventory of existing, unauthorized, user-created trails as soon as possible (motorized or non-motorized) as a record of what qualifies as "existing" based on what was on the ground on the date the draft RMP was published – April 2015.

4.3 We recommend that BLM, in consultation with both OHV riders and other recreation users, immediately close any trails that are currently causing significant degradation of resources such as those with serious erosion or gully creation, those crossing open meadows, wetlands, or in other sensitive areas. Trails causing significant conflicts between motorized and non-motorized users should also be addressed. These trails can be reviewed for whether it is appropriate to re-locate them or close them permanently during the relevant travel management period. These closures should be done within 3 months of the ROD, and BLM should strictly enforce their closures plus obtain help from motorized and non-motorized user groups to police these closures. Similar to the recommendation in 4.1 above, for motorized and non-motorized users alike, the continued use of any trail closed temporarily due resource damage or other problems until the Travel Management Plan is completed, would mean closure of all trails for that user group in the affected or nearest RMA. This will provide peer pressure to stop further illegal trail use or building. This policy needs to be well publicized and enforced.

5. **Final RMP should designate areas outside of Recreation Management Areas (RMAs) as Limited to BLM designated trails and roads only. All unauthorized trails outside of the designated RMAs should be closed**: Assuming that travel management plans first focus on high priority RMAs, any areas without RMAs may not see travel management plans for years. To protect the BLM lands outside of RMAs from continued use of unauthorized trails and to prevent any new trail construction, we recommend the final RMP designate non-RMA areas as open only for recreation on designated trails and roads. Roads in these areas would remain available to OHV use or non-motorized users. If any recreation user wishes to create a new trail in a non-RMA area or gain approval for an old unauthorized trail, they will have to go through the full NEPA review process and meet relevant trail design requirements.

6. **New Trails going through NEPA review should not trigger RMP amendments**: We understand that any new trail proposed that is not part of this current RMP would trigger a time-consuming amendment to the RMP. If this is true, we suggest that proposals for new authorized trails, especially those connecting to an existing designated trail system such as the Sterling Mine Ditch Trail, not trigger the need to amend the RMP. As long as trails go through the full NEPA review process and meet BLM's trail design standards, this level of public and BLM staff review should insure that a trail meets with the intent of the RMP.

7. Creation of Sustainable Trails Makes Economic Sense: SUTA strongly supports the creation of sustainable trail systems – both motorized and non-motorized. This means all trails should be subject to NEPA review to avoid any adverse resource impacts and should be sited, designed and constructed based upon trail standards that produce sustainable trails. Proper trail design will also minimize user conflicts both among the non-motorized users and between motorized and non-motorized users. In an era of diminishing funding for recreation, every effort should be made to make sure trails are designed with long-term management in mind. A poorly designed trail that has constant maintenance needs because it is on highly erodible soils, too steep, or poorly drained will require higher investments of limited paid or volunteer time and require on-going financial resources. This will drain limited resources away from other recreational needs. It is in the interests of the entire recreation community to make sure trails are well designed so that more time can be spent enjoying the trails than maintaining them. This is particularly true as community involvement becomes increasingly key to maintaining trails. For this reason, SUTA has deliberately utilized existing roads for part of the Jack-Ash trail route. It may not be our first choice to hike on a gravel road shared with all other users, but the trade-off is reduced trail maintenance needs.

8. RMP management guidelines for target shooting need to be more specific: We are thrilled that BLM has recognized the public safety hazard caused by uncontrolled and unsafe target shooting on BLM lands, especially around the SMDT and Jack-Ash Trail system – the Anderson Butte to Wagner Butte ridge region. We strongly support the creation of no-shooting buffers at trail heads and along trail corridors. This protection should apply to both motorized and non-motorized trails. However, this approach addresses only part of the problem and does not provide specific guidance about how much of a buffer is sufficient when the firearms being discharged are capable of sending bullets thousands of feet and high-powered firearms can shoot rounds that travel more than 2.5 miles.

One of the many management responsibilities on federal lands is ensuring public safety. We recognize the need for people to have opportunities to pursue their preferred form of recreation. However, when that activity represents a risk of death or serious injury to others, causes severe resource damage and destroys the recreational amenities for the majority of users, and creates fire risk and safety hazards for federal employees, members of the public and adjacent private land owners, it is time to reach a solution. Before someone is seriously injured or killed, the uncontrolled shooting and tannerite explosions in the Anderson Butte to Wagner Butte complex must be addressed. As much as many would like to think the Wild West still exists, at least within the urban-wildland interface, there are simply too many people who feel entitled and want to do whatever they want on federal lands.

Uncontrolled target shooting creates significant safety risks to all motorized and non-motorized recreational users, including people simply driving their cars along BLM's roads for pleasure. Due to the terrain and vegetation in Southern Oregon, it is often very difficult to see or know from the sound where shooting is occurring. This means that a bicyclist, motorcyclist or equestrian has no idea when they come around a blind corner of a road or trail if they will come face to face with someone shooting illegally across the road or trail, down the road or trail, at a BLM gate or trail sign or safely into a bank. When you are in woods and hear people shooting immediately above you it is impossible to tell if you are at risk or not. In addition, because of the uncontrolled practice of shooting out over open spaces, particularly from ridgetops and landings around the Anderson Butte to Wagner Gap section of the Medford District, bullets can travel long distances and fall into trail corridors. SUTA volunteers have had unnerving experiences working on the Grub Gulch access trail when target shooters above us were shooting unsafely and illegally out into space. They were thousands of feet away from us. We heard bullets pinging against nearby trees where we were working on the trail! Apparently few people shooting know that there are miles of trails throughout this region as well as private residences nearby, so they may think they might be shooting in a safe direction when in fact a trail or home on adjacent private land is within range.

The noise issue is also a serious problem as it significantly degrades the quality of most recreational experiences to hear guns such as semi-automatic weapons being discharged nearby or tannerite explosions. Another unfortunate result of BLM's uncontrolled policy for firearm use is the amount of resource damage and trash associated with these activities. Again, for other forms of recreation, it is not attractive to hike, ride or bicycle by large trash dumps that are shot up or see trees cut off by

bullets or blown up by tannerite explosions. At least during fire season, it is clear that both target shooting and tannerite can cause fires as already amply demonstrated in the 2015 fire season.

In areas close to urban areas with high concentration of recreational use such as Anderson Butte, the use of firearms needs to be seriously controlled within any RMA such as the Anderson Addition RMA. SUTA has four specific management recommendations related to target shooting:

8.1 Designate Safe Target Practice Areas: We would like to see the BLM create a special recreation management area(s) for target shooting completely off the ridgelines and away from the concentration of motorized and non-motorized trails on Anderson Butte area. This target shooting range should be sited where sound and bullets will not travel as far and adversely impact safety and enjoyment of both public and nearby private lands. One suggestion is for the Medford BLM to organize a meeting in 2015 including representatives from Jackson County recreation department, law enforcement officers, State recreation officials, US Forest Service, and representatives of motorized and non-motorized recreation interests as well as representatives from the target shooting community. A group effort is needed to develop a workable solution where excellent but safe target shooting opportunities can be provided for the region. These target shooting areas do not have to be on BLM land but clearly some solution needs to be found soon.

8.2 Close RMAs containing a high concentration of trails or other recreational use to target shooting: While a meaningful sized buffer of no shooting is a great idea, in the case of the Anderson Addition RMA, by the time you safely buffered every motorized and non-motorized trail and trailhead, there would practically be no area left where anyone could safely shoot – underscoring the need to create target shooting ranges to provide an outlet for this form of recreation. Unless an alternative is provided, attempting to create no-shooting trail buffers or to close the RMAs along the Anderson Butte ridge complex to all target shooting is likely to be unsuccessful.

8.3 Make a management commitment to significantly increase law enforcement efforts: Speaking only for the situation in the Medford District, there is a ridiculously small enforcement unit serving the entire Medford District. One management guideline needed in the RMP should be a commitment to increasing law enforcement in the Medford District and if needed, in other BLM districts. While it is sad that this matter has to even be raised in a resource management plan, law enforcement is unfortunately becoming a very key part of BLM's resource management. Regardless of how this is accomplished, a budget commitment for hiring either BLM enforcement officers or contracting for law enforcement is needed. If meaningful policy changes with regard to target shooting are to be successful, a clear commitment to provide aggressive and frequent law enforcement presence in an area such as Anderson Butte will be absolutely necessary. This will require almost daily law enforcement presence for months or more in order to educate the public through fines and citations about the new rules protecting public safety. This policy change also would benefit from a targeted (no pun intended) public education campaign such as clearly posting target shooting closures and rules on all BLM roads leading to current unsafe target shooting areas.

8.4 Exploding targets such as tannerite should be banned completely all year round on all Western Oregon BLM lands without exception: This destructive and disruptive form of recreation is creating resource damage, creating a serious noise impact on both federal and private lands, and has caused significant fires in the Western US. SUTA is a strong advocate for people having the freedom to responsibly pursue their choice of recreation providing it doesn't adversely impact others or natural resources. But there are some activities that are so stupid and damaging, with such a high cost to the rest of society that they should be prohibited. Tannerite is a clear example of one. While one can hope that the use of exploding targets becomes a passing fad, its passing could be helped along if BLM prohibited and enforced prohibition of its use. The Secretary of the Interior has already used her authority to ban the use of tracer bullets and exploding targets on many Western lands during fire season. SUTA urges that that ban be extended to year round.

9. Recreational Management Guidance for Preventing Trail Damage during Wet Seasons: The Jack-Ash RMA management framework suggests seasonal closure of the trail to prevent damage from equestrians and bicyclists when soil conditions are wet. We strongly recommend that there not

be a blanket seasonal closure during the winter for equestrians and bicyclists. While we are among the first to complain about any user damage to the trails we work hard to maintain, the varying weather conditions at least in Southern Oregon make it difficult to say with certainty that the trails are too wet all winter for equestrian or bicycle use. Instead we recommend that signs be clearly posted at all trailheads and other strategic points along the trails to ask users not to ride when we have had recent significant rain or snow softening the tread and urge them to check BLM or SUTA's website before heading out to use the trail when we have had several days of rain or snow. It would also be useful to establish a penalty for causing tread damage – the cost of hiring a crew to repair the tread. The Sterling Mine Ditch has seen occasional instances where equestrians neglected to think about the impact of horse hooves on a soft tread. Bicyclists have also created ruts in the tread due to riding when the soils were too wet. But for the most part, this has not been a problem, especially in recent years. SUTA's preference is to post signs at trailheads and information on our website when we recommend against equestrian use or in some cases bicycles. In recent years the winters have been so dry that all users have been able to use the trail with no concern about tread damage. If damage to the tread becomes a more serious problem then we would consider making a broader prohibition on use during the rainy season. For now we would recommend altering the language in the proposed RMP management framework regarding seasonal trail closures for equestrians and bicycles to read, "Equestrians and bicyclists use in winter subject to posted notices and website postings at trailheads on tread conditions." On a related note, over the years we have noticed that the majority of serious resource damage caused by motorized users occurs during periods when soils are wet. We would recommend that all OHV motorized use be subject to similar restrictions as discussed above for equestrians and bicyclists with posted notices to not ride when soils are wet and soft, and website notices as well as penalties to cover the cost of repairing the damage.

10. Incomplete Information and errors hamper useful comments about recreation: In reviewing the recreation section of the RMP, the related trails and travel management section, related appendices and details provided on BLM's website (the interactive maps and each RMA's management framework) we noticed that key information needed to respond to proposed RMAs was missing, that there were significant data errors in tables, and that there were inconsistent or conflicting management statements – all of which hamper and complicate the ability of the public to provide useful comments.

10.1 Key Information Missing: Non-motorized trails are clearly shown on the various interactive maps and their distances are provided (although often incorrectly). For the motorized trails, no similar maps of either designated or the "existing" – aka unauthorized user created trails – are provided. We need to see where all trails are, their length, and other important details in order to provide useful comments about the proposed recreation management areas.

For example, if the summary recreation tables by district or the interactive maps showed a disproportionate level of a particular type of recreation, it might raise questions about the need to increase other recreational opportunities for that user group. Or if by looking at the maps showing designated and unauthorized motorized trails and the approved non-motorized trails you could see potential user conflict areas, you might be able to provide more valuable guidance about the management for RMAs. Going to a specific example, if we saw a map of the Anderson Addition RMA showing not only the proposed Phase 1 of the Jack-Ash trail but also all of the designated and unauthorized motorized trails, we probably would see that the Jack-Ash trail was crisscrossed by existing unauthorized OHV trails at least four times in one short section. This might lead us to suggest that one of the management guidelines for this particular RMA should be that no non-motorized trail should have more than one motorized trail crossing within a specific distance, especially if conditions exist such as thick vegetation that might block views for potential users and create safety issues for all recreation users. Or another management guideline might be that whenever motorized and non-motorized trails cross, barriers should be placed, as well as signage, to prevent inadvertent use of non-motorized trails by motorized vehicles. However, without any idea of where all the existing unauthorized trails are, let alone designated trails, it is not possible to make meaningful comments or recommendations.

A specific real-life example of the usefulness of sharing all information is SUTA's recent experience when BLM published the scoping document for the proposed Phase I of the Jack-Ash trail. By having that information available, the motorized community identified a potential

conflict with one of their user-created trails on Anderson Butte. We met in the field and discussed various options, worked with the Medford BLM recreation staff and re-routed our trail to accommodate the motorcycle riders. If the motorized community had not been provided a map of where our proposed trail was going, how could they have guessed the implications for their recreation trails? Simply providing the acreage associated with each OHV designation does not offer a useful picture of where and how extensive current OHV trails are throughout western Oregon. This information gap should be remedied as soon as possible and included in the final RMP.

10.2 Data errors: While data errors are inevitable in documents of this length, they do create uncertainty about which set of information to react to or how to react. An example of a data error that might throw off a comparison between the no-action alternative and the four alternatives proposed is on pg. 636. Table 3-219 shows that under the 1995 RMP ROD, the Medford district OHV designations have 139,878 acres of OPEN lands. In fact the ROD for the 1995 RMP lists on pg. 11, that 391,400 acres are designated open for OHV use. The data for designated and existing OHV acreage is also incorrect for Medford District. This provides a false comparison of the no-action alternative and the proposed alternatives and raises questions about where else similar data may be in error.

On pg. 450 a statement is made that motorized trail use is slightly greater than non-motorized trail use in the southern portion of the region. While we realize this was a self-reported participation survey, there is not even an OHV trail use category included in the table. Far more useful is just comparing the demand for non-motorized recreation in each district (in the Medford district, adding up all the non-motorized demand shows that 60% of all recreation demand is for non-motorized recreation versus motorized recreation demand of 31% under this self-reporting survey.) The statement under the table provides an incorrect view of recreational demand in Southern Oregon. If such statements help guide recreation management, they need to be corrected.

While we cannot comment on other BLM districts, the information on the interactive recreation maps and the associated management framework data sheets were inconsistent even for the same trail resource and have errors. We have pointed out the key corrections and inconsistencies in the proposed trail management guidelines that we feel need to be made for the trails we are involved with.

11. Consistency in management direction for each non-motorized trail: While we cannot comment on other BLM districts, the information on the interactive recreation maps and the associated management framework data sheets in the Medford District were inconsistent even for the same trail resource and have errors. Specific management guidelines are provided for each trail; its trailheads and access trails often have individual RMA framework data sheets. To simplify the final RMP we would recommend that each trail have one management framework page. Developing individual framework pages for each trailhead as well as the trail appears to be unnecessary since the same management framework generally applies for the entire length of the trail, including the access trails. Exceptions can be noted on the one framework sheet. But if BLM continues to use different RMA/SRMA framework sheets for multiple components of a single trail system, we recommend that the specific management guidelines for a given trail be consistent for all related framework data sheets. They currently vary on many details. Since these documents are to guide a future travel management plan, we strongly recommend that they be corrected. While we anticipate that the wide differences in the management guidance are probably due to data input errors, we wanted to point this out lest the final RMP inadvertently provide conflicting management guidance for different segments of the same trail. Specific examples of this problem are provided below for the Sterling Mine Ditch Trail.

Part Two: Specific Comments on the Sterling Mine Ditch and Proposed Jack-Ash Trails

12. **SRMA designation for the Sterling Mine Ditch Trail:** We appreciate that the entire historic Sterling Mine Ditch trail (SMDT) and its associated access trails are listed as non-motorized recreational assets in the Medford District. We strongly urge BLM to create a Special Recreation Management area that encompasses the entire SMDT and all seven access trails, plus a buffer on either side of the trail (250 feet/side) in the final RMP. The Sterling Mine Ditch and all of its access trails should be included in all four alternatives and no action alternative as it is an existing trail and has been since the 1870s. It is unclear looking at the interactive maps whether all four alternatives recognize this trail and all the trailheads or not. As a highly prized and increasingly popular non-motorized recreational resource in the Medford District, we want to make sure that the details about the trail and its management are clear.

    The management framework data sheets list the SMDT as a special recreation management area in some instances and others do not. We presume this is an error and that the entire trail plus the access trails are all part of the same special recreation management area. Some of the access trails are listed as RMAs, some do not show up at all – for instance, Grub Gulch is missing. To help clarify the status of entire SMDT system, it currently has seven trailheads. All seven trailheads and associated access trails and parking areas should be part of the SRMA created to protect and manage the SMDT. The trailheads are:

    a. Grub Gulch
    b. Deming Gulch and Deming Equestrian Parking area
    c. Wolf Gap
    d. Armstrong Gulch
    e. Bear Gulch
    f. Tunnel Ridge
    g. Little Applegate

13. **ACEC designation for the Sterling Mine Ditch Trail:** In the 1995 RMP the Sterling Mine Ditch Trail is listed in the maps accompanying the ROD as the Sterling Mine Ditch Trail ACEC. In its expanded and revitalized state, we believe the Sterling Mine Ditch more than meets the criteria used for designating a resource as an Area of Critical Environmental Concern as defined on pg. 124. Protection is needed for the important historic, cultural and scenic values represented by the trail. The SMDT's recent designation as an Oregon State Scenic trail certainly reflects the scenic category. Its creation during Oregon's gold mining era in the 1870s captures the historic and cultural mantle. The draft RMP lists the Sterling Mine Ditch Trail as an ACEC in Appendix X but this information is not reflected in any of the recreation framework management data sheets. We recommend that this information about its designation as an ACEC be added to the RMA management framework data sheets.

    We did find a confusing reference in Volume 1 on pg. 127 that states: "For example, ACEC values range from a historical gold mining ditch in the Sterling Mine Ditch Potential ACEC in Roseburg," We could not find any evidence of another Sterling Mine Ditch Trail in Roseburg so we recommend that this be corrected to say "Medford".

14. **Consistent Class II Visual Resources Management Classification**: As mentioned above, the SMDT was designated an Oregon State Scenic Trail in 2014, the only trail with this designation in southern Oregon – reflecting the special scenic nature of this BLM trail. We recommend that all of the SMDT and its buffer (a total of 500 feet) plus the visual viewshed be classified and managed as Visual Resources Class II. Additionally, at least half of the Sterling Mine Ditch Trail system abuts the Dakabutede ACEC, which has the proposed designation of lands with wilderness characteristics in the RMP and is a Class II visual resource. As this is much of the viewshed from a large section of the SMDT, it further supports the Class II designation. We would recommend that the entire SMDT and access trails be classified as a Visual Resource Management Class II. The current management framework sheets provide different Visual Resource Management classifications for the access trails. For example the Little Applegate Trailhead and access trail is set at Class III,

which seems completely inappropriate considering the visual landscape of the site and that it is within the Dakabutede ACEC. We assume these are data entry errors but for the sake of clarity are pointing out the need for correction.

15. **SMDT Trail Mileage Errors:** Errors in the tables and specific framework data sheets for the Sterling Mine Ditch Trail are found throughout the entire RMP. For example, on pg. 1379, Appendix P, the distance of the Sterling Mine Ditch is incorrectly listed as 10 miles while the length of the Tunnel Ridge access trail (which is not quite a mile long) states it is 41 miles long. We have attached a file showing the correct distances for each trail segment with the hopes that the final data on the trail is corrected. This is the data used for the most recent SMDT brochure printed by BLM and SUTA in July 2015.

16. **Recreation Management Framework Data Sheet errors regarding Trails and Travel Management guidance:** Several of the SMDT framework sheets have conflicting information about whether the SMDT – a strictly non-motorized trail throughout its history – is designated as closed or limited to existing trails for OHVs. While we assume this is simply a data entry error, for the record, ALL of the SMDT access trails and the actual SMDT, the Hidden Creek Trail, the Listening Tree Trail and Jack-Ash trail segments not on BLM roads should be designated as "closed" to OHV use without exception.

    This error in OHV use designation status should also be corrected in Appendix F for ACEC areas where Table F-2 lists the Sterling Mine Ditch Trail ACEC with OHV access set to "limited to existing roads and trails". There are no OHV roads or trails within the SMDT to our knowledge but regardless, the SMDT ACEC should be classified as CLOSED to OHV use. The same closed classification for OHV use should apply to the Dakabutede ACEC on pg. 1069.

    One example of a completely inaccurate listing is found in the data sheet accompanying Map 222 Wolf Gap Special Recreation Management area. Wolf Gap Access trail always has been and still is a non-motorized trail. Additionally, it is the only segment in the entire SMDT system that prohibits bicycle access because of its narrow, rocky terrain and user safety issues. (An alternate bicycle route is under consideration see comments below). The data sheet says under the section "What type of Visitors are being Targeted":

    > "The Wolf Gap Trailhead SRMA has potential to draw non-motorized trail users, and local and regional visitors, as well as participants for OHV and mountain bike special events."

    While SUTA recognizes there are unauthorized OHV trails that leave from the Wolf Gap parking area not far from the Wolf Gap trailhead, we want to make sure that the Map 222 management framework is clear that the actual Wolf Gap Access trail is closed to all OHVs and to bicycles. Any plans for having special events at the Wolf Gap SRMA for either OHVs or bicycles would not be allowed on the SMDT access trail.

    SUTA has been studying a trail route from the Wolf Gap Trailhead parking area that would follow along the ridgeline towards Anderson Butte. This trail would connect the Jack-Ash trail with the SMDT partially along the route of an equestrian trail built in the 1980s and along the edge of the Dakabutede ACEC, much of which is now overgrown or has been taken over in places by the unauthorized OHV trail. We intend to formally propose this non-motorized trail route once the Jack-Ash trail is constructed as it will create a wonderful loop and connecting trail for the Jack-Ash and SMDT trail system. While we do not oppose a nearby OHV trail in this area, the existing unauthorized trail from the Wolf Gap parking area is deeply rutted and subject to serious erosion in places. We would strongly recommend that

it be re-routed and rehabilitated to eliminate the current resource damage and prevent future damage.

Additionally, in the Trails and Travel Management section of the data sheet for Wolf Gap SRMA (Map 222) it incorrectly states that Wolf Gap is open to biking (it is closed), it does not say it is open to equestrians (which it is); it then provides conflicting information saying it should be designated a "limited to existing trails for OHVs" but in the next line it says it is restricted to non-mechanized uses. For the sake of clarity and to avoid future problems we recommend that ALL information in the SRMAs related to the SMDT and the seven access trails provide consistent information regarding Trails and Travel Management Information. This also applies to the Hidden Creek Trail, the Listening Tree Trail and the future Jack-Ash Trail (for non-road portions) and any future additions added to this system over the years. The correct trails and travel management planning guidance should say:

- Open to hiking
- Open to equestrians
- Open to biking (except Wolf Gap access trail)
- Designate trail area as CLOSED for OHV use

17. Recreation Management Framework Data Sheet errors regarding Target Shooting management guidance: Errors or inconsistencies exist on BLM data sheets for the SMDT and all of the access trails about being closed or open to shooting. All non-motorized trails should be closed to all firearm shooting with at least a 1,000 foot buffer on either side of the trail and a larger buffer around trailheads, open only to licensed hunters during hunting season. Hunting rules should clearly require no shooting down trails or in any way that creates public safety issues. While all trail users should be cautious during hunting season, we recommend that trailheads post signs for hunters prohibiting shooting along the trail itself. SUTA expects to post information during hunting seasons at its trailheads and its website.

18. RMA management framework recommended Forest Management policies: We recommend that a consistent set of forest management guidelines be used for all RMAs for all of the non-motorized trails SUTA is involved with, including the SMDT, the Jack-Ash, Hidden Creek and the Listening Tree trail. Our recommended forest management practices within trail RMAs are:

- Closed to firewood cutting and special forest product harvest.
- Allow fuel treatments or other vegetation modifications if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics.
- Establish a no-harvest buffer of 250 feet on each side (off of centerline) for all linear trails.
- Notify and consult with community recreation partners (SUTA) on the above fuel treatments or vegetation modifications decisions.

Timber harvesting as proposed under this plan – especially clear cutting, will not only adversely impact the quality of the recreational experience but will also cause damage to the trail. SUTA's experience on one section of the SMDT in January 2015 during the recent Sterling Sweeper Sale timber harvest demonstrates the need to prohibit timber harvest within the buffer. The 75-foot buffer supposedly in place for the Sterling Sweeper timber sale was inadequate and was not enforced. In light of the economic contribution from non-motorized recreation, the small amount of timber production that might be lost due to providing a no-harvest buffer along trails is well justified to maintaining the amenities along the trail. In the case of the SMDT and the Jack-Ash trail in particular, few timber harvest opportunities would be lost considering the site conditions along much of these trails. The trails may be through oak woodlands, scrub, along ridgelines or

roads or through areas that have had recent thinning completed or other characteristics that minimize conflict with timber harvesting potential.

19. RMA Management Framework for mining activities: The SMDT and all access trails, as well as Proposed Jack-Ash, Hidden Creek and Listening Tree Trail, should be closed for all mining activity. In light of the fact that the SMDT is an important cultural resource, no mining activities at or immediately near this historic trail should be allowed under any circumstances.

20. Suggested changes to RMA Framework data sheets - Trail Visitor Activities: For the SMDT and the proposed Jack-Ash trails we did not see the explanation for why non-motorized trail visitor activities varied even within one trail but, for the record, SUTA would like the following trail visitor activities identified for all segments of the SMDT and the Jack-Ash Trail in case this has a bearing on future Travel Management plans:

- Hiking
- Equestrian
- Mountain biking
- Environmental Education
- Historical education
- Birdwatching
- Botanical viewing
- Wildlife viewing
- Day Use
- Cross Country Skiing/snowshoeing
- Picnicking

21. The Dakabutede should be included in the final RMP as lands with wilderness characteristics and designated closed to all motorized use in the RMP and future Travel Management Plans: The Dakabutede above the Sterling Mine Ditch and soon to be below the Jack-Ash trail represents a unique ecological resource that should not be dissected by roads or motorized trails. This area provides a key attribute to the wilderness-like experience found along the SMDT and is part of the reason the State of Oregon designated the SMDT as a state scenic trail. SUTA strongly supports designating the Dakabutede as closed to all motorized use within the Anderson Addition RMA. An alternative might be to include the Dakabutede as part of the SMDT Special Recreation Management Area, which is open to non-motorized use and closed to all motorized uses.

22. Management provisions for future trail additions:_SUTA has several preliminary plans for enhancing an existing access trail (Wolf Gap) to provide a route for bicycles, a new Jack-Ash Trail segment connection from Wolf Gap to a point on the Jack-Ash near Anderson Butte, and for adding a new access trail from Little Applegate Road to the center of the ditch which is currently difficult to reach for maintenance because of the distance to any trailhead. The final RMP should contain language that reflects the need to allow for the addition of new access trails or loop trails that improve and expand the amenities offered by existing trails such as the SMDT and the future Jack-Ash. As with all new trails they would be subject to NEPA review and BLM trail design and construction requirements. In the interest of gaining the biggest benefit from future investments in recreational trails, adding features or new segments to existing trails that create more loops and options for users would be useful to list as a desired management approach. SUTA recommends that any new trails or trail amenities proposed to BLM that will enhance an existing trail system not trigger an amendment to the RMP. There may be instances where these trails are outside an existing RMA but because they will be subject to full NEPA review, proposals enhancing existing trail systems should be encouraged, not discouraged by past policies requiring a RMP amendment for anything new. The review process should be sufficient to ensure the trail is in keeping with overall RMP recreation policies.

23. RMP needs to allow for flexibility in the final route for proposed trails: The Jack-Ash Trail is being developed in three phases. The trail route for Phase I is nearly final since the

EA is currently being written. Because this trail is still proposed – especially the sections between Jacksonville and Griffin Lane and from Section Line Gap to its connection with the Ashland Trails near Wagner Butte – the final RMP needs to show and label the proposed trail corridor on maps as "proposed, subject to change in final approval" in case the route changes significantly. We are concerned that if the trail corridor is changed significantly to accommodate some need such as resource surveys or accommodating other users or private land owners, the RMP should provide sufficient flexibility to allow such change without amending the final RMP.

24. Keep the Listening Tree RMA: The Listening Tree Trail was included in the 1995 RMP as an educational trail, similar to the Hidden Creek Trail. Because this trail can easily be connected to the Jack-Ash, SUTA recommends continuing inclusion of this trail as a non-motorized trail for educational purposes.

25. RMP needs to allow overnight camping as a future possibility for backpacking along the SMDT and especially along the Jack-Ash Trail.

26. The final RMA should designate the Jack-Ash Trail a Special Recreation Management area (SRMA) for its entire length on BLM lands (Management framework for map 159): SUTA recommends the RMA management framework for the entire Jack-Ash trail provide the same basic management guidelines discussed for the SMDT regarding permitted uses, trail and travel management and forest management and the other details mentioned in # 1-16 above. This trail is anticipated to have extensive use based on the explosion of user demand on the SMDT. It should be subject to the management guidelines and protections provided to SRMAs. Another specific item of note, the Jack-Ash trail will be open to all non-motorized users, not just hikers as the RMA management framework currently incorrectly states.

27. Jack-Ash Trail should be a Class II visual resource designation: There is no explanation why a class III designation is provided for the Jack-Ash trail but we would suggest that this may be a data entry error since the visual quality of the views from this trail will be one of its greatest assets. As an indicator of the extraordinary views available of both the Rogue and Applegate Valleys from this route, in the current 1995 RMP, the BLM road along which the Jack-Ash trail will travel for several miles, is listed as a proposed backcountry byway called McKee-Anderson, travelling the route up Anderson Butte Road all the way to McKee Bridge in the Applegate Valley. We would agree with this designation and hope that backcountry byway continues to be identified as a wonderful resource for public use. But it underscores the tremendous scenic beauty along the Jack-Ash.

28. The Anderson Addition ERMA should be reclassified to SRMA: The high intensity of recreation interest on the Anderson, Point and Bald Mountain ridge complexes justify designating this area as a SRMA. Both motorized and non-motorized trails crisscross this entire area, people hike extensively all over these ridges, the roads are popular for scenic drives, it's a popular hunting area and much more. We strongly recommend changing the designation to SRMA. However, as noted elsewhere, the Anderson Addition RMA should indicate that the portion covering the Dakabutede LWC/ACEC is restricted to non-motorized recreation only.

Part Three: Forest Management Recommendations

SUTA supports forest management practices that promote forest health, fire resiliency through fuels reduction and a sustainable level of timber harvest appropriate to a specific region, provided it protects and enhances all components of a local ecosystem. We are glad to see the RMP reflects the differences in timber production capabilities of wetter parts of Oregon compared to Southern Oregon's dry forests. However, we are strongly opposed to the significant

increases in timber extraction under all alternatives proposed for Western Oregon and to the reduction in the size of the riparian areas.

It is extremely unfortunate that federal payments to Oregon's O&C counties are linked to the level of logging of our forests. This has created a sense of entitlement and dependence on short-term economic payments regardless of the long-term costs to those same counties. The economy of Oregon's counties has diversified in recent years as amply shown in recent Oregon's Department of Economics studies. Employment and revenues from timber now plays a minor role compared to other sources of economic growth such as recreation, tourism, healthcare or IT. While changing the O&C Act is clearly not part of the RMP, BLM can bring its forest management policies up to date to reflect the current needs of Western Oregon and set an example of how forests could be managed to provide multiple values to a local economy.

We strongly recommend the BLM eliminate all consideration of clearcutting in Oregon's forests. The findings of scientific research on the adverse environmental impacts of clearcutting (or pseudo clearcutting with few green trees retained) make it surprising that BLM would even consider this approach again. At least for southern Oregon, our steep slopes, low rainfall relative to other parts of Oregon and the tremendous ecological diversity found in this region raise serious questions about why BLM would even propose clearcutting. We see no new research indicating that clearcutting does not increase the risk of soil erosion on steep slopes, does not cause wildlife habitat loss for a large number of species, and does not degrade water quality. As a recreation organization, we can say with certainty that clear-cuts will not enhance any of the forms of the non-motorized recreation we represent. While we are not opposed to sustainable timber harvests, from the perspective of recreation, it will take decades before a clear-cut is once again a forest that might provide some attraction for recreation either directly or as a visual resource from a road or trail.

We hope that BLM will re-order its forest management priorities so that our forests and forest ecosystems thrive and a sustainable level of forest products can be harvested over the long term while other interests such as clean water, wildlife and the diversity of our ecosystems are protected and enhanced, not impaired. Such a management approach will also mean recreational opportunities will continue into the future.

Thank you for considering our comments. We hope the final EIS for the Western Oregon Resource Management Plan will incorporate many of the recommendations we have made.

The Siskiyou Upland Trails Association Board:

Hope Robertson

Jannalee Smithey

Joy Rogalla

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Marys Peak Group
P.O. Box 863
Corvallis, OR 97339

August 18, 2015

RMPs for Western Oregon
Bureau of Land Management
P.O. Box 2965
Portland, Oregon 97208

Dear BLM,

Thank you for receiving our comments on the April 2015 Draft Resource Management Plan/Environmental Impact Statement (RMP/EIS).

We are very concerned that Alternatives A through D all reduce present levels of stream protection afforded by the Northwest Forest Plan (NWFP) and the Aquatic Conservation Strategy (ACS). Rather than reducing protections the final RMP should, at a minimum, maintain the stream protection and restoration standards and guidelines in place under the NWFP and the ACS.

The 20-year monitoring report for watersheds managed under the NWFP and ACS shows improving trends in stream water temperatures and macroinvertebrate fauna (Miller, et al. 2015). This is remarkable, especially as our climate continues to warm. We urge you to keep and strengthen the NWFP Riparian Reserve protections and the ACS standards and guidelines. These are working. The Draft RMP/EIS does not provide a scientific basis to support weakening current levels of stream protections, and there is a recent scientific review that indicates these levels should be strengthened (Frissell, C.A., et al. 2014).

The 20-year watershed report also indicates that decommissioning of roads is correlated with improved stream water quality. The final RMP should focus on reducing the number of road miles on BLM lands and minimizing new road construction to reduce future stream pollution from road run-off and erosion.

We are very concerned that Alternatives A through D abandon the NWFP Survey and Manage Standards and Guidelines for rare species associated with older forests. We believe that in all land management decisions, and especially those that have the potential to negatively impact rare native species, the best available science should be used and this must include on-the-ground knowledge of the species at the site of impact. The Survey and Manage Standards and Guidelines of the NWFP should be included in the final BLM RMP.

The RMP's rationale for abandoning Survey and Manage appears to be that all Alternatives are anticipated to increase habitat availability for these species. However the plan states "increased habitat availability may not translate directly to proportional increases in population numbers since some ... species have limited ranges or low mobility" (page 689) but the plan does not provide an assessment of potential adverse impacts to those species if Survey and Manage is abandoned.

The final RMP should expand upon the NWFP Forest Reserve system by protecting all existing old-growth and mature forests >80 years old; this will improve the resiliency of our older forests and the species dependent on these forests. The 20-year monitoring report on trends in Late Successional and Old Growth (LSOG) on BLM and USFS lands managed under the NWFP shows that losses from wildfires (and to a lesser extent from logging and insect outbreaks) over the past 20 years were significantly mitigated by forest succession (Davis, R. J., et al. 2015). This signals that the NWFP Forest Reserves are working to create a more resilient forest system overall. The final RMP should strengthen, not weaken, conservation measures to ensure longterm resiliency of LSOG reserves on BLM lands.

The resiliency of a robust LSOG Reserve system is especially important in maintaining habitat for the Northern Spotted Owl and Marbled Murrelet. The 20-year monitoring report for the Spotted Owl indicates that habitat losses to wildfires, timber harvest and insect outbreaks were largely offset by forest succession (Davis, R.J., et al. 2015). Although problems with barred owl encroachment persist, the Draft RMP/EIS section on the Spotted Owl indicates that "...research affirms the importance of older forest conditions and managing for large blocks of unfragmented older forest" (page 774) . The 20-year monitoring report for the Marbled Murrelet states that the current NWFP goal of maintaining and increasing nesting habitat should remain in effect (Falxa, G.A. and M.G. Raphael 2015). The final RMP should provide the strongest possible habitat protections for these and other federally listed species and fully integrate habitat management for listed species with USFS lands.

We encourage BLM to focus the final RMP timber management in the Harvest Land Base on restoration of younger, dense plantations, thinning for fuels reduction around populated areas, and on ecological restoration in fire-adapted dry forests.

The Marys Peak Group of the Oregon Sierra Club serves Benton, Lincoln, Linn, Marion, and Polk counties. Every year, in all seasons, we lead hundreds of people in outings to natural areas in and beyond our five-county area. We ask that the final RMP emphasize providing for quiet, non-polluting outdoor recreation, such as hiking, nature observation, and non-motorized boating. We live in a busy, noisy world and quiet natural spaces are becoming rarer as Oregon's human population increases. We would especially welcome new opportunities for passive outdoor recreation on BLM lands in our area.

We support a final RMP that protects existing Lands with Wilderness Characteristics, existing and eligible Areas of Critical Environmental Concern, and all eligible segments of Wild & Scenic Rivers. These special areas are important natural legacies that should remain intact for future generations to study and enjoy.

Thank you for your attention to our comments. We will continue to monitor the RMP process. We care deeply about stream and water quality protection, conservation of native forests and rare species (terrestrial and aquatic), and opportunities for quiet recreation on BLM lands in Oregon. The forests and rivers managed by the BLM are essential to clean drinking water, native salmon runs and Oregon's growing outdoor recreation economy. Please build upon the conservation successes of the NWFP and strengthen them in the final RMP. Craft a final RMP that focuses on the highest levels of protection, maintenance, and ecological restoration of forests, native species habitats, and streams on BLM lands in Oregon.

Sincerely,

Bruce Encke

Bruce Encke, Chair
Marys Peak Group Sierra Club

Citations

Davis, Raymond J.; Hollen, Bruce; Hobson, Jeremy; Gower, Julia E.; Keenum, David. 2015 (Draft). Northwest Forest Plan—the first 20 years (1994–2013): status and trends of northern spotted owl habitats. Gen. Tech. Rep. PNW-GTR-xxx. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. xx p. Available at http://www.reo.gov/monitoring/reports/20yr-report/

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---------- Forwarded message ----------
From: **RMPs_WesternOregon, BLM_OR** <blm_or_rmps_westernoregon@blm.gov>
Date: Fri, Aug 21, 2015 at 9:02 AM
Subject: Fwd: Geos Institute comments on RMPs for the public record
To: BLM_OR RMPWO_Comments <blm_or_rmpwo_comments@blm.gov>

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Before including address, phone number, email-address, or any other personal identifying information in your comments, be advised that your entire comment, including personal identifying information, may be made publicly available at any time. If you wish us to withhold your personal information you must state this prominently at the beginning of your comment. While individuals may request that the BLM withhold personal identifying information from public view, the BLM cannot guarantee it will be able to do so.

You have received this email because you have previously submitted a request to be on the mailing list, stakeholder list, submitted a comment, feedback or survey response and/or indicated interest in the RMPs for Western Oregon.

---------- Forwarded message ----------
From: **Dominick DellaSala** <dominick@geosinstitute.org>
Date: Thu, Aug 20, 2015 at 10:44 AM
Subject: Fwd: Geos Institute comments on RMPs for the public record
To: BLM_OR RMPs_WesternOregon <BLM_OR_RMPs_WesternOregon@blm.gov>

Attached are comments of the Geos Institute on the DEIS for BLM's western OR RMPs - by regular mail, I also sent a package with a DVD containing 112 pdfs of relevant literature not cited in the DEIS. We are greatly concerned that the various models chosen by BLM, particularly the fire and carbon models, are not based on best science nor relevant historical reference conditions and omit numerous regionally specific studies. We are also quite concerned about BLM's narrow interpretation of its O&C statutory obligations and that this has led to a timber dominance bias that is inherent throughout the document and inconsistent with case law

as reviewed by Scott and Brown (2007). For these reasons, we are requesting that you consider a conservation alternative to provide a full range of alternatives as required under NEPA.

I know you all are trying really hard to find a way forward on the ongoing controversy surrounding the BLM O&C lands and I appreciate the detail that went into the models. However, BLM lands in western OR are critical to the integrity of the NWFP; they are some of the last remaining low-elevation older forests in the region and this and other ecological values need to be better reflected in the EIS. I know this from my days on the spotted owl recovery team and, from combing over numerous late-successional maps, I have come to realize that BLM lands are all that we have left for owls and hundreds of other old forest associates in western Oregon (particularly the Coast Range). In addition, BLM has some of the most carbon dense forests in the nation yet the emphasis and modeling of carbon does not reflect BLM's relative importance in optimizing carbon or how the agency will remain below the draft CEQ guidelines on CO2 emissions from land use. You will find these and other comments throughout our attachments.

In the meantime, I would be happy to meet with BLM in person to go over these concerns and encourage BLM to conduct a transparent peer review of the science presented in the DEIS using non-agency and non-industry scientists in the review. It is imperative that all alternatives begin with the importance of the NWFP as a baseline. That means reinstating the survey and manage program and expanding, not shrinking, the Riparian Reserve widths and developing a road density standard for transportation planning that minimizes watershed impacts. Thank you for the time to consider our comments.

GEOS INSTITUTE

August 21, 2015

RMPs for Western Oregon
Bureau of Land Management
P.O. Box 2 65
Portland, OR 7208

Re: eos nstitute comments on BLM Draft Resource Management Plan/ S

  eos nstitute is a science-based organi ation dedicated to helping people predict, prepare for, and reduce the impacts of climate change. For over a decade, we have published numerous peer-reviewed studies on the orthwest Forest Plan WFP as a global model for ecos stem management and biodiversit conservation and related studies on orthwest forests, man of which are cited herein in our comments. Please accept our comments and the attached 112 pdfs for inclusion in the public comment period for the Draft nvironmental mpact Statement D S for the Western Oregon Resource Management Plan RMP . At a minimum, we re uest that ou at least consider the case law review provided b Scott and Brown 2007 that runs contrar to our interpretations of the O C Act as timber dominance.

Based on our review of the materials, we have identified six major shortcomings in the and re uest that ou include the re uested information on these issues in the F S: 1 overall conservation importance of BLM lands in western Oregon and role in maintaining the functionalit of the orthwest Forest Plan WFP 2 ecos stem benefits of fire, including impacts of pre- and especiall post-fire logging on forest ecos stems and fire-dependent species 3 importance of carbon se uestration and net carbon storage on BLM lands particularl in comparison to the surrounding nonfederal lands that are a carbon source 4 improvements to a uatic s stems resulting from implementing the A uatic Conservation Strateg ACS of the WFP 5 the importance of the WFP for maintaining biodiversit and ecos stem services in a changing climate and 6 impacts of logging and other land-use stressors on imperiled species, including surve and manage species, northern spotted owl, and marbled murrelet. We note that a great deal of new information is now available from the 20- ear WFP monitoring reports attached and is available on the spotted owl demograph stud in final review that we re uest ou include in the F S to better ensure that the RMPs are based on best available science. Specificall , BLM needs to recogni e the importance of the WFP as a baseline for all RMP alternatives with improvements rather than subtractions to the standards and guidelines protecting biodiversit in the region and BLM's coordination responsibilities in ensuring implementation of the WFP as it currentl stands.

Our comments underscore the need for BLM to base its preferred alternative on its obligation to the WFP, particularl with respect to the ACS, surve and manage program, and reserves. The efficac of the WFP depends on ongoing interagenc coordination of the Plan's standards and guidelines as specified in the WFP Record of Decision and the Dw er 1 1 court ruling. This is especiall important given the scarcit of national forest lands in the Oregon Coast Range, relative importance of BLM lands to the WFP, and demonstrable improvements to forests and watersheds as reflected in the 20- ear monitoring reports and related science cited herein. This means treating the WFP standards and guidelines as a *conservation baseline* below which an reductions in buffer widths and surve and manage program protections are treated as inconsistent with the Plan's ecosystem management and biodiversit emphasis. Thus, all RMP alternatives should begin with the best science on the importance of

BLM lands regionall see Staus et al. 2010 and how BLM contributes to the functionalit of the WFP. We urge BLM to include further discussion about how the WFP remains the best available science as indicated in numerous assessments Courtne et al. 2004, Lint 2005, DellaSala and Williams 2006, DellaSala et al. in final review, and the recent 20 ear monitoring reports .

 n sum, we are especiall concerned that the D S is based on untested models e.g., LA DF R , class condition mapping that have nown over-prediction biases regarding high-severit fire see Cru and Alexander references cited herein and provided as pdfs , are based on incomplete literature reviews that include citing studies not relevant to the region's fire regimes or forest types including citing industr non-peer reviewed literature – e.g., OFR or that have not been peer reviewed e.g., T C condition class maps in other regions have been shown to poorl predict fire severit compared to empirical evidence postfire , are based on biased fire assumptions and carbon modeling, and unsupported statements about how management ma be superior to reserve protections in terms of resilience and resistance to climate change. For these reasons, we submit for the record 112 pdfs with the intent of expanding BLM's literature review in the F S, re uest that BLM validate its fire and carbon models given the numerous problems cited herein, and re uest that BLM adhere to the nformation ualit Act and OMB guidance in having the RMPs peer reviewed b non-agenc /non-industr scientists and professional societies e.g., American Fisheries Societ , Societ for Conservation Biolog , The Wildlife Societ , cological Societ of America . The nformation ualit Act directs the OMB to issue government-wide guidelines that "provide polic and procedural guidance to Federal agencies for ensuring and **maximizing the quality, objectivity, utility, and integrity of information (including statistical information) disseminated by Federal agencies" (emphasis added)**. Federal agencies are re uired to publish their own guidelines for information ualit and peer review and these are clearl deficient in the D S and need to be part of a transparent and objective RMP process.

Sincerel ,

Dominic A. DellaSala, Ph.D.
Chief Scientist

I. CONSERVATION IMPORTANCE OF BLM LANDS IN WESTERN OREGON AND FUNCTIONALITY OF THE NWFP

sing computer mapping anal sis in a geographic information s stem S and satellite imager interpretation 2000 imager , Staus et al. 2010, attached – also see DellaSala et al. 2005 pdf documented the importance of BLM lands and reserves to the functionalit of the WFP. n general, lands administered b the BLM in western Oregon contain significant amounts of late-successional forests essential to the recover of federall listed species and the integrit of the WFP area. BLM LSRs contain a significant portion of this habitat (i.e., are the "backbone" to species recovery) and are integral in the conservation of hundreds of old-growth associated species. istoricall , the federal injunction on logging was lifted b udge Dw er in 1 1 onl because the NWFP was the "*bare minimum*" necessary to meet statutor re uirements e.g., SA, Clean Water Act, FMA on ational Forests . Contrar to BLM's DEIS alternatives, there is no science that supports moving away from the Plan's reserves, stream buffers, or surve and manage program re uirements. Additionall , BLM lands are crucial for maintaining the integrit and functionalit of the WFP given the highl fragmented surroundings on nonfederal lands Figure. 1 and lac of coastal national forest lands. This relative importance needs to be specificall referenced in the F S and the level of surrounding fragmentation included in the cumulative impacts anal sis of RMP alternatives.

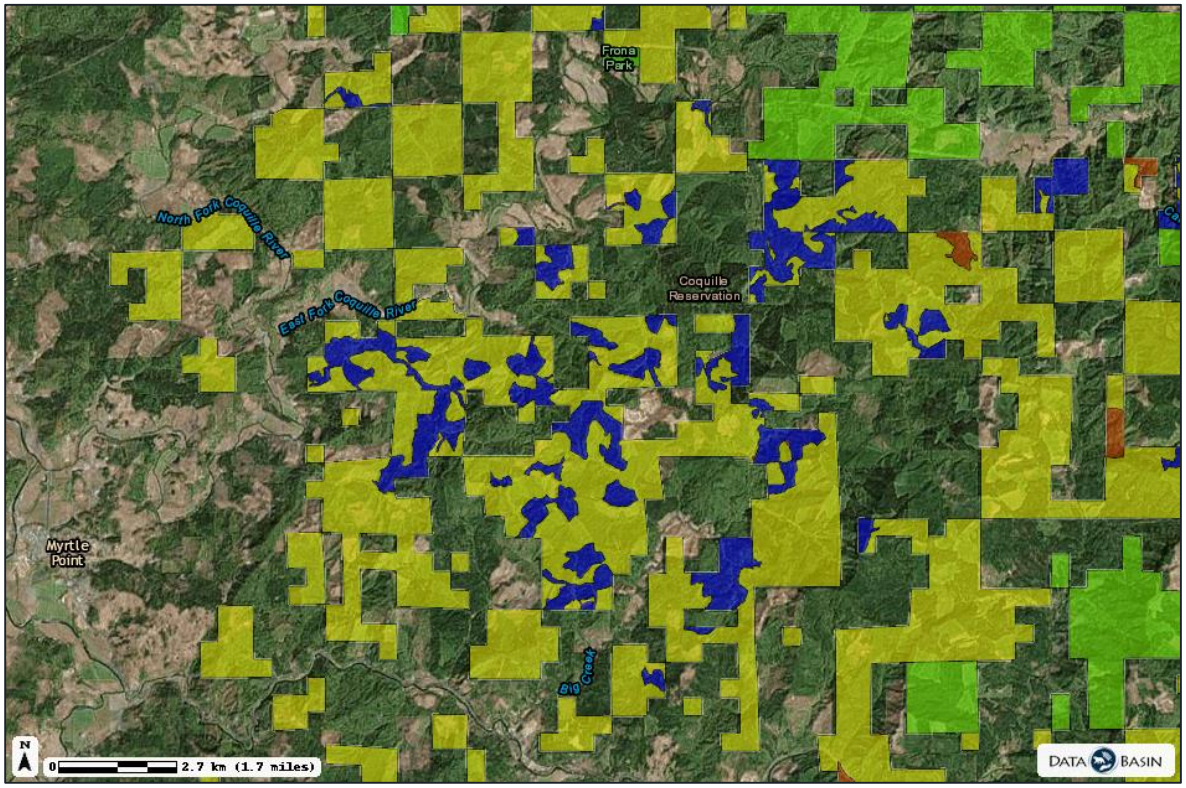

Figure 1. Satellite image of Southwest Oregon showing extensive fragmentation from a "checkerboard" pattern of clearcuts on private lands with WFP land management allocations. Map created using Data Basin www.databasin.org accessed ul 2 , 2015 . BLM lands present the last relativel intact forests and watersheds in this portion of the WFP planning area.

Key Features Related to BLM lands:

- BLM LSRs and Riparian Reserves i.e., reserves are fundamentall important to the ecological objectives of the WFP – they are the "bare minimum" required to avoid the need to list additional species under the SA.
- BLM reserves contain 00,000 acres of old growth >150 ears and 5 0,000 acres of mature 80-150 ears forest, 22 and 15 of the old and mature forests remaining in western Oregon, respectivel or nearl 40 of older forests .
- BLM lands and LSRs are essential to recover of the federall threatened northern spotted owl - BLM LSRs contain nearl 600,000 acres of owl habitat—which is 58 of the suitable owl habitat on BLM land in western Oregon. Collectivel , BLM LSRs contain 16 and 25 of the total owl critical habitat in western Oregon and the Coast Range, respectivel .
- BLM lands and LSRs are important to the recover of the federall threatened marbled murrelet - BLM lands contain 485,000 acres 32 of critical murrelet habitat, 83 of which is found within LSRs. Without the full networ of LSRs both SFS and BLM , it will li el be impossible to meet the goals of the recover plan for this species.
- The orthwest Forest Plan is a e underpinning of the State of Oregon Plan for Salmon and Watersheds - the foundations of salmon conservation could be seriously undermined by BLM's proposed reduction in ACS buffers see Frissell et al. 2014 .
- BLM lands provide essential habitat for over 400 rare species - the viability of "survey and manage" (i.e., rare species designated by the NWFP) depends on a functional reserve network in combination with protective "buffers" in areas open to logging (DellaSala et al. in final review). The WFP was built on the concept of coarse and fine filter conservation biolog approaches. liminating an one of these approaches would damage the functionalit of the WFP and the survey and manage program needs to be integral to BLM's alternatives.
- Cumulative actions from reductions in protections on federal lands combined with stepped up logging on non-federal lands could trigger a jeopard decision for listed species, including spotted owl, marbled murrelet, and salmon – examples of cumulative actions include reductions in surve and manage protections, A uatic Conservation Strateg rollbac s, salvage logging in LSRs, increased logging and deficiencies in abitat Conservation Plans on the nearb lliott State Forest and We erhaeuser-Millicoma tree farm, increased logging for fire-ris reduction. Such cumulative impacts need to be addressed under each of the BLM D S alternatives to imperiled species and surve and manage species.
- BLM unroaded areas are vital as salmon strongholds and refugia for sensitive species - BLM lands contain 268,181 acres of unroaded areas >1,000 acres spread over 146 areas across all BLM allocations 76 of these are small unroaded areas totaling 105,000 acres within BLM LSRs. The majorit of unroaded acres are within one large LSR adjacent to Wild Rogue Wilderness and Sis i ou ational Forest in the Medford BLM District – the ane re Roadless Area and this area should be permanentl protected under all plan alternatives.

What We Request in the FEIS:

- Summari e the conservation literature on the importance of BLM lands to the WFP and the WFP in general include Staus et al. 2010 and bullets above .

- Adhere to the WFP standards and guidelines as fundamental to the functionalit of the WFP in all RMP alternatives – this means designing alternatives that begin with all LSRs, Riparian Reserves, Ke Watersheds, surve and manage as a baseline re uirement of the WFP, and then build on these protections b prohibiting post-fire logging in reserves and protecting remaining late-successional forests >80 ears from logging and road building. Older forests >80 ears is important to spotted owls and other late-successional species as demonstrated repeatedl F MAT 1 3, Strittholt et al. 2006, Carroll and ohnson 2008, Dugger et al. 2011, Olson et al. 2012 – several of these are provided as pdfs . An departure from this baseline should be anal ed in the cumulative effects anal sis of the F S in order to be compliant with PA.

II. ECOSYSTEM ROLE OF FIRE AND APPROPRIATE MANAGEMENT

Mixed evergreen forests and other vegetation t pes of the Klamath Sis i ou ecoregion northwest California and southwest Oregon support globall outstanding biodiversit maintained, in part, b reoccurring fires of varied severit DellaSala et al. 1 , Odion et al. 2004, Odion et al. 2010, DellaSala and anson 2015, provided as pdfs . BLM's RMP; however, has a number of inherent biases reflected in the partial treatment of fire as a threat that needs suppression via mechanical treatments. BLM's fire science s nthesis and D S do not provide a comprehensive literature review on the ecological importance of mixed-severit fires in maintaining fire-dependent biodiversit and complex earl seral forests Swanson et al. 2011, DellaSala and anson 2015, several pdfs provided . Therefore, BLM does not present the best fire ecolog science in its supporting documentation as summari ed herein .

Fire return intervals and fire severities are complex and highl variable in western Oregon Odion et al. 2004, Odion et al. 2010, Odion et al. 2014a, pdfs provided). BLM's fire s nthesis lac s a discussion of uncertaint related to thinning efficac in mixed-severit s stems see Odion et al. 2014a, DellaSala and anson 2015 . BLM also applies T C fire mapping built on LA DF R and fire regime condition class datasets *that have not been ground trothed for prediction bias*. These models are nown to have an under-prediction bias e.g., Cru and Alexander 2010, Alexander and Cru 2013, Cru et al. 2014 meaning the often predict that fuel reductions would reduce or eliminate the potential for crown fires when in fact fuel reductions ma not achieve this effect, especiall in the climate-limited fire s stems see Little et al. 200 . Model uncertaint needs to be clearl specified in the F S because BLM creates the expectation without uantif ing uncertaint or at least reporting on model biases that thinning will reduce fire intensit in mixed-severit fire regimes that are mainl climate driven fire events. The lac of a uncertaint discussion in the fire section of the D S and supporting appendix, and BLM's treatment of thinning as fire remediation, runs counter to several studies in the region that were not discussed e.g., Odion et al. 2004, Thompson and Spies 2007, anson et al. 200 , Odion et al. 2010, Odion et al. 2014a, pdfs provided .

Contrar to widel held assumptions about the need to thin forest canopies to reduce fire severit in western landscapes, Odion et al. 2004 found long-unburned areas with closed forest canopies in mixed evergreen forests of this region supported **more low severity fire** than recentl burned areas. This ma be due to the presence of hardwoods in these forests that shade out flammable understor vegetation overtime. eterogeneit in fire behavior, including large and small patches of high severit , is an inherent and resilient propert of mixed evergreen forests undervalued b BLM. This criticall important natural heterogeneit needs to be recogni ed in the F S for its biodiversit benefits and not just ris s to ecos stems. BLM management aimed at reducing high severit fire where it is needed to maintain

dependent communities see Swanson et al. 2011, DellaSala et al. 2014, pdfs provided represents a biased and incomplete review of the fire ecolog literature of the region. The D S also does not include relevant studies that have shown no recent since 1 84 increases in acres burned or fire severit in this region as published in peer-review journals see anson et al. 200 , Odion et al. 2014a,b, pdfs provided . The partial review of the literature in the D S clouds BLM's view that fire is increasing and is therefore a threat to forests. This theme is pervasive in the RMP alternatives and lac s scientific rigor. otabl , most studies of fire increases cited b BLM are based on extremel short timelines and lac historical baselines. Anal sis using short-timelines can lead to shifting baseline perspectives, where the baseline is inappropriatel moved to a more recent timeline that does not represent historical range of variabilit see DellaSala et al. 2013, pdf provided . This needs to be corrected b BLM b including bac -casting studies to help validate fire models such as those provided as pdfs see Whitloc 1 2 Colombardi and avin 2010 Ba er 2011, 2014 and Dipaolo and osten 2015 provided as pdfs .

We provide five reasons for proceeding with caution regarding fire models used in developing RMP alternatives: 1 fire regimes and vegetation t pes are much more complex/variable in western Oregon, fire exclusion effects var widel mostl low elevation exclusion in the wildlands urban interface, less so in the bac countr , and treatment prioriti ation is clearl warranted e.g., plantations 2 thinning overstor canopies is inappropriate in mixed-severit s stems given an inverse association between fire severit and closed canop forests Odion et al. 2004 – this stud was reported in the BLM literature but the inverse association was not mentioned 3 the complex pattern of fire-vegetation mosaics in this region is associated with high levels of biodiversit Odion et al. 2010, Donato et al. 2012, DellaSala and anson 2015, pdfs provides and complex earl seral forests Swanson et al. 2011, pdf not mentioned b BLM which remains out-of-step with current fire ecolog science and 5 fire ris s to owls are grossl overstated in the RMP and appendices also discussed below .

Post-fire logging - Response of fire-adapted species and communities to post-fire logging depends on the scale, intensit , degree of biological legacies removed Mc ver and Starr 2000, Lindenma er et al. 2006, 2008, several pdfs were provided in support of this section including the postfire logging literature review presented in DellaSala et al. 2015 and the enclosed pdf , disturbance histor of the site Reeves et al. 2006, utto 2008 , and species-specific tolerances to logging. Documented impacts span a broad range of taxa, ecos stem processes, and forest functions see Karr et al. 2004, Lindenma er et al. 2004, utto 2006, anson and orth 2008, Lindenma er et al. 2008, DellaSala et al. 2014 summari ed as follows see Appendix 1 and DellaSala and anson 2015 pdf :

- alteration of stand structure and function
- loss of soil nutrients
- chronic sedimentation and erosion
- reduction in carbon storage
- increased fine fuel loads and re-burn severit
- degradation of habitat for threatened, endangered, and sensitive species
- reduced habitat and pre for apex predators and forest carnivores
- reduced snag densities for cavit nesting birds and mammals
- exotic species invasions, and lowered resistance and
- reduced resilience of post-fire landscapes to future disturbances, among other alterations

Appendix 1 shows a widespread and consistent pattern of post-fire logging impacts across taxa and regions that is, arguabl this t pe of logging is more severe in its adverse impacts than logging green forests. n addition, management in the region has resulted in a damaging feedbac loop between fire and logging whereb areas that burn in a fire are logged and planted with commercial species onl to burn more intensel in the next fire, and then are logged again later Figure 2 . The combination of post-fire logging and removal of native shrubs through herbicides—as is commonl practiced in the western SA especiall on private lands—dramaticall increases the spread of invasive and often highl combustible weeds Mc innis et al. 2010 . The fire to post-fire logging, to intense fire, feedbac ma accelerate if climate change triggers more fires that then trigger more logging. The accumulation of widespread impacts Appendix 1 in relation to fire projections and post-fire logging feedbac loops needs further discussion in order for the RMP to present the direct, indirect and future cumulative impacts pursuant to PA.

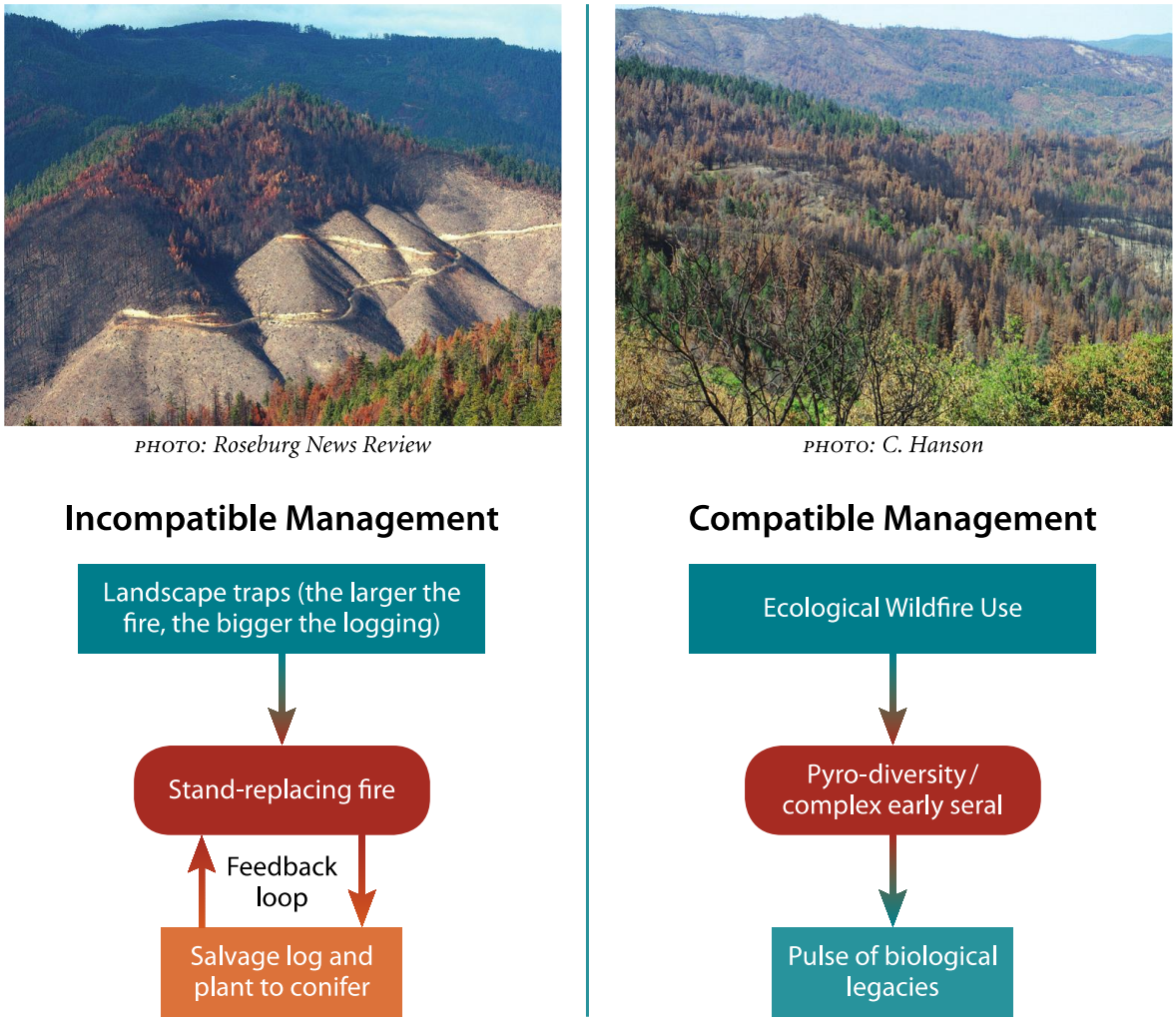

Figure 2. Management-fire feedbac where fires lead to high- ualit or complex earl seral forests that are then post-fire logged and converted to degraded tree plantations that then re-burn intensel to be logged again after the next fire. Chronic disturbances li e these can lead to landscape traps Lindenma er et al. 2011, pdf as disturbance d namics are flipped to degraded stages over large landscapes.

Key Findings Related to BLM lands:

- Based on extensive review of the literature, post-fire logging impedes post-fire ecos stem processes b removing some of the rarest and most biodiverse wildlife habitat in forest ecos stems, compacting soils, causing chronic erosion, dela ing natural succession, and introducing or spreading invasive species impacts are even more severe for ground- and cable-based logging than helicopter logging , among other damages. Rather than jump starting forests as claimed, post-fire logging damages or removes complex earl seral

forests and inhibits the return of forest ecos stem conditions over time b removing the ver components large dead, d ing, and downed trees crucial in their development, and b eradicating core components of forest biodiversit , such as native shrub patches. Post-fire logging can also elevate fine fuels b removing the least combustible portion of trees trun s and leaving logging slash in places where logging slash is treated with pile burning, damage to soils can have long-term conse uences .

What We Request of the FEIS:

- At a minimum, provide a more comprehensive literature review of the ecos stem benefits of mixed-severit fires see DellaSala and anson 2015 , importance of complex earl seral forests and their association with future late-successional stand development Swanson et al. 2011, Donato et al. 2012, DellaSala and anson 2015 , more complete studies showing no recent since 1 84 increases in acres or severit in this region anson et al. 200 , Odion et al. 2014a,b , uncertainties in class condition mapping and prediction biases of fire models see Cru citations above along with Odion and anson 2006, Odion and anson 2008, pdfs , and broad-scale impacts of postfire logging Appendix 1 .
- Wor with the Forest Service to implement a cohesive wildland fire management strateg that allows more fires to burn unimpeded in the bac countr to reduce widespread damage to ecos stems from extensive and often ineffective fire suppression see ngalsbee and Roja 2015, pdf provided in DellaSala and anson 2015 .
- Recogni e that mixed evergreen forests have different fire regimes and fire-dependent communities compared to mesic forests and that long-unburned forests in this region ma actuall experience lower fire severit levels Odion et al. 2004 .
- Prioriti e thinning to plantations using ecologicall appropriate methods, including, as appropriate, prescribed burning in lower elevations.
- Focus on reducing the probabilit of human-caused fire ignitions b closing roads seasonall , and decommissioning problematic roads that not onl contribute to chronic sediment and water ualit problems but also to cumulative ignition probabilities across large landscapes. Reducing fire ignition factors should be given higher priorit in transportation planning b BLM.
- Recogni e that fuel reduction efforts have limits, including: 1 the probabilit that a treated area will intersect a fire is ver small 5-8 , Rhodes and Ba er 2008, pdf 2 thinning is ineffective during extreme fire behavior that ma increase overtime due to climate change especiall for climate limited fire s stems such as this region Littell et al. 200 and 3 extensive thinning can contribute to fire spread b opening forest stands to increase wind penetrance, increased light levels and associated plant growth, and increases in fuel loadings left b thinning slash. BLM should refine its fire assumptions based at least on Rhodes and Ba er 2008 and uncertainties in fire modeling as described b the Cru citations provided.
- Design management alternatives to prioriti e ecologicall appropriate thinning in plantations comprised of small trees <80 ears – this should be conducted in association with comprehensive restoration measures that include rescaling the road s stem to be smaller and less damaging to a uatics, restoring floodplain continuit b removing gra ing from riparian areas see Beschta et al. 2014, pdf , addressing fire and fuel issues in flammable plantations see Odion et al. 2004 , and ma ing use of variable-spaced thinning to increase structural complexit and accelerate late-successional stand development.

- A small diameter alternative needs to be considered in the F S in order to provide an ade uate range of alternatives under PA. one of the BLM alternatives focus exclusivel on small diameter restoration treatments as the primar objective and thus the D S remains out-of-compliance with PA and best available science. Based on prior calculations Kerr 2011, pdf and a one-time entr for timber volume, this could potentiall generate **1.6 billion board feet** from the Matrix and Adaptive Management Areas.
- aturall regenerating landscapes following fire are biologicall rich and need to be conserved for their uni ue ecological values. Therefore, we recommend that: 1 post-disturbance landscapes be allowed to regenerate on their own, as evidence from several studies e.g., see Turner and Dale 1 8, Donato et al. 2006, Lindenma er et al. 2008 indicates post-disturbance processes can be remar abl productive see DellaSala and anson 2015 2 avoid road building including temporar roads , as it damages regenerative processes 3 avoid post-fire logging in dense, mature/old forest stands that experience intense fire, as such areas tend to provide the highest ualit , and spatiall rarest, complex earl seral forest habitat Swanson et al. 2011, DellaSala et al. 2014 4 protect biological legacies large dead and d ing trees, shrubs to aid in regenerative processes and 5 intervene onl in wa s that promote natural processes i.e., do no harm .

III. IMPORTANCE OF CARBON SEQUESTRATION AND CARBON STORAGE ON BLM LANDS

Forests are a critical part of the global biological carbon C c cle and their management can contribute to stabili ing the concentration of the greenhouse gas CO_2 in the atmosphere Pacala and Socolow, 2004 . Forest management is a major factor in determining if forest landscapes release CO_2 into the atmosphere or, on the contrar , remove CO_2 and store it long-term. Thus, forest management decisions are especiall important in the Pacific orthwest where older forests have some of the highest biological potential to store C armon et al., 1 0 Smithwic et al., 2002 Birdse et al., 2006 Kran ina et al. 2014, several pdfs .

Management of federal forestlands in the Pacific orthwest changed substantiall in earl 1 0s when the WFP was adopted with the primar goal to protect late-successional forests and associated species DellaSala and Williams 2006 . Although not the original intent, the WFP has led to a considerable increase in C stores on federal forestlands within the first decade of its implementation Kran ina et al. 2012 . This net removal of C from the atmosphere can be expected to continue for several decades if the limits on timber harvest set under the WFP are maintained Kran ina et al. 2012 .

otabl , Kran ina et al. 2014 studied the distribution of high-biomass forest stands >200 Mg/ha in live aboveground biomass or >81 tonnes per acre in the Pacific orthwest and showed that 68.1 of western Oregon federal public forestlands administered b BLM are high-biomass forests Table 1 – is included here mainly because BLM's carbon analysis did not mention this or related published studies).

Table 1. Area estimates b ownership class for Forest Service Region 6 Oregon and Washington combined thousand ha, from Kran ina et al. 2014, pdf .

Ownership class	Total land area	Total forest area	Forest area disturbed from 2000-2008				Forest area in biomass classes[a]		
			All forest		igh-biomass forest [b]		1-200	201-400	>400
	n ear 2000		Fire	Other	Fire	Other	Mg/ha		
SFS	,	,					,	,	
PS									
BLM	,								
Other Public	,	,					,		
Private	,	,					,	,	
TOTAL	,	,		,			,	,	,

[a] xcluding 2000-2008 disturbance [b] >200 Mg/ha

When an older high biomass forest is cut down, much of this stored carbon is released as CO_2 – a global-warming pollutant – switching it from a sin to a "source" or "emitter" of CO_2. For instance, nearl 60 of the carbon stored in an old-growth forest is emitted as CO_2 when it is converted to oung growth, via decomposition of logging slash, fossil-fuel emissions from transport and processing, and deca or combustion within 40-50 ears of forest products, often in landfills armon et al. 1 0, pdf . Planting or growing oung trees does not ma e up for this release of CO_2 from a logged forest. ndeed, after a forest is clearcut, it remains a net CO_2 emitter for its first 15 or more ears Law and armon 2011, pdf , and even if not cut down again will not reach the levels of carbon stored in an old forest for centuries.

Key Findings Related to BLM lands:

- Managing forests to optimi e carbon stores through preservation of high biomass forests and lengthened timber rotations would provide co-benefits for climate adaptation, including clean water, climate refugia, and connectivit across fish and wildlife habitat Brandt et al. 2014, pdf . Thus, optimi ing carbon b protecting high biomass forests and increasing se uestration potential of previousl logged forests is consistent with the multi-functionalit of ecos stem services given C is correlated with biodiversit and other ecos stems services.
- Accurate assessment of whether a forest practice ields carbon benefits re uires managers to conduct a life-cycle analysis of "upstream" and "downstream" carbon losses, as well as gains. The D S is incomplete in not presenting the best science on carbon flux using regionall specific models such as Landcarb http://landcarb.forestr .oregonstate.edu .
- Although wildfire smo e is dramatic, less carbon is emitted than previousl thought Campbell et al. 2007, pdf . Onl 1-3 of tree bole carbon combusts in low and high severit fires Campbell et al. 2007 . Most of what burns is fine fuels in low and high severit fires, ma ing actual carbon loss much less than previousl believed. For example, from 1 87-2007, carbon emissions from fire were the e uivalent of 6 of fossil fuel

emissions in the NWFP area (Turner et al. 2011). If fire hasn't significantly reduced total carbon stored in forests, it isn't going to materially worsen climate change.

- Landscape and regional studies show that large-scale thinning to reduce the probabilit of crown fires and provide biomass for energ production does not reduce CO_2 emissions under current and future climate conditions udiburg et al. 2011, Mitchell et al. 200 , 2012 Law and armon 2011, Campbell et al. 2012, Schul e et al. 2012, several pdfs . f thinning were implemented over large landscapes, as proposed b BLM, it would result in long-term carbon emissions to the atmosphere because man areas that are thinned will not experience fire during the period of treatment effectiveness Rhodes and Ba er 2008, pdf , and removals from areas that later burn may exceed the carbon 'saved' by reducing fire intensity (Rhodes and Ba er 2008, Campbell et al. 2012 . Thinning also does not reduce fire occurrence, particularl in extreme weather conditions drought, wind and especiall in climate-driven fire s stems such as this region see Littell et al. 200 .

What We Request in the FEIS:

- nclude a literature review of the importance of older forests in storing 3 to 10 times the carbon of oung forests, and that a larger portion of their total ecos stem carbon is stored in live trees Law et al. 2001, udiburg et al. 200 , pdfs .
- Develop standards to protect high biomass forests generall >80 ears old from timber harvest whether the are in our outside WFP reserves. ncrease, biomass carbon stoc s b extending timber harvest rotations as best science shows carbon stores could be twice as high if forests were allowed to accumulate carbon udiburg et al. 200 . f current harvest rates were lengthened b just 50 ears, biomass stoc s could increase b 15 .
- Ac nowledge that carbon flux from thinning in most cases will exceed that of forest fires b including more appropriate life c cle anal ses that account for flux from logging operations http://landcarb.forestr .oregonstate.edu and choose a planning alternative that optimi es C stores long-term.
- nclude a more comprehensive C assessment of forestr emissions so that the public can better understand the conse uences of BLMs management actions, and include a full accounting of the land-based C balance. Full accounting of all C releases, including thinning for crown fire ris reduction, C storage in long- and short-term wood products, substitution for fossil fuel, and displacement of fossil fuel energ , has repeatedl shown that thinning results in increased atmospheric CO2 emissions for at least man decades. t does not reduce emissions above citations .
- ncorporate the Council on nvironmental ualit C draft recommendations on land-use emissions[1], anal e forestr emissions in relation to CEQ's recommended thresholds 25,000 metric tons of CO_2 e , and calculate a social cost of carbon.

[1]https://www.federalregister.gov/articles/2014/12/24/2014-30035/revised-draft-guidance-for-federal-departments-and-agencies-on-consideration-of-greenhouse-gas

IV. MAINTENANCE OF AQUATIC ECOSYSTEMS AND THE ACS

The ACS of the WFP included establishing Riparian Reserves with protective stream buffers that preclude most logging and identif ing and protecting Ke Watersheds managed for water ualit and high-habitat ualit for at ris salmonids. The strateg is designed to restore and maintain ecological processes broadl for a uatic and riparian areas Reeves et al. 2006 . Stream conditions across 214 watersheds are being evaluated on federal lands in two eight- ear sampling periods 2002-200 vs. 2010-2017, incomplete Miller et al. 2015, pdf . At the regional scale, broad-scale improvements in pools i.e., deep water poc ets that provide cover, food, thermal refuge for a uatic species , stream substrate, and a uatic macroinvertebrates were observed between sampling periods, but no trend was detected in ph sical habitat features in riparian area canop cover condition or stream temperature Table 2 from DellaSala et al. in final review and summari ed from Miller et al. 2015, pdfs .

Table 2. Summar of a uatic trend anal sis testing for linear relationship between sampling periods 2002-200 vs. 2010-2013, incomplete Miller et al. 2015 . Macroinvertebrates were based on an observed to expected index O/ calculated b Miller et al. 2015 . Pool scores were estimated b using the amount of fine <2 mm sediments that accumulate in the downstream portion of pools.

A uatic ndicator	Trend estimate	F-test	p-value
Ph sical habitat	0.1	0.33	0.5
Pools	-0.21	6.22	**0.03**
Wood	0.0	3.14	0.11
Substrate	0.10	. 0	**0.02**
Macro-invertebrates O/	0.01	10.84	**0.02**
Temperature	-0.0	1.1	0.31

ncludes Kenward-Roger approximation. P<0.05 significant as described in Miller et al. 2015

At the WFP level, there were moderate gains in upslope/riparian conditions due to forest ingrowth and road decommissioning Miller et al. 2015 . otabl , the ACS anticipated improvements in stream and habitat conditions would ta e decades and repeat monitoring has confirmed short-term benefits as noted but long-term goals have et to be reali ed allo et al. 2005, Reeves et al. 2006, Miller et al. 2015 . nterestingl , watershed condition appeared best in Congressionall Reserved lands primaril designated Wilderness Areas , followed b LSRs, and the Matrix, although valid statistical anal sis could not be performed due to incomplete sampling Miller et al. 2015 . Ke Watersheds and roadless areas encompass man of the

remaining areas of high- ualit habitat and represent refugia for a uatic and riparian species Lanigan et al. 2012 , and, therefore, improved protection and restoration actions in those areas remain criticall important to conserving a uatic biodiversit .

A recent review of the NWFP's ACS in light of scientific advances since 1993 (Frissell et al. 2014, pdf documented a host of reasons to recommend that Riparian Reserves *should be expanded*, and logging activities within them reduced compared to the baseline WFP this is contrar to the BLM D S and therefore the D S remains out-of-step with current science .

Key Findings Related to BLM lands:

- BLM LSRs and Riparian Reserves i.e., reserves are fundamentall important to the ecological objectives of the WFP – the are the "*bare minimum*" required to avoid the need to list additional species under the SA.
- A subset of BLM lands, totaling 1.2 million acres of the 2.1 million acres of BLM O C and CBWR lands, includes 7 Surface Water Source Areas SWSA http://www.de .state.or.us/w /dwp/results.htm that provide clean drin ing water for 1.5 million people from Medford to Portland, high- ualit water for salmon, old forest habitat for threatened wildlife, and are important for preparing communities and wildlife for the inevitable conse uences of climate change.
- Co-benefits present in BLM areas with SWSAs that remain at ris to logging include: 1 watersheds with up to five species of salmon, including federall listed coho *Oncorhynchus kisutch)* and 2 watersheds with high water ualit and low Total Maximum Dail Loads essential to salmon and people.
- n terms of watershed benefits, BLM lands contain irreplaceable ecos stem benefits most often degraded b industrial-scale logging on nonfederal lands and increasingl important in a climate changing world.

What We Recommend in the FEIS:

- At a minimum, maintain all Riparian Reserves, Ke Watersheds, and LSRs for their terrestrial and a uatic conservation co-benefits and expand the buffer widths in Riparian Reserves to account for increasing stressors from potential extreme weather events floods, droughts due to climate change.
- nclude specific standards for reducing Total Maximum Dail Load TMDL from logging roads, thinning, and other logging activities to minimi e chronic sediment to SWSAs.
- Provide more stringent protections for Ke Watersheds and LSRs to ensure their contribution to a uatic biodiversit conservation and salmon recover , stringent limits on or an end to post-fire logging, and the importance of more aggressive and strategicall focused reduction of road densit and storm proofing improvements in roads that remain Frissell et al. 2014 .
- Account for ongoing stressors from land management in the surrounding nonfederal lands, the increasing li elihood of climate-change-driven stress from drought, floods, and wildfire in places, or the aforementioned tradeoff of adverse watershed impact from thinning

projects relative to their putative but highl uncertain benefits for reducing the severit of future fire or insect outbrea s should the occur. These impacts need to be included in the F S in order to compl with PA.

V. CLIMATE CHANGE AND THE NWFP

Climate change was not full anticipated during development of the WFP and thus represents a new broad-scale stressor that would exacerbate earlier projected and reali ed cumulative impacts to a uatic and terrestrial species and ecos stems throughout the region. Temperatures alread have increased b 0.7 C from 18 5 to 2011 Mote et al. 2015 and are anticipated to rise another 2 to 6 C b late centur with warming most extreme during the summer Mote et al. 2015, DellaSala et al. 2015a, pdf . reater uncertaint exists in precipitation projections depending on emissions scenarios chosen certaint is higher for summertime dr ing b the end of the centur Mote et al. 2015 . Summer dr ing coupled with increasing temperatures will li el impact timing of salmonid migrations in snow-fed streams Littell et al. 200 b, Mote et al. 2015 and increase future fire events shifting fire regimes increasingl to weather driven events Littell et al. 200 , Mote et al. 2015 .

Persistence li elihood of hundreds of late-successional species in the face of disturbances was addressed in the WFP via *redundancy and distribution of the reserve network* uncertaint exists, however, as to whether the reserves can indeed accommodate unprecedented climate-related shifts. This does not mean that the reserves are ineffective, just that the ma not be as effective as hoped, and increasing the number and si e of LSRs would ma e the networ more effective on BLM lands as well as throughout the WFP area.

nvironmental uncertaint caused b climate change also has implications for restoration objectives of the WFP. The WFP assumed that oung plantations can be restored to an older forest condition, but this ma be less certain as forest succession comes under increasing influence of novel climatic conditions and perhaps increasingl altered disturbance regimes Mote et al. 2015 . Thus, as forest conditions are altered b climate change this ma impact the communit of late-successional species based on changes to their climate envelope e.g., mesic species are expected to decline, Olson et al. 2012, pdf . One wa to reduce this uncertaint is to conserve more late-successional forest along north-facing slopes as potential micro-refugia and a hedge against further losses Olson et al. 2012 .

Climate change and livestock grazing summari ed from Beschta et al. 2014, pdf – Climate change affects public land ecos stems and services throughout the American West and these effects are projected to intensif with climate change Beschta et al. 2014 . ven if greenhouse gas emissions are reduced, adaptation strategies for public lands are needed to reduce anthropogenic stressors of terrestrial and a uatic ecos stems and to help native species and ecos stems survive in an altered environment. istorical and contemporar livestoc production—the most widespread and long-running commercial use of public lands—can alter vegetation, soils, h drolog , and wildlife species composition and abundances in wa s that exacerbate

the effects of climate change on these resources. xcess abundance of native ungulates e.g., deer or el and feral horses and burros add to these impacts. Ongoing and impending effects of ungulates in a changing climate re uire new management strategies for limiting their threats to the long-term suppl of ecos stem services on public lands. Removing or reducing livestoc across large areas of BLM land would alleviate a widel recogni ed and long-term stressor and ma e these lands less susceptible to the effects of climate change. Where livestoc use continues, or where significant densities of wild or feral ungulates occur, management should carefull document the ecological, social, and economic conse uences both costs and benefits to better ensure management that minimi es ungulate impacts to plant and animal communities, soils, and water resources. Reestablishing apex predators in large, contiguous areas of public land ma help mitigate an adverse ecological effects of wild ungulates.

Key Findings Related to BLM lands:

- Low-elevation forests, valle bottomlands, river corridors, and north-facing slopes ma provide climate refugia for climate-forced wildlife migrations in this region Olson et al. 2012 .
- Reducing stressors from land management activities such as logging, roads, gra ing, OR s, mining, and other activities in watersheds needs to be part of building resilience to climate change.

What We Recommend in the FEIS:

- xpand the F S discussion to full recogni e robust conservation strategies such as redundanc of reserves, connectivit for climate-force migrations, and inclusion of climate refugia in conservation and climate change planning Olson et al. 2012 .
- Map connectivit corridors, climate refugia, and include these areas in Wild and Scenic and Wilderness Stud Area proposals to build a climate robust conservation strateg .
- Minimi e land-use stressors, particularl forest fragmentation and livestoc gra ing see Beschta et al. 2014 , in order to avoid t pe conversions and provide for a resilient landscape and species.
- BLM needs to do a better job of reducing land-use stressors that accumulate in space and time and that ma trigger ecos stem t pe shifts Lindenma er et al. 2011 with conse uences to biodiversit Paine et al. 1 , pdf .
- We appreciate that BLM is reducing gra ing acres from 4 5,100 ac to 35 ,04 ac in the RMP alternatives. otabl , large areas of BLM lands, especiall Riparian Reserves and stream buffers, need to be off limits to gra ing and BLM should prioriti e these areas in cattle reductions.
- While lowering gra ing pressure rather than discontinuing use might be effective in some circumstances, public land managers need to rigorousl assess whether such use is compatible with the maintenance or recover of ecos stem attributes such as soils, watershed h drolog , and native plant and animal communities. n such cases, the contemporar status of at least some of the e attributes and their rates of change should be carefull monitored to ascertain whether continued use is consistent with ecological recover , particularl as the climate shifts Beschta et al. 2012 .
- A potentiall important tool for restoring ecos stems degraded b excessive ungulate herbivor is reintroduction or recoloni ation of apex predators. n areas of public land

that are sufficientl large and contain suitable habitat, allowing apex predators to become established at ecologicall effective densities Beschta et al. 2012 .

- Large-scale reductions or cessation of ecos stem stressors associated with ungulate use are crucial. Federal and state land management agencies should see and ma e wide use of opportunities to reduce significant ungulate impacts in order to facilitate ecos stem recover and improve resilienc Beschta et al. 2012 .

VI. SURVEY AND MANAGE, NORTHERN SPOTTED OWL, MARBLED MURRELET COMPLIANCE WITH BEST SCIENCE

As a supplement to the ndangered Species Act, one of the fine-filters of the NWFP is the "survey and manage" program, an unprecedented precautionary approach designed to protect known locations and collect new information to address persistence probabilities and management uncertainties for rare and poorl surve ed species outside the reserve networ Molina et al. 2006 . Some 400 late-successional species of amphibians, br oph tes, fungi, lichens, mollus s, vascular plants, arthropod functional groups, and one mammal, including man endemics that otherwise ma not persist outside the reserve networ , were included in the program and given limited usuall small site-specific buffers protections from logging if found.

The surve and manage standards and guidelines for management might not be needed if the coarse filter reserves and older forests were full functional and therefore capable of being resilient to short-term disturbance li e fires and longer-term climate and land-use changes. But that is not currentl the case. n sum, the surve and manage program resulted in significant gains in nowledge, reduced uncertaint about conservation, and developed useful new inventor methods for rare species Molina et al. 2006 .

We note that a thorough documentation of old forest species distributions and diversit man are undescribed is still needed. Some regions e.g., Klamath-Sis i ou ecoregion of southwest Oregon/northern California, DellaSala et al. 1 have exceptional concentrations of endemic species that remain poorl studied and vulnerable to climate change Olson et al. 2012 . We also now far too little to guarantee that habitat re uirements for numerous rare species can be ensured with present management policies and practices, especiall under a rapidl changing climate and with increasing emphasis on timber volume as illustrated in the BLM D S.

Key Finding Related to BLM lands:

- BLM lands provide essential habitat for over 400 rare species - the viability of "survey and manage" (i.e., rare species designated by the NWFP) depends on a functional reserve network in combination with protective "buffers" in areas open to logging DellaSala et al. in final review . The WFP was built on the concept of coarse and fine filter conservation biolog approaches. liminating an one of these approaches would damage the functionalit of the WFP and the survey and manage program needs to be integral to BLM's alternatives.

Spotted Owl Conservation Strategy–The northern spotted owl was b design the umbrella species for hundreds of late-successional species in the WFP area F MAT 1 3 . Thus, when developing the conservation strateg for the owl, Thomas et al. 1 0 drew on fundamental principles from population viabilit anal sis Bo ce 1 2 , island biogeograph MacArthur and Wilson 1 67 , and conservation biolog Murph and oon 1 2 oon and McKelve 1 6a, 1 6b that applied specificall to the owl and more generall to the communit of late-successional associates. Thus, the WFP is globall considered a model for conserving imperiled species over a broad region DellaSala and Williams 2006, pdf .

Spotted Owl Population Trends and the NWFP– ven with the reserve networ in place, spotted owl populations on federal lands have continued to show an alarming 3.8 annual rate of decline Davis et al. 2015 that has increased from the 2.8 annual decline reported previousl Davis et al. 2011 . Spotted owl populations are monitored across 11 large demographic support areas on federal n 8 and nonfederal n 3 lands. Based on the 2011 demograph stud area, four of these areas showed mar ed declines both the point estimator and 5 confidence intervals in mean annual rate of population change Forsman et al. 2011 . n 2015, the number of demograph areas with mar ed declines increased to six K. M. Dugger, pers. communication . Spotted owl declines were ostensibl due to interference competition with barred owls *Strix varia* Wiens et al. 2014, pdf , logging-related habitat losses mostl nonfederal lands , and the lac of a full functional reserve s stem SFWS 2011 .

otabl , recent reports of owl trends within the demographic stud areas indicate total detections and previousl banded owls were the lowest recorded Dugger et al. 2015, pdf . Spotted owl detections at historic territories remained unchanged from 2013-2014 at LSRs, whereas, a double-digit decrease in owl detections was noted in the Matrix that well exceeded the slight decrease in detections recorded for Wilderness areas. Anthon et al. 2006, pdf also reported that the decline in spotted owls was steepest on stud areas not managed under the WFP and therefore the downward trajector of owl populations might have been much worse without the WFP and BLM needs to include this in the F S.

Spotted Owl Habitat Trends–Older forests used b the owl and other late-successional species once were widel distributed and dominated much of the landscape throughout the Pacific orthwest, especiall in wet forests coastal where fire-return intervals occurred over centuries Wimberle et al. 2000, Strittholt et al. 2006, Davis et al. 2015, pdfs . Before the WFP, the annual rate of LSO loss on national forests was 1 in California and 1.5 in Oregon and Washington SFWS 2011 . Recent monitoring of older forests b federal agencies using multiple inventor methods indicates that, at the Plan-scale, there was a slight reduction in the amount hectares of federal older forests of 2.8 to 2. in 2012 compared to 1 3 levels based on a newl applied old-growth structure index O S , Table 3 . The O S is a continuous value of 0-100 used to delineate older forests based on four old-growth features: 1 large live tree densit 2 large snag densit 3 down wood cover and 4 tree si e diversit at the stand level Davis et al. 2015 .

Table 3. Total old forest area hectares x million for federal SFS, BLM combined vs. non-federal lands using three old-forest estimates: an old-growth structure index at 80- ears O S -80 old-growth structure index at 200 ears O S -200 and Late-Successional/Old rowth LSO Davis et al. 2015 . Percent differences between time periods were repeated from repeated from Davis et al. 2015 who used more significant figures in calculations not shown here and here and rounded to the nearest hundred thousand.

Time Period	Federal O S -80	Federal O S -200	Federal LSO	on-federal O S -80	on-federal O S -200	on-federal LSO
1 3	5.1	2.6	3.0	2.6	0.7	1.6
2012	4. -2.	2.5 -2.8	2.6 -2.0	2.3 -11.6	0.6 -18.1	1.3 -14.2

n general, on federal lands, wildfire accounted for 4.2 to 5.4 of the gross older forest losses compared to logging that accounted for 1.2 to 1.3 old forest reductions Davis et. al. 2015 . Such losses were within the anticipated WFP baseline of 5 over this period however, fire-related losses were >5 in some dr forest ecoprovinces 5.5 to 7.1 Washington astern Cascades Klamath Oregon and California Provinces 12.2 to 15.3 percent and 7.0 to 13.1 percent, respectivel Davis et al. 2015 . Thus, one of the WFP primar accomplishments was to drasticall slow old forest losses from logging over the WFP period with some notable exceptions. **On BLM lands in Oregon, the rate of old forest losses reflected by spotted owl habitat loss was > 2 times that of U.S. Forest Service lands over a ten-year period** Table 4 . This relativel higher rate of loss on BLM lands needs to be ac nowledged in the F S.

otabl , losses from wildfires vs. logging are not comparable as a fire in an older forest generates complex earl seral forest that ma continue to provide foraging habitat for owls and important habitat for earl seral associates while logging removes most of the structural elements important to forest succession and future LSO development.

Table 4. stimated spotted owl habitat losses due to logging on .S. Forest Service SFS vs. Bureau of Land Management BLM lands under different time periods. stimates obtained from SFWS 2007 data.

Federal Agenc	Pre-Owl Listing ha 1 81-1 0	Anticipated Rates ha 1 1 – 2000	Calculated Rates 1 4-2003
SFS WA, OR	25, 10	15, 51	4,187 0.21
SFS CA	A	1, 03	66 0.14
BLM OR	8, 07	,474	1, 88 0.52
Totals		27,328	6,844 0.24

ncreased spotted owl extinction rates from interference competition with barred owls have been observed in response to decreased amounts of old-forest habitat at the territor scale, and, conversel , higher spotted owl coloni ation rates have occurred when old-forest habitat was more

intact (Dugger et al. 2011). Wiens et al. (2014) also reported that the barred owl's competitive advantage over the spotted owl diminishes in territories with greater proportion of late-successional habitat in portions of the owls' range. Thus, greater conservation of large amounts of contiguous, old-forest habitat is justified in an attempt to maintain northern spotted owls in the landscape.

Spotted Owls and Fires– SFWS 2011 , and the BLM and Forest Service b inference, assume that fire is a leading cause of habitat loss to owls on federal lands, et few empirical studies have actuall investigated northern spotted owl response to fire absent post-fire logging in or around owl territories Clar et al. 2011, 2013, pdfs , that almost alwa s occurs post-fire DellaSala et al. 2013 . Spotted owls ma be resilient to forest fires provided low-moderate severit patches refugia are present within large fire complexes to provide nesting and roosting habitat. n the dr portions of the owls' range, where fire is common, owl fitness is associated with a mosaic of older forests nesting and roosting habitat and open vegetation patches foraging areas Fran lin et al. 2000, Dugger et al. 2005 . Such patch mosaics are produced b mixed-severit fires characteristic of the Klamath and eastern Cascade dr ecoprovinces anson et al. 200 , Odion et al. 2014a, pdfsA that ma have contributed to maintenance of owl habitat historicall Ba er 2014, pdf . owever, if fire increases in severit or homogeneit of burn patterns due to climate change e.g., Littell et al. 200 , Mote et al. 2015 and if LSO losses outpace recruitment rates over time, the beneficial habitat effects of fire to owls would diminish. Currentl , contrar to popular belief, a deficit in high-severit fire exists in most of the western orth America compared to historical levels, and recruitment of older forests currentl and for the next several decades appears to be outpacing fire losses see anson et al. 200 , Odion et al. 2014b, pdfs .

Federal managers have been emphasi ing widespread forest thinning with the intent to reduce fire severit perceived as a threat to owl habitat DellaSala et al. 2013, pdf . Forest thinning ma lead to cumulative losses in owl habitat that exceed those from fires. For example, using a state transition model that accounted for recruitment of owl habitat over time vs. presumed habitat losses from severe fires, Odion et al. 2014b concluded that thinning of suitable owl habitat at intensities 22 to 45 of dr forest provinces recommended b SFWS 2011 would reduce late-successional forest habitat 3 to 7 times more than loss attributed to high-severit fires. Projected thinning losses were consistent with empiricall based studies of habitat from thinning that reduced overstor canop below minimum thresholds of owl pre species as reviewed in DellaSala et al. 2013 . The tradeoff between fire ris reduction and owl habitat maintenance has seldom if ever been s stematicall evaluated b the federal agencies. Such simulation and empirical based studies on impacts of widespread thinning on spotted owls need to be included b the BLM in the RMP.

Key Findings Related to BLM lands:

- BLM lands and LSRs are essential to recover of the federall threatened northern spotted owl - BLM LSRs contain nearl 600,000 acres of owl habitat—which is 58 of the suitable owl habitat on BLM land in western Oregon. Collectivel , BLM LSRs contain 16 and 25 of the total owl critical habitat in western Oregon and the Coast Range, respectivel .

Murrelet Population Trends–This federall threatened coastal seabird, nests in older-aged forests usuall within 80- m of the coast from northern California to Alas a. The murrelet was listed as threatened in the Pacific orthwest due to habitat fragmentation from roads and clearcuts that expose murrelets to increased levels of nest predation SFWS 1 7, Luginbuhl et al. 2001, L nch et al. 200 . Murrelet distribution and population trends are determined b the amount of suitable nesting habitat within five coastal "conservation zones" from Washington to California (Falxa and Raphael 2015 . n general, as nesting habitat decreases so too do estimates of murrelet abundance, although abundance is also related to near-shore marine conditions e.g., fish-pre abundance . Over the WFP area, the trend estimate for the 2001 to 2013 period was slightl negative 1.2 confidence intervals overlapped with ero Falxa and Raphael 2015 . At the scale of conservation ones, there was strong evidence of a linear decline in two of the five conservation ones both in Washington State. Trends were downward but not significant in other WFP states declines in murrelets li el would have been worse without the WFP Raphael 2006, Falxa and Raphael 2015, pdf .

Murrelet Habitat Trends–About 1 million ha of potential suitable nesting habitat for murrelets remained on all lands within the range of the murrelet at the start of the WFP estimate based on satellite imager Falxa and Raphael 2015 . Of this, onl 186,000 ha was estimated as high suitabilit nesting habitat based on murrelet nest site locations. Over the WFP baseline 1 3-2012 , net loss of potential nesting habitat was 2 and 27 on federal and nonfederal lands, respectivel Falxa and Raphael 2015 . Losses on federal lands were mostl due to fire 66 and logging 16 on nonfederal lands logging 8 was the greatest habitat loss Falxa and Raphael 2015 . n sum, loss and degradation of murrelet habitat resulted from: 1 logging on private and State lands 2 federal/private land exchanges 3 logging and thinning in suitable habitat and in buffers to suitable habitat, including within LSRs 4 inade uate habitat protections on nonfederal lands and 5 a variet of natural and anthropogenic causes including fire, windthrow, disturbance, and development McShane et al. 2004 .

iven that the availabilit of higher-suitabilit nesting habitat is related to the carr ing capacit of murrelets, BLM forest management needs to focus on conserving and restoring remaining nesting habitat and minimi ing fragmentation especiall in the chec erboard O C lands. The conservation strateg for murrelets therefore should include protecting remaining large patches of older-aged forests with minimal edge, buffering nest sites from windthrow and predators, and maintaining habitat connectivit . Maintaining the s stem of LSRs on BLM lands continues to be critical to murrelet conservation as is balancing the short-term and long-term management of forests within LSRs Raphael 2006, Falxa and Raphael 2015 . For example, thinning that accelerates creation of forest conditions in forest plantations that eventuall become suitable to murrelet nesting can have short-term negative impacts, including increasing access of predators e.g., corvids to murrelet nest sites, blowdown and unraveling of suitable habitat, and changing the microclimate critical to temperature regulation and habitat availabilit McShane et al. 2004 . ncreased edge resulting from forest fragmentation can lower moss abundance needed for murrelet nesting Malt and Lan 2007, van Rooven et al. 2011 , and increase nest depredation

rates b corvids, especiall at the juxtaposition of large openings and forests and in areas with berr producing plants such as elderberr *Sambucus* sp. Masselin 2001, Mar luff et al. 2004, Mar luff and eatherlin 2006 . These factors underscore the need for BLM to maintain suitable buffer areas suggested minimum widths of 1 to 183 m SFWS 1 7 to minimi e fragmentation and edge effects, reduce windthrow and reduce predation ris within LSRs and adjacent to suitable murrelet habitat Raphael et al. 2015 . The watershed, juxtaposition of occupied murrelet habitat, and ownership should all be considered in thinning operations within LSRs or adjacent to older-aged forests.

Key Findings Related to BLM lands:

- BLM lands and LSRs are important to the recover of the federall threatened marbled murrelet - BLM lands contain 485,000 acres 32 of critical murrelet habitat, 83 of which is found within LSRs. Without the full networ of LSRs both SFS and BLM , it will li el be impossible to meet the goals of the recover plan for this species.

What We Request for the FEIS:

- ntil federal agencies protect all remaining late-successional habitat and the reserves are full functional, BLM should full compl with the surve and manage provisions of the WFP in all its alternatives.
- Provide protections for *all suitable spotted owl nesting and roosting habitat* and not just the high ualit habitat areas given owls will use mature forests and not just the oldest age classes Carroll and ohnson 2008, pdf .
- Recogni e the mixed-severit fires are not a threat to spotted owls in its southern range and manage for heterogeneit produced b these fires. Mixed-severit fires provide nesting and roosting habitat in low to moderate burn patches and foraging habitat in high-severit burn complexes DellaSala et al. 2015, pdf . This needs to be recogni ed b BLM as the spotted owl appendix is out-of-step with new fire science on owl habitat.
- Minimi e forest fragmentation and edge effects to marbled murrelets particularl in the fragmented chec erboard ownerships on O C lands. Fragmentation is a cumulative impact needing further anal sis b BLM due to the juxtaposition of O C lands with private lands and logging in both.

VII. OTHER ISSUES SPECIFIC TO THE DEIS THAT NEED TO BE ADDRESSED BY BLM IN THE FEIS

- Table 2-3 in the D S understates the level of logging intensit – retaining 5-15 of the forest in a cut bloc is not “moderate intensit ” – that would be a significant reduction from the 15 standards under the WFP and is more extreme than moderate. Further, retaining 15-30% of stand volume is likewise understated as “low intensity timber.” These are subject terms and there is no basis the BLM provides for uantif ing how these intensities relate to wildlife impacts, soils, h drolog , cumulative effects, fire ris s, etc.

This is especiall relevant to how BLM classifies harvest into subjective logging intensities within spotted owl habitat. Again, what BLM classifies as low intensit in owl habitat has no basis in an literature on intensit effects of logging to owls that we are aware of. ither show the data or drop these subjective classifications.

- Reducing Riparian Reserve buffer widths to 1 tree height p. 50 Chapter 2 is completel inade uate for maintaining diverse a uatic integrit functions – this needs to be discussed in relation to science showing that wider buffers than the ACS are needed in a changing climate with cumulative land use pressures see Frissell et al. 2014, pdf .
- Carbon estimates provided in Chapter 3 p. 134 treat carbon stored in forests and wood products e uivalentl . Carbon stored in wood products should not be included in BLM C estimates as these stores are not e uivalent in terms of climate or ecos stem benefits. et carbon flux needs to be factored into C stores because C stored in wood products is much less stable than that stored in an unlogged forest -- wood products onl temporaril store C. BLM needs to separate out C stores wood products vs. forests as combining them into one C store is inappropriate see numerous citations provided from armon, Law and others – pdfs .
- BLM's atmospheric CO2 levels (p. 137) need to be updated to account for the global level of 400 ppm that was crossed last ear see recent OAA estimates for CO2 levels .
- Citation regarding BLM estimates of C stores p. 137 did not include Kran ina et al. 2014, pdf that compares federal and nonfederal C stores and is regionall appropriate – wh was this literature not referenced
- BLM should use a more appropriate comparison of logging emissions to other industries and not the State of Oregon or the entire nation p. 140 This is mas ing the impacts of BLM logging relative to other comparable industrial CO2 sources. Thus, we re uest that ou compare CO2 e from logging to the list of the State's industrial polluters to have a fair comparison of how BLM logging compares to similarl scaled industries.
- Climate projections on p. 143 show increases in annual, spring and summertime precipitation projected b climate models et BLM discusses how the area is becoming drier – how can this be Please resolve this inconsistenc .
- "As with northern spotted owls, these findings indicate that even when sufficient high- ualit nesting habitat is available, climate events and climate change can influence murrelet populations b affecting the conditions important for pre species (p. 150)." Does BLM have data on how when *sufficient* habitat is present these species still decline ow can BLM conclude this when nearl all habitat 80 was eliminated on public lands prior to the WFP Strittholt et al. 2006, pdf – also see Table 1 above
- P. 153 ma es mention of climate velocit and refugia principles without citing locall specific wor on proposed refugia published in a peer reviewed journal Olson et al. 2012, pdf – wh wasn't this relevant study cited and analyzed in RMP alternatives
- P. 154 mentions interaction effects of climate change and disturbances but ma es no mention throughout the document about cumulative effects from land-use impacts and climate change. Land-use stressors need a more complete discussion to distinguish them from BLM's preoccupation with fire and insects as natural disturbances produce pulse events while land-use disturbances are t picall chronic Paine et al. 1 , pdf with different effects on ecos stems.

- The section on fire Chapter 3, p. 155 needs to include a comprehensive literature review including recent fire studies that show no increases in fire extent or severit in this region see anson et al. 200 , Odion et al. 2014a . The fire section is biased toward the viewpoint that fires are increasing and high severit needs to be suppressed and omits regionall relevant peer-reviewed studies to the contrar . There is no discussion of the importance of high severit for fire-dependent species see Swanson et al. 2011, DellaSala et al. 2014 . The section repeats the notion that the region is getting drier et the precipitation projections are e uivocal -- uncertaint needs to be part of the discussion in this section.
- P. 156 repeats unsubstantiated assertions that more fire means more homogeneit and that this is bad for biodiversit it cites onl 1 stud that is not even from the region – northern Cascades . This section needs to reference regionall specific studies on the importance of mixed-severit fire regimes Odion citations and their positive association with biodiversit as reflected throughout our comments. The fire science is poorl constructed b BLM and is not based on best available science, presents a biased view on fire, and no data are provided on presumed increases in severit or acres to bac numerous assertions and unsubstantiated models used to promote widespread thinning on BLM lands.
- Wildlife and Wildlife abitat p. 157 – this section lac s a comprehensive literature review and is missing citations relevant to the region. For instance, Olson et al. 2012 discuss regionall specific climate refugia yet this study wasn't cited. n addition, if fire is increasing as BLM presumes than how can earl seral species be at ris of climate change The main threat to earl species associates is from postfire logging numerous citations and pdfs provided that removes biological legacies and degrades complex early seral forests. This is not the same as "early seral" given clearcuts are no substitute for complex earl seral forests Swanson et al. 2011, DellaSala et al. 2014 and habitat ualit clearl differs between the two for numerous wildlife species. These relevant studies and the distinction between complex earl seral created b natural disturbances and impacted b logging and earl seral created b forestr and in abundance due to logging needs to be made clear in this section in order to represent the best science and regional studies thus far omitted from the RMP.
- The t pes of recommended actions for building resilience p. 158 are based on incomplete citations and a BLM inherent bias toward thinning. What evidence does BLM have that insect outbrea s can be suppressed b thinning Where are the data We have attached the Blac et al. 2013, pdf stud for our inclusion in a more complete literature review as this stud examined do ens of published papers across the West reporting that thinning does not suppress insect outbrea s and is not associated with increased forest resilience. This is one of several recent studies on the lac of a thinning response to outbrea s – why weren't these studies included
- The section on adapting to climate change top of p. 15 also represents a biased review of the literature on carbon with several studies reported from completel different regions e.g., Stephens is not regionall relevant . This section is incomplete, not based on best science, and does not even cite an of the relevant regional studies b Oregon State niversit researchers as provided herein e.g., Law, armon, Kran ina, Campbell and man others were omitted from BLM's discussion . Wh were these studies not included Again this section implies that management thinning will increase resistance and resilience to climate change et provides no evidence and lac s a discussion on how these management strategies can also increase stressors to ecos stems, particularl given the discussion above on mixed evergreen forests having different fire regimes and response mechanisms to fire than dr ponderosa pine forests that BLM inappropriatel cites. n doing so, the BLM is appl ing thinning treatments more appropriate for

dr p-pine forests that instead ma create novel ecos stems less resistant and resilient to climate change see DellaSala et al. 2013 . The uncertaint around thinning in terms of resistance and resilience needs discussion as BLM is otherwise carr ing forward pro-thinning biases from other sections in the D S that have little relevance to the region's fire regimes as discussed above .

- The discussion on large reserves at the bottom of p. 15 is incredibl biased and assumes that reserves are less resilient and resistant to climate change than managed areas even though BLM states uncertaint . What evidence does BLM have that reserves will be less resistant/resilient to climate change BLM needs to include the literature on compounded disturbances associated with management that can flip ecos stems to novel ecos stem states and create landscape traps with diminished biodiversit see Paine et al. 1 , Lindenma er et al. 2012, DellaSala et al. 2015, Figure 2 above, pdfs provided . The statement about large reserves b BLM needs to be deleted from the RMP as it's not based on best science and BLM has not produced a single study to back its assertion.
- The Landfire section Table 3-38 needs a discussion on model uncertaint and how empirical testing of Landfire in other regions has indicated there is a tendenc to over-predict severe fire and over-state thinning efficac see comments above . BLM should compare this with studies of the region that have included historical accounts as a baseline Whitloc 1 2, Colombardi and avin 2011, DiPaolo and osten 2015, Ba er 2014, pdfs rather than rel ing exclusivel on untested models. For instance, DiPaolo and osten 2015 indicate that forests in this region were highl variable in forest structure and included dense vegetation areas and low levels of open forests – the historical accounts li e this are necessar to help ground truth models and BLM needs a more complete literature review to bac its model assertions BLM also should consult with historical datasets that document similar high variabilit in forest stand densities such as those b Leiberg earl 1 00s cited in DellaSala and anson 2015, pdf .
- Fire exclusion in dr forests p. 175 – this section is incomplete and represents onl a portion of the relevant literature. There is no mention of regionall specific studies e.g., Odion et al. 2004, 2010 that have shown time since fire is not related to increased fire severit in this region as BLM assumes. n fact, as time since fire increases, forest canopies close, and overstor trees shade out understor fuels in this region – why weren't these studies included? The Hessburg et al. 2005 stud cited is not even from the region
- Current fire climate and future trends p. 176 – this section needs to discuss the influence of t pe conversion on fuel profiles and fire severit . For instance, Odion et al. 2004 report for the Klamath-Sis i ou ecoregion plantations burned in twice as much high-severit area compared to natural forests. The influence of plantation management on fuel structure and fire severit needs to be included in this discussion in order to present a more complete and regionall specific review of the pertinent literature.
- The discussion of presumed recent increases in fire extent/severit top of p. 176 is based on citation to an industry document (OFRI) and BLM's prior WOPR and to a broad scale analysis by Westerling et. al 2006 that did not show an increase in fire severit nor is it appropriate to this region This particular section reflects an inherent industr bias and lac s an of the relevant papers that show the contrar anson et al. 200 , Odion et al. 2014a,. pdfs . ndustr citations are not peer reviewed documents and neither is the BLM's prior WOPR – BLM needs to correct its inherent biases reflected b omission of regionall specific peer reviewed literature that runs contrary to BLM's assumptions about recent increases in fire extent or severity and at least get the literature right. **Other citations in this section are not even from the region (e.g., Martinson and Omni is for the Rockies, Prichard and Kennedy is for the N. Cascades,**

Stevens-Rumann et al. is for the Rodeo-Chedeski area, Kennedy and Johnson for the Wallow fire area!). As mentioned above, BLM needs to cite the regionall relevant studies even if the run contrary to BLM's assertions (Thompson and Spies 2007, Hanson et al. 2009, Odion et al. 2014a, pdfs .

- Classifying the region's forests into dry and moist (top of p. 178) has regionall specific biases as argued in the literature. For instance, DellaSala et al. 2013 indicate that mixed evergreen forests experience mixed-severit fire regimes that cannot be readil classified using binar classifications s stems dr /moist . There is classification uncertaint that was otherwise not accounted for in BLMs models that need to be discussed as using a simplistic binar classification will bias model outputs resulting in over emphasis on thinning that could result in t pe conversions DellaSala et al. 2013 . BLM at least needs to represent the disagreement in the literature between Franklin and Johnson's (2013) approach (ecoforestry) vs. criticisms by DellaSala et al. 2013 as regional uncertaint and lac of scientific agreement.
- Affected environment section bottom of p. 182 – this section states there is a slight overabundance of earl seral without contrasting earl seral produced b industrial forestr vs. that produced b natural disturbances. There are documented differences in habitat ualit between the two that need discussion see Swanson et al. 2011, DellaSala et al. 2014, pdfs . Additionall , wh does Figure 3-33 lac an acreage value for earl seral – is something missing
- Bottom of p. 184 – how can there possibl be a slight overabundance of late seral when BLM and industr have had a histor of clearcutting older forests see above Table 1, Figure 1 Did BLM compare this to historical estimates of older forests in this region Strittholt et al. 2006 in order to ground truth model assertions BLM's reference conditions need to be compared to back-casting and historical accounts of forests and other estimates provided herein in order to be regionall appropriate and not based on a non-validated model.
- Bottom of p. 186 onl mentions fire exclusion as resulting in departure from reference condition –BLM needs to discuss how timber management has increased departure from reference conditions as well (see Table 1 above). BLM's lack of discussion on timber impacts in this section is pu ling and not based on best science.
- BLM's deficit of late seral open is based on a non-validated model and ignores bac -casting studies conducted in the region see prior citations and pdfs provided . The model needs to be calibrated
- Table 3-41 is conjecture – what evidence does BLM have that earl seral with and without structure has comparable resistance to stand replacement fire BLM needs to include the relevant regionall specific stud Odion et al. 2004 that documented greater high severit acres in plantations and contrast complex earl seral with earl seral produced b forestr for this table to be based on best science.
- Bottom of p. 187 top of p 188 continues BLM's omission of regionally specific studies that run contrar to its views on efficac of fuel treatments Odion et al. 2004, 2014a, b . BLM needs to include the regionall specific studies and data and use caveats whenever citing studies from other regions with clearl different fire severities and forest t pes.

VIII. CONCLUSIONS

We understand that the BLM is caught between a roc and a hard place when it comes to the controvers over its responsibilit to the public, counties, and others regarding western Oregon

O C and public domain lands. nfortunatel , BLM continues to base its approach on a narrow interpretation of its O C statutor re uirements that have resulted in timber dominance biases and under-estimated impacts to fish and wildlife throughout the D S. We re uest that ou at least consider the case law review provided b Scott and Brown 2007 that runs contrar to our interpretations of the O C Act.

BLM lands are criticall important to the function of the WFP and BLM needs consider regional context and its uni ue holdings in what otherwise is a sea of industrial forestr clearcuts, Figure 1 . f BLM continues to pursue a path that departs from the WFP ACS, surve and manage it needs to discuss how its decreased protection responsibilities will affect the functionalit of the WFP, other landowners, including the Forest Service's responsibilities to pic up the slac , and how BLM's reductions in protections affect the assumptions upon which abitat Conservation Plans on nonfederal lands are based. Suffice to sa , if there are fewer protections on BLM lands that violates the intent of the WFP which was to assume conservation responsibilities so that private lands could continue to log – BLMs reduced WFP protections needs to be included in the F S cumulative impacts section in how it affects other landowners and their responsibilities to late-successional species.

eos nstitute provided 112 pdfs with the intent to draw attention to the numerous missing citations in the DEIS that have clouded BLM's judgement and presented a document that has some of the same problems that prior RMPs have had – lac of scientific rigor. n sum, rel ing on untested models without calibrating model reference conditions to historical range of variabilit e.g., the regionall published historical accounts cited herein , omitting regionall specific studies on fire regimes and rel ing on literature from outside the region has led to inaccurate interpretations of fire management options and the under-valued the role of natural disturbances in providing complex earl seral forests, the carbon models are not based on regionall specific studies and datasets from Oregon State niversit researchers and have included inappropriatel combining C stores in forests and wood products, and the supporting appendices are based on biased interpretations about fire impacts to owls compared to thinning and post-fire logging in owl habitat that is a much a bigger problem to owls than forest fires.

For these and the man reasons cited in our comments, we re uest that BLM submit its RMPs for peer review in order to compl with the Data ualit Act and OMB guidance on best available science. BLM also needs to bring its forest management up to the C threshold standards drafted b OMB, including assessing the social cost of carbon using appropriatel scaled comparisons of CO2 emissions i.e., scaled to comparable industr sources rather than the entire countr or state of Oregon .

n closing, we re uest that BLM withdraw its preferred alternative based on a biased interpretation of the O C Act see Scott and Brown 2007 and submit an alternative that is based first and foremost on the WFP as a floor for conservation rather than a ceiling to be lowered for timber dominance. We re uest that BLM include a more robust conservation alternative than an of those in the D S that includes the following criteria:

- Protect all remaining older carbon dense forests generall >80 rs and not just high ualit spotted owl habitat b expanding the reserves and prohibiting old forest matrix logging.
- Optimi e carbon stores b protecting high biomass forests see Kran ina et al. 2014 as a foundation for ecos stem services and biodiversit conservation see Brandt et al. 2014 .
- dentif potential climate refugia e.g., low elevation river corridors, north-facing slopes, elevational and latitudinal corridors and related high elevation land-bridges, see Olson et al. 2012 and include these in a climate-robust reserve design as AC Cs or other protective designations.
- Reinstate the WFP ACS including at least the current stream buffers , reinstate and expand the surve and manage program, including identification of complex earl seral associates to avoid post-fire logging impacts.
- Preclude post-fire logging in mature forests that have burned especiall in high severit fires that produce uni ue pulses of biological legacies and complex earl seral forests Swanson et al. 2011, DellaSala et al. 2014 .
- Consider an alternative that is based mainl on small diameter thinning see Kerr 2012 in fire-prone and degraded plantations using ecologicall appropriate restoration.
- Redo the fire, carbon, and other supporting appendices to include a more comprehensive, regionall specific, and less biased literature review particularl for fire, carbon, and a uatic ecos stems as addressed herein and address degrees of uncertaint in the various models used to predict fire, climate, and CO2 emissions e.g., use the PCC standards regarding degrees of confidence in predictions . otabl , BLM should compare its forestr emissions to the draft C emissions threshold levels and remain below these levels in all RMP alternatives to be in compliance with the White ouse interest in reducing climate change impacts.

Appendix 1. mpacts of post-fire management across regions where most studies have been conducted reprinted from DellaSala et al 2015b .

Location	Attribute	cos stem mpacts	Source
Broadl applicable	Process, structure, function	Altered and diminished stand structural complexit , ecos stem processes and functions, and populations of species and communit composition	Karr et al. 2004, Lindenma er and oss 2006, Burnett et al. 2012, DellaSala et al. 2014

Mostl western SA but broadl applicable	Chronic soil erosion	rosion is greatest when logging is associated with road building, conducted with ground-based log retrieval s stems, or underta en in areas with steep slopes and sensitive soils erosion occurs when logs are dragged across steep slopes, and damage to soil hori ons occurs from burning of slash piles	Mc ver and Starr 2000, Beschta et al. 2004, Karr et al. 2004
Mostl western SA but broadl applicable	A uatic and h drological processes	Substantial disturbance of h drological s stems especiall from chronic sediments from roads Removal of burned trees that provide shade ma hamper tree regeneration especiall on high-elevation or dr sites increased fre uenc and magnitude of erosive high flows and raising of sediment loads these changes	Karr et al. 2004

		alter the character of river channels, harming a uatic species construction and reconstruction of roads and landings accelerate runoff and chronic erosion harmful to a uatic s stems	
Western SA Western SA	Riparian areas Logging slash and fuels	nhibit riparian functions ncreased combustible fuels left on site	Reeves et al. 2006 Weatherspoon and S inner 1 5, Duncan 2002, Donato et al. 2006
Western SA	erbicides	sed to ill shrubs viewed as competitors of commerciall valuable trees, though such shrubs are important to nutrient c cling and m corrhi ae development often lac ing in industrial settings e.g., private lands , and data do not indicate that shrub cover precludes conifer regeneration herbicide spra ing strongl tends to increase invasive weeds	Beschta et al. 2004, Shatford et al. 2007, Mc innis et al. 2010

Pacific orthwest and northern California, SA	Threatened, ndangered, and Sensitive Species	Local extirpation of orthern Spotted Owl *Strix occidentialis caurina* territories Clar et al. 2013 , and California Spotted Owl territories *Strix occidentalis occidentalis*	Lee et al. 2012, Clar et al. 2013
West-central Alberta, Canada	Acorn predators	Alters the guild of acorn predators and ma reshape the pattern of seedling establishment	Puerta-Pinero et al. 2010
ictoria, Australia		After a 1 3 wildfire in ictoria, logging contributed to shortage of cavit trees for more than 40 vertebrate species, including some endangered ones.	Lindenma er et al. 2004
Mostl western SA uebec, Canada	Plant richness and biomass, understor vegetation	Reduced vegetation biomass, increased graminoid grass cover, overall reduced plant species richness and survival of planted seedlings relative to unlogged areas	Mc ver and Starr 2000, Donato et al. 2006, Titus and ouseholder 2007, Purdon et al. 200

		reduced understor abundance, richness and diversit	
Western SA, ictoria-Australia	Biological legacies	Removal of a great percentage of large dead wood structure significantl alters post-fire wildlife habitat partial removal less so	Lindema er et al. 2004, Beschta et al. 2004, Russell et al. 2006
ew ngland, SA	Resistance/resilience to disturbance	Post-disturbance logging and silvicultural attempts after hurricane and insect outbrea failed to improve resistance or resilience of forests and were degrading overall	Foster and Orwig 2006
Mostl western SA	xotic species	ncreases in invasions related to soil disturbance, livestoc , road pathwa s, greater human vector of spread site access, and herbicide spra ing	Mc ver and Starr 2000, Beschta et al. 2004, Karr et al. 2004, Mc innis et al. 2010
Mostl western SA but broadl applicable	cos stem restoration	Post-fire logging inconsistent with comprehensive restoration goals	Beschta et al. 2004, Donato et al. 2006, Swanson et al. 2011, DellaSala et al. 2014, anson 2014

Southwest Oregon, SA	Conifer seedlings	atural conifer regeneration two ears after the 2002 Biscuit fire, although variable, was abundant even in high-severit burn areas where conifer seedling densities >120 per ha exceeded regional standards for full stoc ed stands. Post-fire logging reduced median conifer regeneration densit b 71 , impacted conifer seedlings b damaging soils and b ph sical burial of seedlings b wood material due to logging significantl increased fine- and coarse-wood fuel loads	Donato et al. 2006
ictoria, Australia	Cavit nesting mammals and birds	Removal of hollows reduced the persistence of an arra of cavit - using species including the endangered arboreal marsupial, Leadbeater's possum	Lindenma er and Ough 2006

Western, SA		*Gymnobelidues leadbeateri* . Reduced multi-aged montane ash forests that t picall support the highest diversit of arboreal marsupials and forest birds. Reduction in abundance and nesting densit of cavit -nesting birds	Lindenma er and Ough 2006 Caton 1 6, itchcox 1 6, ejl et al. 1 5, Saab and Dudle 1 8, Smuc er et al. 2005, utto 2006, utto and allo 2006, Cahall and a es 200 some open-nesting birds increased , anson and orth 2008, utto 2008, Burnett et al. 2012
Canadian Roc ies, Alberta, Canada eastern Oregon	Apex predators and forest carnivores	Avoidance of logged areas in wolf–ungulate s stem post-fire logging, thinning, and conversion from fir to pine adversel impacts fishers	Bull et al. 2001, ebblewhite et al 2008

Mediterranean and Sierra evada conifer forests	Carbon storage	Reduced from removal of wood biomass	Powers et al. 2013, Serrano-Orti et al. 2013
Pacific orthwest SA	Burn severit	ncreased between successive fire events in logged areas	Thompson et al. 2007
ortheastern Alberta, Canada	B roph tes	egative effect on species richness and species composition	Bradbur 2006
orthwest uebec, Canada	Soil nutrients	Loss of Calcium, Magnesium, and Potassium for at least 110- ear timber rotation	Brais et al. 2000

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Jasmine Benjamin

From: m1allen@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Friday, August 21, 2015 12:15 PM
To: RMP-Comments@heg-inc.com
Subject: Fwd: Pacific Crest Trail Association comments re BLM-RMP
Attachments: BLM_RMP-PCTA_Comm.docx

---------- Forwarded message ----------
From: **Ian Nelson** <inelson@pcta.org>
Date: Thu, Aug 20, 2015 at 3:15 PM
Subject: Pacific Crest Trail Association comments re BLM-RMP
To: "blm_or_rmpwo_comments@blm.gov" <blm_or_rmpwo_comments@blm.gov>

Hello-

Please find comments from the Pacific Crest Trail Association attached. A hard copy letter will follow to the Portland, OR address.

Thank-you,

-Ian

Ian Nelson

Northern California/Southern Oregon

Regional Representative

Pacific Crest Trail Association

POB 458 Medford, OR 97501

(541)778-3252

The mission of the Pacific Crest Trail Association is to protect, preserve and promote the Pacific Crest National Scenic Trail as a world-class experience for hikers and equestrians, and for all the values provided by wild and scenic lands.

August 20, 2015

RMPs for Western Oregon
Bureau of Land Management
PO BO 2 65
Portland, OR 7208

Dear Planning Team,

The Pacific Crest Trail Association is the primar private partner in the management of the Pacific Crest ational Scenic Trail. PCTA is part of a long-standing memorandum of understanding and wor s closel with California State Par s, the ational Par Service, the nited States Forest Service, and the Bureau of Land Management. With a main office in Sacramento, CA and five regional offices along the length of the trail, PCTA wor s alongside agenc partners at the national, regional, and local levels to ensure the PCT is protected, preserved, and promoted as one of America's premier long-distance trails.

 am writing to ou toda in regards to the Draft Resource Management Plan/ nvironmental mpact Statement for Western Oregon. As a Regional Representative for the Pacific Crest Trail Association, wor closel with agenc staff in the da -to-da management of the Pacific Crest ational Scenic Trail in orthern California and Southern Oregon. have been wor ing with the BLM's Medford District office staff for the past 10 ears on BLM administered lands in Southern Oregon as the PCT passes through the Cascade-Sis i ou ational Monument and Soda Mountain Wilderness. earl 30 miles of the PCT, a unit of the BLM's National Landscape Conservation S stem, occur outside the Monument and Wilderness and are therefore directl affected b the outcomes of the RMP as are the lands in the anal sis area viewed from the PCT.

<u>Management Direction for a PCT Corridor</u>

Regarding the nine bullet points on page 405 that outline the management direction for the PCT within the corridor, we've addressed them point by point below and strongl support these management directions.

- We understand and appreciate that the designation of a special recreation management area is a crucial part of BLM management, especiall as it relates to a ational Scenic Trail.
- We appreciate that the PCT would fall under a visual resource management class in this area of developed recreation sites outside of the Monument and Wilderness.
- aving the trail closed to motori ed vehicles is of the utmost importance. owever, we as that the BLM also include a specific closure for *mechanized* transport such as mountain bi es.
- We appreciate that the corridor would be closed to recreational target shooting.
- While we are advocating for a mile wide management corridor for the trail that would capture the foreground viewshed, it seems reasonable to allow timber harvest onl to protect or maintain recreation setting characteristics within a mile of the trail.
- We strongl support the last four bullet points as the relate to mineral developments and exploration.

n addition, we as that the BLM consider the management directions outlined below that have not been addressed in the draft RMP.

- Authori e recreational special uses and commercial uses onl when the do not adversel affect PCT values and resources. Limit new recreation events such as foot races or horsebac endurance events and fund raising events to designated crossings onl . Outfitter/ uide permits for commercial uses will be minimi ed, but ma be considered if there is a strong educational or service component. On page 5-8 of the BLM Manual 6280, the BLM is directed to 'discourage competitive or commercial recreation along the National Trail')
- ew roads, permanent or temporar , should not be permitted within this management area unless re uired b law to provide access to private lands and documented as the onl prudent and feasible alternative. ew public roads should be permitted onl if the are the onl feasible and prudent alternative, and after impacts have been mitigated. Road crossings should be at right angles wherever possible.

PCT Corridor Width

There are nine pages 405-413) in chapter 3's affected environments section dedicated to the ational Trails S stem. While there is some language regarding trail corridor management page 405 that we feel is sufficient to protect a ational Scenic Trail, we have some concerns with the protections provided b the proposed corridor width page 413 identified in the preferred alternative B as it relates to the PCT.

One of the most important considerations in the management of a ational Scenic Trail is the width of the corridor outlining the trail's management area. We feel that the corridor width identified in Alternative B would be insufficient to protect the PCT and is inconsistent in regards to managing for a foreground corridor as defined b the isual Resource Management S stem. We re uest that the BLM consider Alternative C as it relates to the PCT corridor width. A one-mile wide trail management corridor would result in a mile on each side of the trail and therefore capture the foreground as well as maintain consistent management with adjoining land managing agencies. A one mile wide corridor would not preclude management activities within the PCT management area, but it would re uire special considerations when proposing projects within the corridor. n recent ears, we have wor ed closel with BLM staff to mitigate the visual impacts to the PCT of vegetation management projects on BLM lands in Southern Oregon. n addition, we have wor ed closel with our SFS partners to develop mitigating measures for vegetation management projects on ational Forest lands along the PCT. Please see Appendix A for some examples of mitigations utili ed during implementation of projects.

n addition, the national land ac uisition program for the BLM is using the foreground to identif the potential of lands for ac uisition to full protect the Pacific Crest ational Scenic Trail as it passes through the chec erboard land ownership pattern often associated with BLM managed lands. Therefore, BLM should be managing for foreground as the goal is for the agenc to own in fee and manage lands within the foreground of the PCT.

We are concerned with the viewshed anal sis that leads to decisions regarding the width of the PCT corridor and accompan ing special recreation management area. There is insufficient emphasis on the visual foreground area as viewed from the PCT in the anal sis although that is clearl the guidance given in the isual Resource Management s stem handboo . This is

compelling enough for the BLM and the SFS to use this distance one to determine which lands should be purchased to protect the PCT experience. ven when putting more emphasis on the foreground one in anal sis of percentage of lands managed b BLM, it should be noted that Congress has authori ed and continues to appropriate funding with the goal of all lands in the foreground one be owned b the federal government and managed b federal agencies, so that eventuall all land within that one are under the management of the BLM or S Forest Service in the area of anal sis. Lands managed b the S Forest Service should be considered in determining the current percentage of lands managed b an agenc with responsibilit for management of the PCT. There are sections of the trail in the anal sis area that are left out of the viewshed anal sis even though the federal government owns, and BLM manages rights of wa across these lands for the trail. These segments of trail should have been included in the visual anal sis as part of the viewing platform. n addition there are segments of trail on adjacent lands managed b BLM and the S Forest Service that view the lands in the anal sis area, but these segments of trail were also neglected as a viewing platform in the anal sis.

Therefore, we as that the BLM consider a second viewshed anal sis that captures the entire section of PCT outside the Monument and Wilderness on BLM managed lands as well the lands outside the anal sis area that view the anal sis area. While there are some sections of PCT on BLM managed easements on private lands, the BLM lands within the corridor are subject to BLM management. On page 4-5 of the BLM manual 6280 for management of national scenic trails, it directs the BLM to consider 'including other federal lands, state trust lands, and private lands.' That said, the viewshed analysis should also capture the PCT as it traverses USFS lands that are within a half-mile of BLM managed lands at the northern extent of PCT as illustrated on figure 3-133 of the draft RMP.

We at the PCTA are proud of our role in the management of the PCT and value our strong working relationship with the BLM's Medford District office. We loo forward to wor ing with the RMP planning team and local staff to ensure that the PCT is afforded the best protections possible. Lastl , we will be contacting the recreation team leads in Portland to re uest an in person meeting to discuss our suggestions and concerns.

Sincerel ,

an elson

Regional Representative

orthern California/Southern Oregon

Pacific Crest Trail Association

CC: Beth Bo st SFS , Mar Conle BLM , Deb Salt BLM , ohn erritsma BLM , Mi e Dawson PCTA

Appendix A- egetation Management within a Proposed PCT Corridor

An vegetation management projects within the PCT Management Area should contain design criteria to ensure compatibilit with resources, ualities, values, and associated settings and the primar use or uses, including addressing the characteristic landscape, mimic ing landscape-level patterns and features, and minimi ing potential impacts to the PCT and the PCT experience for hi ers and e uestrians.

Within the PCT management area, some examples of mitigating measures are as follows:

- Within the mmediate Foreground and Foreground, all projects will meet a visual resource management class .
- auling or s idding along the PCT tread or using the PCT for landings or temporar roads is prohibited. auling and s idding within the prescription area will be allowed onl if the environmental anal sis indicates that this is the onl feasible and prudent alternative and all due care has been ta en to mitigate the effects.
- Construction of temporar roads crossing the PCT is prohibited.
- uipment crossings of the trail will be limited to a minimum number of designated crossings. Designated crossings will intersect the trail tread at as close to a 0 degree angle as possible. When this occurs, the PCT tread will be restored to specifications.
- When heav machiner is used, such as a feller-buncher, e uipment will avoid turning within 150' of the PCT to reduce soil disturbance and visual impacts. A different color paint should be used for the cut tree mar ings within 150' from the PCT; this will make it clear to contractors implementing the project where the change occurs between cut tree and leave tree mar ings.
- Cut tree markings, as opposed to leave tree markings, will be utilized within 150' of the PCT.
- Maximum stump of height will be 6" or less within 150' of the PCT.
- Use of heavy equipment should be prohibited within 75' of the PCT.
- Burn piles should be located a minimum of 150' from the PCT.
- An project burning under burns or pile burning within the PCT corridor should occur within one ear of project implementation.
- Herbicide treatment should not be applied within 100' of the PCT.
- nterpretive signs ma be placed, as needed, at project areas or trailheads to educate PCT users to the project and associated impacts.

Jasmine Benjamin

From: m1allen@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Friday, August 21, 2015 12:43 PM
To: RMP-Comments@heg-inc.com
Subject: Fwd: Applegate Trails Association RMP Comments
Attachments: ART_20130615-b_with_Wellington.pdf; ART_20130917_with_Connectors.pdf; RMP Comments; ATA Aug 2015.docx; Applegate Community Public Lands Vision.docx

---------- Forwarded message ----------
From: <david@applegatetrails.org>
Date: Thu, Aug 20, 2015 at 8:38 PM
Subject: Applegate Trails Association RMP Comments
To: blm_or_rmpwo_comments@blm.gov
Cc: Joseph Vaile <joseph@kswild.org>, Zach Jarrett <zjarrett@blm.gov>, Zach Million <zmillion@blm.gov>, John Gerritsma <jgerrits@blm.gov>, Dayne Barron <d1barron@blm.gov>, Chad Davis <chad.davis@oregon.gov>, Joel Brumm <jbrumm@blm.gov>

Dear BLM,

Attached is the Applegate Trails Association's (ATA) comments for BLM's Draft Resource Management Plan. This document is signed by the 5 board members of ATA and 45 other citizens who wrote in support and asked to sign onto our comments. Now we can only hope BLM will read our comments, hear our message and act responsibly.

Thank you.

David Calahan
Applegate Trails Association
PO Box 105
Jacksonville, OR 97530
541-899-1226
www.applegatetrails.org

This email has been checked for viruses by Avast antivirus software.
www.avast.com

Applegate Ridge Trail

June 15, 2013
AMP

Cathedral Hills Trails

To Grants Pass

Board Shanty Rd

Murphy

Applegate River

Greens Creek

Savage Creek

Birdseye Creek

R. Fork Foots Creek

L. Fork Foots Creek

WEST ART

Caris Creek

Old Blue

Mt. Isabelle

Jacksonville Forest Park

Jacksonville

NORTH ART

Slagle Creek

Provolt

BillyMtn

N. Applegate Rd

Humbug Creek

Wellington Butte

CENTER ART

Forest Creek

Bunny Meadows

Jack-Ash Trail

Sterling Rd

EAST ART

Applegate

Highway 238

China Gulch

Bishop Creek

Ruch

WORKING DRAFT

Legend

- Applegate Ridge Trail (Approx)
- Private - Route Undetermined
- Wellington Wild Lands (Proposed)
- JackAsh Trail (Approx)
- BLM
- Private
- County Lands
- Roads
- Highways
- Streams

N W E S

0 0.5 1 2 Miles

Applegate Trails Association
P.O. Box 105, Jacksonville, OR 97530
www.applegatetrails.org

Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), and the GIS User Community

August 20, 2015
erome . Pere
State Director
Washington/Oregon
Bureau of Land Management
P.O. Box 2 65
Portland, Oregon 7208

ATT : Mar Brown

Submitted via mail: blm_or_rmpwo_comments@blm.gov

RE: Resource Management Plans for Western Oregon Draft Environmental Impact Statement

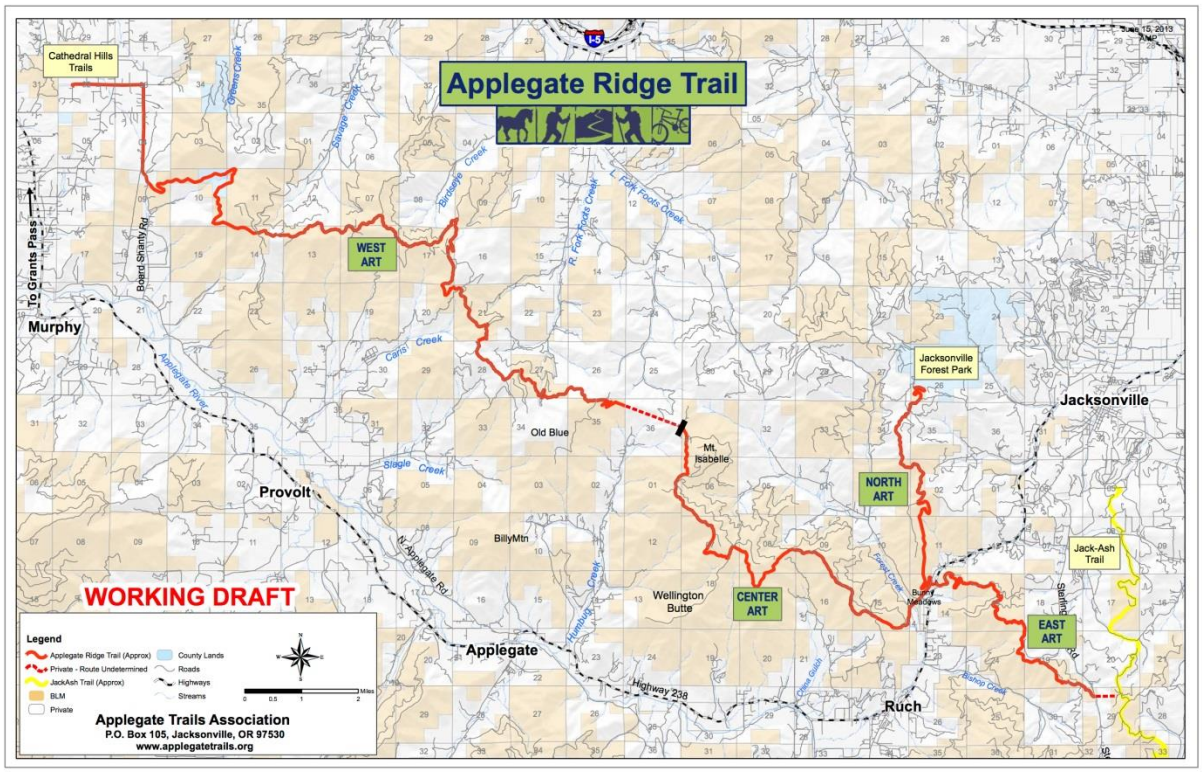
Dear Director Pere :

I, David Calahan, a retired firefighter and the chairman of the Applegate Trails Association (ATA), have lived in the Applegate Valley for 43 years, with the last 38 years in one beautiful location. Like so many places in the Applegate, it is surrounded by BLM lands. They are our watershed, view-shed, and recreation area. On behalf of my own relationship with BLM lands and of ATA, whose relationship is explained below, I offer these comments on the RMP for Western Oregon.

The Applegate Trails Association is a non-profit organization formed by community residents to develop a system of hiking, biking and equestrian trails in the mountains of the Applegate Valley. Our main focus and goal is to create the Applegate Ridge Trail (ART), from the Cathedral Hills trail system in Grants Pass to the Jacksonville Woodlands trails in Jacksonville. This trail would then connect with the proposed Jack-Ash Trail from Jacksonville to the Pacific Crest Trail near Ashland, giving hikers many miles of beautiful ridge-top walking and a potential to hike from Grants Pass to Ashland.

Most of the land the ART passes through belongs to BLM. For this reason and for our general interest in all non-motorized trails in the Applegate, ATA has a deep concern for the BLM's planning for management of Applegate's forested lands.

The map of the proposed ART below clearl depicts 4 sections or projected phases of the ART based on the terrain and t pe of trails. BLM chose to eliminate the Center ART and combine it with the West ART. ATA will follow BLM's lead in this document and not refer to the "Center" ART. The attached map also shows the orth ART, the proposed connection to the ac sonville Forest Par which was overloo ed in the draft RMP.



Below are ATA's key comments about the 2015 RMP. These comments apply to Southern Oregon and more specificall the Applegate alle . The wa the alternatives are proposed in the RMP ma e it difficult to pic an one favorite so these comments will highlight what ATA supports or rejects in this large document.

have divided our comments into four parts:

1. eneral comments applicable to the overall approach of the recreation section of the RMP.
2. Comments regarding Lands with Wilderness Characteristics LWC in the Applegate alle .
3. Specific comments regarding the RMP's proposed recommendations for the ART, other trails and trailheads in the Applegate alle .
4. Comments related to the forestr management component of the RMP.

FOOT OT S: Because ATA is wor ing on a trail s stem within the Rogue and Applegate alle s that will connect with the trails of the Sis i ou pland Trails Association S TA , we have coordinated with S TA on the broad polic recommendations regarding recreation and other issues in the RMP. n addition, each organi ation provides comments specific to its trails.

Before we begin our comments we would li e to ac nowledge the time and effort the BLM staff put into this RMP. To produce a 1500 page document as well as the supporting online

information was not an eas tas and it would be a miracle if no errors or issues were found. owever, because of the importance of these documents to set long-term management direction and polic for Western Oregon, we are submitting comments on an thing we found that might create a problem in the future. We cannot now whether something is a data input error or a planned management approach. So our apologies if some of our comments appear as unfair criticism. That is not our intent. Rather we are hoping to ma e sure management guidelines provide clear, fair, and productive approaches to managing our public lands. Finall , the bul of our specific recreation management comments, especiall in Parts 2 3 are related to the Medford BLM district.

Part One. General Comments applicable to the RMP's proposed management approach to recreation:

Recreation should be a top priority for BLM's management of public lands:

Recreation is of huge importance to Oregon's economy and BLM land in Western Oregon pla s a major role in providing recreational opportunities. Recreation provides extremel important ualit of life benefits to the public and is a sustainable source of jobs and economic growth for Oregon counties. This view guides our recommendations for the management of recreation.

A recent surve b Oregon Par s and Recreation reports that non-motori ed recreation in Oregon represents over 162 million activit da s per ear and contributes 2.1 billion represents over 162 million activit da s per ear and contributes 2.1 billion annuall to the state's economy.[1] This same surve indicates there are 2.6 million activit da s per ear of motori ed activit . Thus the ratio of non-motori ed activit to motori ed activit is 62:1. This is little doubt that non-motori ed recreation is of high value to Oregon's population and econom .

As federal, state and private studies indicate, the economic benefits from recreation far exceed the contribution from timber production to Oregon's employment picture. BLM's own RMP statistics point this out on page 567. et the draft RMP actuall reduces the lands managed for recreation relative to the 1 5 RMP. We do not see an significant indication in the draft RMP that the management focus on timber production is being adjusted to reflect today's economic realities about the most beneficial and sustainable use of these public lands.

We do feel that the RMP's proposed priorities for forestr management are the reverse of what the public wants and what sheer economics would dictate. The public clearl wants

[1] **Oregon Non-Motorized Trail Participation and Priorities,** Report in support of the 2015-2024 Oregon Trails Plan Conducted b Oregon State niversit for the Oregon Par s and Recreation Department , ul 2015, pg. 45

health , fire-resilient forests that are managed to protect a host of important ecological values and provide a rich arra of recreational opportunities appropriate to each area and the specific environmental conditions. A sustainable level of timber production would be the b -product of such an approach, instead of having the driving force be timber production with to en efforts to ma e it appear that it includes consideration of sustainabilit , recreation and other values the public desires.

In light of recreation's growing importance, we urge the BLM in its final Western Oregon RMP to place more emphasis on managing public lands for recreation, especiall b not reducing the acreage of Special Recreation Management Areas SRMA . The RMP calls for this reduction for most districts under all alternatives. The Medford District is one of the few districts where at least one of the alternatives D increases SRMA acreage. While we understand the management realities of not having all non-SRMA lands classified xtensive RMAs RMAs , it appears that the BLM is going in the opposite direction it needs to, b minimi ing or reducing the importance of recreation. We provide specific recommendations for The Medford District SRMAs and RMAs in Section 3.

1. All non-motorized trails and trailheads should be designated Special Recreation Management Areas (SRMA) with a 250' buffer: n light of the public interest in non-motori ed recreational opportunities, ATA encourages the BLM to designate all existing and proposed non-motori ed trails and trailheads as SMRA's in the final RMP. n the Medford BLM District this includes non-motori ed trails such as the proposed ART which consists of the ast, West *and* orth Applegate Ridge Trails and the associated connector trails. Other trails include the Sterling Mine Ditch Trail SMDT , the proposed ac -Ash Trail, the ac sonville Forest Par , the ac sonville Woodlands, the Pacific Crest Trail PCT , the Wellington Mine Trail, the nchanted Forest Trail and the others listed in the RMP. All trails and trailheads should have a meaningful corridor providing a buffer against activities that might degrade the ualit of the recreational experience, such as clearcutting, new roads or target shooting.

For all non-motori ed trails, ATA recommends a 250 foot buffer on each side of the trail that would be subject to specific management treatment including a forest management as detailed below. n addition, the t pe of timber harvest activities on lands adjacent to SRMAs should be carefull selected to minimi e adverse impacts on recreational values. A clear cut in plain view of a popular hi ing trail ma provide short-term economic gain to someone, but in Southern Oregon it would mean an 80-100 ear loss of value from a recreational amenit which compounded over that time period is of a much larger economic significance to the local econom than the value of the timber. f Oregon becomes nown as the state of clear-cuts, our recreation and tourism industries will be

severel adversel impacted. On the other hand, if the RMP advocates forest management policies that enhance forest health, build fire resilienc and re uire the use of sustainable timber harvest management practices both our forests and recreation will flourish and complement each other.

We support the half-mile buffer being proposed b and for the national PCT, to be managed with specific guidelines for various t pes of activities within that buffer.

2. **BLM should commit to completion of Travel Management Plans:** For over a decade we have been promised a Travel Management Plan TMP for the Medford District but none has materiali ed. The proposed RMP states these plans will be completed within five ears. n light of the failure to meet previous deadlines we suggest the final RMP contain a clear schedule showing the list of TMPs needed for each BLM district with their completion dates over the next five ears. TMPs for high priorit areas should be completed as soon as possible but preferabl no later than one ear after the ROD.

For example, for a wide variet of reasons we would highl recommend the ridge complex between Forest Cree and the main Applegate alle be completed within one ear of ROD or no later than December 2017, whichever is earlier. This ridge complex would include the West Applegate Ridge Trail 216 , the nchanted Well RMA 13 , the southern side of the Timber Mtn. Recreation Area 20 and northeast side of the Wellington Butte LWC. Travel management plans for high use recreation areas are particularl important in order to provide all users with certaint about the future of the trails the use.

3. **There should be an environmental review of all trails:** BLM's authorized process for gaining approval of a new trail, the nvironmental Assessment A , has been in place for decades. f BLM would li e to see recreational trails developed in a planned and sustainable fashion, it is important to enforce its re uirements for environmental review of all trails as well as to clear trail design and construction re uirements. This has not been the polic at least in the Medford BLM district, for the past several decades. Because of the BLM's focus on timber production, it is not surprising that little attention has been given to the public s use of these public lands for recreation. owever, times have changed.

As discussed above, recreation of all inds, but especiall non-motori ed recreation, is now more important to Oregon's econom than timber production. Therefore, trail s stems need to be carefull planned in order to minimi e future problems or costs while still meeting recreation needs.

The RMP cannot change whatever has happened with unauthori ed or user-created trails in the past, but BLM's new RMP policy should address how unauthorized trails will be dealt with in the future. There will be some catching up to do to ma e sure all trails meet PA re uirements and have been constructed sustainabl . Some trails will need to be closed, some re-routed. Some ma have their use changed and so forth. t is our strongl held view that pushing responsibilit for addressing this issue into the future is no longer an option. This is wh we insist that a definite schedule and funding commitment be made to completing TMPs for top priorit areas as soon as possible.

ATA strongly objects to "grandfathering" user-created O trails, especiall those created since the 1 5 RMP. Man O trails were once or are still hi ing or e uestrian trails. O users cover up the trac s of hi ers, pac animals, and bic cles effectivel obliterating old non-motori ed trails. ATA would li e to see trails with historic non-motori ed use be restored to non-motori ed status. f BLM recogni es all of the user-created O trails, then the must also recogni e non-motori ed user-created trails. f it had historic hi ing use or ATA has hi ed it, then fair treatment would dictate those trails be "grandfathered" as non-motori ed trails. As it stands, the Medford District BLM has labeled all trails as motori ed as the leave the biggest trac . BLM does not recogni e the previous or current non-motori ed use. ust because hi ing leaves less of a mar does not mean the trail does not exist.

Some trail groups such as ATA and S TA, have chosen to develop trails using BLM's full review process to ensure our trails create minimal environmental damage and meet trail standards. The RMP proposal to allow the unauthori ed user created trails to remain in use until a TMP is developed essentiall rewards illegal and resource damaging behavior. We recogni e that the unauthori ed trails are there and recreation users now have a sense of entitlement about continuing to use them. This is to a large degree because the Medford BLM has essentiall condoned this behavior b not ma ing an serious effort to curb illegal trail building, b not closing at least the trails causing significant resource damage and b not completing the TMP promised for over a decade in the Medford District.

owever, we are now in a new era with a new RMP being drafted and ATA strongl advocates a consistent management approach to all trails – motori ed or non-motori ed. Besides as ing for completion of the travel management plans as soon as possible we would ma e the following recommendations to address these issues while travel management plans are being developed.

a. The final RMP should re uire, retroactivel to April 2015 when the draft RMP was released , that an individuals or groups wishing to build a trail on BLM lands must go through the environmental review process and meet pertinent trail design and construction standards or ris fines for illegall creating new trails. nless there are repercussions to users for violating these policies, the review process and design standards will be meaningless. Therefore for motori ed and non-motori ed users ali e, the creation of an unauthori ed trails after April 2015 would mean closure of all trails for that user group in the affected RMA or if it is outside of an RMA – within the nearest RMA, until the TMP is completed. An illegall created trails should be decommissioned immediatel .

b. BLM should publish an inventor of existing unauthori ed user-created trails as soon as possible motori ed or non-motorized) as a record of what qualifies as "existing" based on what was on the ground on the date the draft RMP was published – April 2015. BLM mapped the O trails in the proposed Timber Mountain O Recreational Area as earl as 2002 and generall updated those maps as needed so this information ma be easil obtained.

c. We recommend that BLM, in consultation with both O riders and other recreation users, immediatel close an trails currentl causing significant degradation of resources such as those with serious erosion or gull creation and those crossing open meadows, wetlands or in other sensitive areas. Trails causing significant conflicts between motori ed and non-motori ed users should be assessed for the most appropriate usage and either relocated or closed permanentl during the relevant travel management period, whichever is more appropriate. These closures should be done within 3 months of the ROD and should be strictl enforced. BLM should obtain help from motori ed and non-motori ed user groups to police these closures. Similar to the recommendation in a. above, for motori ed and non-motori ed users ali e, the continued use of an trail closed temporaril due to resource damage or other problems until the TMP is completed would mean closure of all trails for that user group in the affected or nearest RMA. This will provide peer pressure to stop further illegal trail use or building. This polic needs to be well publici ed and enforced.

4. **Final RMP should designate areas outside of RMAs as Open for BLM designated trails and roads only. All unauthorized trails outside of the designated RMPs should be closed**. Assuming that TMPs first focus on high priorit RMAs, an areas without RMAs ma not see travel management plans for ears. To protect the BLM lands outside of RMAs from continued use of unauthori ed trails and to prevent an unauthori ed trail construction, we recommend the final RMP designate non-RMA areas as open onl on designated trails and roads. Roads in these areas would remain available to O use or non-motori ed users. An recreation user wishing to create a new trail in a non-RMA area or gain approval for an old unauthori ed trail would have to go through the full PA review process and meet relevant design re uirements.

5. **Final RMP should not require a plan amendment for future authorized trails:** We understand that an new trail proposed that is not part of this current RMP would trigger a time-consuming amendment to the RMP. We propose removing obstacles to the development of new, full authori ed trails b re uiring new trails proposed in non-RMA areas go through the full PA review process. This should not re uire a plan amendment to the final RMP. Otherwise, all unauthori ed trails on BLM lands not included in RMAs will be CLOS D to motori ed or non-motori ed users.

6. **The creation of sustainable trails makes economic sense**: ATA strongl supports the creation of sustainable trail s stems – both motori ed and non-motori ed. This means all trails should be subject to PA review to avoid an adverse resource impacts and should be sited, designed and constructed based upon trail standards that produce sustainable trails. Proper trail design will also minimi e user conflicts between motori ed and non-motori ed users. n an era of diminishing funding for recreation, ever effort should be made to ma e sure trails are designed with long-term management in mind. A poorl designed trail that has constant maintenance needs because it is on highl erodible soils, too steep or poorl drained will re uire higher investments of limited paid or volunteer time and re uire on-going financial resources. This will drain limited resources awa from other recreational needs. t is in the interests of the entire recreation communit to ma e sure trails are well designed so that more time can be spent enjo ing the trails than maintaining them. This is particularl true as communit involvement becomes increasingl important to maintaining trails. For this reason, ATA has deliberatel utili ed existing roads for part of the West and orth ART routes. t ma not be our first choice to hi e on a gravel road shared with all other users, but the trade-off is reduced trail maintenance needs.

7. **RMP management guidelines for target shooting need to be more specific:** We are thrilled that BLM has recogni ed the public safet ha ard caused b uncontrolled and unsafe target shooting on BLM lands, especiall around the trailheads and along the roads of the West ART. We strongl support the creation of no-shooting buffers at trail heads and along trail corridors. This protection should appl to both motori ed and non-motori ed trails. owever, this approach addresses onl part of the problem and does not provide specific guidance about how much of a buffer is sufficient when the firearms being discharged are capable of sending bullets thousands of feet and high-powered firearms can shoot rounds that travel more than 2.5 miles.

One of the man management responsibilities on federal lands is ensuring public safet . When an activit represents a ris of death or serious injur to others, causes severe resource damage, destro s the recreational amenities for the majorit of users and creates fire ris and safet ha ards for federal emplo ees, members of the public and adjacent private land owners, it is time to reach a solution. Before someone is seriousl injured or illed, the uncontrolled shooting and explosions at various de-facto shooting areas must be addressed.

ncontrolled target shooting creates significant safet ris s to all motori ed and non-motori ed recreational users, including people simply driving their cars along BLM's roads just for the pleasure. Due to the terrain and vegetation in Southern Oregon, it is often ver difficult to see or now from the sound where shooting is occurring. This means that a bic clist, motorc clist or e uestrian has no idea when the come around a blind corner of a road or trail if the will come face to face with someone shooting illegall across the road or trail, down the road or trail, at a BLM gate or trail sign or safel into a ban . When ou are in woods and hear people shooting immediatel above ou it is impossible to tell if ou are at ris or not. n addition, because of the uncontrolled practice of shooting out over open spaces, particularl from ridgetops and landings such as the uarr above Long ulch 38-3-8 on the northwest boundar of the Wellington Butte LWC , bullets can travel long distances and fall into trail corridors and onto the private properties along the can on bottoms. have even found a spent bullet in m barn gutter. M nearest neighbor is 6/10 mile awa and one can onl guess where it came from but the thought of a stra bullet stri ing one down in our own ard is sobering. had another unnerving experience while doing volunteer wor at the sabelle Trailhead when a target shooter pulled in, bac ed up a short spur road and within a minute proceeded to shoot two rounds bac towards the trailhead before hollered to stop him. He said he didn't see me and was uite apologetic. Apparentl ver few people shooting guns are aware there are miles of trails throughout this region as well as private residences nearb , so the ma thin the are shooting in a safe direction when in fact a trail or home on adjacent private land is within range.

The noise issue is also a serious problem as it significantl degrades the ualit of most recreational experiences to hear an guns being discharged nearb or Tannerite explosions. Another unfortunate result of BLM's uncontrolled polic for firearm use is the amount of resource damage and trash associated with these activities. Again, for other forms of recreation, it is not attractive to hi e, ride or bic cle b scattered T s, appliances, computers, cans, and glass that are shot up or see trees cut off b bullets or blown up b Tannerite explosions. At least during fire season, it is clear that both target shooting and Tannerite can cause fires as alread ampl demonstrated in the 2015 fire season.

n areas close to urban areas with high concentration of recreational use such as Forest Cree and Anderson Butte, the use of firearms needs to be seriousl controlled within an RMA, such as the Bell Forest, nchanted Well, Bald Wagon and Anderson Addition RMAs. ATA has four specific management recommendations related to target shooting:

> *7.1 Designate Safe Target Practice Areas:* We would li e to see the BLM create a special recreation management area s for target shooting completel off the ridgelines and awa from the areas where motori ed and non-motori ed trails are concentrated. This target shooting range should be sited where sound and bullets will not travel as far and adversel impact safet and enjo ment of both public and nearb private lands. One suggestion is for the Medford BLM to organi e a meeting in 2015 including

representatives from ac son Count recreation department, law enforcement officers, State recreation officials, S Forest Service, and representatives of motori ed and non-motori ed recreation interests as well as representatives from the target shooting communit . A group effort is needed to develop a wor able solution where excellent but safe target shooting opportunities can be provided for the region. These target shooting areas do not have to be on BLM land but clearl some solution needs to be found soon.

7.2 Close RMAs containing a concentration of trails or other recreational use to target shooting. While a meaningful si ed buffer of no shooting is a great idea, in the case of the West Applegate Ridge Trail RMA, b the time ou safel buffered ever motori ed and non-motori ed trail and trailhead, there would practicall be no area left where an one could safel shoot - underscoring the need to create target shooting ranges to provide an outlet for this form of recreation. nless an alternative is provided, attempting to create no shooting trail buffers or close the RMAs along the Forest Cree or Anderson Butte complex to all target shooting is li el to be unsuccessful.

7.3 Make a management commitment to significantly increase law enforcement efforts: n the Medford District, a ver small enforcement unit serves the entire district. The RMP should include a commitment to increasing law enforcement in the Medford District and, if needed, in other BLM districts. While it is sad that this matter has to even be raised in a resource management plan, law enforcement is unfortunatel becoming a very key part of BLM's resource management. Regardless of how this is accomplished a budget commitment for hiring either BLM enforcement officers or contracting for law enforcement is needed. f meaningful polic changes with regard to target shooting are to be successful, a clear commitment to provide aggressive and fre uent law enforcement presence in an area such as the Long ulch uarr and Anderson Butte will be absolutel necessar . This will re uire almost dail law enforcement presence for months or more in order to educate the public through fines and citations about the new rules protecting public safet . This polic change also would benefit from a targeted no pun intended public education campaign such as clearl posting target shooting closures and rules on all BLM roads leading to current unsafe target shooting areas.

7.4 Exploding targets such as Tannerite should be banned completely all year round on all Western Oregon BLM lands without exception: This destructive and disruptive form of recreation is creating resource damage, creating a serious noise impact on both federal and private lands and has caused significant fires in the Western S. ATA is a strong advocate for protecting our natural resources. There are some activities that should be prohibited and binar exploding targets is a clear example of one. While one can hope that the use of exploding targets becomes a passing fad, its passing could be helped along if BLM prohibited and enforced prohibition of its use. The Secretar of the nterior has alread used her authorit to ban the use of tracer bullets and exploding targets on

man Western lands during fire season. ATA urges that that ban be extended to ear round.

7.5 Proposed guidelines for hunters and designated non-motorized trails: rrors or inconsistencies exist on BLM data sheets about whether non-motori ed trails are closed or open to shooting. All non-motori ed trails should be closed to all fire-arm shooting with at least a 1,000 foot buffer on either side of the trail and around trailheads and should be open onl to licensed hunters during hunting season. unting rules should clearl re uire no shooting down trails or in an wa that creates public safet issues. While all trail users should be cautious during hunting season, we recommend that trailheads post signs for hunters prohibiting shooting along the trail itself. ATA expects to post hunting seasons at its trailheads and on its website.

8. The RMP should provide r**ecreational management guidelines for preventing trail damage during wet seasons**: The RMA plan for area trails assumes the soil conditions would be wet during the winter and suggests seasonal closures of the trails to prevent damage from e uestrians and bic clists. We strongl recommend that there not be a blan et seasonal closure during the winter for e uestrians and bic clists. As volunteers we are among the first to complain about an user damage to the trails we wor hard to maintain. The var ing weather conditions, at least in Southern Oregon ma e it difficult to sa with certaint that the trails are too wet all winter for e uestrian or bic cle use. t is not unusual to have extended dr periods mid-winter in our area. We recommend that signs be clearl posted at all trailheads and other strategic points along the trails informing users not to ride when we have had recent significant rain or snow. We would urge them to check BLM's, ATA's or SUTA's website during wet periods and before heading out to use the trail. t would also be useful to establish a penalt for causing tread damage - the cost of hiring a crew to repair the tread. n recent ears the winters have been so dr that all users have been able to use the trails with no concern about tread damage. f damage to the tread becomes a more serious problem then we would consider ma ing a broader prohibition on use during the rain season. For now we would recommend altering the language in the proposed RMP management framewor regarding seasonal trail closures for e uestrians and bic cles to read – " uestrians and bic cle use of trails in winter is subject to posted notices at trailheads and website notifications about tread conditions".

The majorit of serious resource damage caused b motori ed users occurs during periods when soils are wet. nfortunatel that is one of the favorite times for riding single trac motorc cles. ATA would recommend that all O motori ed use be subject to similar restrictions as discussed above with posted notices and website notices to not ride when soils are wet and soft and that penalties would be exacted to cover the cost of repairing the damage.

. **Incomplete information and errors make it difficult to submit useful comments about recreation:** n reviewing the recreation section of the RMP, the related trails and travel management section, related appendices and details provided on BLM's website (the interactive maps and each RMA's management framework) we noticed that key information needed to respond to proposed RMAs was missing and there were significant data errors in tables and inconsistent or conflicting management statements – all of which hamper and complicate the abilit of the public to provide useful comments.

.1 Ke nformation Missing: on-motori ed trails are clearl shown on the various interactive maps and their distances are provided although often incorrectl . For the motori ed trails, no similar maps of either designated or the "existing" - a a unauthori ed user created trails - are provided. Since the 1 5 RMP there has been a significant increase in illegal trail creation b O enthusiasts in the Medford District BLM. BLM published a map of the nown O trails in the Timber Mountain/ ohns Pea area as earl as about 2002. ow the public needs to see where all trails are, their length and other important details in order to provide useful comments about the proposed recreation management areas. Simpl providing the acreage associated with each O designation does not offer a useful picture of where and how extensive current O trails are throughout western Oregon. Without an idea of where all the existing unauthori ed trails are let alone designated trails, it is not possible to ma e meaningful comments or recommendations. n light of the multiple steps necessar to compl with BLM standards when pla ing b the rules in building a hi ing trail, man in the non-motori ed community are outraged by this "oversight". This information gap should be remedied as soon as possible and the information included in the final RMP.

.2 Data errors: While data errors are inevitable in documents of this length, the do create uncertaint about which set of information to react to or how to react. An example of a data error that might throw off a comparison between the no-action alternative and the four alternatives proposed is on pg. 636. Table 3-21 shows that under the 1 5 RMP ROD, the Medford district O designations have 13 ,878 acres of OP lands. n fact the ROD for the 1 5 RMP lists on pg. 11, that 3 1,400 acres are designated open for O use. The data for designated and existing O acreage is also incorrect for Medford District. This provides a false comparison of the no-action alternative and the proposed alternatives and raises uestions about where else similar data ma be in error.

On pg. 450 a statement is made that motori ed trail use is slightl greater than non-motori ed trail use in the southern portion of the region. While we reali e this was a self-reported participation surve , there is not even an O trail use categor included in the table. t is far more useful to compare the demand for non-motori ed recreation in each district n the Medford district, adding up all the non-motori ed demand shows that 60

of all recreation demand is for non-motori ed recreation versus motori ed recreation demand of 31 under this self-reporting surve . The statement under the table provides an incorrect view of recreational demand in Southern Oregon. f such statements help guide recreation management, the need to be corrected.

.3 There needs to be consistenc in management direction for each non-motori ed trail**:** While we cannot comment on other BLM districts, the information on the interactive recreation maps and the associated management framewor data sheets in the Medford District was inconsistent even for the same trail resource and has errors. Specific management guidelines are provided for each trail its trailheads and access trails often have individual RMA framewor data sheets. To simplif the final RMP we would recommend that each trail have one management framewor page. Developing individual framewor pages for each trailhead as well as for the trail appears to be unnecessar , since the same management framewor generall applies for the entire length of the trail, including the access trails. xceptions can be noted on the one framewor sheet. But if BLM continues to use different RMA/SRMA framewor sheets for multiple components of a single trail s stem, we recommend that the specific management guidelines for a given trail be consistent for all related framewor data sheets. The currentl var on man details. Since these documents are to guide a future travel management plan we strongl recommend that the be corrected. While we anticipate that the wide differences in the management guidance are probabl due to data input errors, we wanted to point this out lest the final RMP inadvertentl provide conflicting management guidance for different segments of the same trail.

Part Two: Expand the Wellington Butte LWC (Lands with Wilderness Characteristics). The LWCs in the Applegate Valley should be better protected and designated closed to all motorized use in the final RMP and future Travel Management Plans.

11. The RMP **should support and protect the four LWC's in the Applegate Valley: Wellington Butte, Dakubutede, Burton Ninemile and Round Mountain**: All of these LWCs should be closed entirel to O Off ighwa ehicle use and be protected from post fire logging. Since LWC status provides little protection to retain the integrit of these areas from over ealous managers, the should be given protection e uivalent to a Wilderness Stud Areas WSA . This level of protection would maintain an area's character until Congress can decide what to do with it.

11.1 The Wellington Butte LWC represents a uni ue ecological resource that should not be dissected b roads or motori ed trails. This area provides a e attribute to the

wilderness-li e experience found along the ART. ATA strongl supports designating the entire nchanted Well RMA 13 as closed to all motori ed use since most of this area is comprised of the Wellington LWC. The balance of nchanted Well lies between umbug Cree and Slagle Cree , is ver difficult to access, is ver steep and natural and does not have O trails. This O closure would especiall appl to the Wellington Butte LWC and the Wellington Mine Trail 215 . See attached map .

O s should be removed from the ridge-line on the northeast boundar of the Wellington Butte LWC. This gated road nown locall as the Sundown Trail runs along the top of a large mountain meadow in the LWC. vidence shows O intrusion is inevitable here unless BLM ta es positive steps to close this area. The trail allows OHV's to penetrate the LWC on a user created trail nown as the Little tal Trail b the O communit . This illegal trail is unsustainable must be closed to O use.

Long ulch, the jewel of the Wellington Butte LWC, has never been logged nor had a road put into it. t met the relevance and importance criteria re uirements and should be designated an AC C. Long ulch was nominated as an AC C and made all but the final cut in the WOPR. t had too much timber. This rare and pristine can on hides 323 acres of untouched low elevation old growth scattered up the can on bottom and monitored b resident spotted owls. We believe the 1063 acre Long ulch can on more than meets the criteria used for designating a resource as an AC C as defined on pg. 124. Protection is needed for the important values represented b this last remaining intact remnant of low elevation old growth forest. We recommend BLM review the process and determination den ing Long ulch the AC C status it deserves.

<u>11.2 The Wellington Butte LWC should be expanded to include the entire headwaters of China ulch:</u> BLM should add the connected bloc of approximatel 1400 acres of south facing, brush covered slopes located east of the Wellington Butte LWC to create the largest LWC in southern Oregon at around 7111 acres. This would much better reflect the true situation on the ground, as onl a gravel road behind a loc ed BLM gate separates two significant wild areas. ndeed, the nchanted Well RMA 13 reflects this extension of the Wellington Butte LWC perfectl . To obtain maximum si e the small part of the Bell Forest RMA 108 that lies south of the ridge that separated Forest Cree from the Applegate alle must be included in the LWC.

This addition to expand the Wellington Butte LWC would encompass the BLM lands between the BLM road 38-3-16, the land south of the ridge separating Forest Cree and the main Applegate alle and the private lands on the east side of China ulch Road. That would include parts of TS38S, R3WWM, sections 8, , 15, 16, 21 and 22. There is little timber in this bloc of wilderness, just brush and the user created O trails in and around the upland meadow of China ulch. This area has no roads and definitel has the

necessar characteristics to join the Wellington Butte LWC. t just got overloo ed. ow is the time to correct this deficienc .

11.3 China ulch needs an O closure, rehabilitation and protection China ulch is a relativel small south facing drainage, 3 miles long that starts just 1/2 mile west of Ruch. A recent Kic starter campaign generated b Lu e Ruediger for O monitoring in the Applegate got wide communit support and was ver successful. The campaign raised about 1000 more than re uested and we find the reports are extremel well done. Than s to the local citi ens and Lu e we now have the information and documentation of the damage done to our public lands b unchec ed O abuse. China ulch was identified in the BLM report as one of the areas heavil damaged b O s. Most of the headwaters of China ulch are inside the Wellington Butte LWC including all of the meadow which is seriousl damaged from user created trails. umerous unauthori ed, user-created trac s cross the headwaters meadow with deep, compacted ruts and hill climbs emanate from the meadow all the wa to the ridgeline where possible. See https://www.dropbox.com/sh/ ca6 3hns88e3e/AACBo -T40WSbTtSsa oic8Fa dl 0 O Monitoring Reports, page 23. ATA signed onto the petition being circulated re uesting BLM close the most egregious areas from further O abuse in the Medford BLM District.

11.4 China ulch and the Wellington LWC should remain intact The Medford BLM District sa s the next area the intend to visit for timber extraction in the Middle Applegate is in the Forest Cree , China ulch, umbug Cree , Bishop Cree and Slagle Cree areas. This would include the Wellington LWC and over half of the ART. We expect BLM to propose logging/thinning in the China ulch basin and on the north end of the Wellington LWC near Mt. sabelle. An form of logging in a LWC would diminish its future potential as a wilderness and should be prohibited. An attempt to cut timber from the Wellington Butte LWC would be a public relations nightmare for BLM. Our communit is ver strong when it comes to resisting poorl designed timber sales in inappropriate places. Over a decade ago, BLM failed three times to sell scattered patches of trees from the Wellington Butte area in the Ferris Bugman Timber Sale. Than s to the fierce communit resistance, the Wellington LWC exists toda - somewhat tarnished with fading blue rings on selected trees, still standing in this wild place.

Part Three: Comments Related to the Proposed Applegate Ridge Trail and other non-motorized trails and trailheads in the Applegate Valley.

12. **The following will clarify the ART and the associated connector/access trails and trailheads:** The proposed ART is primaril a ridge-top trail running from rants Pass to ac sonville and the proposed ac -Ash Trail. The s stem of trails ma ing up the ART consists of approximatel 40 miles of main trail and 30 miles of connector trails. The ast

and West Applegate Ridge Trails 128 216 and the orth ART no number ma e up the main trail. Trailheads are usuall proposed where another trail will intersect or at the three primar trail ends. Additionall there will also be trailheads at the lower end of each connector/access trail in the Applegate alle . one of the connector/access trails to the ART and onl three of the sixteen total proposed trailheads associated to the ART were shown in this document.

The map attached , shows the proposed connector trails to the ART the proposed connection across Sterling Cree Road between the ac -Ash Trail and the east end of the ast ART. Some of those connector trails, li e the Wellington Mine Trail and the nchanted Forest/Felton Trails, presentl exist. The BLM interactive map should show all of the ART including the connector trails in the final RMP.

The seven trailheads located on the lower end of connector/access trails to the ART are: China ulch two , umbug Cree , orth Applegate Road, Slagle Cree , Board Shant and reens Cree . Onl one connector trail goes north from the ART towards the Rogue River and that is at reens Cree in osephine Count . The other six all terminate in the Applegate alle .

Four of the identified trailheads along the main ART Bunn Meadows 117, China ulch 122, Long ulch and sabelle 158 alread have been improved with a Title grant procured b ATA and with volunteer help. ATA has the funds to complete the fifth trailhead east end of the ast ART when permitted b BLM. The four remaining trailheads along the ART that are et to be formall developed are located at the north end of the orth ART, the west end of the ART at Cathedral ills, the west end of the ast ART at w 238 and at Board Shant Road.

The West ART 216 is listed as “limited to existing” for OHV use. Since BLM has not addressed the proposed ART and the existing O use along this route, this travel management decision is uite worrisome. Parts of the West ART cannot follow the ridgeline due to the steepness of the terrain and therefore new trail construction is proposed, for example inside the Wellington Butte LWC. But other parts of the ART follow existing trails which sometimes are in conflict with O users. nder no circumstances should O s be allowed to dominate the ridge in uestion. There are lots of miles of other trails available to O s in the immediate area which the can get to easil . on-motori ed trail users cannot traverse the steep hillsides with such ease. i ers have an e ual right to have a ualit experience on that ridge as a man on a motorc cle.

The SRMA s 121 Chic en Foot, 122 China ulch, 158 sabella, and 164 Kane Cree , are all trailheads lumped together under Timber Mtn. Rec. Sites that combine motori ed and

non-motori ed users are not ideal but it can wor . China ulch, Bunn Meadows and sabella are part of the ART and those trailheads were recentl improved with grading, boulders, ios s and picnic tables provided b a Title grant obtained b the ATA. But there is another trailhead on the ART between sabella and China ulch that was overloo ed and is missing from this document. The Long ulch trailhead also had the same improvements in une 2014 and is the launching point for the Wellington Mine Trail RMA 215 also known locally as the "Heart Trail". On National Trails Da 2014, ATA had a celebration-dedication and led a hi e from this location.

The trailhead at Bunny Meadows (SMRA #117) lists its purpose as "access for motori ed trails". This trailhead is also used for non-motori ed recreation. t is a launching point for hi ers of the ART and the primar intersection of the ast ART, the West ART and the orth ART. n addition, about a ear ago ATA placed a ios and two picnic tables at this location.

13. **The RMP needs to use consistent Class II Visual Resources Management Classification**: We recommend that the ART and its connector trails be classified and managed as isual Resources Class . The entire ast ART is an unusuall scenic section passing through high mountain meadows offering incredible views of the Bishop Cree watershed, the main Applegate alle and the distant, sometimes snow covered Sis i ou Mountains and the Red Buttes Wilderness. Setting the RM at Class seems completel inappropriate considering the tremendous scenic beaut along this part of the ART. Additionall , approximatel six miles of the West ART either abuts the Wellington Butte LWC or is proposed to be constructed inside the LWC which is a Class visual resource. As the LWC is much of the view shed from this large section of the ART, it further supports the Class designation. We would recommend that the entire ast ART and the eastern half of the West ART from the nchanted Forest Trail be classified as a isual Resource Management Class . The visual view sheds along these trails are one of their greatest assets.

14. **Wellington Mine Trail (SRMA #215);** should be designated as non-motori ed in all the alternatives. This old 2.5 mile long naturall decommissioning miners road cuts right through the middle of the Wellington Butte LWC and is appropriate for non-motori ed activities onl . The encroaching brush and ban detrition ma es this rutted road nearl unusable if not for the efforts of some to eep it open. Additionall the interactive map does not portra this road accuratel as the route depicted includes the proposed non-motori ed connecter trail to the ART from umbug Cree . Presentl the connector trail does not exist although ATA has explored the route.

15. **Recreation management framework data sheet contains errors regarding trails and travel management guidance:** The framewor sheets have conflicting information about whether the ART – a strictl non-motori ed trail – is designated as closed to O s. While we assume this is simpl a data entr error, for the record, all of the ART and all the associated

connector/access trails not on BLM roads should be designated as "closed" to OHV use without exception.

For the sa e of clarit and to avoid future problems we recommend that ALL information in the SRMAs related to the ART and the associated access trails provide consistent information regarding Trails and Travel Management nformation. This also applies to an future additions to this s stem over the ears. The correct trails and travel management planning guidance should sa :

- Open to hi ing
- Open to e uestrians
- Open to bi ing
- Designate trail area CLOS D for O use

16. ATA **supports all non-motorized recreation opportunities:** We recommend these areas be designated SRMAs Special Recreation Management Areas . The following is a partial list of trails or sites mostl described as RMA xtensive Recreation Management Areas :

101 Anderson Little-Apple
120 Cathedral ills Trail S stem
128 ast Applegate Ridge Trail
137 nchanted Forest Felton Trail
146 ra bac Mtn. Trail
153 idden Cree Trail
15 ac -Ash connector trails
160 ac son Cree
162 ac sonville Woodlands Trail
172 La ton Ditch Trail
182 Mountain of the Rogue
188 Provolt Seed Orchard,
203 Sterling Mine Ditch Trail
215 Wellington Mine Trail
216 West Applegate Ridge Trail
connector trails

224 Woodrat Mtn. liding Sites
103 Armstrong ulch Trailhead T
107 Bear ulch T
117 Bunn Meadows
121 Chic en Foot T
122 China ulch T ,
126 Deming ulch uestrian T
127 Deming ulch T
138 nchanted Forest T
147 ra bac Mtn. T
154 idden Cree T
158 sabella T
161 ac sonville Woodlands T
173 La ton Ditch T
175 Little Applegate T
222 Wolf ap T .

- RMA 105 Bald Wagon – 3124 acres this area ma es up a large part of the proposed Timber Mountain/ ohns Pea O Recreation Area. Most of this area is alread severel damaged b man miles of user created O trails, some approved b BLM and some not. But on the far-east side, between the ridge and w 238 and awa from the O s, ATA proposes to build the orth ART. The final draft RMP should recogni e and show the orth ART as a SRMA.
- The nchanted Well 13 RMA should include all of 37S, R3, section 31 as it includes parts of three gated roads that are currentl used for both motori ed and non-motori ed recreation. The view from sabelle Pea is well worth the hi e. The road 38-

3-5 to the uarr is ver peaceful as it gets little use and offers great views of Medford and the Rogue alle . The sabelle Spring Trail southwest corner of section 31 , should be designated non-motori ed as it is a part of the ART. This trail is narrow and steep and it would be ha ardous to meet a motorc cle here. Road 38-3-6 and the sabelle Spring Trail ma e a big loop around the mountain. All these trails should be SRMA's.

- We note the interactive map for the nchanted Well 13 and the Bell Forest 108 RMAs appear to follow the proposed route of the ART where it will be necessar for the new trail to penetrate the Wellington Butte LWC. The boundar should be on the ridge-line. This mapping error should be corrected.
- RMA 208 Thompson Cantrall – 23,317 acres stated purpose is for multiple use with "O s-dual sport (on improved road)". This area includes the Burton inemile LWC which should be closed to O s. ATA proposes the closed and partiall decommissioned roads 3 -4-23 and 3 -4-10 in the Lad bug can on be designated a non-motori ed trail. The Burton inemile area is ver steep and has not seen the usual influx of O s. ATA feels it is inappropriate to encourage off road O intrusion therefore this area should closed to O use except on designated BLM roads.
- RMA 20 Timber Mountain – 10,160 acres stated purpose is for "mountain biking, hiking, equestrian and camping" and "closed to OHVs" yet this is a large part of the area nown as the Timber Mtn./ ohns Pea O Recreation Area. This area is alread hammered b man miles of user created O trails, some approved b BLM and some not. enerall onl motori ed vehicles will tread here except for the part of the ART on the ridge that separates Forest Cree and the Applegate alle . The proposed orth ART when completed will offer some additional non-motori ed recreation in this area although the northern end is a shared BLM road with O traffic which ma es it somewhat less desirable for hi ers or e uestrian use. The final RMP should reflect the onsite realit and correct this data.
- RMA 223 Woodrat – 3876 acres due to the steep terrain this is not a ver usable O area and as such has seen ver limited use but the data sheet has that troubling statement "limited to designated for OHV. There are no designated trails in this area. It would be better stated to be "limited to existing BLM roads".
- SRMA 188 ATA recommends the Provolt Seed Orchard as an excellent place for man forms of non-motori ed recreation. This location is especiall important because public river access is extremel limited on the Applegate River. Currentl this land is fenced and unavailable for public use. With 2 5 acres, there is a great opportunit to include a non-motori ed loop trail on this land. Other forms of recreation include hi ing, running, swimming, fishing, a a ing, rafting, bird watching, bic cling, camping, picnic ing and more.

17. **ATA recommends forest management policies relating to trails:** ATA recommends a consistent set of forest management guidelines be used for all the non-motori ed trails in the Applegate alle . Our recommended forest management practices within trail RMAs are:

- Closed to firewood cutting.
- Allow fuel treatments or other vegetation modifications if the are compatible with meeting recreation objectives, do not interfere with recreation opportunities, and maintain setting characteristics.

- stablish a no harvest buffer of 250 feet on each side off of centerline for all linear trails.
- otif and consult with communit recreation partners ATA and others on the above fuel treatments or vegetation modifications decisions.

Timber harvesting as proposed under this plan - especiall clear cutting - will not onl adversel impact the ualit of the recreational experience but also cause damage to the trail. SUTA's experience on one section of the SMDT in anuar 2015 during the recent Sterling Sweeper Sale timber harvest demonstrates the need to prohibit timber harvest within the buffer. The 75 foot buffer supposedl in place for the Sterling Sweeper timber sale was inade uate and was not enforced. n light of the economic contribution from non-motori ed recreation, the small amount of timber production that might be lost due to providing a no harvest buffer along trails is well justified to maintain the amenities along the trail. n the case of the SMDT, the ac -Ash trail and the ART in particular, few timber harvest opportunities would be lost considering the site conditions along much of these trails. Since the ART runs along the northern side of the valle , the trails fre uentl run on the south side of the slopes through oa woodlands and scrub, along ridgelines or roads. Some areas have had brush fuel treatments completed or have other characteristics that minimi e conflict with timber harvesting potential. The ast ART passes through ver little timber and the West ART is mostl on south facing brush covered slopes or in the Wellington Butte LWC.

18. **ATA recommends RMA management framework for mining activities:** The proposed ART, the proposed ac -Ash Trail, the SMDT and all the associated connector trails should be closed for all mining activit . n light of the fact that the Sterling Mine Ditch Trail is an especiall important cultural resource, no mining activities at or immediatel near this historic trail should be allowed under an circumstances.

1 . **Suggested changes to RMA framework data sheets - Trail Visitor Activities:** For the ART, the Sterling Mine Ditch and the proposed ac -Ash trails we did not see the explanation for wh non-motori ed trail visitor activities varied even within one trail but for the record, ATA would li e the following trail visitor activities identified for all segments of these trails in case this has a bearing on future Travel Management plans.

- i ing
- uestrian
- Mountain bi ing
- nvironmental ducation
- istorical education
- Birdwatching
- Botanical viewing
- Wildlife viewing
- Da se
- Cross Countr S iing/snowshoeing
- Picnic ing

- Overnight camping

20. **There needs to be management provisions for future trail additions**: The final RMP should contain language that reflects the need to allow for the addition of new access trails or loop trails that improve and expand the amenities offered b existing trails such as the proposed ART, SMDT and the proposed ac -Ash. As with all new trails the would be subject to PA review and BLM trail design and construction re uirements. n the interest of gaining the biggest benefit from future investments in recreational trails, adding features or new segments to existing trails that create more loops and options for users would be useful to list as a desired management approach. ATA recommends that an new trails or trail amenities proposed to BLM that will enhance an existing trail s stem not trigger an amendment to the RMP. There ma be instances where these trails are outside an existing RMA but because the will be subject to full PA review, proposals enhancing existing trail s stems should be encouraged, not discouraged b re uiring a RMP amendment for an thing new. The review process should be sufficient to ensure the trail is in eeping with overall RMP recreation policies.

21. **RMP needs to allow for flexibility in the final route for proposed trails:** The ART is being developed in three or four phases depending on how BLM wants to handle it. The trail route for Phase 1 is nearl final, since the A is currentl being written. Because this trail is still proposed the final RMP needs to show and label the proposed trail corridor on maps as "proposed subject to change in final approval" in case the route changes significantl . We are concerned that if the trail corridor is changed significantl to accommodate some need such as resource surve s or other users or private land owners, the RMP should provide sufficient flexibilit to allow such change without amending the final RMP.

22. **The North ART should be added the final RMP:** The orth ART, which was overloo ed in this document, is an important connection as it connects the ART at the Bunn Meadows T Map 117 to the ac sonville Forest Par ac son Cree , Map 160 . The Medford District BLM received the map detailing the entire ART which clearl shows the orth ART, on anuar 20, 2012 and has referred to this map during multiple meetings with the ATA.

The ac sonville Forest Par has over 18 miles of non-motori ed trails. Therefore it is important the ART and this extensive trail s stem ma e a connection. Avoiding the O trails, the orth ART will re uire approximatel 1.5 mile of new trail construction from the Bunn Meadows T north to connect to the existing BLM road 38-3-26.1. The trail will follow this road north approximatel 2 miles to the proposed trailhead located on 40 acres of BLM land in the southwest corner of TS37S, R3WWM, Section 26, immediatel adjacent to the ac sonville Forest Par trail s stem. ATA strongl recommends the inclusion of this non-motori ed

connector trail in the final RMP. t is a large part of the basic framewor for which this trail s stem was envisioned and designed.

23. **The RMP needs to allow overnight camping as a future possibility for backpacking along the proposed ART, the proposed Jack-Ash Trail, the SMDT and all the associated connector trails:** As these trail s stems connect and expand, bac pac ers will want to camp overnight at some of the beautiful places along these routes. This ind of recreational experience should be permissible and these trails would be available generall ear around.

24. **The final RMA should designate the ART and the associated connector trails a Special Recreation Management area (SRMA) for the entire length (East ART, #128 & West ART, #216 & the North ART):** ATA recommends the RMA management framewor for the entire ART provide the same basic management guidelines discussed previousl in this document regarding permitted uses, trail and travel management, shooting and forest management. We expect the ART will have extensive use based on the explosion of user demand in Southern Oregon. t should be subject to the management guidelines and protections provided to SRMAs.

25. **The Enchanted Timber ERMA (#136) should be reclassified to SRMA:** The high intensit of recreation interest on the along and below the ridge complexes justifies designating this area as a SRMA. Both motori ed and non-motori ed trails crisscross this entire area, people hike extensively all over these ridges, the roads are popular for scenic drives, it's a popular hunting area and much more. We strongl recommend changing the designation to SRMA. owever, as noted elsewhere, the nchanted Well RMA 13 should indicate that the portion covering the Wellington Butte LWC is restricted to non-motori ed recreation onl .

Part Four: Forest Management Recommendations

ATA supports forest management practices that promote forest health, fire resilienc through small diameter fuels reduction and other sustainable forest practices appropriate to a specific region provided it protects and enhances all components of a local ecos stem. We are glad to see the RMP reflects the differences in timber production capabilities of wetter parts of Oregon compared to Southern Oregon's dry forests. However, we are strongly opposed to the significant increases in timber extraction under all the alternatives proposed for Western Oregon and feel those levels are unsustainable. We are also opposed to the reduction in the si e of the riparian areas.

 t is extremel unfortunate that federal payments to Oregon's O C counties are lin ed to the level of logging of our forests. This situation has created a sense of entitlement and dependence on short-term economic pa ments regardless of the long-term costs to those same counties. The economy of Oregon's counties has diversified in recent years as amply shown in recent Oregon's Department of conomics studies. mplo ment and revenues from timber now pla a minor role

compared to other sources of economic growth such as recreation, tourism and healthcare. A 2012 stud b BLM cites 223,000,000 of economic benefit from recreation from O C lands in western Oregon while timber contributed 23,000,000 during the same period. While changing the O C Act is clearl not part of the RMP, BLM can bring its forest management policies up to date to reflect the current needs of Western Oregon and set an example of how forests could be managed to provide multiple values to a local econom .

We strongly recommend the BLM eliminate all consideration of clearcutting in Oregon's forests. The findings of scientific research on the adverse environmental impacts of clearcutting or pseudo clearcutting with few green trees retained ma e it surprising that BLM would even consider this approach again. At least for southern Oregon, our steep slopes, low rainfall relative to other parts of Oregon and the tremendous ecological diversit found in this region raise serious uestions about wh BLM would even propose clearcutting. Such a proposal would elicit a strong reaction from a communit that has long expressed an aversion to clearcutting and other destructive timber practices. We see no new research indicating that clearcutting does not increase the ris of soil erosion on steep slopes, cause wildlife habitat loss for a large number of species and degrade water ualit . As a recreation organi ation, we can sa with certaint that clear-cuts will not enhance an of the forms of the non-motori ed recreation we represent. From the perspective of recreation, it will ta e decades before a clear-cut is once again a forest that might provide some attraction for recreation either directl or as a visual resource from a road or trail. o one now wants to hi e an where near a clearcut.

BLM should retain more canop closure when logging. After BLM brings a forest canop down to 30 , the resurgence of brush in our area is dramatic Within 8 to 10 ears the brush will be thic and 10 feet tall. Man times the fire situation is even worse within a decade of logging than when we started.

Re uire post-harvest management ta e actions to reduce the potential of introducing O trails after fuels treatments or thinning. This is an ongoing problem on public lands in Southern Oregon that should be mitigated with the proper management. The official closure of these areas could ma e a difference provided BLM steps up its law enforcement division.

We want BLM to retain the Applegate Adaptive Management Area. This program was innovative and ver much supported b the communit . We support the Applegate Communit Public Lands ision for our forests see attached .

We are concerned the RMP does not accuratel ta e into account the significance of climate change. t appears BLM did not use the best available science. The forests in Southern Oregon will loo vastl different in two more decades. We could sa goodb e to man , man fir trees, and other species will also feel the dr ing trend. The evidence is with us again this ear as can be seen b the rust color of man d ing trees in our surrounding landscape.

Please no new roads The list of issues associated with roads is extensive. We don't need any more no matter how much easier it is to log. ust tr to ta e care of the existing BLM roads in our inventor . BLM roads are wa behind on maintenance, and ATA is tired of competing with BLM road projects ever time we appl for a Title grant.

In Conclusion:

We hope that BLM will re-order its forest management priorities so that our forests and forest ecos stems thrive and a sustainable level of forest products can be harvested over the long term while other interests such as clean water, wildlife and the diversit of our ecos stems are protected and enhanced, not impaired. ATA would li e a more balanced approach to an S, not one which presents onl the data that justifies the predetermined preference of increasing timber production. Such a management approach will also mean recreational opportunities will continue into the future.

Please note the additional signatures of people who have written in support of ATA's comments.

Than ou.

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Applegate Ridge Trail

Sept 17, 2013
AMP

Cathedral Hills Trails

To Grants Pass

Board Shanty Rd

Murphy

Applegate River

Greens Creek

Savage Creek

Birdseye Creek

R. Fork Foots Creek

L. Fork Foots Creek

Galls Creek

WEST ART

Caris Creek

Slagle Creek

Provolt

Old Blue

BillyMtn

N. Applegate Rd

Humbug Creek

Applegate

Highway 238

Wellington Butte

Mt. Isabelle

CENTER ART

China Gulch

Ruch

NORTH ART

Forest Creek

Bunny Meadows

Bishop Creek

EAST ART

Jacksonville Forest Park

Jacksonville

Jack-Ash Trail

I-5

WORKING DRAFT

Legend

- Applegate Ridge Trail (Approx)
- Connector
- Private - Route Undetermined
- JackAsh Trail (Approx)
- BLM
- Private
- Other Public Lands
- Highways
- Roads
- Streams

N W E S

0 0.5 1 2 Miles

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Applegate Community Public Lands Vision

As residents of the Applegate Valley, we value the Bureau of Land Management lands that surround our homes because they are integral to our community. The forests and rivers managed by the BLM are essential to the clean drinking water, native salmon runs, and the expanding recreation economy of the Applegate Valley. We urge the management of BLM lands in the Applegate Valley to support our community values by:

➢ **Preserving the Applegate Adaptive Management Area (AMA) as a designated area** in which the BLM must use a collaborative, community-based decision-making process that directly involves the community in forest management decisions. As citizens and neighbors we have the right to help guide actions that affect our lives and livelihoods.

➢ **Decoupling logging receipts from providing revenue to county governments** and exploring alternative revenues such as valuation of the ecosystem services of public lands. It is unrealistic to expect that timber revenues alone from O&C land can make up budget shortfalls.

➢ **Managing forests to increase diversity**, preserving mature trees over one hundred years old, protecting riparian streamside forests, and conserving sensitive plants and animals including salmon and steelhead. Protecting biodiversity is essential for healthy forests, and we cannot assume that private industry will plan for diversity and old forests.

➢ **Preserving the clean water supply** that supports family farms, small businesses, individual wells, and community water supplies.

➢ **Protecting "lands with wilderness characteristics"** and roadless areas such as the Wellington Wildlands and the Dakubetede areas. Many of us moved to this area for its wilderness characteristics, which continue to attract people to this area to live and to recreate—providing a growing source of revenue for the local economy.

➢ **Reducing fire risk and fire fighting costs through fire prevention planning.** Investing in thinning, stewardship contracting, and fuels reduction focused next to communities not only stimulates the local economy, but also will save money in fire-fighting costs over the long term.

➢ **Using only the existing road network** to conduct any thinning or fuels reduction projects as prescribed by the forest or fire management plans. Building roads increases pollution and diminishes the open space needed by animals (and humans). Blocks of open, contiguous space are consistent with BLM's forthcoming Resource Management Plans.

➢ **Ensuring all forest management** recognizes the need for reduced timber harvest levels in the fragile, dry forest ecosystems of southwestern Oregon. Re-growth of Southern Oregon forests is dramatically slower than those of more northern, wetter Oregon forests. This approach will preserve the sustainability of timber harvests for generations to come.

We, the undersigned, as residents of the Applegate Valley do approve and endorse the Applegate Community Public Lands Vision.

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Sent: Friday, August 21, 2015 12:37 PM
To: RMP-Comments@heg-inc.com
Subject: Fwd: Conservation Coalition Comments
Attachments: RMP Coalition Comments Final.pdf

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From: **Steve Holmer** <sholmer@abcbirds.org>
Date: Thu, Aug 20, 2015 at 7:49 PM
Subject: Conservation Coalition Comments
To: "blm_or_rmpwo_comments@blm.gov" <blm_or_rmpwo_comments@blm.gov>

American Bird Conservancy agrees with and endorses these comments.
>

August 20, 2015

Jerome E. Perez
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ATTN: Mark Brown
Submitted via Email: <blm_or_rmpwo_comments@blm.gov>

RE: Resource Management Plans for Western Oregon Draft Environmental Impact Statement

Dear Director Perez:

On behalf of our thousands of members and supporters throughout Oregon and the nation, our conservation organizations submit these comments concerning the Draft Environmental Impact Statement (DEIS) for the Resource Management Plans (RMP) for BLM forests and watersheds in Western Oregon.

Western Oregon's BLM lands support salmon, steelhead, and wildlife while delivering outstanding watershed and recreational values to the public. These forests are source-drinking watersheds for hundreds of thousands of Oregonians; they sequester large amounts of carbon; and they provide crucial ecological functions. The natural amenities found on these public lands are highly valued and sought after, from local residents to tourists from around the world.

We are pleased that the RMP recognizes that recreation is the means by which most Americans experience these lands, and that recreation provides the greatest economic benefits to local communities. Our members and supporters want the important natural amenities and environmental services to exist for future generations on BLM lands in western Oregon. However, we are concerned that the Draft RMP promotes plans that would resume clearcut logging, reduce streamside buffers, increase road construction, and reward damaging motorized off-road recreation on BLM forests.

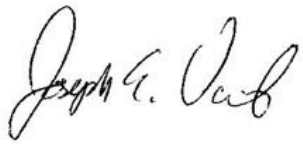
We are particularly concerned that BLM is proposing to disengage from the coordinated interagency federal land management plan embodied in the Northwest Forest Plan. Specifically, we are alarmed by the BLM's proposals to reduce riparian forest protections, eliminate the Aquatic Conservation Strategy, abandon protections for Key Watersheds, minimize green tree and down wood retention standards, abandon the Applegate Adaptive Management Area, and drop the Survey and Manage program for rare plants and animals. This profound shift away from a unified federal management strategy for lands within the range of the Northern spotted owl threatens to unravel the certainty and legal assurances relied upon by BLM and Forest Service

project planners across 25 million acres of federal land as well as assurances provided to adjacent private and state land managers throughout the Pacific Northwest.

As stated on page 21 of the DEIS, the purpose and need for the NWFP was guided by a presidential directive to the BLM and Forest Service to adopt a "comprehensive …common management approach to the [federal] lands administered throughout the entire region." The BLM has not provided a compelling reason for rejecting the comprehensive and unified approach to federal forest management that is abandoned in all of the action alternatives developed and considered in the DEIS.

We look forward to discussing these comments with your planning staff prior to the development of a Final Environmental Impact Statement and Record of Decision.

Sincerely,



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THE PURPOSE AND NEED

During the late 1980s and early 1990s, a series of lawsuits uncovered "*a remarkable series of violations of the environmental laws*," and "*a deliberate and systematic refusal … to comply with the laws protecting wildlife.*" [1] To end the gridlock, President Clinton directed the Forest Service and BLM to craft a comprehensive, long-term management strategy that is "*scientifically sound, ecologically credible, and legally responsible*." [2] The agencies assembled a team of leading scientists, called the Forest Ecosystem Management Assessment Team ("FEMAT"), to develop ecosystem management strategies that would meet this goal.[3] The final result was the Northwest Forest Plan, an ecosystem management plan that contained standards and guidelines for managing Forest Service and BLM public lands, created old-growth and riparian reserves, and provided for continued timber harvest. The Northwest Forest Plan has been upheld by the federal courts in challenges both from the timber industry and from conservation groups. The Ninth Circuit Court of Appeals also rejected the BLM's prior attempt to revise its RMPs to achieve the same objectives as earlier flawed attempts to revise the Northwest Forest Plan.[4] This DEIS marks the fourth major attack on the Northwest Forest Plan.

The range of reasonable alternatives to be considered in an environmental impact statement depends on the purpose of the project.[5] However, an agency's discretion to determine the purpose and need of a project is not unfettered. Courts require an agency's definition of purpose to be reasonable.[6]

Courts impose this standard to ensure that agencies do not avoid NEPA's requirements by defining a project's purpose so narrowly as to preclude consideration of reasonable alternatives.[7] Consideration of alternatives is "the heart of the environmental impact statement."[8]

For the Resource Management Plan for Western Oregon, BLM describes the purpose and need of the proposed action in the following way:

> *The BLM conducted plan evaluations in accordance with its planning regulations, which require that RMPs "shall be revised as necessary based on monitoring and evaluation*

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[1] *Seattle Audubon Soc'y v. Evans*, 771 F. Supp. 1081, 1089-90 (W.D. Wash.), *aff'd*, 952 F.2d 297 (9th Cir. 1991).
[2] Northwest Forest Plan Record of Decision at 3.
[3] . *Seattle Audubon Soc'y v. Lyons*, 871 F. Supp. 1291, 1303 (W.D. Wash. 1994), *aff'd*, 80 F.3d 1401 (9th Cir. 1996); FEMAT Report at I-1, II-36 to-37, ch. V.
[4] *Pac. Rivers Council v. Shepard*, No. 03:11-CV-00442-HU, 2011 WL 7562961 (D. Or. Sept. 29, 2011), *report and recommendation adopted as modified*, No. 03:11-CV-442-HU, 2012 WL 950032 (D. Or. Mar. 20, 2012); *Pac. Rivers Council v. Shepard*, No. 12-35570 (9th Cir. March 1, 2013) (opinion and order dismissing appeal by timber Intervenors for lack of jurisdiction and upholding district court decision in its entirety).
[5] *Methow Valley Citizens Council v. Regional Forester*, 833 F.2d 810, 815-16 (9th Cir. 1987) (impact statements must consider all reasonable alternatives that accomplish project purpose, but need not consider alternatives not reasonably related to the purpose).
[6] *City of Carmel-by-the-Sea v. United States Dep't of Transp.*, 123 F.3d 1142, 1155 (9th Cir. 1997); *Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 195-96 (D.C. Cir. 1991).

[7] *Simmons v. United States Army Corps of Eng'rs*, 120 F.3d 664, 666 (7th Cir. 1997); *City of New York v. United States Dep't of Transp.*, 715 F.2d 732, 743 (2d Cir. 1983); *Citizens Against Burlington*, 938 F.2d at 196.
[8] *Simmons v. United States Army Corps of Eng'rs*, 120 F.3d 664, 666 (7th Cir. 1997); *City of New York v. United States Dep't of Transp.*, 715 F.2d 732, 743 (2d Cir. 1983); *Citizens Against Burlington*, 938 F.2d at 196.

findings, new data, new or revised policy and changes in circumstances affecting the entire plan or major portions of the plan" (43 CFR 1610.5-6). These evaluations concluded that "[a] plan revision is needed to address the changed circumstances and new information that has led to a substantial, long-term departure from the timber management outcomes predicted under the 1995 RMPs*"* [9] *These evaluations also concluded that the management direction for most of the other resource management programs need to be modified or updated because of changed circumstances and new information. These evaluations concluded that changes are particularly indicated for the fisheries, aquatics, recreation, off-highway vehicle, and fire and fuels programs.*

Moreover, the BLM needs to revise existing plans to replace the 1995 RMPs' land use allocations and management direction because of new scientific information and policies related to the northern spotted owl. Since the 1995 RMPs were approved, there have been analyses on the effects of land management on northern spotted owl habitat, demographic studies, and analyses of the effects of barred owls on northern spotted owls. In addition, since that time, new policies for northern spotted owls have been put in place, including a revised recovery plan and a new designation of critical habitat.[10]

The DEIS goes on to note that this purpose and need includes providing a sustained yield of timber, conservation and recovery of listed species, providing clean water, restoring fire-adapted ecosystems, providing for recreational opportunities, and coordinating management of lands surrounding the Coquille Forest.[11]

While these goals are laudable, the resulting alternatives do not comport with these objectives because each alternative includes components that would threaten wildlife, watershed, and recreational values in an attempt to increase timber production. BLM has steadfastly maintained that the Northwest Forest Plan has failed to produce "enough" timber from O&C lands, but in fact, timber production has produced a relatively constant – if lower than historic highs – harvest level. *See infra*. Moreover, all of the "new information" BLM references demonstrates that the Northwest Forest Plan is working to achieve the remaining stated "needs" for action. Monitoring of implementation of the NFP has demonstrated that more species are better protected under the NFP than without it; watersheds are in better condition than they were prior to the implementation of the NFP; water is cleaner and cooler with the ACS, riparian reserves, and a program of watershed restoration than without the NFP; more people recreate on BLM lands than use them for timber harvest; and recreationalists contribute more money to local economies than does timber harvest. While "restoring fire-adapted ecosystems" is part of the stated purpose and need, BLM acknowledges that it has little ability to do so on its lands due to the checkerboard pattern of federal and nonfederal ownership on the O&C lands.[12] BLM has also not demonstrated that the status quo has precluded coordination with the Coquille Tribe regarding management of their lands adjacent to federal lands.[13]

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[9] (USDI BLM 2012a, p. 12).
[10] DEIS at 5.

[11] DEIS at 6-10.
[12] DEIS at 181, 212.
[13] *See generally*, Regional Ecosystem Office, *20 Year Reports for the Northwest Forest Plan* (July 8, 2015),http://www.reo.gov/monitoring/reports/20yr-report/.

Given that available information indicates that the Northwest Forest Plan is working, the stated purpose and need for action are impermissibly flawed, leading to alternatives that are trying to solve imaginary problems with the status quo.

I. THE SUSTAINED YIELD PURPOSE AND NEED SHOULD BE SECONDARY, NOT PRIMARY.

BLM cites as its first purpose of the RMP revision to "Provide a sustained yield of timber." (DEIS at 6). The DEIS shows that regeneration is not needed to restore early seral-habitat, because early seral habitat is already over-abundant and likely to increase in the future as a result of climate change.

Regeneration harvest is not needed for "community stability" because the DEIS admits that the timber industry is inherently volatile and has been for decades. Increasing regeneration harvest will actually reduce not increase community stability. And, regeneration harvest is not needed for fire hazard reduction, because the DEIS shows that young forests resulting from such logging are more hazardous than mature forests.

What is the real purpose of sustained yield? The O&C Act says that sustained yield is sought *"for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities"* [14]

BLM should structure the analysis so that these enumerated purposes are primary, and sustained yield is sought to the extent it fulfills these purposes. The analysis shows that pursuing a higher and more certain sustained yield will degrade watersheds and destabilize communities. This makes no sense. Is BLM seeking sustained yield for its own sake? Such a tautological approach is deeply flawed.

The DEIS at 6 concludes:

> *FLPMA specifically provides that if there is any conflict between its provisions and the O&C Act related to management of timber resources or the disposition of revenues from the O&C lands and resources, the O&C Act prevails (i.e., takes precedence) (43 U.S.C. 1701 note (b)). Thus, the multiple-use management direction of the FLPMA does not apply to the O&C lands that are suitable for timber production.*

BLM has jumped to a conclusion that there is a conflict between multiple use and lands suitable for timber production. BLM has not shown any such a conflict exists. In fact, the DEIS shows that forest conservation is highly compatible with the O&C Act purposes, including watershed protection and community stability.

BLM cannot rely on an interpretation of sustained yield that conflicts with its obligation to protect watersheds, regulate water flow, conserve endangered species, or maintain and restore water quality. BLM must use a rational definition of sustained yield that is qualified by conservation values. A consensus definition of the term is: "The sustainable yield of natural capital is the ecological yield that can be extracted without reducing the base of capital itself, i.e.

[14] 43 U.S.C. 1181a.

the surplus required to maintain nature's services at the same or increasing level over time. This yield usually varies over time with the needs of the ecosystem to maintain itself, e.g. a forest that has recently suffered a blight or flooding or fire will require more of its own ecological yield to sustain and re-establish a mature forest. While doing so, the sustainable yield may be much less."[15]

BLM should also interpret sustained yield in light of current scientific understandings of non-linearity of ecological process that sustain forests.

SUSTAINED YIELD FORESTRY IN BRITISH COLUMBIA by Lois Dellert is the definitive academic study of Sustained Yield in B.C. The report describes the evolution of Sustained Yield from 1900 to 1990 emphasizing the fear of scarcity and the hoped for improvement of timber production by scientific reordering of forests. From MacMillan through Sloan and Pearse to the present her central purpose is to examine the development of forest policy and,

> *...explore why it has been so difficult for forestry to achieve conservation in British Columbia.*
>
> *Forestry was motivated by scarcity and its goal was to support a forest-based economy by maximizing production and regulating the forest to provide a continuous supply of wood. Its policy of sustained yield was influenced by the scientific movement which believed the world operated according to universal rules and could be efficiently and rationally managed to capture its full potential and re-structured to achieve stability through order. The core ideas were efficiency and stability.*

The simple Newtonian universe of linear cause and effect and equilibrium dominant when Sustained Yield was developed no longer exists. Developments in non-equilibrium thermodynamics, in complexity and chaos theory, and in systems thinking about ecology and uncertainty have awoken science from Newton's sleep[16].

Recognizing that sustained yield must be achieved within some social and environmental constraints, the real goal is better conceived as sustainable forest management.

The Forest Service explored the definitions of sustainable forestry in a 2004 report called "National Report on Sustainable Forests—2003" (FS-766): The *Dictionary of Forestry* (Helms 1998) offers this description of forest sustainability:

> *....the capacity of forests, ranging from stands to ecoregions, to maintain their health, productivity, diversity, and overall integrity, in the long run, in the context of human activity and use.*

The *Dictionary of Forestry* also states that sustainable forest management is an evolving concept:

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[15] http://en.wikipedia.org/wiki/Sustainable_yield.

[16] http://www.pacificfringe.net/sustainedyield/ See also, Dellert, Lois. 1998. "Sustained Yield: Why Has It Failed to Achieve Sustainability?" in The Wealth of Forests: Markets, Regulation and Sustainable Forestry. Chris Tollefson, ed., UBC Press, Vancouver, B.C.

> *The stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality, and potential to fulfill, now and in the future, relevant ecological, economic, and social functions at local, national, and global levels, and that does not cause damage to other ecosystems–note criteria for sustainable forestry include (a) conservation of biological diversity, (b) maintenance of productive capacity of forest ecosystems, (c) maintenance of forest ecosystem health and vitality, (d) conservation and maintenance of soil and water resources, (e) maintenance of forest contribution to global carbon cycles, (f) maintenance and enhancement of long-term multiple socioeconomic benefits to meet the needs of societies, and (g) legal, institutional, and economic framework for forest conservation and sustainable management.*

Other definitions particularly stress the importance of recognizing environmental limits. One example is the following statement[17] from the book *Defining Sustainable Forestry*:

> *Since sustainable forest management is only possible within the ultimate constraints and limits imposed by the ecosystem, sustainability should be viewed as the degree of overlap between ecological possibilities and socially desired benefits of forests.*
>
> *The concept of sustainable forest management is related to but different in significant ways from an earlier concept of sustained yield—the amount of wood that a forest can produce on a continual basis. The concept of sustained yield, dating back to the Middle Ages in Europe, was brought to the United States in the late 1800s by early forestry leaders such as Bernhard Fernow and Gifford Pinchot. It was expanded over time to include the perpetual production of other forest outputs in addition to timber supply, including water, recreation, fish and wildlife, and livestock forage—the expanded concept is often referred to as the "multiple-use sustained-yield" principle. This principle was enshrined in law in 1960 for national forests. The concept of sustainable forest management, however, includes managing the forest for more than outputs; it focuses on maintaining processes and seeking to sustain communities, economies, and all the elements of a forest (Floyd 2002).*

When one views the multiple objectives of the O&C Act as modified by the Federal Land Policy and Management Act, Endangered Species Act, and Clean Water Act, there is clearly no significant difference between sustained yield, multiple-use sustained-yield, and sustainable forest management.

II. BLM FAILED TO HARMONIZE ITS LEGAL MANDATES.

The DEIS states that FLPMA's multiple use mandate does not apply to lands suitable for timber production because there is a conflict between the mandates of FLMPA and the O&C Act. This is an unsupported assumption. Before finding a conflict, BLM must first try to harmonize the objectives of these Acts, which is what the Northwest Forest Plan did, and there is no reason to conclude that this was an error.

[17] Noss 1993.

In the 1944 Sustained Yield Act, Congress articulated a vision of sustained yield that encompassed, *"... maintenance of water supply, regulation of stream flow, prevention of soil erosion, amelioration of climate, and preservation of wildlife.*"[18] Congress clearly does not see a conflict between sustained yield timber production and water quality or wildlife habitat. The Gang of Four also cautioned that there is "no free lunch." To reconcile these, one must conclude that as long as the timber yield is low enough, other resources can also be sustained.

BLM has the cart before the horse. Any acre that is suitable for timber production is accorded a special status that causes BLM to reject other potential uses of those lands. The DEIS fails to recognize that timber production conflicts with other public benefits that flow from BLM lands.

Before designating lands suitable for timber production, BLM should first determine whether those lands are more suited for other public purposes including, but not limited to: water quality, hydrologic function, slope stability, soil conservation, species recovery, keeping species off of the ESA list, carbon storage/climate stability, recreation, community stability, and quality of life.

In responding to public comments on the Northwest Forest Plan EIS, the agencies concluded that the Northwest Forest Plan, including the reserve system was consistent with the O&C Act.

> ***Comment****: The SEIS fails to acknowledge the Oregon and California (O&C) Lands Act (43 USC Sec. 1181a) as a constraint on the management of O&C lands. Alternative 9 violates the dominant use of O&C lands, and fails to acknowledge that these lands are the subject of special legislation that dedicates them primarily to timber production rather than ecologic (including wildlife) uses. The Endangered Species Act does not require the enormous land set-asides for wildlife which are being proposed, and the magnitude of the exclusion of the timber use must be submitted for congressional review under Section 202(e) of FLPMA.*
>
> ***Response****: The management of the O&C lands is governed by a variety of statutes, including the O&C Lands Act, FLPMA, the Endangered Species Act, and the Clean Water Act. The O&C Lands Act requires the Secretary of the Interior to manage O&C lands for permanent forest production; however, such management must also be in accord with sustained-yield principles. Further, that Act requires that management of O&C lands protect watersheds, regulate streamflow, provide for recreational facilities, and contribute to the economic stability of local communities and industries. The Act does not require the Secretary to harvest all old-growth timber or all commercial timber as rapidly as possible or according to any particular schedule. The Secretary has discretion to determine how to manage the forest on a sustained-yield basis that provides for permanency of timber production over a long-term period. The Secretary must necessarily make judgments, informed by as much information as possible, about what kind of management will lead to permanent forest production that satisfies the principle of sustained yield.*
>
> O&C lands must also be managed in accordance with other environmental laws such as the Endangered Species Act and the Clean Water Act. Some provisions of these laws take predominance over the O&C Lands Act. For instance, the Endangered Species Act (ESA)

[18] 16 U.S.C. § 583.

> requires the Secretary to insure that management of O&C lands will not likely result in jeopardy to listed species or destruction or adverse modification of critical habitat. The ESA directs the Secretary and all federal agencies to utilize their authorities to carry out programs for the conservation and recovery of listed species. Although several owl recovery plans have been proposed, the Secretary has not yet adopted final recovery plans for either the northern spotted owl or the marbled murrelet. Alternative 9's Late-Successional and Riparian Reserve concepts are important building blocks in the development of recovery plans to achieve the conservation and recovery of those species.
>
> One of the purposes of the Endangered Species Act is the preservation of ecosystems upon which endangered and threatened species depend. Certainly, a forward-looking land management policy would require that federal lands be managed in a way to minimize the need to list species under the ESA. Additional species listings could have the effect of further limiting the O&C Lands Act's goals of achieving permanent forest production, which would contribute to the economic stability of local communities and industries. The O&C Lands Act ought not be interpreted in such a manner that limits the Secretary's ability to take steps now that would avoid future listings, and additional disruptions, in the future.
>
> Moreover, the concept of creating a set of reserves in which timber harvest is substantially circumscribed across a portion of the landscape, such as the proposed Late Successional Reserves, is consistent with the O&C Lands Act. The Secretary has discretion under the O&C Lands Act to determine the length of harvest rotations on O&C lands or whether any particular tract should be subject to harvest, as well as the intensity of harvest activities, which should occur. From a practical point of view, there is little or no on-the-ground difference between a management strategy that provides for a deferred harvest for 80 years on Old-Growth Emphasis Areas as proposed in BLM's Draft Resource Management Plans, and one that sets aside reserves in order to restore and maintain a healthy old-growth forest ecosystem, over the time of the deferred harvest. Regardless of approach, FLPMA requires the Secretary to monitor and revise Resource Management Plans in light of changed circumstances or new information generated through the adaptive management process.
>
> The lands included in the reserves under the preferred alternative greatly constrain, but do not exclude timber use. Silvicultural treatments, such as thinnings, consistent with the objectives for the reserves will be allowed. Since this use is not totally eliminated, this management decision will not be subject to the reporting requirement in Sec. 202(e) of FLPMA.[19]

The BLM must recognize the timber production is embedded within and dependent upon a complex ecological system. Timber production is based on the growth of trees, which is based on the existence of a complex soil food web, a wide variety of nitrogen fixing species, nutrient cycling, fungal abundance and diversity, etc. The USDA Committee of Scientists (COS) recognized that "*without ecologically sustainable systems, other uses of the land and its*

---

[19] 1994 NWFP SEIS pp F-114-115 (emphasis added).

resources could be impaired." [20] The BLM must strive to achieve ecologically sustainable forests, not just sustained production of timber based on simple agricultural models. "Ecological sustainability" means maintaining the composition, structure and processes of an ecological system within certain acceptable bounds typically described as the natural of historic range of variability. A modern and scientifically credible approach to sustained yield will require BLM to consider[21]:

- the dynamic nature of ecological systems,
- the role of natural functions and processes,
- uncertainty and variability of ecological systems,
- an integrated assessment of feedbacks and cumulative effects,
- how to preserve options, and
- the historic range of variability.

In the O&C Act, Congress did not require BLM to apply a one-dimensional view of sustained yield equating maximum tree growth rates with sustained yield. Congress explicitly required BLM to account for water resources, recreation, community stability, and later passed superseding legislation requiring conservation of water quality and imperiled fish and wildlife. The BLM must adopt a modern view of sustained yield.

Landscape ecology has lead to a new appreciation of the importance of disturbance agents such as fire and disease and insect outbreaks in maintaining forest health at the landscape level. Unfortunately, the sustained yield forestry approach still regards forests as timber supply areas where fire and pathogens destroy (waste) valuable timber.

Fire suppression in particular has had a very detrimental impact on habitat for biodiversity. Furthermore, the legacy of problems caused by fire suppression including the increased potential for devastating large scale forest fire will bedevil forest managers far into the future.

A particular revealing criticism of Sustained Yield management is that we are creating forests that need humans to take care of them. Fire and disease suppression as well as changed age class and species distribution has altered the dynamics of forest evolution that have been developing over millennia, creating conditions potentially overwhelming to established natural defense dynamics. Global warming and other anthropogenic changes will probably further exacerbate these problems.[22]

BLM must provide room for the entire suite of structures, functions, and processes that integrate to create and maintain healthy forest ecosystems. Disturbance agents such as fire, insects, and disease must be allowed to operate. The full suite of biodiversity must be preserved, including non-vertebrates that play such crucial roles in soil ecology and nutrient cycling.

Some observers warn, "*Distrust claims of sustainability. Because past resource exploitation has seldom been sustainable, any new plan that involves claims of sustainability should be suspect. One should inquire how the difficulties that have been encountered in past resource exploitation*

[20] COS p xvi.
[21] See Committee of Scientists pp 19-40. http://web.archive.org/web/20030212110159/www.fs.fed.us/news/science/
[22] http://www.pacificfringe.net/sustainedyield/index.htm

are to be overcome." [23] One of the main authors of the Northwest Forest Plan reinforced this same point.

Jack Ward Thomas, one of the main authors of the NWFP, also cautions against an outdated view of sustained yield timber production:

> *The vision that I was taught in school of the "regulated forest" and the resultant predictable outputs of commodities has turned out to have been a dream. And a dream that could only be realized in a time of seemingly boundless virgin forests. This vision held only so long as, no matter what the circumstances, there was more timber available over the next ridge. And, that timber was relatively cheap--easy to access and long--and environmental risks were either less appreciated or more palatable than at present. Further, it was assumed that good forestry was--as a matter of course--good wildlife management, good watershed and management, etc.*
>
> *By now it is becoming obvious that this dream was built on the pillars of the seemingly boundless virgin forest and an ethic of manifest destiny coupled with hubris of being able to predict the response of nature and humans. This was coupled with an inflated sense of understanding of forested ecosystems and of human control. Perhaps it is time to recognize that such stability is not attainable in any western region except for relatively short periods of years or decades.*
>
> *Why? Consider the variables that interact to affect long-term stability of the supply of timber. Each variable is subject, more or less independently, to considerable variation over the longer term. Taken together, in terms of their interactions, these variables are guaranteed to produce varying levels of uncertainty and makes attainment of stability unlikely.*
>
> *Oscillations in timber supply can be moderated by taking a conservative view of "annual sale quantity" projections as opposed to the tendency to make overly optimistic projections such as those that resulted in the first forest planning efforts of a decade or so ago.*
>
> *Insanity has been defined as doing the same things over and over and expecting a different result. Decidedly, optimistic outcomes were the trademark of the first generation of forest plans. With decided regularity, this optimism has not been justified and only reluctantly recognized and abandoned. This caused the agency(s) performance, in terms of commodity production, to consistently come in at below anticipated levels--i.e., the predictions were not valid and belated recognition of that fact, in turn, caused additional instability because of accumulated effects. More conservative approaches are more apt to produce predictable results. And, if results exceed those anticipated, it is easier to adjust commodity yields upward than to deal with the social and political consequences of short fall.*

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[23] Donald Ludwig, Ray Hilborn, Carl Walters. 1993. Uncertainty, Resource Exploitation, and Conservation: Lessons from History. Science 260(2):17, April 2, 1993. http://www.envsci.nau.edu/sisk/courses/env555/Readings/ludwig1.pdf

While the search for new understanding through science may produce short-term instability [sic] in commodities such as timber supply as managers react to new information, such efforts are essential to long-term stability if renewable natural resources are to be managed in a sustainable fashion. In the end, there can be no turning back from science--no matter now politically [sic] expedient that may seem in the short run.

In summary, the timber supply from federal lands is one drought, one insect and disease outbreak, one severe fire season, one election, one budget, one successful appeal, one loss in court, one listing of a threatened or endangered species, one new piece of pertinent scientific information, one change in technology, one shift in public opinion, one new law, one loss of a currently available technological tool, one change in market, one shift in interest rates, et al, away from "stability" at all times. And, these changes do not come one at a time, they come in bunches like banannas and the bunches are always changing. So, stability in timber supply from the public lands is simply a myth, a dream that was never founded in reality. It is time to stop pretending.[24]

BLM must respond to opposing viewpoints by taking a hard look at the core issue of sustained yield as the primary purpose of the RMP revision.

THE O&C ACT

I. MULTIPLE USE MANDATE OF THE O&C ACT

Given that the only apparent "problem" with the NFP is that it hasn't produced "enough" timber off O&C lands, it is clear that the real objective of the RMP revisions is to increase timber harvest. However, the O&C Act does not require maximum timber production from every acre all the time; the *Headwaters* case upon which BLM relies itself involved a land management plan with no-cut reserves; and the courts have already ruled that the Northwest Forest Plan does not violate the O&C Act. BLM is choosing to re-do its management plans, and that choice reflects only one true purpose – BLM's desire to increase logging on federal public lands in Oregon.[25]

The Oregon and California Lands Act ("O&C Act") governs railroad grant lands that revested in the federal government due to the railroad company's breach of its statutory duties. In the O&C Act, Congress sought to put an end to wasteful and destructive logging practices that clearcut large forest areas for short-term gains without safeguarding the forests and other resources. The

[24] Jack Ward Thomas, *The Instability of Stability*. Pacific Northwest Regional Economic Conference. Regions in Transition. Spokane. April 1997 http://www.pnrec.org/pnrec97/thomas2.htm

[25] It is not even clear that the O&C Act applies to BLM lands currently governed by the Northwest Forest Plan. The language of the Act states that it applies to "*such portions*...which have heretofore or may hereafter be classified as timberlands...." 43 U.S.C. § 1181a (italics added). Under this plain language, only portions of the O&C lands classified as timberlands are covered by the O&C Act. When BLM jointly promulgated the Northwest Forest Plan with the U.S. Forest Service, BLM changed the classification of the O&C lands previously defined as timberlands to the status of late-successional reserves and riparian reserves. BLM has the authority to reclassify its land under FLPMA § 202(d), where the lands are better suited to a different purpose.

Act instituted a conservation ethic, marking the first federal statute to impose sustain-yield constraints on timber cutting.

The O&C Act provides that O&C lands:

> *shall be managed . . . for permanent forest production, and the timber thereon shall be sold, cut and removed in conformity with the principal [sic] of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities.*

Numerous statutes other than the O&C Act establish duties that BLM must meet in managing the O&C lands.[26] The timber industry has contended that BLM must manage the O&C lands under a timber-first mandate, drawing from the permanent forest production goal set out in the O&C Act. BLM has long recognized, however, that it must manage the O&C lands for multiple purposes both to comply with the O&C Act and its duties under other laws. Indeed, under the Northwest Forest Plan, BLM has been managing these lands to comply with all applicable laws, including the O&C Act.

II. SAFEGUARDS DRAWN FROM THE O&C ACT

Under the Act, O&C lands "shall be managed . . . for permanent forest production," but subject to other constraints.[27] First, permanent forest production is not synonymous with commercial logging. A 1979 Interior Solicitor memorandum clarified the forest production need not be for commercial use. That is but one of the uses. The forest production could be to protect watersheds, stream flows, or recreation.[28]

Second, the goal of the timber production is to promote economic stability of local communities. In the O&C Act, Congress sought to curtail the type of boom and bust logging frenzies that had generated economic instability. Congress decidedly did not support maximizing timber production for short-term economic gain. Instead, it sought to institute long-term sustainability. To achieve these goals, BLM must consider alternatives that promote community stability, even if they favor thinning over clearcutting and even if they shift some areas of the forest to other activities that would achieve that goal.

Indeed, the DEIS indicates that an alternative that increase timber harvest will be inconsistent with the O&C Act, which requires timber harvest "...contribut[e] to the economic stability of local communities and industries."[29] The DEIS states that "Because the timber industry has a long, national history of high volatility, alternatives with harvest volumes that exceed current levels are likely to introduce greater instability to local economies, based on past business

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[26] These comments address only management of the O&C lands, but the RMP revisions pertain to all BLM lands, including vast tracts of public domain lands that are fully subject to all land management and environmental laws.
[27] 43 U.S.C. § 1181a.
[28] Interior Solicitor Mem. (Aug. 27, 1979).

[29] 43 U.S.C. 1181a.

cycles." [30] Introducing greater instability to local economies is an inappropriate outcome for BLM land management, and is inconsistent with the O&C Act.

Third, the Act does not seek to promote other resource extraction activities, such as grazing. Such activities should not occur where they conflict with any of the Act's other goals or BLM's duties under other laws.

Fourth, the O&C Act explicitly lays out other goals for management of the O&C lands. Specifically, the lands must be managed for the purpose of "protecting watersheds, regulating stream flow, . . . and providing recreational facilities."[31] The mandate to protect watersheds and stream flow supports establishing safeguards like those embodied in the Aquatic Conservation Strategy of the Northwest Forest Plan.

Similarly, BLM must manage the O&C lands to protect high-quality recreational opportunities. The Interior Solicitor has advised that this mandate "is broad enough to include such things as scenic highways or scenic rivers which are identified as such through the Bureau's planning process." [32] With respect to a wild and scenic river partially on O&C lands, the Interior Solicitor counseled that logging that would be noticeable from the river would be prohibited along scenic stretches of the river and that logging could occur in areas important for recreation only if it would not impair recreational or aesthetic qualities. [33]

SAFEGUARDS DRAWN FROM OTHER LAWS

BLM must comply with other laws unless they expressly carve out an exception for the O&C Act. The courts strive to reconcile overlapping statutory duties so that all applicable statutes retain their vitality. A statutory obligation is overridden only in the event of a direct conflict that makes it impossible to comply with competing mandates or explicit legislative language indicating an intent for one to be preeminent over another.

Initially, BLM and the courts focused on the role of the Federal Land Policy and Management Act ("FLPMA"), enacted decades after the O&C Act. In *Headwaters v. BLM*,[34] the Ninth Circuit held that BLM did not err in construing the O&C Act to make timber production a dominant or primary use of the lands. Headwaters had challenged a particular timber sale and argued that BLM erroneously emphasized timber production over conservation of wildlife habitat and old-growth forests. Before rejecting this construction of the O&C Act, the majority held that BLM appropriately tiered its environmental assessment for the timber sale to a programmatic environmental impact statement addressing wildlife and old-growth habitat, and it rejected Headwaters' challenge to BLM's multiple use determination, which emphasized timber production for the lands at issue. As later cases confirm, the result is often far different where BLM is subject to other statutory duties that lead it to protect O&C lands in order to protect wildlife or old-growth forests.

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[30] DEIS at 568.
[31] 43 U.S.C. § 1181a.
[32] Interior Solicitor Mem. at 10. (May 14, 1981).
[33] Interior Solicitor Mem. at 1-2 (Oct. 4, 1978).
[34] 914 F.2d 1174, 1183-84 (9th Cir. 1990),

FLPMA has also been construed to impact BLM's wilderness review obligations for O&C lands. Under FLPMA, BLM has an obligation to conduct a wilderness study review of roadless areas that have 5000 acres or more and wilderness characteristics.[35] The review should have occurred within 15 years of FLPMA's passage, i.e., by the end of 1991. During a wilderness study review, BLM must manage the lands in a manner that does not impair their suitability for preservation as wilderness.[36] This has been construed to prohibit roadbuilding and logging in most instances.

FLPMA has a savings clause, which provides that the O&C Act prevails "*in the event of conflict with or inconsistency between [FLPMA and the O&C Act] insofar as they relate to management of timber resources, and disposition of revenues from lands and resources . . .*"[37] An Interior Department Solicitor's memorandum indicates that there is scant legislative history pertaining to the savings clause, but there was some indication that the Department sought to assuage concerns raised by the Oregon delegation that the funding formula and management of O&C lands would be affected by FLPMA.[38] The Solicitor's memorandum reconciles the O & C Act with FLPMA's wilderness study provision as follows: O&C lands that are suitable for timber production are ineligible for wilderness study, while O&C lands that are unsuitable for timber production can be considered for wilderness. In practice, however, O&C lands have been included in some wilderness study areas and designated wilderness areas, such as the Wild Rogue Wilderness and Table Rock Wilderness. Moreover, BLM could properly determine that designating O&C lands that are suitable for timber production as wilderness would be the most effective way to meet its legal obligations to protect species and ecological functions.[39]

After *Headwaters*, the courts have retreated from a timber-centric vision for O&C lands. Instead, the operating principle has become one of dual responsibilities. BLM must meet all of its statutory obligations, many of which call for environmental safeguards even where such safeguards result in less intensive or pervasive logging.

In *Portland Audubon Society v. Lujan* [40], the Ninth Circuit found no unavoidable conflict between an injunction stopping old-growth logging pending compliance with the National Environmental Policy Act, and the O&C Act, even though the Act's timber targets (stated as a minimums) could not be met under the injunction. BLM and the O&C counties had argued that "the district court erred in issuing an injunction which prevents the BLM from selling a minimum of 500 million board feet of timber per year as directed by the" O&C Act.[41] The court rejected this argument, stating:

> *We find that the plain language of the Act supports the district court's conclusion that the Act has not deprived the BLM of all discretion with regard to either the volume requirements of the Act or the management of the lands entrusted to its care. Because there does not appear to be a clear and unavoidable conflict between statutory directives,*

[35] 43 U.S.C. § 1782(a).
[36] *Id*. § 1782(c).
[37] 43 U.S.C. § 1701 note.
[38] Interior Solicitor Mem. at 9 (Sept. 5, 1978).
[39] Since the O&C Act supersedes FLPMA only where the two conflict, BLM still has an obligation to designate Areas of Critical Environmental Concern particularly where special management is needed to protect ecological values that are consistent with the O&C Act's goals. *See* 43 U.C.S. § 1702.
[40] 998 F.2d 705 (9th Cir. 1993).
[41] *Id*. at 709.

we cannot allow the Secretary to 'utilize an excessively narrow construction of its existing statutory authorizations to avoid compliance [with NEPA].'" [42]

Under this ruling, BLM must comply with NEPA, the ESA, and other environmental laws in its management of O&C lands.

More recent court rulings have held that in fact, the BLM must comply with many other laws, in addition to the O&C Act, which may have the effect of reducing the amount of timber that can be produced on O&C lands.[43] Similarly, the *Swanson* court also held that timber industry Plaintiffs did not have standing to bring a claim against BLM for failing to offer 500 MMbf of timber per year.[44] Consequently, it is plain that BLM has the legal authority to reduce timber harvests where necessary to comply with the provisions of other laws, as well as the multiple use mandate of the O&C Act.

I. THE NORTHWEST FOREST PLAN COMPLIES WITH THE O&C ACT AND ENVIRONMENTAL LAWS

In the Northwest Forest Plan, the agencies understood that other environmental laws take precedence over the O&C Act in the absence of a conflict between laws, and that prudent management to avoid future conflicts with such other laws is within the BLM's discretion, as it could promote economic stability in the long-run. For example, "*That Act does not limit the Secretary's ability to take steps now that would avoid future listings and additional disruptions.*"[45] The Secretaries made the finding that the adopted plan "will provide the highest sustainable timber levels from Forest Service and BLM lands of all action alternatives that are likely to satisfy the requirements of existing statutes and policies." [46]

In *Seattle Audubon Society v. Lyons*,[47] Judge Dwyer rejected the contention that the Northwest Forest Plan violated the O&C Act, stating that BLM must fulfill its conservation duties under other environmental statutes in managing the O&C lands. He also rejected the contention that the agency need not comply with the NEPA or the ESA because it has no power under its enabling statute to modify its management activities based on the other environmental statutes. BLM "*for many years has exercised broad authority to manage the O&CLA lands: the BLM is steward of these lands, not merely regulator. Management under the O&CLA must look not only to annual timber production but also to protecting watersheds, contributing to economic stability, and providing recreational facilities.*"[48]

Judge Dwyer noted that the court in *Headwaters* approved a BLM management plan that allocated over 50% of the area at issue to non-timber uses and that the decision dealt with the O&C Act alone, not BLM's duty to comply with other statutes. He also pointed to *Portland Audubon* as confirming that BLM must fulfill conservation duties imposed by other statutes. As in *Portland Audubon*, NEPA compelled BLM to consider the environmental impacts of its

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[42] *Id*. at 709.
[43] *Swanson Grp. Mfg. LLC v. Jewell*, No. 13-5268, 2015 WL 3634645 (D.C. Cir. June 12, 2015).
[44] *Id.*
[45] NWFP ROD at 50.
[46] NWFP ROD 61.
[47] 871 F. Supp. 1291 (W.D. Wash. 1994) (appeal history omitted),
[48] *Id*. at 1314.

actions.[49] Moreover, Section 7(a)(1) of the Endangered Species Act requires BLM to utilize its authorities and carry out programs to conserve threatened and endangered species.[50] BLM appropriately construed this mandate to take action to minimize the need to list species in the future.[51] Moreover, Judge Dwyer concluded that the agencies could not, given the current conditions of the forests, meet their obligations under NEPA and § 7(a)(1) of the ESA "*without* planning on an ecosystem basis.*"*[52]

While NEPA and the ESA are two statutes that impose mandates on BLM's management of O&C lands, the Interior Solicitor has recognized that numerous statutes similarly constrain BLM's management of O&C lands. The Wild and Scenic Rivers Act is one such statute, and in fact several designated wild and scenic rivers include O&C lands. BLM must also manage the lands to safeguard species listed under state endangered species acts, to provide sufficient habitat to conserve and rehabilitate fish, wildlife, and game populations, to meet water quality standards established under the Clean Water Act, and to impose measures to protect wetlands, including by prohibiting logging in wetlands areas, where necessary. *See* Interior Solicitor Mem. (May 14, 1981).

In short, there is no need to emphasize timber production over other statutory mandates because BLM has been acting in concert with those mandates under the Northwest Forest Plan for 20 years. BLM should be up-front about its one true purpose in proposing this action – increasing the cut from BLM lands in Oregon.

II. THE DEIS FAILS TO DISCLOSE THE EFFECTS TO THE NORTHWEST FOREST PLAN AS A WHOLE.

The 1994 Northwest Forest Plan amended the planning documents of 19 national forests and seven BLM districts, and it set standards and guidelines for these lands. The timber industry challenged the agencies' authority to adopt an ecosystem plan that covered lands administered by both the Forest Service and BLM. As stated above, the district court noted that both agencies' planning statutes required an integrated, scientific approach; both agencies had to comply with NEPA's mandate to consider ecosystem effects; and both agencies had to comply with the Endangered Species Act, among other laws such as NEPA. The court held that "[g]iven the current condition of the forests, there is no way the agencies could comply with the environmental laws *without* planning on an ecosystem basis."[53]

The effectiveness and legality of the Northwest Forest Plan depends on its application to both Forest Service and BLM lands; the Northwest Forest Plan is a "coordinated management direction for the lands administered by the Forest Service and BLM within the range of the spotted owl [that will also] protect and enhance late successional and old-growth forest ecosystems."[54] Two key assumptions behind the biological analysis of the Northwest Forest Plan were that (1) "[r]iparian and Late-Successional Reserves (LSRs) will retain reserve status and

[49] 871 F. Supp. at 1311.
[50] *Id*. at 1311, 1314.
[51] *Id*. at 1314.
[52] *Id*. at 1311 (emphasis in original).
[53] *Seattle Audubon Soc'y v. Lyons*, 871 F. Supp. 1291, 1311 (W.D. Wash. 1994).
[54] FWS Northwest Forest Plan Biological Opinion at 2 (Feb. 10, 1994).

will not be available for timber production other than as provided in Alternative 9" and (2) "[a]lternative 9 applies to Forest Service and BLM lands; all future actions on these lands would be consistent with Alternative 9, as adopted in the Record-of-Decision (ROD)."[55] BLM's alternatives in this DEIS, however, violate both of these assumptions.

A similar conclusion was reached with respect to aquatic protection. "The effectiveness of the [Aquatic Conservation Strategy] is still subject to debate among scientists. If the plan as implemented is to remain lawful, the monitoring, watershed analysis, and mitigating steps called for by the ROD will have to be faithfully carried out, and adjustments made if necessary."[56]

Under NEPA, federal agencies are required to examine in an EIS the cumulative impacts of proposed actions – that is, those impacts that result from the incremental impact of the action when added to the past, present, and reasonably foreseeable future actions.[57] By considering action alternatives that would change BLM's land management, the agency is essentially considering pulling out of the multi-agency Northwest Forest Plan. BLM cannot do this without causing the entire Northwest Forest Plan to crumble; that is, although the action agency here is BLM, its decisions will by necessity change the validity of the Forest Service's actions and land management assumptions. The DEIS fails to address or analyze the environmental and cumulative impacts of these alternatives on the continuing validity of the Northwest Forest Plan as a whole.

Similarly, pursuant to the consultation provisions of the Endangered Species Act, BLM, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service must address the full effects of this action, which includes the dismantling of the regional Northwest Forest Plan.[58]

Because the unraveling of the Northwest Forest Plan and its protections is a foreseeable future action and effect of the proposed actions, the environmental and cumulative impacts of losing or changing the Northwest Forest Plan should have been analyzed by BLM in the DEIS. As they were not, the DEIS violates the National Environmental Policy Act. By attempting to back out of the Northwest Forest Plan, BLM is violating its affirmative conservation duties under ESA § 7(a)(1). Finally, consultation under ESA § 7(a)(2) must look at the entire agency action, which is the dismantling of the Northwest Forest Plan.

III. BLM CANNOT MAKE RADICAL DEPARTURES FROM THE NWFP WITHOUT EXPLANATION

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[55] *Id.* at 4.
[56] *Seattle Audubon Soc'y v. Lyons*, 871 F. Supp. at 1322.
[57] 40 C.F.R. § 1508.7.
[58] *See Connor v. Burford*, 848 F.2d 1441, 1453 (9th Cir. 1998) (agency must "analyze the effect of the of the *entire* agency action" and render a "comprehensive biological opinion") (emphasis in original); *Greenpeace v. National Marine Fisheries Serv*., 80 F. Supp. 2d 1137, 1147-50 (W.D. Wash. 2000) (finding biological opinion invalid for failing to assess full scope of individual and cumulative fishing allowed under fishery management plan); *see also PCFFA v. NMFS*, No. 04-1299-RSM, Report and Recommendation, slip op. at 22 (W.D. Wash. 2006) (later site-specific consultations that do not address entire Northwest Forest Plan cannot adequately address cumulative effects).

Recent *en banc* case law from the 9th Circuit affirms the principle that BLM cannot radially depart from the NWFP without adequate explanation. *Organized Village of Kake v. USDA*. (9th Circ, July 29, 2015) http://cdn.ca9.uscourts.gov/datastore/opinions/2015/07/29/11-35517.pdf

BLM proposes some significant changes from the Northwest Forest Plan, including

- eliminating the Northwest Forest Plan's survey and manage program,
- dramatic narrowing of the purpose of and the width of riparian reserves,
- increasing active management in the reserves, and
- reducing the retention requirements in the timber management areas.

The NWFP was adopted with the most compelling scientific rationale of any RMP anywhere.

The purposes of the survey and manage program were justified based on "additional species analysis" contained in the 1994 FSEIS for the Northwest Forest Plan and further explained in Appendix J2 of that document. Based on the encouragement of Judge Dwyer, the NWFP adopted an ecosystem management approach that attempted to protect species before they become threatened or endangered. BLM is now trying to narrow the purpose and need for this RMP revision by asserting that it does not have a wildlife conservation mandate. This is incorrect. Wildlife conservation is mandated by the ESA, FLMPMA, as well as the mandates of the O&C Act (e.g., "permanent forest production" and "recreation facilities"). BLM has tried three times (unsuccessfully) to eliminate the survey and manage program (2004 EIS/ROD, 2007 EIS/ROD and 2008 WOPR). Twice the courts have rejected the agencies' efforts because the survey and manage program was considered integral to the overall conservation scheme of the Northwest Forest Plan.

The broad purposes of the riparian reserves were explained in the 1994 FSEIS. These purposes include both terrestrial and aquatic conservation objectives, providing extra assurance that at-risk fish would be conserved, mitigating for cumulative impacts, maintaining microclimate and wood input for amphibians and other wildlife that live near but not in streams. The agencies wrote an EIS to amend the ACS in 2008 but withdrew it in the face of litigation. Now BLM proposes an even more radical revision of the riparian reserves and its objectives and standards & guidelines. BLM DEIS does not address all the reasons that riparian reserves were established.[59]

BLM proposes to allow significant logging in reserves with an assumption that logging is compatible with late successional habitat and other objectives. This assumption was rejected in the Northwest Forest Plan and BLM has not explained how they arrived at a contradictory conclusion.[60]

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[59] See Heiken, D. 2013. Riparian Reserves Provide Both Aquatic & Terrestrial Benefits - A Critical Review of Reeves, Pickard & Johnson (2013). https://dl.dropboxusercontent.com/u/47741/Heiken%202013.%20Review%20of%20Reeves%20et%20al%20Riparian%20Proposal.pdf

[60] See Heiken, Doug. 2009. The Case for Protecting Both Old Growth and Mature Forests, Version 1.8. Oregon Wild. http://dl.dropbox.com/u/47741/Mature%20Forests%2C%20Heiken%2C%20v%201.8.pdf (See especially the following sections that explain why the authors of the NWFP adopted a mostly hand-offs approach in reserves, except for dense young stands:

- Logging mature forests will impair development of important features of old-growth forests, especially snags and dead wood. p 29

Heiken (2009) explained:

> The Northwest Forest Plan prohibits logging of stands 80 years or older in the Late Successional Reserves for several reasons: (a) such stands are beginning to acquire late successional characteristics and provide valuable habitat for spotted owls and other wildlife; (b) there is a lack of evidence to support the hypothesis that logging in stands >80 years old is beneficial to habitat development; and (c) logging will likely do more harm than good.
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> This reasoning is articulated in several scientific reports, including the 1990 Interagency Scientific Committee (ISC) Report, the 1993 SAT Report, and various reports to Congress where the scientists were being asked to explain to a skeptical committee in Congress why logging old forests could not be compatible with conserving late-successional forest ecosystems. The ISC report said "no consensus exists about whether any silvicultural systems would produce the desired results. The ability to harvest timber in currently suitable owl habitat and have that habitat remain suitable has not been clearly demonstrated."[61]
>
> The SAT noted that "considerable additional research is likely required" before we will know whether silviculture can be compatible with spotted owls, and while the spotted owl is relatively well studied, the risks and uncertainty are even more pronounced for the hundreds of other species associated with old-growth.[62] It should also be recognized that President Clinton's Mission Statement directed the FEMAT team to ensure that "tests of silviculture should be judged in an ecosystem context and not solely on the basis of single species or several species response."[63]
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> The 1993 Report of the Scientific Analysis Team (SAT) specifically highlighted the risks associated with logging in suitable owl habitat, saying "intentions to selectively cut forest stands to create conditions favorable for spotted owls, represents increased risks to the viability of the spotted owl."[64] The Scientific Analysis Team said there are several factors that support this conclusion and affirm the Interagency Scientific Committee's decision to exclude logging in old growth reserves and rely on natural processes to maintain and restore habitat:

- In all forest types, recognize that logging has trade-offs. p 34
- In moist provinces, mature forests just need time, not logging. p 35
- In dry provinces, fire hazard is over-stated. Logging mature trees will just make things worse. p 39")

[61] Thomas, J.W., E.D. Forsman, J.B. Lint, E.C. Meslow, B.R. Noon, and J. Verner. 1990. A Conservation Strategy for the Northern Spotted Owl. A report by the Interagency Scientific Committee to address the conservation of the northern spotted owl. USDA, Forest Service, and U. S. Department of the Interior, Fish and Wildlife Service, Bureau of Land Management, and National Park Service. Portland, OR (*herein* ISC Report), 1990, p 104.

[62] Thomas, JW, Raphael, MG, Anthony, RG, Forsman ED, Gunderson, AG, Holthausen, RS, Marcot, BG, Reeves, GH, Sedell, JR, and DM Solis. 1993. Viability Assessments and Management Considerations for Species Associated with Late-Successional Old-Growth Forests of the Pacific Northwest. The Report of the Scientific Analysis Team (*herein* SAT Report), 1993, p 147.

[63] FEMAT Report, p iii.

[64] SAT Report p 145.

a. "Lacking experience with selective cutting designed to create spotted owl habitat, such practices must be considered as untested hypotheses requiring testing to determine their likelihood of success. ... Given the uncertainty of achieving such expectations, it is likely that some silvicultural treatments, which have been characterized as largely experimental, may well have an opposite effect from that expected. Consequently, such treatments may hinder the development of suitable habitat or they may only partially succeed, resulting in development of marginal habitat that may not fully provide for the needs of spotted owls. Results which fall short of the expected conditions could occur because of delay or failure to regenerate stands that have been cut, increased levels of windthrow of remaining trees, mechanical damage during logging to trees remaining in the logging unit, the spread of root rot and other diseases. Increased risk of wildfires associated with logging operations that increase fuels and usually employ broadcast burning to reduce the fuels also increase the risk of not attaining expected results. Such events may spread to areas adjacent to stands that are logged, thereby affecting even more acreage than those acres directly treated." [SAT p 147-148] The SAT indicates that these comments apply equally to density management and patch cutting, both of which are being promoted as tools to enhance owl habitat. The SAT also cited concerns about the effect of logging on snags and down woody debris which are essential features of owl habitat.

b. "Planning produces a description of desired future conditions [and] culminates in a final plan for a project which, for timber sales, involves legal contracts obligating the purchaser and the seller to specific provisions. … Our experience is that commonly not all provisions of the plan are thoroughly incorporated into such contracts, nor are all contract provisions thoroughly administered to ensure compliance." [SAT p 148-149].

c. "There are also probabilities associated with how well monitoring will identify 'trigger points' that indicate a management plan may need modification. The more complex the plan (i.e., the more variables there are to monitor) the less likely the monitoring plan will successfully detect problems. Manipulation of forest stands to accelerate development of spotted owl habitat on a landscape scale, as prescribed in the Bureau of Land Management Preferred Alternative, is an extremely complex issue involving a myriad of variables over a very long timeframe. Development of a monitoring plan intensive enough to isolate the causes of observed variations for wide-scale implementation of the Bureau of Land Management Preferred Alternative seems unlikely to us. … [I]nadequate monitoring will increase, perhaps dramatically, the risk of failure of a plan that relies heavily on adaptive management." [SAT p 149].

d. "A basic requirement for a viable adaptive management strategy is the existence of resources necessary to make the required adjustments. Adaptive management can only be expected to reduce risk if options to adjust management to fit new circumstances are not eliminated. Adaptive management, therefore, can be considered a means to reduce risk associated with a Resource Management Plan commensurate with the options for adjustment which remain during the time the plan is in effect." [SAT p 149-150] In other words, silvicultural manipulation of mature forests has long-term consequences and is likely to foreclose some future options in

those stands, thus reducing the utility of adaptive management. A prime example is the fact that logging "captures mortality," yet mortality is an essential feature of old-growth habitat used by both spotted owls and their prey.

e. SAT then noted the cumulative effects of all these uncertainties: "The combined risks associated with treatment of spotted owl habitat or stands expected to develop into suitable habitat for spotted owls, as discussed above, will likely result in situations where either habitat development is inhibited or only marginal habitat for spotted owls is developed. The exact frequency of these partial successes or failures is unknown. Given the likely cumulative relationship among the risks for each factor, it appears to us that the overall risk of not meeting habitat objectives is high. … Members of the Interagency Scientific Committee indicated that, because a plan (the Interagency Scientific Committee's Strategy) was put forth which proposes to reduce the population of a threatened species by as much as 50 percent, providing the survivors with only marginal habitat would be extremely risky and certainly in their minds not 'scientifically credible' [65]

f. The SAT concluded, "The transition period (1-50 years) between implementation of the Interagency Scientific Committee's Strategy and achievement of an equilibrium of habitat and spotted owls is a critical consideration. … Given the existing risks that face owl populations and the sensitivity of the transition period, the short-term effect of these actions on habitat loss may be much more significant than the long-term predicted habitat gains. We further conclude that, although research and monitoring studies are presently being initiated, no significant new data exist which suggest that the degree of certainty that is expressed in the Bureau of Land Management Draft Resource Management Plans for developing owl habitat silvicultural treatments is justified. Therefore, it is our opinion that the course prescribed in the Interagency Scientific Committee's Strategy, pertaining to timber harvest in Habitat Conservation Areas, remains the most likely course to result in superior habitat conditions within reserves (i.e., Old-Growth Emphasis Areas). The approach prescribed by the Interagency Scientific Committee's Strategy preserves options for adjustments in the course of management under a philosophy of adaptive management." [66]

The authors of the Northwest Forest Plan took all this into account and determined that 80 years is a useful place to draw the line between younger forests that are likely to benefit from careful thinning and older forests that are likely to experience net negative consequences.[67] There is no new science to change that conclusion. In fact, new information developed since 1994 shows that dead wood is probably more

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[65] USDA 1991:45., SAT p 151. file://localhost/mailbox/::C%257C:Documents%20and%20Settings:netcorps:Application%20Data:Thunderbird:Profiles:0a0zzrc0.default:Mail:pop.efn.org:Inbox.sbd:DC%3Fnumber=100232524 - _ftn3

[66] SAT p 151-152.

[67] See 1993 SAT Report pp 146-152. AND February 1991 Questions and Answers on A Conservation Strategy for the Northern Spotted Owl (prepared in response to written questions from the Senate Energy and Natural Resources Committee to the Interagency Scientific Committee on the May 1990 ISC Report. AND Jerry Franklin, David Perry, Reed Noss, David Montgomery, Christopher Frissell. Simplified Forest Management To Achieve Watershed And Forest Health: A Critique. National Wildlife Federation. http://www.coastrange.org/documents/forestreport.pdf

valuable than previously thought. It is important for a wide variety of ecological functions, not least of which is providing complex habitat to support owl prey species. Thinning stands over 80 years will remove many large trees and prevent them from ever becoming snags and dead wood. The long-term loss of recruitment of dead wood habitat in older stands is a very strong argument against logging in stands over 80 years old.[68]

Structure-based management (SBM) is often suggested as a way to produce logs and habitat from the same forests, but this is not a well-supported approach to managing older forests. There are well-founded critiques which point out that structure-based management is untested, uncertain, high risk, and unlikely to result in desired outcomes. Consider the well-developed critique of structure based management set forth by the Scientific Panel on Ecosystem Based Forest Management:

> The concept that all forests must be silviculturally manipulated (logged) and eventually replaced in order to provide desired goods and services, including the continued health of forest landscapes, is an old and honored tradition. … The proposition that forest values are protected with more, rather than less logging, and that forest reserves are not only unnecessary, but undesirable, has great appeal to many with a vested interest in maximizing timber harvest. … Our interpretation of the scientific literature, combined with our professional experience, leads us to some very different conclusions about appropriate approaches. Scientifically based strategies for the conservation of forest ecosystems, with a sound theoretical basis in conservation biology—including biodiversity and critical ecological services—have inevitably incorporated reserves along with ecologically sensitive management of unreserved areas (e.g., FEMAT 1993). … In our view, the assumptions underpinning simplified structure-based management (SSBM) are not supported by the published scientific literature on structural development of natural forests, disturbance ecology, landscape ecology and conservation biology, or by the relationships between ecosystem structures and processes. … We do not believe, however, that scientific literature or forestry experience supports the notions that intensively managed forests can duplicate the role of natural forests, or that sufficient knowledge and ability exist to create even an approximation of a natural old-growth forest stand.[69]
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> …

[in dry forests]

Hanson et al (*in press*) reviewed 2 decades of fire records in conifer forests in dry provinces of the Northwest Forest Plan and found that the proportion of area burned and the severity of

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[68] USDA Forest Service. 2007. Curran Junetta Thin Environmental Assessment. Cottage Grove Ranger District, Umpqua National Forest. June 2007. http://www.fs.fed.us/r6/umpqua/projects/projectdocs/curran-junetta-thin/index.shtml This EA revealed that heavy thinning in young stands would delay attainment of objectives for recruitment of dead wood for 6 decades or more.

[69] Jerry Franklin, David Perry, Reed Noss, David Montgomery, Christopher Frissell. Simplified Forest Management To Achieve Watershed And Forest Health: A Critique. National Wildlife Federation. http://www.coastrange.org/documents/forestreport.pdf

fire has not changed significantly.[70] These findings, along with the evidence that logging has unavoidable adverse impacts, indicates that caution is warranted. We should not encourage excessive and unwarranted logging in mature forests. PNW Research Station recently reported that profit-driven fuel reduction logging can conflict with both habitat objectives and fire risk reduction objectives.[71]

If there is a new push for timber volume from mature forests and trees, it will cause fire hazard to increase. Commercial logging can increase fire hazard by making forest stands hotter and windier, and fuels dryer. "Thinning opens stands to greater solar radiation and wind movement, resulting in warmer temperatures and drier fuels throughout the fire season. [T]his openness can encourage a surface fire to spread. …"[72] Opening the canopy also stimulates the growth of new surface and ladder fuels, and logging moves fine fuels from the canopy to the ground where they are more available for combustion.

BLM's Western Oregon Plan Revision EIS confirms that fire hazard will increase in areas managed for timber production, and that retaining more canopy cover would help reduce fire hazard. "The more canopy that would remain, the less effect wind would have on drying fuels and surface fires. This reduction in mid-flame wind speed would reduce flame length, which can lead to a reduction in tree mortality. … A lower probability of mortality equates to greater fire resiliency."[73]

The current DEIS does not provide adequate discussion or explanation for the radical departures from these important Northwest Forest Plan requirements.

RANGE OF ALTERNATIVES

In preparing an EIS, NEPA requires the agency to "study, develop and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources."[74] The regulations implementing NEPA explain that alternatives to the agency's proposed action are "the heart of the environmental impact statement."[75] The "touchstone" of the alternatives analysis is "whether [the] selection and discussion of alternatives fosters informed decision-making and informed

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[70] Hanson, C.T., Odion, D.C., DellaSala, D.A., and W.L. Baker. *in press.* Overestimation of fire risk in Northern Spotted Owl Recovery Plan. Conservation Biology.

[71] PNW Research Station. 2006. Seeing The Bigger Picture: Landscape Silviculture May Offer Compatible Solutions To Conflicting Objectives. Science Findings. July 2006. Http://Www.Fs.Fed.Us/Pnw/Sciencef/Scifi85.Pdf

[72] USDA Forest Service; Influence of Forest Structure on Wildfire Behavior and the Severity of Its Effects, November 2003. http://www.fs.fed.us/projects/hfi/2003/november/documents/forest-structure-wildfire.pdf

[73] BLM. 2008. Western Oregon Plan Revision FEIS, pp 810-811.

[74] 42 U.S.C. § 102(2)(E).

[75] 40 C.F.R. § 1502.14; *see also* 42 U.S.C. § 4332(2)(E); 40 C.F.R. 1507.2(d), 1508.9(b).

public participation."[76] "The existence of a viable but unexamined alternative renders an environmental impact statement inadequate." [77]

The BLM failed to consider a reasonable range of alternatives in the DEIS. First, BLM explains that it did not consider an alternative that would examine the status quo, which is implementation of the Northwest Forest Plan *as amended and currently implemented*.[78] BLM's rationale for not analyzing effects of the NFP as implemented is that:

> *It is not possible to analyze continuation of the current practices within the decision area as the No Action alternative for two reasons. First, implementation of the timber management program has departed substantially from the outcomes predicted in the 1995 RMPs, and the manner and intensity of this departure has varied substantially over time and among districts (USDI BLM 2012, pp. 6-12). There is no apparent basis on which the BLM might select and project into the future continuation of the practices from a specific year (or set of years) since 1995. Second, continuing to harvest timber at the declared annual productive capacity level for multiple decades into the future would not be possible using the current practices (USDI BLM 2012, pp. 6-12). The No Action alternative provides a benchmark to compare outputs and effects, even though this alternative does not meet the purpose and need of the project. Because of the inherent unsustainability of current practices, the BLM cannot project their implementation into the future; thus, continuation of the current practices would not serve the essential function of the No Action alternative of providing a baseline for comparison of outputs and effects.*[79]

This rationale is arbitrary and capricious. While it may be true that the BLM's timber program has departed from timber harvest *estimates* in existing RMPs or even the NFP, this does not mean that BLM cannot model or predict how existing RMPs will affect the environment. BLM could simply forecast timber outputs based on continued application of the RMPs as amended by court order or other change; and BLM provides no evidence that this approach is inappropriate. Indeed, in order for the agency to conclude that the existing RMPs are not "sustainable over time," it must have completed some sort of calculations; but this evidence is not in the DEIS or appendices.

Similarly, BLM claims that "continuing to harvest timber at the declared annual productive capacity level for multiple decades into the future would not be possible using the current practices," and cites its 2012 *Resource Management Plan Evaluation Report: Western Oregon* for support. However, that report simply lists reasons why BLM has not met the timber targets in existing RMPs, not that it is impossible to continue to implement existing RMPs as amended by the NFP and to project those environmental consequences into the future.[80]

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[76] *Westlands Water Dist. v. U.S. Dep't of Interior*, 376 F.3d 853, 872 (9th Cir. 2004) (*quoting California v. Block*, 690 F.2d 753, 767 (9th Cir. 1982)).
[77] *Morongo Band of Mission Indians v. FAA*, 161 F.3d 569, 575 (9th Cir. 1998); *Alaska Wilderness Recreation & Tourism v. Morrison*, 67 F.3d 723, 729 (9th Cir. 1995).
[78] DEIS at 77-79.
[79] DEIS at 77.
[80] 5 U.S.C. § 706(2)(A).

I. ARTICULATION OF ENVIRONMENTAL CONSEQUENCES FROM ALTERNATIVES

The DEIS is clear that the BLM does not intend to select one of the alternatives analyzed in the DEIS, but instead will select aspects of the various alternatives for implementation. DEIS at 76. For that reason, each alternative contains different mixes of uses that seek to offset any environmental "benefit" (i.e., protection) with a commensurate amount of environmental "harm" (i.e., extraction). While this is an attempt to develop alternatives that are "balanced," in practice it means that the public cannot assess the individual components of each alternative. Instead, the public is left with the impression that more timber harvest means less environmental protection, which, while likely true, does not allow for the public to have a true understanding of the actual differences among the alternatives, or what combination of particular aspects of particular alternatives have what particular environmental effects. For example, an alternative that allocates more land to the timber harvest base, but also decreases riparian buffers and increases ACEC designations over the status quo may have the "same" effects on fisheries as an alternative that reduces lands in the harvest base but also increases riparian buffers and does not designate any additional ACECs. This alternatives approach does not allow the public to clearly understand the differences among alternatives and to make a reasoned choice among them.[81]

II. INCREASED DISCRETION HAS ADVERSE ENVIRONMENTAL CONSEQUENCES.

BLM's internal agency reward system leads to unintended consequences. Unreasonably high timber targets combined with highly discretionary standards and guidelines will lead to abuse of discretion and failure to attain environmental objectives.

The EIS needs to take a hard look at the adverse effects from increased discretion, especially increased flexibility for logging in reserves. Rules for riparian reserves and LSRs provide too much discretion, allowing BLM to log inside the riparian areas for reasons other than restoring aquatic resources. Logging often causes a mix of positive and negative effects. In an effort to meet timber targets, BLM will focus on the benefits and ignore the adverse trade-offs, and therefore likely lead to logging in reserves with net negative effects on ecological objectives for the reserves.[82]

The action alternatives leave very little of the BLM landscape off-limits to logging. Subtracting structurally complex LSR, inner riparian zones, and congressionally reserves lands, leaves 63% of BLM lands open to logging under the preferred alternative.

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[81] *California v. Block*, 690 F.2d at 767.

[82] See Heiken, Doug. 2009. The Case for Protecting Both Old Growth and Mature Forests, Version 1.8. Oregon Wild. http://dl.dropbox.com/u/47741/Mature%20Forests%2C%20Heiken%2C%20v%201.8.pdf

2015 BLM RMP Analysis of what's open to logging				
Open to logging	**Acres**	**Not open to logging**	**Acres**	
LSR	636,635	LSR that is structurally complex*	463,910	
outer riparian zone**	167,729	inner riparian zone	232,083	
HLB Low	77,384	cong reserved	40,537	
HLB mod	224,582	district reserves - not including road footprint*	187,926	
HLB uneven	274,199			
East Side Mgt Lands	151,885			
District Reserve Road Footprint**'	33,701			
Totals	1,566,115		924,456	2,490,571
Percentages	**63**		**37**	

3. The DEIS Fails To Distinguish Differences Among Alternatives.

The DEIS seems to focus too much on the similarity among alternatives instead of highlighting differences. The purpose to NEPA is to help the decision-maker choose among alternatives, so the analysis must be redone to better highlight differences that are relevant to the decision-maker's choice among alternatives.

For instance, the DEIS at 225 says "All of the alternatives would increase the potential large wood and small functional wood contribution to streams from the current conditions. There is no meaningful difference discernible at this scale of analysis among the alternatives in their effect on potential wood contribution." This fails to recognize that there are significant differences in wood recruitment among the alternatives. In particular, those that allow commercial logging within the riparian reserves will capture mortality and reduce recruitment of functional wood to both the stream and the adjacent stream-side habitat. Another example is on page 233 of the DEIS which says "there would be no identifiable difference among the alternatives in the effects on fish from peak flow increases …" This does not mean that differences will not occur but rather, BLM reached this conclusion because the analysis was done at a scale that was not designed to identify differences.

As another example, DEIS at 315 states "Although the absolute values for increased potential fine sediment delivery through 2023 vary by alternative, these differences do not represent a substantial difference in the effects of the alternatives, because the increases in sediment delivery and the differences among the alternatives in future increases in sediment delivery are so small in comparison to the existing sediment delivery." This is misleading. Instead of highlighting the small additional level of sediment produced at a regional scale compared to the sediment from existing roads, BLM should disclose that some of the new sediment would be produced in areas that are not currently exposed to high levels of sediment form existing roads. There are local effects that will be significant and differ significantly among alternatives that allow more or less logging and road building near streams.

DEIS at 430 says "there is no basis for predicting a difference in effects between the No Action alternative and Alternatives A, B, and C" with respect to conservation of rare plants and fungi. This is high misleading, especially given the fact that the no action alternative requires pre-disturbance surveys and protection buffers for rare and uncommon species, while the action alternatives do not require surveys and will result in the loss of countless populations of rare and uncommon wildlife. The action alternatives won't even protect existing known sites of rare and

uncommon species on O&C lands "when protection measures … conflict with sustained-yield timber production…" There are many bases for BLM to distinguish alternatives but BLM offers a misleading analysis that highlights similarities. This is arbitrary and capricious.

BLM is basically asking the wrong questions and failing to highlight the choice faced by decision-makers. The EIS needs to clearly show that more logging allowed near streams, more regeneration logging with less retention, more logging of older forests, and more logging without survey for rare and uncommon species, will result in greater the adverse effects to fish, water, wildlife, carbon, and recreation. It is important for the decision-maker to understand this and to be able to see and understand these differences among alternatives.

One example where BLM does find a substantial difference is on DEIS at 255 which says "There is a substantial difference in the structural complexity of most future forests when comparing the even-aged management (which includes clear-cutting) practices in the HITA in Alternatives A and C to the two-aged practices (which include variable retention-regeneration harvest) in the No Action alternative, and the LITA and MITA in Alternatives B and Sub-alternative B, and the MITA in Alternative D." This is an important disclosure that should lead the decision-maker to choose an alternative that retains more structure in regeneration harvest areas. It also shows why BLM finds a difference – because it looked at stand-scale effects, instead of regional effects. BLM needs to do more of this and ask further questions such as. What are the local stand-scale and reach-scale effects of more logging near streams or near populations of rare and uncommon wildlife.

Once these local effects are more clearly understood and disclosed, BLM can then add up those effects to provide a clearer picture of cumulative impacts.

AQUATIC CONSERVATION STRATEGY

The Northwest Forest Plan included the Aquatic Conservation Strategy ("ACS") developed by FEMAT. The ACS has four basic components: (1) a system of key watersheds or refugia comprising watersheds with the best aquatic habitat or the greatest potential for recovering at-risk fish stocks; (2) riparian reserves along streams where certain activities are constrained; (3) watershed analysis to be used to tailor activities to specific watersheds needs; and (4) a comprehensive, long-term watershed restoration program.[83]

The ACS imposed constraints on habitat-degrading activities in two ways. First, binding standards and guidelines restrict certain activities within riparian reserves and key watersheds.[84] Second, FEMAT recognized the need to constrain: (1) activities outside riparian reserves in, e.g., unstable areas; and (2) the cumulative impacts of activities throughout a watershed.[85] Instead of imposing explicit constraints on such activities, the ACS has nine objectives that require aquatic habitat to be maintained and restored to properly functioning conditions.[86] The Northwest Forest Plan Record of Decision gave the ACS objectives binding force as standards and guidelines and

[83] Northwest Forest Plan Record of Decision at B-12; FEMAT at V-32.
[84] See Northwest Forest Plan Record of Decision at C-7, C-30 to C- 38.
[85] FEMAT at V-29.
[86] Northwest Forest Plan Record of Decision at B-11; FEMAT at V-30 to-31.

explicitly required that federal lands shall be managed to attain the ACS objectives. "Both FEMAT and the [Northwest Forest Plan] contemplate that projects must be consistent with ACS objectives."[87]

When Judge Dwyer upheld the validity of the Northwest Forest Plan, he cautioned with respect to the ACS that, "[I]f the plan as implemented is to remain lawful, the monitoring, watershed analysis, and mitigating steps called for in the ROD will have to be faithfully carried out, and adjustments made if necessary." *Seattle Audubon Soc'y*, 871 F. Supp. at 1322. More recently, courts have found that FEMAT embodies the best available scientific information pertaining to the impacts of forestry activities on salmon and their habitat.[88]

The BLM offers no compelling rationale for why all of the proposed action alternatives eliminate the Aquatic Conservation Strategy Objectives and the Key Watershed designations of the NWFP. As confirmed in the 20-year NWFP Monitoring Report, the Aquatic Conservation Strategy Objectives and the Key Watershed designations have proven effective at improving water quality. The BLM's refusal to develop or consider an action alternative that retains these bedrock conservation elements of the NWFP is arbitrary and capricious.

As acknowledged by the BLM on pages 9-10 of the DEIS, FLPMA (43 USC 1701[a][8]) directs the agency to protect water resources and the O&C Act (43 USC 1181a) requires the BLM to manage forests for the purpose of protecting watersheds. At no point in the DEIS does the BLM identify how abandoning the ACS of the NWFP will achieve those objectives or contribute to attaining the purpose and need of the plan revisions process.

I. RIPARIAN RESERVES ARE AN INTEGRAL PART OF THE ACS.

The FEMAT scientists first convened in April 1993 and assessed the likelihood of having the continued persistence of the species, well-distributed throughout its historical range on federal lands over the next 100 years.[89] They were instructed to assume that the Aquatic Conservation Strategy would be fully implemented. For the salmon species considered, the likelihood of their continued survival on these lands over the next 100 years was only 65%.[90] Only when the riparian reserves and other mitigation measures were added into the protections of the ACS did the Northwest Forest Plan result in an 80 percent or greater likelihood of continued existence of salmon and steelhead.[91]

Recognizing that the ACS represented the best available science on the intersection between forest management and salmonid protection, NMFS has relied on ACS consistency in order to

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[87] PCFFA v. NMFS, No. 04-1299RSM, Order on Report and Recommendation, slip op. at 4 (W.D. Wash. March 30, 2007).
[88] *PCFFA v. NMFS*, 71 F. Supp.2d 1063, 1069 (W.D. Wash. 1999); see also *PCFFA v. NMFS*, No. 04-1299RSM, Order on Report and Recommendation, slip op. at 6 (W.D. Wash. March 30, 2007) ("The FEMAT scientists are respected scientists and their views relevant.").
[89] FEMAT at IV-40.
[90] FEMAT Table V-11, at V-69.
[91] FSEIS at 3&4-196; App. J2- 47-48.

judge jeopardy. "[B]ecause NMFS is allowed to equate ACS consistency with a no jeopardy finding, NMFS chooses to inquire into ACS consistency."[92]

Riparian forests are distinctly different from upland forests because they are located adjacent to stream channels where dynamic processes of stream flow and sediment transport interact with vegetation. Riparian forests have a dual role of providing water quality and habitat for freshwater species as well as late-successional habitat for a variety of birds, mammals and other species. Plants along streams and aquatic animals have distinct management needs quite different from upland areas. A large body of scientific literature describes interactions between riparian forests and stream channels as well as larger scale watershed processes.

II. THE BLM SHOULD WORK TOWARD SALMON RECOVERY

The recovery of threatened salmonids (e.g. the Southern Oregon Northern California Coast (SONCC) coho salmon Evolutionary Significant Unit and the Oregon Coast coho salmon ESU) must be a high priority for the RMP planning process. Development of the 1995 Medford District RMP and other RMPs anticipated federal ESA fish listings by adopting the Aquatic Conservation Strategy (ACS) of the Northwest Forest Plan into RMPs. Subsequently, the SONNC coho salmon ESU was federally listed as threatened in 1997 and the listing reaffirmed in 2006. The NOAA Fisheries has determined that the Northwest Forest Plan ACS is adequate for protection and recovery of listed fish ESUs, including the SONCC. We recommend that the ACS be used in all alternatives. Incorporation of the ACS would assure approval by NOAA fisheries and avoid questions of legality as occurred in the WOPR. We are concerned that the RMP process is emphasizing forestry classifications (e.g. moist/dry) that are designed to be compatible with spotted owl recovery while largely ignoring the need for protection of riparian forests to recover coho salmon.

Habitat monitoring has found that streams have generally improved with the ACS (Lanigan et al. 2011). Unfortunately, SONCC coho salmon populations have recently declined despite modest improvements in habitat. The SONCC coho recovery plan states that the SONCC coho salmon ESU is at high risk of extinction and is not viable." The parallel to spotted owl declines is striking but not surprising since both species are strongly dependent on watersheds with mature and old growth forest cover.

Riparian Forests are best managed with treatments that enhance structure through decadence creation, underplanting and prescribed fire (see Franklin et al. 2009:32). We believe these silivicultural treatments are appropriate in riparian forests because they do not remove structure (i.e. coarse wood) needed for the dual purpose of providing habitat for animals and integrity for stream channels. Commercial thinning in riparian forests is often not appropriate because it removes the very component (coarse wood) needed to achieve desired conditions and creates numerous adverse impacts antithetical to stream integrity.

[92] PCFFA v. NMFS, 265 F.3d 1028, 1034-35 (9th Cir. 2001) (further noting that presumably other methods of reaching a jeopardy determination are available, but discussing none).

III. PROTECT KEY WATERSHEDS

The RMP fails to identify a hierarchical system of 5th, 6th, and 7th field coho "key" spawning and coho "key" rearing watersheds with requirements to substantially reduce road density and grazing in 6th and 7th field watersheds. Summer steelhead would also be high priority for key watershed designations. Key watersheds were identified in the Northwest Forest Plan prior to the listing of coho salmon. Federal listings of coho salmon, SONCC coho recovery plan, and recent research findings[93] indicate a need to build on key watershed component of the ACS to direct effective recovery actions at appropriate watershed scales. Although not federally listed, summer steelhead in the Rogue Basin are at a high risk for loss of viability over the next decades. Generally coho and summer steelhead spawn in the same tributaries, thus these watersheds or sub-watersheds would be high priority for key watershed designation (e.g. Cheney Creek, Foots Creek, Evans Creek etc.).

IV. BASIS FOR KEY WATERSHED RMP STANDARDS AND GUIDELINES

Refugia are a cornerstone of most species conservation strategies. Williams et al. (2011b) identified four critical elements for watershed scale conservation: (1) maintain processes that create habitat complexity, diversity and connectivity;(2) nurture all of the life history stages of the fishes being protected; (3) include a large enough watershed to provide long-term persistence of native fish populations and (4) provide management that is sustainable over time. A system of Coho Key Watersheds that serve as refugia is crucial for maintaining and recovering habitat for threatened coho salmon within core areas identified in SONCC recovery plan. Coho Key Watersheds would include areas of high quality habitat as well as areas of degraded habitat. Coho Key Watersheds with high quality conditions would serve as anchors for the potential recovery of depressed populations segments within core population areas. Those areas of lower quality habitat with a high potential or capacity for restoration and will become future sources of high quality habitat with the implementation of a comprehensive restoration program.

As stated in our scoping comments, we recommend that 5th field watersheds with relatively high amounts of high intrinsic potential coho habitat and relatively high spawner counts be identified in RMPs as Key Coho Watersheds. For example, in the Illinois Basin, Sucker Creek, Deer Creek, upper East Fork Illinois River, Elk Creek and possibly Althouse Creek would be identified as Coho Key Watersheds to support core area designation in the SONCC Coho Recovery Plan (p. 30-6). Within Coho Key Watersheds we recommend that sufficient 6th or 7th field sub-watersheds be identified as Coho Key Spawning Watersheds. Likely candidates as Key Coho Spawning Watershed would be smaller watersheds of "key" streams (e.g., Bear Creek and Grayback tribs to Sucker Creek). Mainstem areas of 5th field watersheds are often too unstable for successful spawning by coho because of instability of gravel beds during winter peak flows.[94] Thus, it is common to find high concentrations of coho spawning in only a few tributaries of 5th field watersheds or in spring fed side channels buffered from bedload movement (e.g., Sucker Creek). A portion of juvenile coho migrate to mainstem 5th field stream areas suitable for rearing

[93] Firman et al. 2011
[94] Nawa and Frissell 1997.

or seek out other tributary reaches. The relatively small 6th and 7th field sub- watersheds would be high priority areas for intensive road decommissioning and grazing reduction.

A review by Carnefix and Frissell (2009) found that it is more effective to reduce road densities to very low densities in selected high priority watersheds than to reduce high road densities to only moderate levels. A road density effect on adult coho salmon was corroborated by Firman et al. (2011) who found that "[p]redictor variables indicative of land management, cattle density, and road density were negatively associated with peak spawner densities in many of our models."

The coho populations studied were spawning in 7th field watersheds. This is important because reducing road densities is extremely costly. Reducing roads to very low densities in 6th and 7th field Coho Key Spawning Watersheds would be far more practical and effective than attempting to reduce road densities in Coho Recovery Plan "population" areas that are many times larger. The recommended restoration strategy is to concentrate road density reductions in small watersheds where they will be most effective to benefit known coho spawning populations.

V. RECOMMENDED STANDARDS AND GUIDELINES FOR KEY WATERSHEDS

- Coho Key Watersheds are highest priority for watershed restoration;
- No new roads would be built in Coho Key Watersheds;
- Road Densities in Coho Key Spawning Watersheds would be reduced to 0-0.5/mi^2 during first ten years of plan;
- Grazing would be reduced or eliminated in Coho Key Spawning Watershed; and
- Watershed analysis is required prior to major ground disturbing management activities such as timber harvest in Coho Key Watersheds.

VI. THE BLM SHOULD MAINTAIN RIPARIAN RESERVES

> *The No Action alternative has wider Riparian Reserve widths on fish-bearing streams than all action alternatives." –DEIS at 228.*
>
> *[T]he Riparian Reserves in the No Action alternative were designed to meet an array of objectives, including broad ecological objectives and riparian and terrestrial species habitat. In contrast, the Riparian Reserves in the action alternatives are designed to meet narrower objectives: conservation and recovery or listed fish and protection of clean water, consistent with the purpose and need for action. -DEIS at 80.*

The BLM offers no compelling rationale or reason for its refusal to develop and consider action alternatives that meet the "broad ecological objectives" for Riparian Reserve management that underlie the NWFP. Indeed, federal courts have ruled that the NWFP conservation plan (including the terrestrial habitat connectivity function of Riparian Reserves) is the absolute minimum allowed by federal law. The DEIS contains no proposal to replace the habitat connectivity function provided by NWFP Riparian Reserves and contains no analysis or disclosure of the impacts of reduced riparian widths on terrestrial wildlife connectivity. Thus the

BLM is stepping away from minimum level science based broad ecological objectives that provide a comprehensive management approach to federal lands throughout the entire region, which is what the purpose and need of this DEIS calls for.

As illustrated in Table 3-89 of the DEIS, several BLM action alternatives would allow logging impacting 275-372 miles of fish-bearing and perennial streams "susceptible to shade reductions that could affect stream temperatures." Raising stream temperatures directly inhibits BLM watershed management goals and may result in violations of the Clean Water Act associated with TMDL listed-waterbodies.

Page 317 of the DEIS indicates that increase in riparian reserve logging proposed in every BLM action alternative would necessitate additional road construction within the "sediment delivery distance" (200 feet) near streams.

> *Within the sediment delivery distance (200' feet), newly constructed roads would primarily be constructed to provide access for forest thinning [logging] within the riparian reserve. In the action alternatives, this thinning [logging] would be limited to the outer zone of the riparian reserve." DEIS at 317.*

The BLM fails to quantify the amount of road to be constructed in Riparian Reserves or the amount of sediment that will be added to streams. The BLM neglects to disclose which streams in the planning area are currently TMDL listed for sediment and how the agency intends to meet its Clean Water Act obligations.

Please note that pages 332-335 of the DEIS indicate that the shade reductions and soil disturbance associated with Riparian Reserve logging will make "riparian habitats more susceptible to the introduction and spread of invasive plants" undermining BLM policy objectives for the management of invasive species and riparian habitats.

VII. BLM SHOULD RETAIN NWFP RIPARIAN RESERVES AND STANDARDS & GUIDELINES

We have two primary concerns with alternatives that modify streams buffers. First, the spatial extent of the buffers is reduced without any compelling justification. Second, the standards & guidelines governing activities in the buffers are weakened which will allow many activities to degrade the conditions that need careful conservation. We find no compelling rationale for either of these changes.

BLM claims that the riparian requirements under the no action alternative have conflicting objectives and that the action alternatives will increase certainty. This is inaccurate and misleading. The Northwest Forest Plan clearly prohibits timber harvest in riparian reserves. While it is true that the agencies have exploited some loopholes in that prohibition, that problem could be easily fixed with direction from BLM's state office. Contrary to BLM's assertions, the action alternatives actually increase uncertainty because most of the alternatives allow regeneration harvest in areas that are currently reserves, and they allow commercial logging in the outer portion of narrower stream buffers to achieve questionable purposes that will likely lead to conflict and controversy.

The DEIS fails to consider an adequate range of alternatives for riparian reserves. BLM should consider adopting wider stream buffers to meet several important policy objectives, including, but not limited to:

- Maintain and improve water quality;
- Maintain natural rates of wood recruitment both instream and adjacent areas that support terrestrial wildlife that live near streams;
- Provide high value habitat for spotted owls, marbled murrelets, and Pacific fishers that spend disproportionate time in lower slopes near streams;
- Increase old forest habitat to provide connectivity and support wildlife dispersal across the managed landscape;
- Provide habitat (including moderated microclimate and natural rates of wood recruitment) for numerous species that are not threatened & endangered;
- Provide greater assurance that salmon populations and water quality will be conserved;
- Provide carbon storage in highly productive streamside forests;
- Provide a buffer for increased climate extremes expected under climate change;
- Mitigate for amplified hydrologic cycle caused by climate change;
- Reduce landslide risk by encompassing a greater amount of potentially unstable lands;
- Protect of recreation and scenic values in areas where those values are high;
- Allow near stream forests to serve their natural functions including capture/store/release water, energy, sediment, carbon, nutrients, as well as provide unimpeded movement of wood, gravel, and organisms.

BLM should consider an alternative that retains the existing NWFP buffer widths with clarified standards & guidelines that limit active management to situations that provide clear net benefit to aquatic AND terrestrial wildlife, and do not retard attainment of ACS objectives.

BLM needs to compile and synthesize all the adverse impacts that are caused by reducing streamside buffers and increasing logging near streams, such as those listed above. Where effects are disclosed, the DEIS spreads these effect disclosures across numerous different sections of the DEIS, so the public and the decision-maker cannot see clearly all the public benefits that result from the simple requirement to maintain or increase stream buffers.

The DEIS does not address the original reasons for adopting wider buffers, nor provide a compelling alternative rationale for the proposed radical reduction of stream buffers. The Northwest Forest Plan adopted wider riparian reserves to meet a specific set of objectives that encompassed both aquatic and terrestrial wildlife and to mitigate cumulative effects. When an agency proposes to change course after making an important policy decision, the courts have consistently held that NEPA analysis must clearly explain the rationale for the change. This requires addressing the reasons for the original decision. The DEIS appears to lack any clear disclosure of the multi-faceted purposes of the riparian reserves and the diverse aquatic and terrestrial values that were intended to benefit from the adoption of wider stream buffers. The EIS needs to present the decision-maker with a clear picture of all the adverse impacts that will be caused by the choice whether to maintain or reduce stream buffers and whether to maintain or weaken rules protecting those buffers.

The Northwest Forest Plan explicitly adopted wider stream buffers for a variety of reasons that remain compelling to this day. BLM must not reverse the policy decision to protect wide stream

buffers absent a clear disclosure of a competing rationale and disclosure of the adverse effects of reduced protection for streamside forests. Oregon Wild has carefully reviewed and documented the original reasons for adopting wide stream buffers and Oregon Wild convincingly refutes all the rationales for reduced stream protection offered to-date. BLM must carefully review and respond to this analysis.[95] BLM is proposing to dramatically change the purposes of the riparian reserves in the Northwest Forest Plan from terrestrial AND aquatic purposes, to exclusively aquatic purposes. In making this change, BLM must carefully evaluate the original broad purposes of the riparian reserves, and provide a clear and compelling rationale for narrowing those purposes.

Most of the purposes of the wide riparian reserves adopted in the NWFP cannot be met by protecting forests elsewhere on the landscape. Simply put, meeting Recovery Action 32 is not a substitute for wide riparian buffers. Many of the purposes of the reserves are directly or indirectly connected to the unique slope positions and proximity to streams. For example, any amphibians are associated with streams but use habitat much farther than ½ to 1 site-potential tree distance from the stream. Narrow riparian buffers will have direct adverse effects on these amphibian species.

VIII. OTHER SPECIES RELY ON RIPARIAN AREAS

One of the key purposes of wide riparian buffers was to provide for dispersal of terrestrial organisms. This rationale has only increased in importance in the years since the Northwest Forest Plan was adopted.[96]

Spotted owls disproportionately use lower slopes near streams. Evidence indicates that spotted owls and barred owls are more likely to tolerate each other's presence in mixed hardwood-conifer forests near streams. These conditions often extent more than ½ to 1 site-potential tree distance from streams. Marbled murrelets disproportionately rely on nesting habitat near streams. Reducing stream buffers to ½ to 1 site-potential tree will shrink potential marbled murrelet nesting opportunities and expose marbled murrelet nest patches to next predation. Even wildlife that live within ½ to 1 site-potential tree still rely on protection of forests beyond that narrow buffer. Reducing stream buffers will expose their habitat to edge effects such as increase wind, increased temperature, reduced humidity, and reduced input of down wood which is in short supply as a result of past practices and which so many wildlife species rely on. This is why the authors of the NWFP saw a need for a buffer-on-the-buffer.

The DEIS does not disclose all of these significant adverse effects from reduced stream buffers. The DEIS analysis of riparian reserves does not address all the values provide by riparian reserves. The analysis focused exclusively on listed fish and water quality, but riparian reserves also provide value to non-aquatic species such as spotted owls and marbled murrelets and Pacific fisher, which spend disproportionate time on lower slopes near streams. Wide riparian buffers

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[95] See Heiken, D. 2013. Riparian Reserves Provide Both Aquatic & Terrestrial Benefits - A Critical Review of Reeves, Pickard & Johnson (2013). https://dl.dropboxusercontent.com/u/47741/Heiken%202013.%20Review%20of%20Reeves%20et%20al%20Riparian%20Proposal.pdf.

[96] See Alexander K. Fremier. Leona K. Svancara, Michael Kiparsky, Dale D. Goble, Stephan Gmur, Barbara Cosens, Jocelyn Aycrigg, Frank W. Davis, Robin Kundis Craig, J. Michael Scott (2015) A riparian conservation network for ecological resilience. Biological Conservation 191 (2015) 29–37.

also meet the purpose and need to reduce fire hazard by maintaining more mature forest and less regeneration harvest that leads to hazardous fuel conditions. Wide riparian buffers also contribute to community stability by protecting important public values near streams and by constraining timber harvest that makes communities boom and bust. The DEIS analysis of the alternatives therefore fails to recognize all the important effects of the wide buffers in the no action alternative.

The DEIS fails to address the unique values of lands near streams. BLM treats all lands outside of their new narrow buffers as if they were interchangeable in providing habitat functions for spotted owls, marbled murrelets, and other wildlife. BLM is assuming that protecting old forest far from streams is equivalent to protecting habitat near streams. This is wrong. The no action alternative protects wider riparian buffers. These forests may appear to resemble upland habitat, but their proximity to streams makes them function differently, and the EIS needs to recognize this.

Reeves et al. admit that riparian reserves were established to provide "dispersal corridors for a variety of terrestrial organisms" and "[t]he boundaries of the Riparian Reserve were extended to a full site-potential tree height on all non-fish bearing streams … to provide additional support for non-fish organisms that use the area near streams as habitat or migratory corridors"[97] but their analysis never fully acknowledges the scope of the terrestrial wildlife objectives expected from riparian reserves, nor does their analysis show whether terrestrial objectives will be met if riparian reserves are systematically reduced as they propose.

Application of riparian reserves Scenario 1 throughout the range of the northern spotted owl was one of the key mitigations adopted to assure long-term viability of, not just fish, but a wide range of aquatic and terrestrial species. The EIS supporting the NWFP states: *[General Mitigation Measures] Application of Riparian Reserve Scenario 1 in the intermittent streams would benefit a wide variety of terrestrial and aquatic species by providing additional habitat. These species include the northern spotted owl, coho salmon, amphibians, small mammals, and some vascular plants. Connectivity of the ecosystem would also be improved.*[98]

The NWFP Record of Decision adopted Riparian Reserve Scenario 1 with the explicit intention to benefit: spotted owls, marbled murrelets, marten, red tree vole,[99] vascular plants, bryophytes, amphibians[100] (especially tailed frog, Van Dyke's salamander, clouded salamander, Del Norte salamander, black salamander, Cope's giant salamander, Cascade torrent salamander, southern torrent salamander[101]), bats,[102] birds, mammals, mosses, arthropods,[103] goshawk, fisher, bufflehead, harlequin duck,[104] 19 mollusks,[105] 12 species of lichen, 23 species of fungi,[106] and

[97] Reeves et al. pp 8 and 9.

[98] 1994 FSEIS p 3&4 – 49.

[99] 1994 FSEIS, Appendix B-11, p B-143 -145.

[100] 1994 ROD p B-13.

[101] 1994 FSEIS p 3&4 – 176; 1994 FSEIS, Appendix J2, p 45.

[102] 1994 FSEIS pp 3&4 – 186-187.

[103] 1994 FSEIS, pp 3&4 – 61, 81.

[104] 1993 SAT Report, Ch 5, pp 296-298, 304, 308—309, 310.

130 species that were subject to "additional species analysis" because of viability concerns and received mitigation in the form of wider riparian buffers).[107] Two of these benefited species - the spotted owl and marbled murrelet - were already listed as "threatened" under the ESA when the NWFP was approved. Since the NWFP was adopted, three additional benefited species are warranted (or likely warranted) for ESA listing (the Pacific fisher, the Humboldt marten, and the North Coast DPS of the red tree vole).

In upholding the Northwest Forest Plan Judge Dwyer said "*The federal defendants were bound by law, and by the obvious fact of species interdependence, to consider the survival prospects of species other than vertebrates.*"[108] There is no new information available suggesting that the current buffers are not needed. In fact, there is some evidence suggesting that buffers should be extended to accommodate dispersal of wide-ranging amphibians over ridgetops.[109]

Reeves et al. devote a section of their paper (at pages 46-48) to address the terrestrial wildlife impacts of their proposal, giving five justifications for adopting smaller riparian reserves and why it will have "minimal" effects on terrestrial wildlife. All of their justifications are flawed.

Those flaws are described in detail in the following documents: Heiken, D. 2013. Riparian Reserves Provide Both Aquatic & Terrestrial Benefits - A Critical Review of Reeves, Pickard & Johnson (2013).[110] The DEIS does not address the voluminous evidence that riparian reserves like those in the no action alternative are irreplaceably important for spotted owls, marbled murrelets, and a variety of amphibians, as reported in Heiken (2013).

IX. RIPARIAN RESERVES CONTRIBUTE TO SPOTTED OWL CONSERVATION

The NWFP represents the "federal contribution to recovery" of the threatened northern spotted owl.[111] The NWFP relies on riparian reserves to provide benefits to spotted owls, including dispersal, connectivity, and demographic support. Reeves et al. dismiss the need to maintain riparian buffers for spotted owls because FWS' final critical habitat rule did not specifically incorporate riparian reserves. A more thorough review of the evidence shows that riparian

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[105] 1994 ROD p 38.

[106] 1994 FSEIS, Appendix J2, pp 20 – 23.

[107] 1994 FSEIS, Appendix J2; 1994 FSEIS, Appendix B11, pp B-143 – B-145. Martin Raphael. 2012. The Function of Riparian Reserves for Terrestrial Species – What Was the Intent? http://ecoshare.info/wp-content/uploads/2013/01/Raphael-buffers.pptx

[108] *Seattle Audubon Society v Lyons*, 871 F. Supp. 1291 (W.D. Wash. 1994).

[109] Science Findings, Issue 120 (February 2010) Linked in: Connecting riparian areas to support forest biodiversity, based on science by Kelly Burnett and Deanna Olson. http://www.fs.fed.us/pnw/sciencef/scifi120.pdf; and Olson, D.H., Anderson, P.D., Frissell, C.A., Welsh, H.H., Jr., and D.F. Bradford. 2007. Biodiversity management approaches for stream–riparian areas: Perspectives for Pacific Northwest headwater forests, microclimates, and amphibians. Forest Ecology and Management 246 (2007) 81–107.

[110] https://dl.dropboxusercontent.com/u/47741/Heiken%202013.%20Review%20of%20Reeves%20et%20al%20Riparian%20Proposal.pdf

[111] 1994 ROD p 15.

reserves are critically important for spotted owls, and increasingly so in light of new threats like the barred owl and climate change.

The 1994 Record of Decision for the NWFP explained the role of riparian reserves in conservation of spotted owls:

> ***Mitigation Measures Adopted*** *… The standards and guidelines of the selected alternative mitigate the impacts to plant and animal species and their interrelated ecosystems. The standards and guidelines for the land allocations of this decision will improve current conditions and alter certain past practices detrimental to late-successional species by protecting large blocks of remaining late-successional and old-growth forests, and by providing for the regrowth and replacement of previously harvested late-successional forest stands. …*
>
> *… riparian reserves in particular mitigate timber harvest effects by providing for well distributed patches of late-successional forest that serve for dispersal of mobile species such as the northern spotted owl, and serve as refugia for species that disperse only short distances.*
>
> *… Another possible mitigation is that the rate of timber harvest in the matrix could be controlled (such as with the 50-11-40 rule) to provide additional dispersal habitat for spotted owls. This measure was not adopted, in part, due to the acreage of late-successional and other reserves well-distributed in the matrix … this will protect larger amounts of nesting, roosting, and foraging owl habitat, which will be higher quality than what the 50-11-40 rule would have done (see Appendix G, part 3 of the Final SEIS).*[112]

A careful review of the available evidence shows that riparian reserves provide disproportionate value to spotted owls and they represent an integral part of the spotted owl conservation strategy adopted in 1994. New evidence reinforces the importance of riparian reserves.

Contrary to Reeves et al.'s assertions, the critical habitat rule and the recovery plan explicitly recognize the role of riparian reserves in owl conservation. FWS's 2012 proposed rule for revised critical habitat said "Riparian Reserves, Adaptive Management Areas and Administratively Withdrawn Areas can provide both demographic support and connectivity/dispersal between the larger blocks, but are not necessarily designed for that purpose."[113] And FWS's 2011 Revised Recovery Plan states:

> Riparian Reserves, Adaptive Management Areas and Administratively Withdrawn Areas can provide both demographic support and connectivity/dispersal between the larger blocks, but are not necessarily designed for that purpose. … Apparently in response to barred owls, some marked spotted owl site centers have moved higher up slopes (Gremel 2005). According to one study, "the trade-off for living in high elevation forests could be reduced survival or fecundity in years with severe winters (Hamer et al. 2007:764).[114]

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[112] 1994 NWFP ROD p 29-31.

[113] USFWS 2012. Proposed rule- Revised Critical Habitat for the Northern Spotted Owl. Federal Register Jun 1, 2012. http://www.gpo.gov/fdsys/pkg/FR-2012-06-01/html/2012-13305.htm

[114] USFWS 2011. Final Revised Recovery Plan for the Northern Spotted Owl. pp A-14, B-11.

Spotted owls spend disproportionate time in riparian areas and on the lower third of slopes. Robert Anthony recently provided input to an interagency process regarding thinning in riparian reserves and noted that spotted owls are associated with riparian areas, and that logging has negative effects on spotted owls and their prey:

> *Northern spotted owls are also associated with riparian areas, which is relevant to thinning of young forests in these areas (McDonald et al. 2006, Glenn et al. 2004). The association with riparian areas has been determined with the use of radiotelemetry studies of their movements and habitat use, which have shown that owls use riparian areas more than their proportional availability across the landscape. There have been at least three hypotheses proposed for the disproportionate use of riparian areas: (1) riparian areas provide more favorable thermoregulatory conditions (Barrows 1981); (2) prey species are more abundant in riparian areas (Carey et al. 1992 1999); and (3) fire severity has been lower in riparian areas resulting in the retention of structural complexity (Reeves et al. 2006). There is some support for all three of these hypotheses so they all likely have some influence over the use of riparian areas by northern spotted owls.*
>
> *… [M]any of the forest management practices (i.e., clearcuts, shelterwood cuts, heavy commercial thinning) used in the Pacific Northwest have had negative effects on spotted owls*[115]
>
> *… [I]t is safe to say that commercial thinning within the range of the northern spotted owl will have a negative effect on abundance of northern flying squirrels. Northern flying squirrels are the owl's primary prey by number and biomass throughout most of their range; consequently, there is little doubt that commercial thinning will have a negative effect on abundance of flying squirrels as prey for spotted owls. In addition, commercial thinning has negative effects on the abundance of red-backed voles (Suzuki and Hayes 2003, Manning unpublished data), which is also an important prey species for the owl.*[116]

The contractor's report supporting FWS' 2004 status review of the spotted owls found "owl locations were positively associated with proximity to riparian habitat..."[117] The SEI Report also said, "In the Klamath Province, more nests than random sites were on the lower third of slopes … "[118] Blakesly et al. (1992) found similar results in California: "Spotted owls also selected the lower third of slopes, used the middle third of slopes in proportion to their availability, and used the upper third of slopes less than expected …"[119]

Riparian stands may be particularly important to spotted owls in areas where old forests are uncommon, such as the BLM checkerboard of western Oregon. Glenn et al. (2004) said:

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[115] Forsman et al. 1984, Zabel et al. 1995, Buchanan et al. 1995, Hicks et al. 1999, Meimann et al. 2003.

[116] Anthony, R.G. 2013. Effects of Riparian Thinning on Marbled Murrelets and Northern Spotted Owls. Part III of the Science Review Team for the identification and interpretation of the best available scientific information to determine effects of riparian forest management. 28 January 2013.

[117] SEI Scientific Evaluation Of The Status Of The Northern Spotted Owl, Chapter 5: Habitat Associations, p 5-6. http://www.sei.org/owl/finalreport/Chapter5HabitatAssociations.pdf *citing* Irwin et al. (in press).

[118] SEI p 5-19, *citing* Hershey et al. (1998).

[119] Blakesly, Franklin & Gutierrez 1992. Spotted Owl Roost And Nest Site Selection In Northwestern California. J. Wildl. Manage. 56(2):388-392. http://www.fs.fed.us/psw/publications/blakesley/blakesley1.PDF

> *[N]est sites for owls at NCR [Northern Coast Range] and ESF [Elliot State Forest] generally were located within mature/old conifer forest or along conifer–broadleaf edges associated with riparian areas. … In areas of western Oregon where spotted owls occupy sites with little or no old conifer forest, we recommend that managers retain existing old and mature conifer forest, broadleaf forest, broadleaf forest edges, and forested riparian areas as owl habitat.*[120]

The NWFP expected riparian reserves to serve two main purposes for spotted owls – First, owls use high quality habitat in riparian reserves for movement of adults within and between territories, and for dispersal of juveniles between reserves. Second, riparian reserves provide "demographic support" for owls in the matrix, that is, the additional suitable owl habitat occurring in riparian reserves supports a larger owl population that is less vulnerable to extinction.

The riparian reserves were adopted in part as a replacement for the spotted owl dispersal standard known as the "50-11-40 rule" that pre-dated the NWFP. Riparian reserves were expected to maintain and develop late-successional habitat, and provide superior dispersal habitat (i.e., better than 11" dbh and 40% canopy closure).[121] Higher quality dispersal habitat means that owls can not only move safely through the landscape with protective cover from predators, but they can also find roosting sites that are protected from weather extremes, hunting perches, a prey base offering foraging opportunities, as well as nesting/breeding sites.

An addendum to the Biological Assessment for the NWFP states:

> *Owl dispersal requirements are believed to be met in Alternative 9 due to the cumulative benefits from a variety of land allocations and standards and guidelines which are not specifically earmarked as owl dispersal standards. The following are two [sic] the benefits which are expected to be the most important to assuring owl dispersal … .*
>
> *Riparian Reserve Scenario 1 results in an increase in the total acreage and the amount of owl habitat and murrelet habitat which would be retained along intermittent streams. This will have a greater effect in the provinces which have higher stream densities, as illustrated in the calculations below and the Aquatic Conservation Strategy discussion in Chapter 3&4. The larger acreage of protected habitat will increase the amount of dispersal and nesting habitat which will be retained throughout the owl and murrelet range.*
>
> *Riparian Reserve Scenario 1 will apply to Alternative 9 throughout the range of the northern spotted owl. This modification increases the acreage of Riparian Reserve along intermittent streams from one-half to the full height of a site potential tree. … The decision to implement Riparian Reserve Scenario 1 results in 3,233,100 acres of Riparian Reserves, which is an additional 638,000 acres (25 percent increase) over the Draft SEIS Alternative 9. … These Riparian Reserves will improve travel and dispersal corridors for*

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[120] Glenn, Hansen, & Anthony 2004. Spotted Owl Home-Range And Habitat Use In Young Forests Of Western Oregon. Journal Of Wildlife Management 68(1):33–50. http://www.eddylsrproject.com/deis/B1/703-47%20Glenn%202004.pdf

[121] 1994 ROD p 29-31.

many terrestrial animals and plants, and serve as connectivity corridors between the Late-Successional Reserves. …

The standards and guidelines state that Riparian Reserve widths may be modified after completion of watershed analysis. That analysis will take into account northern spotted owl dispersal needs as well as other species that were intended to be benefited by this mitigation measure. There are two specific values in the application of Riparian Reserve Scenario 1 for spotted owl dispersal. First is the fact that the acreage reserved will be fairly evenly arranged across the landscape. This is important because of the documentation of juvenile spotted owl dispersal occurring in random directions. An even distribution of dispersal habitat is important, and this was one factor which lead to the development of the 50-11-40 rule. The second important feature is that the acreage reserved will have the potential both in the short term and in the long term to provide higher quality habitat than "11-40" conditions. The Riparian Reserves will have more complex forest structure and more dead and down, which will provide better roosting and foraging conditions than a strictly 11 inch dbh and 40 percent canopy closure stand would provide. This will increase its effectiveness in providing for owl survival during dispersal.[122]

David Wiens conducted intensive research on spotted owls in the Oregon Coast Range west of Eugene and found that:

Spotted owls and barred owls in my study selected foraging sites that were closer to streams than random locations, and the relative probability of selection decreased linearly with increasing distance to a stream for both species … . In my study area, small low-order streams were common in lower elevation riparian-hardwood zones and steep, narrow ravines in patches of mature and old conifer trees. Strong selection for habitats near riparian zones has at least 3 explanations. First, cool microclimates associated with stream drainages may be favorable for thermoregulatory purposes during hot, dry summers (Forsman 1976, Barrows 1981). Second, and perhaps more importantly, productive vegetation conditions near streams are likely to support a rich diversity of prey used by both owl species, including woodrats (Carey et al. 1999, Anthony et al. 2003), flying squirrels (Meyer et al. 2005, Wilson 2008), deer mice, and shrews (Verts and Carroway 1998). … A third reason that riparian areas were selected may be due to their complex canopy structures that resulted from past fires that burned less intensively along stream corridors than in upslope areas (Reeves et al. 1989, Kauffman et al. 2001). Such structures may provide good perching opportunities for hunting terrestrial or arboreal prey. … [123]

The 1993 SAT Report, which provided the genesis of the ACS, also offered evidence that riparian areas serve as source areas for small mammals which may serve as a prey base for spotted owls and other predators, stating:

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[122] 1994 FSEIS, Appendix G – Part 3 – Addendum to Biological Assessment. pp G-23 – G-24.

[123] Wiens, J. David. 2012. Competitive Interactions and Resource Partitioning Between Northern Spotted Owls and Barred Owls in Western Oregon. PhD dissertation. OSU. http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/28475/WiensJohnD2012.pdf

Many mammal populations are also dependent on riparian areas. Doyle (1986 and 1990) found that riparian areas in old-growth forests in the Cascades of Oregon were source areas for upland small mammal populations. Abundance of small mammals in coastal forests of Oregon were greatest within 300 feet of the stream, even though individuals were found up to 600 feet away (Gomez 1992). Chapter 5 of this document and USDI (1992) identify several mammal species that use or are dependent on riparian zones. Riparian corridors may also be important as dispersal, travel, and migratory routes for mammals (Gregory et al. 1991).[124]

X. RIPARIAN RESERVES HELP REDUCE COMPETITION BETWEEN SPOTTED OWLS AND BARRED OWLS.

Barred owls, native to eastern North American, have moved west and invaded the entire range of the northern spotted owl. When the NWFP was adopted in 1994, the barred owl was barely mentioned in the analysis. It was assumed that all suitable spotted owl habitat would be available to spotted owls and contribute to their conservation and recovery. Now barred owls occupy and defend tens of thousands (if not hundreds of thousands) of acres of suitable owl habitat that was assumed to be available for the recovery of the spotted owl. Barred owls and spotted owls use similar habitat, and there is significant dietary overlap between the two owls, though barred owls appear to be more generalists in both habitat and food sources.

The barred owl population appears to be growing, and there is no evidence that its population growth is slowing. To mitigate for this, suitable owl habitat needs to be conserved now more than ever. Protecting existing habitat in riparian reserves (and growing more habitat inside and outside reserves) helps increase the chances that spotted owls and barred owl can co-exist. Reducing stream buffers and increasing logging will just increase adverse competitive pressures and magnify the existential perils faced by the spotted owl.

There are two approaches being considered to address the new and significant threat posed by the barred owl: (1) grow more habitat, and (2) kill barred owls. These are not mutually exclusive. The first approach is to protect and grow more suitable owl habitat based on a well-known axiom of the "species-area relationship" from island biogeography which holds that as habitat area increases, the number of cohabiting species also increases.[125] Simply put, spotted owls are more likely to *co-exist* with barred owls if there is more suitable habitat, while local or regional *extirpation* is more likely if there is less suitable habitat available. The existing riparian reserves help protect and restore more suitable habitat and increase the chances of co-existence. Reeves et al. proposal for more logging in riparian reserves will mean reduced area of suitable habitat and greater likelihood of competitive exclusion.

Corroborating these ecological principles, Dr. David Wiens recent telemetry work shows that barred owls have a survival advantage relative to spotted owls in fragmented landscapes.

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[124] 1993 SAT Report, Chapter 5, pp 461-462.

[125] Oscar E. Gaggiotti and Ilkka Hanski. 2004. Chapter 14 - Mechanisms of Population Extinction. *In* Ecology, Genetics, and Evolution of Metapopulations. Elsevier. 2004. http://web.archive.org/web/20070612211945/http://www.eeb.cornell.edu/sdv2/Readings/Gaggiotti&Hanski.pdf. See also Martina Carrete, José A. Sánchez-Zapata, José F. Calvo and Russell Lande. Demography and habitat availability in territorial occupancy of two competing species. OIKOS 108: 125-136, 2005 http://www.ebd.csic.es/carnivoros/personal/carrete/martina/recursos/13.%20carrete%20et%20al%20%282005%29%20oikos%20108-125.pdf.

However, that survival advantage diminishes in landscapes with a higher proportion of older forest (as show in the figure below).[126]

This provides strong support for the continued conservation of mature & old-growth forest inside and outside riparian reserves because spotted owls are able to compete nearly equally with barred owls in landscapes with a high proportion of old forest. According to Wiens:

> *Survival of both species was positively associated with an increasing proportion of old (>120 yrs old) conifer forest within the home range, which suggested that availability of old forest was a potential limiting factor in the competitive relationship between the 2 species. When viewed collectively, my results support the hypothesis that interference competition with a high density of barred owls for territorial space can act to constrain the availability of critical resources required for successful recruitment and reproduction of spotted owls.*[127]

To address the need for additional suitable habitat and to reduce the adverse competitive interactions between spotted owls and barred owls, the FWS adopted Recovery Action 32 that recommends conservation of a *subset* of high quality suitable owl habitat in all federal land allocations. This is a step toward mitigating the effects of the barred owl, but we are not ware of any analysis showing that protecting just a subset of the highest quality habitat is adequate mitigation for all the suitable habitat occupied and defended by barred owls. An impressive groups of spotted owl experts are already calling for conservation of a more inclusive subset of high quality owl habitat.[128]

Even if the highest quality owl habitat in the matrix is likely to be protected under Recovery Actions 10 and 32, riparian reserves still serve an important role in owl conservation. Reeves et al.'s suggestion otherwise is unsupported for several reasons. First, FWS made the recommendation for conservation of high quality habitat knowing that riparian reserves were important for spotted owls and riparian reserves were already protected. Spotted owl conservation likely requires conservation of *both* high quality owl habitat <u>and</u> riparian reserves, not one or the other. Second, riparian reserves are disproportionately important to owl conservation in general, and barred owl mitigation in particular, as described below. Protection

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[126] Wiens, J. David. 2012. Competitive Interactions and Resource Partitioning Between Northern Spotted Owls and Barred Owls in Western Oregon. PhD dissertation. OSU. http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/28475/WiensJohnD2012.pdf. Wiens, D. 2012. Presentation to The Wildlife Society. http://tws.sclivelearningcenter.com/index.aspx?PID=6893&SID=163551 (at 1:12).

[127] Id.

[128] Eric D. Forsman, Robert G. Anthony, Katie M. Dugger, Elizabeth M. Glenn, Alan B. Franklin, Gary C. White, Carl J. Schwarz, Kenneth P. Burnham, David R. Anderson, James D. Nichols, James E. Hines, Joseph B. Lint, Raymond J. Davis, Steven H. Ackers, Lawrence S. Andrews, Brian L. Biswell, Peter C. Carlson, Lowell V. Diller, Scott A. Gremel, Dale R. Herter, J. Mark Higley, Robert B. Horn, Janice A. Reid, Jeremy Rockweit, Jim Schaberl, Thomas J. Snetsinger, and Stan G. Sovern. "Population Demography of Northern Spotted Owls." DRAFT COPY 17 December 2010. This draft manuscript is in press at the University of California Press with a projected publication date of July 2011. It will be No. 40 in Studies In Avian Biology, which is published by the Cooper Ornithological Society. http://www.reo.gov/monitoring/reports/nso/FORSMANetal_draft_17_Dec_2010.pdf

of high quality owl habitat outside of riparian reserves is not a replacement for conservation of riparian reserves.

David Wiens' recent PhD dissertation based on field research in the Oregon Coast Range provides strong evidence that riparian reserves are disproportionately valuable for reducing competition between spotted owls and barred owls.

> *Spotted owls' habitat selection shows a preference for riparian hardwoods (more than 4x greater than the non-forest reference), only slightly less than the owls' preference for old conifer forest (>5x). Furthermore, there is evidence that riparian forests may provide hope as an area where resource partitioning and niche segregation exists between the two owl species. That is, the diverse mix of food sources and habitat structures in riparian reserves appears to meet important needs of both species with less direct competition for resources. Finally, Wiens' telemetry work provides evidence that when spotted owls venture close to barred owls, their selection for riparian forests intensifies.*
>
> *Under the base [resource selection function] RSF for spotted owls, old conifer was >5 times as likely to be selected for foraging as the nonforest reference category (selection ratio [exp(ˆ)] = 5.3, 95% CI = 4.4–6.4), followed by riparian hardwood (4.3, 95% CI = 3.5–5.4), mature conifer (3.4, 95% CI = 2.8–4.1), and young conifer forest (1.9, 95% CI = 1.6–2.4). … As proximity to a barred owl's core-use area increased, a spotted owl's affinity for old, mature, and young conifer forest types was gradually replaced by selection for riparian hardwood forest (Fig. 3.7). … [S]potted owls spent a disproportionate amount of time foraging in steep ravines within patches of old conifer forest. Spotted owls in my study also showed strong selection for riparian-hardwood forest along low-order streams. … My results also parallel those of Glenn et al. (2004), who reported that resource selection by spotted owls in younger forests of western Oregon was associated with hardwood (broadleaf) trees and riparian areas. … Spotted owls and barred owls in my study selected foraging sites that were closer to streams than random locations, and the relative probability of selection decreased linearly with increasing distance to a stream for both species. … The best model of resource selection indicated that spotted owls responded to an increased likelihood of encountering core-use areas of barred owls by decreasing the time spent in mature and old forest and intensifying use of riparian-hardwood forests. Additionally, I found that when spotted owls did enter a core-use area of barred owls they were located more frequently within riparian-hardwood forest than other forest types. … Data on habitat selection and dietary composition suggested that riparian hardwood forests may be an important aspect of resource partitioning between the Species … My results emphasize the value of older conifer forests, large hardwood trees, and moist bottomland riparian areas to resource partitioning between spotted owls and barred owls in the central Oregon Coast Ranges. … My finding that older riparian-hardwood forests played an important role in niche segregation between the 2 species emphasizes the need to consider these forest*

conditions within a management context, as these forests are likely to promote a wide diversity of prey for both species …"[129]

XI. RIPARIAN RESERVES ARE IMPORTANT FOR MARBLED MURRELETS

Marbled murrelets are a threatened seabird that nest on large mossy limbs of mature and old-growth trees located within about 50 miles of the coast. Like spotted owls, marbled murrelets also depend disproportionately on lower slopes and riparian forests. FWS' 1997 Recovery Plan for the Marbled murrelet says "With respect to slope, eighty percent of nests in the Pacific Northwest were located on the lower one-third or middle one-third of the slope."[130] Hamer and Nelson (1995) show that the mean distance to streams from marbled murrelet nests in the Pacific Northwest is 159 meters.[131]

In California, Baker et al. (2006) found that marbled murrelet nest sites "were located closer to streams, had a greater basal area of trees >120 cm dbh, and were located lower on slopes than random sites based on analysis of variance models." Baker (2006) states:

> *We found that nest sites were much closer to streams than would be expected based on randomly available sites within old-growth forests. Nest sites may have been located near streams because these sites afforded murrelets better access from at-sea flyways. Studies have found proximity to streams or other openings to be important for murrelet nesting in other regions as well (Hamer and Nelson 1995, Meyer et al. 2004, Zharikov et al. 2006).*[132]

In British Columbia Burger & Chatwin (2002) found that "[f]orests bordering major stream channels provided high quality nest habitat for murrelets, with large trees, high epiphyte cover and many potential nest platforms. Detections of murrelets were also highest along stream beds …."[133]

Increased clearcutting within riparian reserves is in direct conflict with FWS' 1997 Recovery Plan for the Marbled Murrelet which recommends that mature forests within "secured areas" (such as riparian reserves) be protected so they can serve as future nesting habitat for the marbled

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[129] Wiens, J. David. 2012. Competitive Interactions and Resource Partitioning Between Northern Spotted Owls and Barred Owls in Western Oregon. PhD dissertation. OSU. http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/28475/WiensJohnD2012.pdf

[130] USFWS 1997. Marbled Murrelet Recovery Plan, p 32. http://ecos.fws.gov/docs/recovery_plans/1997/970924.pdf

[131] Thomas E. Hamer & S. Kim Nelson. 1995. Chapter 6: Characteristics of Marbled Murrelet Nest Trees and Nesting Stands. USDA Forest Service Gen. Tech. Rep. PSW-152. 1995. http://www.fs.fed.us/psw/publications/documents/gtr-152/chap6.pdf.

[132] Baker, L.M., Peery, M.Z., Burkett, E.E., Singer, S.W., Suddjian, D.L., And S.R. Beissinger. 2006. Nesting Habitat Characteristics of the Marbled Murrelet in Central California Redwood Forests. The Journal of Wildlife Management (70(4) 939-946. https://www.cnr.berkeley.edu/beislab/BeissingerLab/Steve'%20Publications/Baker_et_al_2006.pdf

[133] Burger, A.E., and T.A. Chatwin. 2002. Multi-scale studies of populations, distribution and habitat associations of Marbled Murrelets in Clayoquot Sound, British Columbia. Ministry of Water, Land and Air Protection Victoria, BC. March 2002. http://env.gov.bc.ca/wld/documents/techpub/mamuwebs.pdf

murrelet.[134] This recovery plan recommendation is not about *existing* high quality habitat, but about mature forests that can serve as future recruitment habitat. These 80-120 year-old maturing forests are precisely those targeted for logging in many recent policy proposals, such as the BLM Secretarial Pilots,[135] and the federal legislation proposed by Representatives DeFazio, Walden, and Schrader.[136]

XII. MAINTAIN BUFFER PROTECTIONS FOR WILDLIFE THAT LIVE NEAR STREAMS

Reeves et al. claim that new information shows that narrow buffers will adequately protect the microclimate needed to meet ACS objectives, stating:

A number of research efforts have examined the effects of forest management on microclimate in riparian areas since the ACS and the associated ecological function curves were originally formulated. … it has been suggested that a one tree-height buffer on fish streams should reduce potential impacts of harvesting in areas on the edge of the buffer on riparian microclimate and water temperature (Brosofske et al. 1997, Moore et al. 2005) (Figure 9b).

… With buffers of 49 ft or greater width, daily maximum air temperature above stream center was less than 1°C greater, and daily minimum relative humidity was less than 5 percent lower than for unthinned stands.[137]

Reeves et al. err by focusing on conditions at the *center of the stream* instead of conditions *throughout the buffers*. This is one of the most significant errors in Reeves et al.'s analysis. Riparian reserves are intended to protect numerous species that do not live *in* the stream, rather, they live in the stream-side forest extending hundreds of feet from the stream, but they still require a relatively cool-moist microclimate, complex forest structure, and abundant wood, and these species will be adversely affected by logging adjacent to narrower riparian reserves. This is part of the reason the NWFP adopted a *buffer-on-the-buffer*, that is, an outer buffer of shade and cover to maintain suitable microclimate conditions for wildlife that live in the inner buffer.

The EIS supporting the NWFP states:

> *Riparian areas are widely considered to be important wildlife habitat. Cool air temperatures due to the presence of cool and turbulent surface waters, typically dense vegetative canopy cover, and their location in the lowest portions of watersheds combine to maintain a distinct microclimate along stream channels and in the adjacent riparian*

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[134] USFWS 1997. Recovery Plan for the Marbled Murrelet. http://ecos.fws.gov/docs/recovery_plans/1997/970924.pdf

[135] Oregon Wild 2011. Scoping Comments on the Wagon Road and Roseburg BLM Secretarial Pilots. http://www.oregonwild.org/oregon_forests/forest-management/in-your-forests/files-for-eyes-on-the-agencies/Wagon_Road_and_Roseburg_Pilots_scoping_6-29-2011_BLM.pdf

[136] Oregon Wild 212. Problems and Pitfalls Associated with the Proposed "O&C Trust, Conservation, and Jobs Act" Version 1.3, June 5, 2012. http://www.oregonwild.org/oregon_forests/old_growth_protection/westside-forests/western-oregon-s-patchwork-public-lands/O-C_Trust_Act_White_Paper_FINAL_6-5-2012_w_DeFazio_response.pdf

[137] Reeves et al. pp 25, 26.

> *area. Maintaining the integrity of the vegetation in these areas is particularly important for riparian-dependent species of amphibians, arthropods, mammals, birds, and bats. Many species of amphibians, birds, and mammals use late-successional and old-growth riparian areas, including associated streams, ponds and wetlands, for reproducing, foraging, roosting, and as travel corridors (Table 3&4-11). The many wildlife species, along with lichens, mosses, vascular plants and mollusks, listed in Table 3&4-11 depend on diverse and complex riparian and aquatic habitats.*
>
> *The principal factor influencing the outcomes for amphibians related to the width of Riparian Reserves.*[138]

The NWFP anticipated regeneration harvest (modified clearcutting) on lands in the matrix outside of riparian reserves. The ongoing threat of regeneration logging is highlighted by recent efforts to increase regeneration harvest. The NWFP recognized that forest openings adjacent to a riparian buffer would create "edge effects" that change the microclimate in the buffer and reduce the recruitment of wood to the buffer. The NWFP addressed this problem by adopting a *buffer-on-the-buffer* so that at least the inner portion of the riparian reserves would have near-natural microclimate and wood recruitment processes.

Reducing the width of riparian reserves and increasing logging adjacent to the narrower buffer will expose sensitive wildlife such as amphibians, lichen, mollusks, red tree vole, and spotted owls, to unfavorable microclimate conditions and reduced levels of dead wood recruitment. This undermines the viability of numerous species that were specifically intended to benefit from the absence of edge effects in the inner buffer.

Reeves et al. recognize a "primary purpose for the extension of the boundary of the Riparian Reserve from one site-potential tree height to two on fish-bearing streams was to protect and enhance the microclimate of the riparian ecosystem within the first tree height …"[139] but they dismiss concerns about microclimate throughout the inner buffer by shifting the focus to microclimate conditions at the *stream center,* or at most 20 meters from the stream. This ignores the fact that many riparian species that were intended to benefit from the riparian reserves use habitat much further from the stream. The outer buffers were established in part to protect microclimate within an inner buffer extending up to 1 site-potential tree height from the stream, which notably protects only a portion of the habitat used by riparian associated species.

Reeves et al. rely on Olson et al. (2007)[140] to support the idea that narrower buffers may be adequate, stating:

> *Olson et al. (2007) reviewed studies of the effects of timber harvest activities, inside and outside of riparian buffers, on microclimatic conditions and amphibians. They concluded that relatively narrow buffers (compared to those of the Northwest Forest Plan) can be effective in maintaining microclimates 33-66 ft (10-20 m) from the stream center. Potential concerns about microclimate that could arise from reducing the size of riparian*

[138] 1994 FSEIS pp 3&4 - 61, 3&4 - 81.

[139] Reeves et al. p 24.

[140] Olson, D.H., Anderson, P.D., Frissell, C.A., Welsh, H.H., Jr., and D.F. Bradford. 2007. Biodiversity management approaches for stream–riparian areas: Perspectives for Pacific Northwest headwater forests, microclimates, and amphibians. Forest Ecology and Management 246 (2007) 81–107.

buffers can be reduced further by minimizing clearcutting along the outer boundary (Moore et al. 2005, Anderson et al. 2007, Kluber et al. 2008). As mentioned previously, clearcutting is not part of the silvicultural strategy under ecological forestry—strategically placing aggregated retention patches during harvest should help ameliorate concerns here.[141]

Reeves et al. make several errors here:

- First, Olson et al. (2007) actually refer to buffers that maintain conditions "at stream center" and the microclimate that "*may* extend 10-20 meters." Reeves tries to make an uncertain statement seem more certain.
- Second, Reeves et al. ignore a very important caveat in Olson et al. (2007) which actually expresses a specific concern about the microclimate effects upslope beyond 10-20 meters from the stream center. Olson et al. state: "However, we have few data for predicting the countervailing spatial extent of upslope harvest influences on microclimates within buffers."[142]

- Third, riparian reserves are intended to protect many species that rely on moderated microclimate conditions extending more than 10-20 meters from the stream. The reduced riparian buffers advanced by Reeves et al. might maintain the microclimate at the *stream center,* or at most 20 meters from the stream, but the NWFP sought to protect the microclimate out to a distance equal to the height of a *site-potential tree*, often 60 meters.[143]
- Fourth, the variable retention harvest (VRH) advocated by Reeves et al. and Franklin & Johnson (2012)[144] is in fact a form of clearcutting (with small reserves). At the site scale, VRH likely creates "edge effects" that are indistinguishable from clearcutting.

A key issue is whether narrow buffers are adequate to protect wildlife, such as amphibians, that may be associated with streams, but also venture away from the water. The NWFP adopted wider buffers in part because many amphibians live up to 900 feet from water. The 1993 SAT

Report explained:

The abundance of amphibians in Pacific Northwest forest and riparian zones is influenced by habitat conditions in riparian areas (Bury et al. 1991, Gomez 1992). Amphibians populations are generally found less than 900 feet from water sources (Nussbaum et al. 1983). Gomez (1992) found that rough-skinned newts, tailed frogs, and western redbacked salamanders were the most abundant species of herptafauna in upland and riparian areas along the Oregon Coast Range. These organisms were found up to 600 feet from streams but were most abundant within 300 feet. Many species have

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[141] Reeves et al. p 27.

[142] Olson et al. (2007) at p 98.

[143] 1993 SAT Report, Chapter 5, pp 461-462. See also Olson, D.H., Anderson, P.D., Frissell, C.A., Welsh, H.H., Jr., and D.F. Bradford. 2007. Biodiversity management approaches for stream–riparian areas: Perspectives for Pacific Northwest headwater forests, microclimates, and amphibians. Forest Ecology and Management 246 (2007) 81–107.

[144] Franklin, J. F. And K. N. Johnson. 2012. A Restoration framework for federal forests in the Pacific Northwest. J. For. 110(8): 429-439.

Table 3
Maximum distances away streams into upland forests at which Pacific Northwest amphibians have been found

Species	Distance (m)	Comments	Reference
RHKE/RHVA, ANFE, PLDU, PLVE, ENES, TAGR [ASTR, DITE]	30–40 m [20–30 m]	Time-constrained searches in quadrats 0–10, 10–20, 20–30, and 30–40 m from streams; 5–100+ year old conifer stands, 0 to 40+ m buffers, 1st–3rd order streams, Oregon; DITE, RHKE/RHVA, PLDU and ASTR found primarily at 0–10 m from stream, PLVE found primarily at 0–20 m from stream	Vesely (1996)
AMGR, TAGR, ENES, PLVE	55	Pitfall traps and cover boards spanning 5, 30 and 55 m from stream; 70-year-old conifer stands; British Columbia; more AMGR were captured at 30 m from stream than 5 and 55 m from stream; AMGR and TAGR moved more along streams than up or down slopes	Maxcy and Richardson (2000)
ASTR	65	Pitfall traps at 5, 25, 45, 65 m from stream; <5 and 80+ year old conifer stands; non-fish-bearing streams <3 m wide; British Columbia; no difference in capture frequency across distance from stream	Matsuda and Richardson (2005)
DITE	66, 22, 19	Radiotracking; forested, clearcut with buffer (20–30 m), and clearcut conifer stands; small streams 1–6 m wide; British Columbia; maximum distance from stream was 66 m in intact forested habitat, 22 m in clearcut, 19 m in buffered clearcut	Johnston and Frid (2002)
ASTR	100	Pitfall traps 5, 25, 50 and100 m from stream; 5- and 250-year-old conifer stands; headwater streams 1–3 m wide and fishless; British Columbia; mean distances from stream reported (adults: 28 m; juveniles: 17 m; males 23 m; females 17 m); frogs captured farther from streams in old growth than in clearcuts	Wahbe et al. (2004)
DITE, TAGR, PLVE, ENES, AMGR, ASTR, RAAU	~135	Pitfall traps, 10 × 10 grid across 135 m × 135 m; 40–50-year-old red alder stands; 2nd order streams, Oregon	McComb et al. (1993a)
ASTR, DITE, BAWR, PLDU, PLVE, RAAU, RHsp, TAGR	200	Pitfall traps at stream and 200 m upslope, 2 trans-riparian pitfall arrays with traps every 25 m; 5–200+ year old conifer stands, deciduous stands; 3rd–4th order streams, Oregon	Gomez and Anthony (1996)
DITE, TAGR, PLDU, PLVE, ENES, ANFE, ASTR, RAAU	400	Pitfall traps <10 and 400 m from streams, 2 trans-riparian arrays with traps every 50 m; 12–140 year conifer stands; 2nd–3rd order streams, Oregon	McComb et al. (1993b)

Species acronyms follow Table 2.

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> *specific tolerance thresholds (e.g., temperature and moisture) microhabitat requirements (e.g., headwater seeps or talus slopes). Many also require downed wood, but may differ in types of wood (e.g., snag, bark on a log, or bark on the ground) or particular decay class of wood (refer to Chapter 5 more specific requirements of specific species). Alteration of microhabitat climate may influence the suitability of riparian conditions for riparian-dependent organisms.*[145]

Narrow buffers that maintain microclimate at the stream center are unlikely to protect temperature-sensitive species that live hundreds of feet from streams.

Reeves et al. offer an incomplete and misleading account of amphibian habitat use, saying "*Recent research by D. Olson of the USFS Pacific Northwest Research Station, found that most amphibians moved along the stream within 45 ft (13.6 m) of the channel.*"[146] In reality there is abundant evidence from Olson and others showing that amphibian use habitat much farther than 45 feet from streams.

The results presented in Olson et al. (2007) do not justify any systematic reduction of stream buffers on federal lands. In fact, their findings strongly reaffirm the importance of the existing buffers, or even an expansion of buffers to promote connectivity between watersheds.

Recent recognition that **stream-breeding amphibians can disperse hundreds of meters into uplands** implies that connectivity among neighboring drainages may be important to their population structures and dynamics.

> *Microclimate studies substantiate a ''stream effect'' of cool moist conditions permeating upslope into warmer, drier forests. … Riparian areas may function as habitat for resident*

[145] 1993 SAT Report, Chapter 5, p 461.

[146] Reeves et al. p 28.

> *species and as corridors for transient species … [Amphibians] may be abundant upslope, and loss or degradation of upland forest habitat could disrupt population dynamics or affect persistence. … Questions persist about whether narrow buffers provide sufficient moderation of microclimate, habitat diversity, and transfers of energy and matter to support non-fish aquatic and riparian biota, particularly sensitive frogs and salamanders, whose abundance is often greatest upstream of fish-bearing waters and whose adult stages sometimes forage hundreds of meters upland from the immediate stream margin. … Many studies reveal pronounced decreases in the ability of amphibians to disperse as human alteration of landscapes increases, and survival of juveniles in such fragmented landscapes is often substantially reduced (see Cushman, 2006)*. These findings imply dramatic effects on immigration because dispersal in amphibians is thought to be primarily effected by juveniles rather than adults (e.g., Funk et al., 2005; Cushman, 2006). … [*L]ess intensive thinning harvests that retain a substantial proportion of the pre-harvest stand density and canopy cover have less impact on stream and riparian microclimates than do more intensive regeneration harvests. … Relatively narrow buffers … can be effective in maintaining stream center microclimate conditions and therefore the steep near-stream microclimate gradients that may extend 10–20 m from streams in intact stands (Anderson et al., 2007; see above microclimate discussion). However, we have few data for predicting the countervailing spatial extent of upslope harvest influences on microclimates within buffers. In general, our understanding of trans-buffer microclimate gradients must be improved by sampling at a higher spatial resolution with spacing among sensors sufficient to quantify non-linear trends across ecotones associated with both stream-buffer and buffer-upslope edges.*[147]

Evidence continues to show adverse effects on microclimate from logging near streams.

Reeves et al. recognize that "large wood is an important element of stream and river ecosystems"[148], however, Reeves et al. mislead when they assert that "[a]llowing ecological forestry in the outer half of the riparian buffers along non-fish-bearing streams is also unlikely to affect wood recruitment."[149] Reeves et al. fail to recognize that recruitment of wood is not just important for streams but also for terrestrial/upland ecosystems that were also intended to benefit from riparian reserves. Reeves et al.'s focus on clearcutting adjacent to narrow buffers and tree tipping into streams fails to recognize likely adverse affects on wood recruitment to terrestrial portions of the riparian reserves.

Many riparian species rely on unimpeded successional processes that accumulate abundant dead wood *near* streams, but not necessarily *in* streams. Logging within and adjacent to riparian reserves will capture mortality, truncate wood recruitment processes, and deprive wildlife of the abundant dead wood they need. Likewise, reducing stream buffers and allowing clearcut edges directly abutting inner riparian buffers will eliminate one source of down wood that would

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[147] Olson, D.H., Anderson, P.D., Frissell, C.A., Welsh, H.H., Jr., and D.F. Bradford. 2007. Biodiversity management approaches for stream–riparian areas: Perspectives for Pacific Northwest headwater forests, microclimates, and amphibians. Forest Ecology and Management 246 (2007) 81–107 (emphasis added).

[148] Reeves et al. p 14.

[149] Reeves et al. p 28.

otherwise fall into the buffer. Protecting an outer *buffer-on-the-buffer* helps maintain natural levels of wood recruitment at least within the inner buffer, though the outer buffer itself would still suffer from depleted dead wood levels due to edge effects.

The NWFP explicitly recognized the problem of reduced wood recruitment in narrow riparian buffers adjacent to logged sites. The 1993 FEMAT Report, an appendix to the EIS supporting the NWFP explained:

> *Large wood on the ground is an important habitat component in riparian areas. Maintaining the integrity of the vegetation is particularly important for riparian-dependent organisms including amphibians, arthropods, mammals, birds, and bats (see appendix V-E for greater detail).*

XIII. RIPARIAN PROCESSES AS A FUNCTION OF DISTANCE FROM STREAM CHANNELS - LARGE WOOD DELIVERY TO RIPARIAN areas

Large downed logs are recruited into riparian areas from the riparian forests and from upslope forests. Similar to large wood delivery from riparian areas into streams, the effectiveness of upland forests to deliver large wood to the riparian area is naturally expected to decline at distances greater than approximately one tree height from the stand edge (Thomas et al.., 1993). Timber harvest adjacent to the riparian area creates an edge that eliminates one source of large wood. Thus, long-term levels of large wood may diminish in the riparian zone.[150]

Additionally, any proposal to protect buffers narrower than one site-potential tree will trigger concerns about wood recruitment to streams, and (depending on slope and aspect) could also degrade the riparian microclimate. Wood is recruited from the full site-potential tree buffer, plus unstable areas. Logging in those areas will capture mortality and reduce in-stream wood recruitment. Also, riparian reserves serve to mitigate for logging outside the buffers. Retaining untreated "skips" (such as riparian reserves) helps mitigate for the loss of snags and dead wood in logged uplands.[151]

OREGON DRINKING WATER PROTECTION PROGRAMS

The Oregon Department of Environmental Quality has spatially mapped drinking water surface source areas for Oregon.[152] We are specifically requesting that BLM analyze a higher protection standard for BLM lands within these drinking water source areas. For example, we recommend that Cave Junction and the Kerby Water District receive a higher degree of watershed protections and higher priority for restoration. A Cave Junction "Drinking Water Special Management Unit" would include the entire East Fork Illinois River watershed upstream of the highway 199 bridge where the City of Cave Junction water intake is located. The federal government invested more than $10 million to construct the City of Cave Junction water and sewage treatment systems in

[150] 1993 FEMAT Report, pp V-25 - V-26.

[151] Heiken, D. 2013. Riparian Reserves Provide Both Aquatic & Terrestrial Benefits - A Critical Review of Reeves, Pickard & Johnson (2013). https://dl.dropboxusercontent.com/u/47741/Heiken%202013.%20Review%20of%20Reeves%20et%20al%20Riparian%20Proposal.pdf

[152] http://www.deq.state.or.us/wq/dwp/swcountymap.html

the 1990s. That investment and the City water rights should be a high priority for protection. In addition the City of Cave Junction has complied with the US Environmental Protection Agency source water protection planning requirements. The City of Cave Junction holds two water rights to divert water from the East Fork Illinois River and serve domestic water to many businesses and 2,350 citizens who live in Cave Junction and Kerby. The Oregon DEQ has mapped the drinking water source area for Kerby and Cave Junction. BLM needs to make spatially explicit analysis of this and all Oregon DEQ drinking water source area maps.

Improved drinking water protection would entail the retention of NW Forest Plan Riparian Reserves with added emphasis on actions to filter out excessive nutrients caused by logging (e.g. phosphorus, nitrogen), filter out roadside use of herbicides, reducing pollutants from road runoff by decommissioning roads or disconnecting roads from stream channels., eliminating rampant off- road- vehicle use that often travel in and across stream channels, eliminating herbicides for roadside weed control, eliminating grazing and horse trails, reducing public road access to stream channels where motorized user dump trash and toxic materials (e.g. Logan Cut), halting mineral withdrawal to prevent the creation of additional toxic mine waste (e.g. Queen of Bronze mine in Takilma Area) and increasing law enforcement to prevent illegal marijuana gardens that use toxic materials (rodenticides) and excessive fertilizers.

We will not be satisfied with the all too often repeated rhetoric that "logging will meet all drinking water requirements." Management of BLM lands and streams must be designed to buffer the effect of ongoing private land pollution and not contribute towards cumulative non-point water pollution effects.

RECOVERY ACTIONS FOR SALMON AND OTHER FISHES

The Southern Oregon Northern California Coastal Coho Cecovery Plan provides recovery actions relevant for analysis in this DEIS. Modeling analysis must delineate critical coho habitat and the network of stream channels upstream of critical habitat that would affect critical habitat.

Circumstances have changed since the ACS was adopted in 1995 BLM RMPS. Coho salmon have been listed and critical habitat identified on BLM lands. The NMFS has deemed the existing ACS (no action alt.) as adequate to maintain and recover listed coho salmon. A recovery plan is final for Southern Oregon Northern California Coastal coho salmon, and a final plan is expected soon.

A huge body of monitoring and research demonstrate that the current ACS has been effective at protecting and improving both water quality and habitat for coho salmon. Any analysis for reduced riparian reserves need to factor in climate change that is likely to be first evident with exacerbated hot dry summers in the Medford District.[153] We provide the following recovery actions and analysis for coho salmon and other fishes that could become biologically threatened and need to be listed and protected.

[153] See Climate Change Report for Rogue Basin http://www.geosinstitute.org/climatewiseservices/completed-climatewise-projects.html

- The National Marine Fisheries Service has identified critical habitat for Oregon Coastal Coho salmon and Southern Oregon Northern California Coastal coho salmon. Spatially explicit identification of these critical habitats need to be integrated into analysis with a higher Riparian Reserve protection standard than non-critical habitat or unoccupied critical habitat. Analysis would need a watershed approach since all stream channels upstream of occupied critical habitat would also need a higher protection standard (e.g. Riparian Reserve land allocations, protections from logging, habitat enhancement, passage improvement, and sediment reductions from non-point sources such as roads, gullies, landslides, OHV use).
- Timber yield projections (p. 58) must be reduced due to landslide prone lands that are unsuitable for harvest due to sediment pollution risk to coho salmon or are uneconomical due to access costs and risks. This is especially relevant for the Medford District because of low productivity on steep lands and need for relatively high road miles to access the low volumes of timber (See Table 28 p. 127). The Medford District needs over a mile of new road for every 1.5 million board ft thinned.
- We recommend that one or more alternatives analyze retaining the existing ACS with more flexibility when implementing project level "buffers" within Riparian Reserve that contain occupied critical habitat of listed species such as coho salmon.
- Analysis of at least one action alternative must include the identification of "inner gorges" and "landslide prone areas" for inclusion within protective riparian reserves based on site-specific project analysis.
- Where feasible, large trees >20' dbh in the outer fish riparian reserve (150-300ft) would be cut or tipped and cabled yarded into the stream with logging equipment. The Medford District has been successful with this technique on Cheney Creek, a high quality coho stream in the Applegate River basin. Obviously, if these large trees in the existing fish riparian reserves (15-300ft) are logged (Alts A, B, C, D) they will never be available for enhancing fish habitat.
- Fire killed trees within Riparian Reserves would not be removed from the riparian reserve. Fire killed trees would be retained to provide shade and dead wood. Burned hazard trees in the riparian reserve would felled into the stream. These management techniques were successfully implemented with the Biscuit Fire decisions.
- Occupied critical stream habitat shall be withdrawn from mineral entry to expedite installation of wood/boulders, ensure retention of large wood placement and ensure protection of spawning gravel and riparian forests.
- Coho salmon migration barriers within project areas or along haul routes shall be removed through collaboration with other agencies, watershed councils, and private land owners.
- A list of coho barriers shall be developed with ODFW and the top barriers shall be removed each year beginning with the year after the ROD. The BLM shall enter into cooperative agreements (i.e. funding, technical expertise) to improve passage on private lands that affect BLM lands upstream.
- Pacific lamprey are declining on the west coast and have been petitioned for federal listing. The principal issue for them is passage of adults to spawning areas. Spatially explicit analysis is needed to identify priorities for retrofitting culverts to provide Pacific lamprey passage on larger streams.

- Sediment from roads within a project area shall be reduced through disconnecting the road runoff from the stream network, decommissioning roads, and preventing off road vehicle use.
- Illegal water withdrawals on coho or summer steelhead streams shall be investigated and returned to instream flow.
- Watersheds with coho spawning shall be reviewed for logging deferral due to cumulative impacts. For example, portions of the Evans Creek watershed on the Medford District were deferred from logging in the 1995 Medford RMP. Conditions remain severely degraded in portions of this watershed (West Fork Evans Creek) and the logging deferral needs to be reinstated.
- Identify a network of 5th or 6th field watersheds as key coho salmon/summer steelhead watersheds for priority restoration.
- Identify a network of 6th and 7th field coho salmon/summer steelhead spawning key watersheds for intensive sediment reduction. Roads would be storm proofed or decommissioned. Roads would be disconnected from the stream network. Grazing would be eliminated. Firman et al. 2012 found that coho salmon spawner abundance was correlated with lower road densities and lower grazing.
- Beaver dams create the highest quality coho salmon habitat. Existing and former beaver dams need to be identified and management directed to enhancing conditions for beaver and protecting beaver from persecution (Pollock et al. 2003).

1. The DEIS Does Not Provide Relevant Choices For The Decision Maker To Ameliorate Sediment Delivery To Critical Coho Habitat.

It is vital that the BLM prevent sediment delivery to coho critical habitat and identify one or more mandatory techniques that would substantially reduce chronic and episodic sediment delivery to streams. We recommend:

- Retain 2 tree height riparian reserves for occupied critical coho habitat. This would greatly reduce sediment from landslides and timber harvest, reduce road building adjacent coho critical habitat, and prioritize road removal/sediment abatement.
- Identify roads within 6th or 7th field coho spawning watersheds for sediment reduction by disconnecting the road from the stream network or decommissioning/obliterating roads.
- Prohibit OHV use in 5th field coho watersheds. Designate them as "closed" and prioritize law enforcement, physical barriers, signs, monitoring and outreach in these watersheds.
- Eliminate grazing along occupied coho critical habitat.
- Identify headwalls and unchanelled valleys as potential sediment delivery sources (i.e. landslide prone areas). Retain mature or older forests on these sites and prohibit road building across potentially unstable areas.
- Reduce or identify a relatively low ASQ for dry forests because due to low productivity it takes twice the number of road miles to obtain the same volume of timber as other districts.

2. Nutrient Loading

The BLM failed to address nutrient loading of streams due to logging. Modeling analysis with reduced (60 ft.) no cut buffers must disclose increased risk of nutrient loading of nitrogen and

phosphorus into streams that are released with logging activities. Many streams in the planning area exceed Oregon DEQ standards for nutrients.

Generally forest buffers of 100 ft or more are needed to retain mobilized nutrients. Adequate no cut buffers are particularly important in headwater streams because of their extensive linear network. There is no science to support narrower buffers in headwater channels subject to nutrient loading. Many streams in the planning area exceed DEQ standards for phosphorus (e.g. Sucker Creek on the Medford District). The issue is how best to keep nutrients retained in soils and not leached out to streams.

3. Medford District Riparian Reserves

Analysis is needed to address the special needs of streams and cold water fish in the Medford BLM District where the dry forest classification dominates. The Riparian Reserve analysis needs to reflect conditions (i.e., context as per NEPA) that warrant a high standard of protection to achieve desired outcomes.

- The Rogue Basin experiences naturally very high stream temperatures, low stream flows exacerbated by droughts, and frequent fires. These hostile factors for fish and water quality are best ameliorated in the long term with the existing Riparian Reserve widths.
- Climate change modeling indicates more heat and drought related stresses on Rogue River cold water salmonids, requiring the maximum protection (i.e. NW Forest plan ACS).
- The federally listed Southern Oregon/ Northern California Coastal Coho salmon Evolutionary Significant Unit in the Medford District is listed separately from the Oregon Coastal Coho ESU. This is important because the SONCC ESU Coho in the Medford District are at a much greater risk of extinction than the Oregon Coastal Coho ESU. Coho populations are much below desired levels and have been decreasing, resulting in the need for retaining a high standard for protection and restoration for at least the next ten years.
- Small cold water refuges created by groundwater make the 2 tree default riparian reserve advisable for occupied coho salmon and summer steelhead habitat.
- Retaining the existing Riparian Reserve standards for the Medford District would greatly simplify timber sale implementation across all forest designations. The Medford District has done a good job of implementing Riparian Reserve thinning and this would continue across all designations as determined by local conditions.
- The Medford District rarely needs to consult with National Marine Fisheries Service because the existing Riparian Reserve widths are known to be adequate to protect federally listed SONCC Coho salmon. Retaining the existing Riparian Reserve standards in the Medford District would ensure speedy timber sale implementation because no consultation with NMFS would be needed.

For the reasons stated above, we think it best for the “dry forest” Medford District to continue managing Riparian Reserves as they have in the past, which includes the judicious commercial thinning of second growth within the reserves based on extremely variable site specific

conditions that defy modeling. Bringing existing Riparian Reserve management forward into the DEIS as a preferred option would ensure a smooth and less controversial transition for changes with upland (dry) forest management (i.e. improved "certainty").

BUREAU SENSITIVE SPECIES AND SURVEY AND MANAGE

The BLM analysis relies upon the development of hypothetical future structurally complex older forests to offset the very real and **immediate** impacts associated with abandoning the Aquatic Conservation Strategy and the Survey and Manage program of the NWFP.

As indicated on page 683 of the DEIS, currently 28% of BLM forests are young stands that lack the wildlife habitat and hydrological values associated with older structurally complex stands. "Young forest habitat is the most prevalent type of habitat" actually present on BLM lands today. Page 684 of the DEIS goes on to acknowledge that when the private lands portion of the O&C checkerboard is considered, 45% of Western Oregon forests consist of young stands. Hence "the prevalence of young and stand establishment stands is greater in the decision area than average historical conditions."

Every BLM action alternative calls for an increase in clearcutting and plantation establishment in a landscape in which young stands already dominate the "timbershed."

Page 225 of the DEIS indicates that alternatives B and C would reduce the amount of structurally complex forests within one site potential tree of streams. *See also* Figure 3-52 and page 233.

Page 680 of the DEIS indicates that the BLM intends to rely upon projected increases in hypothetical habitat for Bureau Sensitive Species (BSS) and (former) Survey and Manage species rather than protecting the actual known sites where these species occur. Trading occupied actual habitat for hypothetical future habitat is arbitrary and capricious.

I. BLM HAS NOT PROVIDED A RATIONALE FOR ABANDONING SURVEY AND MANAGE MITIGATION.

The Northwest Forest Plan adopted survey and manage as mitigation for past and ongoing loss of habitat that are associated with old forests and adversely affected by logging and fragmentation. BLM appears to have adopted a very narrow purpose and need focused on recovery of ESA-listed species, to the exclusion of the NWFP goal of keeping wildlife off of the list. BLM must address the original purposes of the Northwest Forest Plan and must provide a compelling rationale for changing the core purposes of land management. BLM cannot avoid their duty to protect wildlife and avoid analyzing the effects of failing to protect wildlife.

BLM should not abandon core elements of the Northwest Forest Plan, including the survey and manage program, which courts have repeatedly said is important to meeting the goals of the Plan. One of the purposes of the Northwest Forest Plan was to restore a functional interconnected old growth ecosystem. Another purpose was to not only recover species currently listed under the Endangered Species Act, but also prevent new species from being listed. This involved an ecosystem approach to forest management.

Past management of BLM lands has caused severe fragmentation of habitat and substantial emissions of greenhouse gases. Fragmentation of habitat results in increased extinction risk for wildlife populations and these effects tend to be time-lagged. Global warming will compound these effects. It takes a long time to recover from this "extinction debt." BLM lands remain highly fragmented, and the atmosphere remains polluted with excessive greenhouse gases, so BLM has a duty to focus on species that may become endangered during the lag period, rather than just focus on the species that are currently listed under the Endangered Species Act. *See* Jens Kolk, Tobias Naaf. Herb layer extinction debt in highly fragmented temperate forests - Completely paid after 160 years?[154]

In the 1994 Northwest Forest Plan, protecting species diversity was considered an integral part of maintaining functional old growth forest ecosystems. To meet the underlying need for "*a healthy forest ecosystem with habitat that will support populations of native species (particularly those associated with late-successional and old-growth forests),*" the 1994 EIS considered various combinations of reserves and standards and guidelines that mitigate the effects of continued logging and other management activities.[155] In the framework of the 1994 FSEIS, the twin goals of viable populations and functional ecosystems are mutually reinforcing. "In many respects the test of providing a functional, interacting late-successional and old-growth forest ecosystem subsumes the test of viability for the system's component species and groups of organisms."[156] This is merely an expression of the well-recognized interdependence of species.

The structure and function of the historic landscape condition in this region was created by relatively high-productivity forests visited by infrequent large stand-replacing fires which created a landscape dominated by large blocks of old forest. This is the condition that more than 1,000 species evolved with, but this condition was highly fragmented and functionally destroyed by decades of industrial clearcutting. The NWFP sought to recreate something much closer to the conditions that species evolved with.

The authors of the Northwest Forest Plan recognized that establishing large reserves on a highly fragmented landscape is not enough to meet the goal of preventing new species listings. Until the historic pattern of large blocks of old forest can be restored, the survey and manage program is needed to avoid loss of rare and uncommon species during logging.

For decades prior to 1992, logging proceeded on federal forests in the Pacific Northwest without adequate consideration of the needs of species that are dependent upon late-successional and old-growth forest (LSOG). Logging plans were typically designed to disperse cutting units across the landscape in order to avoid acute effects in any one area, but the resulting habitat fragmentation caused widespread harm to virtually the entire forest ecosystem. In the 1993 FEMAT report and the 1994 FSEIS for federal forests within the range of the spotted owl, federal forest managers for the first time attempted to craft a plan that would maintain and restore a functional interconnected late-successional old-growth forest ecosystem that would provide for the needs of

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[154] *Biological Conservation* 182 (2015) 164-172 http://www.sciencedirect.com/science/article/pii/S0006320714004777; and Mark Urban. Accelerating extinction risk from climate change. SCIENCE 1 MAY 2015. https://www.sciencemag.org/content/348/6234/571.full.pdf

[155] 1994 FSEIS vol I p 1-4.

[156] FEMAT, p. II-36.

the spotted owl, marbled murrelet, Pacific salmon, and hundreds of other species associated with LSOG and aquatic ecosystems.

BLM's assertion that "*the distribution of structural stages in the decision area in 50 years would be within the range of the average historic conditions*" (DEIS p 680) is highly questionable. BLM needs to better explain why this conclusion differs from the NWFP. BLM also needs to consider the landscape perspective. Late successional forests are in such short supply on non-federal lands that BLM may need to provide greater than historic average levels of old forest on BLM lands in order to compensate for degraded conditions across the federal/non-federal landscape so that wildlife associated with old forests remain viable.

Conservation of BLM lands represents a rare opportunity to restore low elevation forests. Restoration of a functional interconnected old forest ecosystem, as intended by the NWFP, requires that forests are allowed to express their full range of development and such forests are represented across a wide range of different biophysical settings, such as high elevation and low elevation, valley bottoms and ridge-tops, northern latitudes and southern, moist western aspects and dryer eastern aspects. The NWFP recognized this by including a wide range of biophysical settings in a network of reserves. "*Lower elevation forests have been subject to more intensive forest management than higher elevation forests because a large portion of lands at low elevations are privately owned. Small fragments of old growth are the only remaining representatives of low elevation forests in some areas.*" [157] BLM lands in western Oregon represent a large amount of low elevation forests that have relatively high productivity and high biodiversity. More BLM lands should be allocated to reserves to conserve their high ecological values.

In 1993-94, the authors of the FEMAT and the NWFP FSEIS considered a range of alternatives and concluded that none of the alternatives would ensure attainment of a functional interconnected late-successional old-growth ecosystem within 100 years, because the reserves were so damaged by past management that they likely needed 200 or more years to regrow and recover.

> *During the next 100 years, none of the alternatives provides for a higher than 60 percent likelihood of reaching an outcome in which the quality and quantity of the overall late-successional ecosystem (as defined by the three attributes: abundance and ecological diversity, processes and function, and connectivity) would be at least as high as the hypothesized long-term average condition."*[158]
>
> *In general, high rates of logging, forest plantations, fire suppression, ownership patterns, and human population and environmental influences have altered the regional ecosystem on federal lands to the extent that none of the alternatives can provide for a return to conditions that closely match those of previous centuries. ... [N]one of the alternatives achieved a likelihood of 80 percent or greater for Outcome 1 for any of the individual attributes (see the FEMAT Report, Chapter IV, Terrestrial Forest Ecosystem Assessment). ... The results indicate that none of the alternatives had a 60 percent or greater likelihood of producing a late-successional and old-growth ecosystem with*

[157] 1994 NWFP SEIS, p 3&4-31.
[158] 1994 FSEIS p 3&4 – 43

attributes that approximate at least long-term average conditions (Outcome 1) over a timeframe of 100 years. This occurs primarily because 100 years is not long enough for cutover landscapes to return to late-successional conditions that approximate prelogging conditions. Many late-successional attributes require 200 to 500 years to develop."[159]

The ecosystem assessment shows that the likelihood of attaining a functional and interconnected late-successional and old-growth forest ecosystem in the next 100 years is reduced because some characteristics of terrestrial ecosystems will not be obtained for at least 200 years. Similarly, the Assessment Team expected that degraded aquatic ecosystems will not be fully functional in 100 years. [160]

In recognition of the current deficit of functional late successional forest and the continued risks faced by many late-successional species, the agencies added several mitigation measures, including survey and manage, to the preferred alternative in the Final EIS. The Survey and Manage program requires that the agencies search for and protect certain rare and uncommon species, resulting in the creation of many relatively small, but biologically valuable, protection buffers.

The 1994 FSEIS relied primarily on a network of large reserves to maintain a functional interconnected late-successional old-growth ecosystem.[161] "The reserve system is designed to be comprehensive, adequate, representative, and replicated." [162] However, there are two problems with reliance on reserves. First, there are "significant unanswered questions about the degree to which a reserve system designed spatially to accommodate vertebrate dispersal meets the needs of small organisms," [163]

The second problem with excessive reliance on the reserves is that "old growth forests tend to be distributed in a highly fragmented mosaic." [164] Before the reserves were established in 1994, they were significantly impacted by past logging and road building so the reserves are not currently capable of ensuring the persistence of all late-successional old-growth species.

As much as 40 percent of the Late Successional Reserves currently in young plantations were established for timber production. Typically, the plantations are densely stocked with young Douglas-fir trees, and are unlikely to follow natural stand development pathways toward late successional conditions. Consequently, late-successional forest development in these plantations may be retarded or may not occur at all. In addition, young plantations often increase the occurrence of human caused wildfires, as well as increase the rate of spread and extent of fire and other disturbances across landscapes. The presence of young plantations in Late-Successional Reserves, thus, may increase the risk of loss of intermingled late-successional forests."[165]

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[159] 1994 FSEIS p 3&4 – 45
[160] 1994 FSEIS p 3&4 – 66
[161] 1994 ROD p 45. 1994 FSEIS vol I p 2-23. 2004 FSEIS vol I p 129
[162] 2004 FSEIS vol I p 129
[163] Perry et al. Sept 4, 2001 letter to the RIEC. See also 2004 FSEIS vol I pp 108-109.
[164] 1994 FSEIS vol I p 3&4-29.
[165] 1994 FSEIS vol I p 3&4-49. 2000 FSEIS vol I p 17.

So, the reserve system may not only be conceptually flawed for rare species with limited dispersal capabilities, but it is also non-functional for species that can disperse.

The current DEIS analysis is mostly limited to an projection of the abundance of various forest structural stages, while failing to fully consider other important attributes and indicators of ecosystem integrity. For instance, providing the historic *abundance* of structurally complex forests does not ensure support for healthy populations of wildlife if the habitat is fragmented and not arranged in an appropriate spatial pattern. BLM's analysis asks: "*What levels of habitat would be available under each alternative for [special status] species."* In the FEMAT report and 1994 FSEIS, "*The evaluation of late-successional and old-growth forest ecosystems is expressed as an expected likelihood of achieving long-term past conditions based on three attributes that characterize the quantity and quality of the ecosystem."*[166] Those three attributes are: (1) abundance and diversity, (2) process and function, and (3) connectivity.

II. AMOUNT OF LATE SUCCESSIONAL HABITAT IS INSUFFICIENT.

The current abundance of LSOG in the reserves is insufficient to provide a functional interconnected late-successional old-growth ecosystem, so any additional increment of LSOG outside the reserves (such as survey and manage buffers in the matrix) helps to provide important short-term functionality while the reserves regrow and recover from past logging. The following map of the 66,000 acre Fall Creek LSR clearly shows, with small light-green polygons, the fragmenting effect of past clearcutting. This LSR contains 44% late successional habitat, which is even more than the region-wide average for all reserves (37%).

[166] 1994 FSEIS vol I p 2-68.

III. DIVERSITY OF HABITAT IS IMPORTANT.

Diversity of habitat types is another important attribute LSOG considered by the 1994 FEIS. The survey and manage buffers help contribute to *diversity* simply because each one is in a unique location outside the reserves. Each physical location has a unique combination of geology, soils, slope, aspect, elevation, climate, and especially history of disturbance, therefore LSOG that is retained in different locations will represent a wider diversity of forest-types.

The scientists' Sept 4, 2001 letter to the RIEC says, "Species, species assemblages, and the genetic structure of populations may vary at relatively fine scales for small organisms (which account for by far the largest share of diversity), raising the possibility that each remaining older forest is to some degree unique in its biological structure."

Since survey and manage buffers retain LSOG outside of the reserves, the buffers protect different locations with different geophysical settings and different stand histories, and will thereby enhance the diversity of habitat types within the overall forest ecosystem.

IV. PROPOSED REMOVAL OF SURVEY AND MANAGE

All action alternatives remove the Survey and Manage measures that require the agency to survey for and protect sites of Bureau Sensitive Species when planning a site-specific logging project. The BLM is required pursuant to agency policy to "conduct[] evaluations of the distribution, abundance, population trends, current threats, or habitat for those species using available information." DEIS at 692.

As an initial point, the BLM is eliminating the survey and manage program which satisfied the agency's conservation duties towards these Bureau Sensitive Species. The BLM is eliminating these protections, but does not elaborate on the measures the BLM will take to satisfy their conservation duties. The BLM suggests that the reserve system being set up in WOPR will protect these species; however, this reserve system was not set up to benefit these species or takes into account these species whatsoever, because BLM plainly eliminates the goal of supporting viable populations of old-growth associated species from the WOPR revision. DEIS at 22. This is inadequate treatment of Bureau Sensitive Species.

Not all of these species react to forestry activities the same way the spotted owl does. For example, while thinning in reserves may benefit the spotted owl in the long run, thinning could extirpate many sensitive species from an area. The BLM needs to put a program in place to conserve and analyze impacts to Bureau Sensitive Species.

Also, the BLM's analysis of the vast impact of the removal of this program is woefully inadequate. First, the BLM claims that with complete and species specific surveys, the BLM could analyze the impacts to these species under the various alternatives, but says that the cost of conducting that analysis is too high to conduct all at once during this broad planning stage.

However, this is why Survey and Manage existed in the first place. The BLM has conservation and evaluation responsibilities towards these species, and the most effective way to meet this obligation was a project by project system of surveys, where project receipts would pay for the surveys. It is completely irrational for the BLM to assert that it cannot pay for surveys across the landscape, while also eliminating the only measure designed to mitigate that knowledge gap.

Secondly, the BLM should take into consideration the known sites of various species. The BLM states that for these sensitive species, the BLM will conduct evaluations of impacts to the species based on known information. Over the past two decades the BLM has surveyed for and discovered many known sites of various Bureau Sensitive Species. Those site locations and concentrations should be disclosed to the public in this NEPA process. The BLM could draw conclusions from the surveys conducted for these species concerning range, habitat, and distribution, because little is known about the range and distribution of these species. None of this analysis exists for any species with the exception perhaps of the red tree vole. Failure of the BLM to even attempt this analysis with the existing information it has from decades of survey efforts is a failure to take a hard look at the impact of removing these protections in the future.

Third, the BLM claims that the true analysis of the impact of removing protections for these species was conducted in 2004, the 2004 Final SEIS to Remove or Modify the Survey & Manage Mitigation Measure Standards and Guidelines. DEIS at 692. It incorporates that analysis here. There are several problems with this approach. First, the 2004 ROD and FEIS does not contemplate the various changes in the current alternatives with altering riparian reserve widths, altering the reserve system, altered protections for other late-successional species, like owls and murrelets. All of these changes render the analysis useless because all the underlying protection and buffer standards have changed. Further, there has likely been a lot of new information and significant changes that would render the baseline information in 2004 useless as well. Additionally, it is likely that the data concerning habitat and known sites that are over a decade old is now stale. It is plainly not accounting for the decade plus of surveys that have been conducted for all these species.

Additionally, the BLM cannot rely on a non-NEPA document to cure a lack of analysis in the present document. The 2004 ROD and FEIS, while it went through a NEPA process in 2004, the document was invalidated, DEIS at 692. Therefore, without a new decision on that NEPA document that analysis cannot be relied upon by connected later decisions.

As a final point, the BLM makes a massive faulty assumption regarding Bureau Sensitive Species in the DEIS. The BLM assumes that the habitat and sites of species that fall within the reserve system would receive protection. However, the BLM is permitting in the reserves various types of commercial timber harvest activities that downgrade or removal late-successional habitat. Without maintain the Survey and Manage program on reserve lands, the BLM cannot make this assumption. The BLM would also have to map out the location of every known sensitive species site in order to assure the protection of these sites on the reserves.

V. SURVEY AND MANAGE BUFFERS CONTRIBUTE TO THE FUNCTION OF LSOG FORESTS

The survey and manage species and buffers clearly contribute to the *function* of the LSOG forest, another important old-growth attribute considered in 1994. "Functions … refer to ecological values of the late-successional and old-growth ecosystem that (1) maintain or contribute to the maintenance of populations of species that use these ecosystems, …" [167] The survey and manage buffers contribute disproportionately to this attribute of forest ecosystems, because the buffers are not just randomly designated late successional areas; they are areas that have been surveyed and are known to actually harbor "populations of species that use these ecosystems," and not just any species, but rare and uncommon species that this forest plan was intended to protect. The presence of these rare and uncommon old-growth species is strong evidence that the survey and manage buffers contribute to the function of the old-growth forest ecosystem.

The 2000 and 2004 FEISs both recognize that if populations of survey and manage species are not maintained well-distributed across their native range there will be a "loss of normal biological function." [168]As a result of the 2004 ROD there are now 193 species that will have "insufficient habitat," resulting in some loss of biological function where those species are significantly reduced in population or no longer occur.[169]

The 1993 FEMAT Report also recognized the functional importance of many taxa included in the survey and manage program and the "broad benefits" of retaining even small fragments of LSOG in the matrix.

> *Although an important function of the Matrix is to provide for dispersal of organisms, perhaps of greater importance is the maintenance of organisms with key functional roles in the forest ecosystem. Taxa such as fungi, nitrogen-fixing organisms, and arthropods influence natural succession, nutrient cycling, and other ecosystem processes. Maintenance of populations of these organisms in the Matrix is essential to long-term forest productivity, as well as biodiversity.*
>
> *Old forest patches as small as only a few acres can also provide important refugia for sedentary organisms.... Lichens, fungi, bryophytes, mollusks, arthropods, vascular plants, and the less mobile vertebrates were consistently identified during the expert panel process as benefiting from even small fragments of old forest. <u>Panelists consistently reiterated the important functional roles played by these organisms. Panelists highlighted the necessity of maintaining these organisms well distributed throughout the ecosystem, not just confined to reserves.</u>*
>
> *<u>Summary of mitigation measures having broad benefits</u>*
> *(4) Retain small patches of late-successional or old-growth forest within the Matrix. These small patches can provide important habitat for arthropods, fungi, lichens, bryophytes, vascular plants, mollusks, small mammals, amphibians, and bats. Species*

[167] 1994 FSEIS vol. I p 3&4-37.
[168] 2000 FSEIS vol I p 191. 2004 FSEIS vol I pp 119-121.
[169] 2004 FSEIS vol I pp 124-125.

that are poor dispersers, narrow in their habitat requirements, have restricted geographic ranges and are sensitive to variation in microclimates will benefit most from retention of these patches of late-successional forest.
(6) Survey upland sites for rare, endemic, or sensitive organisms prior to any disturbance caused by management. Protect sites where these organisms occur (e.g. special habitats such as serpentine barrens, wetlands, rock outcrops).[170]

VI. CONSERVING SURVEY AND MANAGE SPECIES ENSURES THAT ECOLOGICAL PROCESS CONTINUE

Ecological processes are another important attribute of LSOG considered in the 1994 FEIS. Examples of ecological *processes* provided directly by survey and manage species include nitrogen fixation (by lichens), nutrient cycling (by fungi, arthropods, and mollusks), symbiosis (in which fungi provide water and nutrients to vascular plants, including virtually all the dominant trees species in the late successional forest, in exchange for photosynthate produced by the plants). Loss of survey and manage protections will lead to reduced benefits related to these processes.

The diversity of functions and processes represented by survey and manage species also enhances the resiliency of the entire forest ecosystem, which is particularly important in the face of climate change and other pressures. This resiliency value of biodiversity also refutes the assertion in the 2004 EIS that if survey and manage species are truly rare, then they must play only a minor role in ecosystem processes and functions.[171] As the climate changes, species that are rare today could become much more important tomorrow. Conserving survey and manage species helps ensure that ecological processes will continue under changing conditions.

VII. SURVEY AND MANAGE BUFFERS PROVIDE HABITAT CONNECTIVITY.

The survey and mange buffers provide important *connectivity* between larger fragments of suitable habitat. The 1995 FSEIS says "Connectivity is a measure of the extent to which the landscape pattern of the late-successional and old-growth ecosystems provides for biological and ecological flows that sustain late-successional old growth ecosystems and plant species across the range of the northern spotted owl." [172]

The current fragmentation of the landscape is not just *between* the reserves but also *within* the reserves themselves. The survey and manage buffers can be viewed as "stepping stones" that link larger patches of late-successional habitat wherever they occur. The added increment of connectivity provided by survey and manage buffers may be very important for enhancing persistence values while the fragmented forests recover.

The design of the Northwest Forest Plan includes large Late Successional Reserves, managed to protect LSOG habitat for species associated with LSOG, with intervening matrix areas, where

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[170] 1993 FEMAT pp IV-186 to IV-190 (emphasis added).

[171] 2004 FSEIS vol II pp 207-208.
[172] 1994 FSEIS vol I p 3&4-38.

more logging is allowed. But the matrix is not a sacrifice zone. There are several standards & guidelines (including survey and manage) to ensure that the matrix plays a role in the ecosystem management scheme of the Northwest Forest Plan.

[F]orests in the matrix function as connectivity between Late Successional Reserves and provide habitat for a variety of organisms associated with both late successional and younger forests. Standards & guidelines for the matrix are intended to provide for important ecological functions such as dispersal or organisms, carryover of some species from one stand to the next, and maintenance of ecologically valuable structural elements such as down logs, snags, and large trees.[173]

Riparian reserves are also located between the LSRs, and, like the Matrix, they are intended to provide connectivity and dispersal. However, the riparian reserves, even more so than the LSRs, are highly impacted by past logging and construction of roads that follow streams, so they are not currently providing adequate connectivity. The objective is that 80 percent of the reserves will be covered with LSOG, but FEMAT estimated that the riparian reserves were only about 31 percent covered with medium and large conifers (versus 42% for the LSRs)[174]. While riparian reserves recover from past disturbance, the survey and manage buffers clearly help serve an important function for connectivity between the LSRs. The 2004 FEIS did not consider the benefit of survey and manage in this context.

Related to connectivity, there is concern for persistence of many species covered by the survey and manage program in part because of the species' limited dispersal capabilities.[175] The scientists' Sept 4, 2001 letter to the RIEC said, "Studies and modeling over the last few years suggest that many LSOG associates in the PNW may be limited more by dispersal than by the abundance of habitat per se, including species of lichens, bryophytes, mollusks, fungi, and invertebrates (Boughton 2001, Sillett et al. 2000). This implies that every remaining piece of suitable habitat becomes an important focus for eventual colonization of the surrounding landscape."

VIII. THE SURVEY AND MANAGE PROGRAM CONTRIBUTES TO KNOWLEDGE AND UNDERSTANDING.

Another "value-added" feature of the survey and manage program is the knowledge gains that contribute to the agencies' understanding of the ecosystem. This value was attributed to some other mitigation but also applies to survey and manage and has not been adequately recognized in the FEIS.

Many of the survey and manage species are included in the program because they are thought to be closely associated with late-successional old-growth forests, yet for some species little is known about their specific habitat associations and their specific role in a functional interconnected old-growth ecosystems.[176] The 1994 EIS said that "opportunities to enhance knowledge about ecosystem function and management in the Adaptive Management Areas of

[173] 1994 ROD pp B-1 to B-2.

[174] FEMAT pp IV-51, IV-54
[175] 1994 FSEIS Appendix J2.
[176] 1994 ROD p C-6

Alternative 9 actually increased the likelihood that this alternative would provide late-successional characteristics in the future." [177] A similar *knowledge-value* is provided by the survey and manage program which not only informs and improves the design of projects at the local scale through pre-disturbance surveys (2001 ROD p 15), but also includes a comprehensive program of strategic regional surveys designed to gain scientifically useful information about little-known, rare, and uncommon species.[178] 2004 ROD eliminates both pre-disturbance surveys and strategic surveys designed to increase knowledge. The objective of functional interconnected late-successional old-growth ecosystem will be reduced to the extent that future knowledge will not be generated by the survey and manage program.

The DEIS at 692 says:

> *…the information in the 2004 SEIS and 2007 SEIS does present analysis based on the incomplete survey information available that concludes that most Survey & Manage species would have sufficient habitat to support stable populations under the No Action alternative without the Survey & Manage measure. … Compared to the No Action alternative, all action alternatives allocate more acres to the Late-Successional Reserve, which the Northwest Forest Plan expected to meet the needs of late-successional and old-growth related species.*

First, we find is very odd that BLM would attempt to tier to previous EISs that were found to be legally deficient by the courts. The analysis in the DEIS is just a few pages and does not address the flaws in those earlier EISs.

Second, the DEIS needs to take a hard look at species that would NOT have sufficient habitat. The fact that "most" species would have sufficient habitat does means that "some" won't.

Third, the DEIS needs to take a hard look at the consequences of increased logging in the reserves which is a likely result of weaker rules for logging in reserves. The standards & guidelines for LSRs allow far too much discretionary logging so the LSRs may not adequately protect rare and uncommon species (or listed species). This concern is amplified because riparian reserves are eliminated in LSRs. The action alternatives leave very little of the BLM landscape off-limits to logging. Subtracting structurally complex LSR, inner riparian zones, and congressionally reserves lands, leaves 63% of BLM lands open to logging under the preferred alternative.

2015 BLM RMP Analysis of what's open to logging

Open to logging	Acres	Not open to logging	Acres	
LSR	636,635	LSR that is structurally complex*	463,910	
outer riparian zone**	167,729	inner riparian zone	232,083	
HLB Low	77,384	cong reserved	40,537	
HLB mod	224,582	district reserves - not including road footprint*	187,926	
HLB uneven	274,199			
East Side Mgt Lands	151,885			
District Reserve Road Footprint**'	33,701			
Totals	1,566,115		924,456	2,490,571
Percentages	**63**		**37**	

[177] 1994 FSEIS vol I p 3&4-46. FEMAT p IV-72.
[178] 2000 FSEIS vol I p 330. The

Fourth, the DEIS needs to account for the increased uncertainty caused by climate change. Species may be less secure than previously assumed and more logging will cause greater risk to wildlife than assumed in previous analyses relied on here.

Fifth, the DEIS failed to take a hard look at the adverse effects on wildlife (including survey and manage species) caused by eliminating other key aspects of the Northwest Forest Plan, such as reducing protection for riparian reserves. The DEIS analysis seems to assume that survey and manage species are mainly dependent on the LSRs when in fact they are dependent on the combination of LSRs, riparian reserves, and other standards & guidelines (including the survey and manage requirements themselves). The matrix standards & guidelines for green tree retention, and down wood retention have significant benefits for wildlife. See 1994 ROD p 29; 1994 FSEIS, Appendix J2. The DEIS needs to clearly disclose the adverse wildlife effects of alternatives that remove these requirements. The EIS supporting the NWFP states:

> *[General Mitigation Measures] Application of Riparian Reserve Scenario 1 in the intermittent streams would benefit a wide variety of terrestrial and aquatic species by providing additional habitat. These species include the northern spotted owl, coho salmon, amphibians, small mammals, and some vascular plants. Connectivity of the ecosystem would also be improved.*[179]

The NWFP Record of Decision adopted Riparian Reserve Scenario 1 with the explicit intention to benefit: spotted owls, marbled murrelets, marten, red tree vole,[180] vascular plants, bryophytes, amphibians[181] (especially tailed frog, Van Dyke's salamander, clouded salamander, Del Norte salamander, black salamander, Cope's giant salamander, Cascade torrent salamander, southern torrent salamander[182]), bats,[183] birds, mammals, mosses, arthropods,[184] goshawk, fisher, bufflehead, harlequin duck,[185] 19 mollusks,[186] 12 species of lichen, 23 species of fungi,[187] and 130 species that were subject to "additional species analysis" because of viability concerns and received mitigation in the form of wider riparian buffers).[188]

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[179] 1994 FSEIS p 3&4 – 49.

[180] 1994 FSEIS, Appendix B-11, p B-143 -145.

[181] 1994 ROD p B-13.

[182] 1994 FSEIS p 3&4 – 176; 1994 FSEIS, Appendix J2, p 45.

[183] 1994 FSEIS pp 3&4 – 186-187.

[184] 1994 FSEIS, pp 3&4 – 61, 81.

[185] 1993 SAT Report, Ch 5, pp 296-298, 304, 308—309, 310.

[186] 1994 ROD p 38.

[187] 1994 FSEIS, Appendix J2, pp 20 – 23.

[188] 1994 FSEIS, Appendix J2; 1994 FSEIS, Appendix B11, pp B-143 – B-145. Martin Raphael. 2012. The Function of Riparian Reserves for Terrestrial Species – What Was the Intent? http://ecoshare.info/wp-content/uploads/2013/01/Raphael-buffers.pptx; See Heiken, D. 2013. Riparian Reserves Provide Both Aquatic & Terrestrial Benefits - A Critical Review of Reeves, Pickard & Johnson (2013). https://dl.dropboxusercontent.com/u/47741/Heiken%202013.%20Review%20of%20Reeves%20et%20al%20Riparian%20Proposal.pdf

BLM's DEIS fails to disclose the consequences of the fact that the old-growth forest ecosystem is currently non-functional. When such a high percentage of the historic amount of mature and old-growth has already been logged, protecting a high percentage of the small amount of remaining habitat does not ensure adequate protection. Likewise, including a high percentage of the forest plan area in the reserve system does not ensure adequate protection, because past logging has already affected such a high percentage of the reserves. Given the existing level of degradation, every acre of mature and old-growth forest is important. Acres with survey and manage species are even more important. Before cutting more of the remaining mature and old-growth forest, it is important to implement mitigation measures to protect species that contribute to the functionality of the overall mature and old-growth ecosystem.

Because the reserves are degraded and not fully functional and will remain so for the next century, the 1994 FSEIS considered, and the 1994 ROD adopted, a number of mitigations, including survey and manage, that will help maintain and restore some of the attributes of functional interconnected forest ecosystems and increase the likelihood that certain species will persist.[189]

The DEIS needs to disclose that Survey and manage buffers play a disproportionately important role in conservation of species because they are not randomly located, but rather they are (1) known to provide habitat for and be occupied by at-risk species and (2) they are located in areas that are threatened with immediate habitat modification.

The DEIS does not adequately disclose the ecological consequences of increased logging in the absence of the survey and manage program, nor does the DEIS explain how they expect to get rid of survey and manage now, after two courts have rejected prior efforts to eliminate the program. BLM must fully disclose the purposes of the program and provide a compelling rationale for abandoning it.

BLM cannot rely on the fact that a large fraction of the landscape is in reserve land allocation, when the old forests in reserves are highly fragmented and a large fraction of the reserves are covered by early and mid-seral forests that do not provide habitat for species of concern.

The scale of analysis makes the alternatives look similar, but this is misleading. At the site scale survey and manage makes a big difference. The 2004 Survey and Manage EIS clearly admits that implementing survey and manage "generally adds protection and reduces risk to species" compared to not doing it.

The DEIS fails to disclose that the Special Status Species Programs (SSSP) are far less protective than survey and manage. The scientific basis of these programs is weak. These programs are often under-funded and inconsistent. Special Status Species Programs give too much discretion to local managers causing inconsistent application and loss of occupied sites. BLM has far too much discretion (just in the fuzzy words) to make choices <u>not</u> to search for and <u>not</u> to protect SSSP. These program slack an "action forcing" mechanism, so the public will be unable to hold the agencies accountable for implementing the programs. Experience has shown that the agencies only act in the interests of wildlife when forced to do so. BLM and other federal

[189] See 2000 S&M FSEIS vol I pp 17-18. 2004 S&M FSEIS vol I p 17.

agencies are notorious for abusing such discretion and making choices in favor of timber extraction and against species conservation. The EIS should disclose the historical facts that lead Judge Dwyer to say in May 1991, that, "*...a deliberate and systematic refusal by the Forest Service and the Fish and Wildlife Service to comply with the laws protecting wildlife ...[demonstrates] a remarkable series of violations of the environmental laws."* [190]

"Site management" for SSSP is far less protective than for survey and manage species. BLM's approach to SSSP is to only protect high priority sites, but unlike survey and manage requirements, there are no consistent criteria or mechanisms to ensure that high priority sites are accurately and consistently identified and protected. The main difference between survey and manage and SSSP is the discretion SSSP affords local managers. This means that BLM's main expectation with the decision to eliminate the survey and manage program is to give local managers discretion to NOT conduct surveys and NOT protect sites. This means we are going from an accountable and consistent system to an unaccountable and inconsistent (i.e. arbitrary and capricious) system of species conservation.

> *Based on BLM Manual 6840, the BLM shall address Bureau Sensitive species (BSS) and their habitats in land use plans and shall implement measures to conserve these species and their habitats, to promote their conservation, and reduce the likelihood and need for these species to be listed under the Endangered Species Act." –DEIS page 680.*

The BLM DEIS largely ignores the binding direction to address and conserve BSS species in favor of a strategy that eliminates the Survey and Manage program, logs known sites, and relies on hypothetical future habitat to mitigate for the actual and certain loss of sensitive species from logging sites that they are known to inhabit.

The BLM presents no quantified analysis of the population levels or trends for any of the Survey and Manage species to be dropped from the program or the handful[191] that will be managed as BSS species. As disclosed on page 692 of the DEIS "there is incomplete and unavailable information relevant to the effects of the action alternatives on Survey and Manage species." What is certain is that the BLM intends to dramatically increase logging of known sites in the short term while relying on hypothetical future habitat. This strategy is not informed by actual species-specific population-informed data or analysis

IX. PACIFIC FISHER

As stated on page 703 of the DEIS the "BLM did not forecast population trends of fisher, because a quantified relationship between the specific number of individuals and the availability of habitat is unknown." This holds true for most BSS and S&M species. Yet the BLM is willing to conclude that hypothetical future habitat outweighs the impacts of refusing to look for, analyze, or buffer habitat for rare species in the planning area. This despite the fact that all of the action alternatives reduce denning habitat, resting habitat and total habitat for the first 10-20 years of implementation.

The fisher is likely to be proposed for federal listing during the RMP process. Management actions must be analyzed to protect and enhance specific habitat features critical to fishers.

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[190] http://clinton6.nara.gov/1993/07/1993-07-01-forest-background.html

[191] Only 5 of 28 current Survey and Manage Species are BSS species. DEIS 692.

Merely reporting generic fisher habitat types from various alternatives is necessary but fails to address needed conservation actions for specific habitat features (large denning trees, hollow logs, mistletoe trees, dense understory shrub, densely vegetated riparian reserves).

The Fish and Wildlife service is conducting a status review of the west coast fisher (78FR16828-16829) and a proposed listing is expected fall 2014. A 2012 update of fisher (77FR70010) states "*Existing regulatory mechanisms on Federal, State, and private lands do not provide sufficient protection for the key elements of fisher habitat, or the certainty that conservation efforts will be implemented or effective. The magnitude of threats is high as they occur across the range of the DPS, resulting in a negative impact on fisher distribution and abundance."* (Emphasis added) Thus, it would be prudent for the DEIS to analyze actual conservation actions to preserve and promote "key elements of fisher habitat" needing special management that would protect fishers and allow for them to increase abundance and range. A well-documented native fisher population is found primarily in the Medford BLM District.[192] A spatially explicit analysis is needed to identify lands with high habitat value as proposed, but analysis also needs to identify where specific conservation actions are needed. Some specific protections would be to protect all snags, live trees >32" dbh since these are used for denning and likely unavailable on most private timberlands. Fuels treatment projects are in conflict with fisher preferred habitat and spatially explicit analysis is needed to ensure that cumulative fuels treatment impacts do not harm fisher habitat. Fishers prefer undisturbed riparian areas. The robust riparian reserves in the no action alternative would best meet the needs of fishers and this conservation needs to identify for fishers. Current project level analysis simply assumes that project impacts are not important because there is abundant fisher habitat that is not being impacted. This is false and not scientific. Landscape scale spatially explicit analysis is needed in this RMP process to identify critical habitat for fishers for protection and enhancement of "key elements."

X. GOLDEN EAGLE AND BALD EAGLE

For the Golden Eagle, the BLM acknowledges that threats include "increased off-road recreation" [193] yet every action alternative includes more acres designated for ORV use while no analysis or data is provided regarding actual impacts to Golden Eagle populations and behavior.

The BLM analyzes impacts to the Bald Eagle at the entire planning level scale, and concludes that there will be "indistinguishable" differences between the action alternatives at this scale. Given that there are only approximately 250 thousand acres of nesting habitat on BLM lands, the BLM should be looking specifically at the impacts to these various habitat patches (older forest in close proximity to large water bodies). Merely concluding that there will be minimal differences at a scale of analysis taking into account millions of acres is inadequate under NEPA. Which sites will be logged, which sites will be retained? Does commercial thinning impact the species even if these sites are located in reserves? Please address these questions in the FEIS.

XI. BLACK-TAILED DEER AND ROOSEVELT ELK

[192] RMP Planning Criteria at 191.
[193] DEIS at 709.

BLM analyzes impacts of the plan revision process to deer and elk using early-seral habitat as a proxy for impacts to the species. BLM assumes that there is a need to increase early-seral habitat because ODFW has documented declines in deer populations across the state. DEIS at 676. To establish a proper baseline for analysis, the BLM instead needs to focus on deer population changes in the project area as opposed to state-wide. We are concerned that deer populations in the project area are stable, perhaps eliminating a need to create early-seral forests on BLM lands in the project area. Additionally, even though population numbers have declined since the 1980's we are concerned that this is an improper baseline for population analysis given the prevalence of clearcut logging in the years proceeding and programs to eliminate predators. In other words, deer numbers in 1979, might have been the highest in Oregon's recorded history, and do not necessary reflect an accurate or ecologically appropriate number of deer for the state and project area. Please develop a more accurate baseline for modeling and interpretation.

XII. WOLVES

Wolves are wide-ranging predators that can exist in a wide variety of habitat types. They are habitat generalists in terms of terrain and vegetation (Boyd 1999, Oakleaf et al. 2006). They are not wilderness dependent, but their survival depends on the availability of cover and relatively secure areas that allow them to avoid humans and escape persecution (Carroll et al. 2003). To successfully inhabit an area they require a year-round prey base of wild ungulates (Boyd et al. 1994, Fritts and Carbyn 1995). Deer, elk, beavers, wild turkeys, marmots, and other small mammals are probably preyed on also.

Because wolves are wide-ranging, disturbance and effects to the species will occur across BLM lands as the species continues to move west and south. Effects could occur during project activities from noise, road building, timber felling, yarding, hauling, smoke (prescribed fire), and increased human activity and presence. Additionally, effects will also be seen by grazing allotments.

Gray wolves are sensitive to road associated factors. (de Vos 1948, Mech et al. 1988, Thurber et al. 1994, Paquet and Callahan 1996, Boyd and Pletscher 1999). For gray wolves, both Mech et al. (1988) and Thiel (1985) found that when road densities exceed about 1 mi/mi^2, wolves avoided or were displaced from areas. Mladenoff el al. (1995) found that road density was the major predictor of wolf pack location. Jensen et al. (1986) reported that road densities >0.6 km/km^2 were apparent barriers to wolf dispersal. Wolves have also been documented to be killed by collisions with vehicles (Gibeau and Heuer 1996, Paquet and Callahan 1996).

The BLM needs to develop standards to ensure that road densities in the forests it manages remain below road densities over 1 mi/mi^2 or manage areas over this road density to prevent any new road construction temporary or permanent. The BLM in its DEIS failed to consider this issue at all, and a failure to do so is a failure to take a hard look at the issue under NEPA.

Specifically, to conserve complete arrays of species and associated ecological interactions, management schemes must consider the density of roads. Road densities greater than 1 mi/mil are considered detrimental to wolf and elk populations Qensen et al. 1986). Wolf pup survival rates indicate that wolves may tolerate road densities higher than 1 mi/mi2 if extensive roadless regions exist adjacent to wolf territories (Mech 1989). But road densities within much of eastside forests exceed 2.5 mi/mi2 (e.g., Colville and Winema National Forests), and remaining roadless regions are quickly disappearing. Protection of terrestrial vertebrates, as well as fisheries resources, requires a moratorium on road building plus efforts to remove existing roads. Henjum, M.G., J.R. Karr, D.L. Bottom, D.A. Perry, J.C. Bednarz, S.G. Wright, S.A.Beckwitt and E. Beckwitt. 1994. Interim Protection for Late-Successional Forests, Fisheries, and Watersheds: National Forests East of the Cascade Crest, Oregon and Washington. A Report to the Congress and President of the United States by the Eastside Forests Scientific Society Panel.

Pups are born at a natal den in spring (generally mid-to late April) and remain there with their mother for about 2 months (Mech 1970, Boyd 1999). During this time any disturbance that results in the female leaving the den may expose the pups to predation or inclement weather. The sensitivity of females to human disturbances at den sites varies greatly among individuals (Boyd 1999). Due to the potential disruption of breeding as a result of human activity associated with any timber harvest, hauling, or road construction activity, these activities and any other activities that could cause disruption should be restricted from April through June. BLM failed to take a hard look at this issue in violation of NEPA.

Wolves are also impacted by grazing activities and grazing allotments. There are 3 potential effects of the proposed grazing activities on gray wolf:

1) Cattle presence on the allotment could displace deer, the primary prey of gray wolves in this area, and thus cause wolves to move to other areas to hunt. Studies have found that deer either moved or changed their use patterns when cattle were turned into allotments (Mackie 1981). Wolves are wide-ranging predators that have been known to travel more than 20 miles away from a den or rendezvous site while hunting (Mech and Boitani 2003). Cattle use of the allotment may result in wolves having to travel further to hunt deer.

2) Human management of the grazing allotment; eg. maintaining fences and water developments, placing salt, moving cattle, looking for cattle, may disturb gray wolves that may be in the allotments. Human disturbance at natal den or rendezvous sites may result in abandonment of the sites (Fritts et al. 2003, Frame et al. 2005).

3) The possibility of livestock/wolf interactions that would result in wolf control actions. Although wolves normally prey on wild ungulates or other wild animals, they sometimes attack and kill livestock or other domesticated animals. Livestock depredation by wolves is difficult to predict and seems to be influenced by many factors. Newborn livestock in remote

places are more vulnerable than larger, older stock that are kept closer to humans, and leaving livestock carcasses out and available for scavenging may increase the risk of wolf depredation (Fritts et al. 2003). The proximity of livestock to wolf homesites can also be a factor in determining the potential for wolf to depredate on livestock (Stone et al. 2008).

The BLM needs to develop conservation measures for its grazing allotments that will deter, wolf-livestock conflict and reduce the need for lethal control actions. This should include, livestock carcass and bone pile removal from allotments, retirement of allotments near rendezvous or den sites, elimination of attractants for livestock near any den sites or rendezvous site, and active implementation of non-lethal techniques to deter conflict when necessary. Please take a hard look at these issues in the FEIS.

XI. RED TREE VOLE

Under the former management mandate (2001 ROD), vole surveys were required pursuant to the species Survey Protocol (now 3.0) and any sites discovered were required to be managed pursuant to the species Management Recommendations (2.0). There was a frequently used exception for pre-disturbance surveys in thinning projects in stands under 80 years old (Pechmann Exemption). WOPR greatly reduces these protections in all alternatives, completely eliminating the vast majority of the species range (all habitat south of Highway 20) from any survey or management regime.

The DEIS contains no analysis or disclosure regarding the impacts of the proposed actions on Red Tree Voles occurring outside the Northern Oregon Distinct Population Segment. What are the population levels and trends for Red Tree Voles (RTV) elsewhere in the planning area? How will genetic connectivity be assured? How many known active RTV sites will be logged? How many RTV will be harmed by such logging?

> *"Since every RTV site in the NOCDPS is a critical for persistence, the lack of provisions for pre-disturbance surveys and known site protection under alternatives A and C would negatively affect the species." DEIS at 738.*

Pages 738 and 744 of the DEIS indicates that Alternatives A and C would negatively affect the species by logging 136 of 383 known sites. Given the acknowledgment that "every RTV site in the NOCDPS is critical for persistence" of the species, the contention on page 744 that the BLM is unsure if such logging would contribute to the need to list the species under the ESA is in error.

A spatially explicit analysis for managing the red tree vole is needed on the entire planning area to assure abundance/distribution for its viability and as an important food source for northern spotted owls and other predators.

The simplistic modeling based on Huff et al 2012 is not adequate and the BLM needs to use Dunk and Hawley. The federal register notice for listing the north Oregon coast red tree vole states:

> *The most comprehensive analysis of current red tree vole habitat conditions specific to the North Coast Range DPS is a report by Dunk (2009, entire). Dunk (2009, p. 1) applied a red tree vole habitat suitability model (Dunk and Hawley 2009, entire) to 388 Forest Inventory Analysis (FIA) plots systematically distributed on all ownerships throughout the DPS (the FIA is a program administered by the USDA Forest Service, and is a national scientific inventory system based on permanent plots designed to monitor the status, conditions, and trends of U.S. forests).*[194]

Certainly the BLM has access to similar plot information identified by the Fish and Wildlife Service to conduct recommended analysis. We are particularly concerned about habitat fragmentation and decreased abundance due to proposed heavy thinning on the Medford District that would space mature trees to the extent that red tree voles would be locally extirpated (e.g. 40% canopy for spotted owl dispersal habitat). Management for abundant and continuous distribution of red tree voles needs to be spatially linked to management for northern spotted owl recovery.

Sites in Reserves: In the WOPR analysis of effects to red tree voles, the BLM forecasted effects to the species by "applying observed detection rates and mean size of occupied stands against acreage of habitat in the Harvest Land Base" and "assumed all sites would be protected in reserves." However, there is no requirement it appears from the management objectives and actions that surveys be conducted in reserves for red tree voles when activities are planned that could remove red tree vole habitat.

Any timber harvest activities in reserves will remove and displace voles. "Continuing timber harvest in younger forest areas adjacent to remaining patches of older forest diminishes the habitat quality of these stands by maintaining them in an isolated and fragmented condition that may not allow for persistent populations of red tree voles." Federal Register /Vol. 76, No. 198 /Thursday, October 13, 2011 / Proposed Rules 63735. Thinning younger stands occupied by tree voles can reduce or eliminate voles from these stands (Biswell 2010, pers. comm.; Swingle 2010, pers. comm.), and Carey (1991, p. 8) suggests activities that result in rapidly developing (changing, unstable) younger forests are a limiting factor for red tree voles. *Id.* at 637-38.

If the BLM wants to make the assumption that all vole sites are reserved in its analysis, all timber removal activities in the reserves should require full and complete red tree voles surveys, and the adequate protection of these red tree vole sites. *Id.* at 637-38. This should include protections of large blocks of habitat not just isolated patches of older forests created by the current Management Recommendations because the FWS's "evaluation of the remaining older forest patches within the DPS indicate they are likely insufficient to sustain red tree voles over the long term due to their relatively small size and isolated nature." *Id.* at 637-38.

Non-high priority sites: Although the baseline No Action Alternative takes into account the 2001 ROD, it does not mention or consider the "Non-High Priority" process that has designated many acres of existing red tree vole sites as non-high priority and cleared them for

[194] 76FR63724

logging. Not factoring in this option would allow the BLM to selectively log certain new red tree vole sites and it overlooks an option existing land managers had under the NFP. Its availability could influence the BLM's decision to eliminate Survey and Manage for red tree voles in most of the alternatives. Please disclose the amount of acres that have been designated or are proposed to be designated non-high priority. The BLM should develop an alternative that uses the survey and non-high priority approach to managing sites in the Harvest Land Base. Further surveys would contribute to a greater understanding of this imperiled species and inform future management and recovery decisions, not to mention the listing status of the species.

Additionally, will it be possible for the BLM to use the non-high priority process north of highway 20? This is not clear.

Need to List the Species: Based upon the findings of the FWS's Warranted but Precluded Findings for the North Coast Oregon DPS of the red tree vole, any reduction in federal vole protections will result in threats to the persistence of the species, and a potential need to list the species. The North Oregon Coast DPS extends north of the Siuslaw River to the Columbia, and the FWS concluded "that the ongoing effects of the destruction, modification, and curtailment of its habitat, in conjunction with other factors described in this finding, pose a significant threat to the persistence of the North Oregon Coast DPS of the red tree vole." FR 63740.

"Clearly, existing and projected amounts of older conifer forest habitat conducive to red tree vole persistence are less than the amounts projected to have occurred historically and with which tree voles have evolved. High-quality older forest habitat remains in isolated fragments, most of which are too small to support tree voles, and are so widely separated as to be likely well beyond the dispersal capability of the species. Unlike historical conditions, which were highly stochastic, these changes are likely to be permanent. Based on our analysis of best available information, we conclude the remaining high-quality habitat within the DPS is likely insufficient to support red tree voles over the long term, and persists in a fragmented and isolated condition that renders local populations of red tree voles vulnerable to extirpation or extinction through a variety of processes, including genetic stochasticity, demographic stochasticity, environmental stochasticity, and natural catastrophes." FR 63754.

Based on these conclusions by FWS, any reductions to protections to the species will contribute to the need to list the species. This is particularly true because "red tree voles are afforded more protection on Federal lands than on State Forest and private lands within the DPS, primarily as a result of the Survey and Manage protections" *id,* and every BLM DEIS Alternative aside from the no-action alternative removes Survey and Manage protections, or reduces these protections dramatically. Based on the WPB findings by the FWS, the BLM should have developed an alternative that set aside specifically large blocks of habitat in areas critical for red tree vole persistence, dispersal, and genetic connectivity. The BLM did not develop any alternative to this regard and did not analyze these issues at all.

Further, the BLM DEIS assumes a large number of sites will be treated as non-high priority, this was not the understanding of the FWS that concluded "all sites on Federal land within the DPS are considered high-priority sites with the exception of 198,000 ac (80,130 ha) of the southernmost portion of the DPS (primarily located within the Siuslaw River drainage)."

Undermining survey and manage protections and the high-priority treatment of vole sites will lead to threats to the species persistence within the North Oregon Coast DPS, not just the area north of Highway 20.

XII. BLACK BACKED WOODPECKER

Spatially explicit analysis is needed to identify expected areas of snag shortages over the entire landscape. Snag retention standards are needed for black-backed woodpeckers. Adjacent industrial private timber management produces virtually no snags.

Post fire forests that are aggressively clear-cut do not provide habitat for the Black Baked Woodpecker. Numerous mammals, birds and amphibians are dependent on snags and down wood. Fishers, black-backed woodpeckers and other future candidates for federal listing need active management to assure snag habitat is protected or artificially created. The BLM needs to reconsider assumptions about stand replacing fire regimes and treatments to reduce high intensity fire (Odion et al. 2014). Standards for snag retention during post fire logging are needed to assure viability of snag dependent animals currently in decline (e.g. fishers, black-backed woodpecker, olive sided flycatcher). Areas with existing or modeled snag shortages would be candidates for snag creation where unwanted competing trees exist within outer Riparian Reserves. There needs to be systematic active management to maintain desirable snag densities at appropriate spatial scales. At a minimum snags, live trees >32" dbh and hollow logs need to be protected in fisher areas during timber harvest. Similarly, dense stands of trees and fire-killed snags need to be maintained for black-backed woodpeckers.

The BLM must identify a spatially explicit analysis of the effects of salvage logging, thinning, and fire suppression on wildfire dependent black-backed woodpeckers. The black-backed woodpecker is undergoing a federal status review and a proposed listing is likely during summer 2014. The findings from the Federal Register notice (78FR21097)[195] states:

> *On the basis of our determination under section 4(b)(3)(A) of the Act, we find that information in the petition and readily available in our files presents substantial scientific or commercial information indicating that listing the Oregon Cascades-California population and the Black Hills population of the black-backed woodpecker may be warranted. This finding is based on information provided in the petition, in addition to information readily available in our files, on the possible loss of black-backed woodpecker habitat due to* ***salvage logging, fire suppression, and forest thinning****, and on the possible negative population effects due to small population size and climate change. We will initiate a status review to determine whether listing each population as endangered or threatened under the Act is warranted.* (emphasis added)

Thus, the BLM needs to analyze management options that would improve viability of black-backed woodpeckers by instituting conservation measures to provide large patches of intact burned forest, manage for dense forests with no thinning, curtail fuels treatment, and reduce the intensity of fire suppression efforts in appropriate potential habitat.

XII. MARBLED MURRELET

[195] http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0F5

In the NFP and original BLM RMPs, the agency would survey prior to logging in any potential Marbled Murrelet habitat. If there is any indication of occupancy, the agency would protect a 0.5 mile radius of all contiguous existing and recruitment habitat (stands capable of becoming habitat in 25 years). These areas would be managed as LSR. Recruitment habitat was required to "protected and enhanced" by any silvicultural treatment. (Eugene RMP at 62).

WOPR alters this regiment in all alternatives as laid out below. In the preferred alternative, murrelet surveys are restricted to the first 35 miles from the coast, and marbled murrelet habitat generally can extend up to 55 miles inland. Additionally, survey habitat is much more strictly defined as detailed out below. Timber harvest is allowed without surveys if large legacy trees are withheld from harvest and habitat is "maintained."

*Alternative A: No surveys, protect existing sites, seasonal disruption restrictions

*Alternative B: Surveys 35 miles from Coast in "mature or structurally-complex coniferous forest" and "conifer forests under 80 years old with platform trees (must be within 35 miles of coast, conifer, dbh greater than 19.1, over 33 meters tall, potential structure over 10 meters from ground, and contains platform over 4 inches in diameter. If stand occupied protect all occupied habitat plus 300 foot buffer around occupied stand. In stands under 80 with platforms, no surveys needed if platform trees aren't removed; maintain habitat (need to define); seasonal restrictions during breeding season.

*Alternative C: surveys in conifer stands over 120 years old, protect sites same as above for 10 years, and existing site protection lasts 10 years

*Alternative D: surveys same as B (but no 35 mile limitation), buffer all contiguous habitat within .5 mile radius of occupied stand (no gaps wider than 100 meters in forest)

Existing Sites: Marbled Murrelets have high nest-site fidelity, and as such, the PSG protocol recommends treating all occupied Marbled Murrelet sites as occupied sites indefinitely. A murrelet site, due to the inability to locate an exact nest location, occupies the entire area of contiguous forest. Given that the BLM is under direction from the FWS to protect occupied habitat, a majority of BLM alternatives say that the BLM will protect existing sites, but it is unclear what this means. DEIS at 722.

Pursuant to the PSG Protocol and available murrelet studies, occupied habitat means all the trees in a contiguous stand, including platform and non-platform trees. Any logging within this occupied habitat opens up the stand to predators and fragments the bird's habitat, resulting in take.

The BLM states that under three of the four action alternatives, all existing murrelet sites would be "retained." DEIS at 733. The BLM needs to elaborate on what this means. We assume it means that the entire survey area, i.e. contiguous forest stand, for each murrelet nest site is to be

protected, off limits from any kind of logging. Marbled Murrelet nest sites are compromised by forest and canopy openings that can be created by thinning or adjacent clearcutting. The BLM if indeed it is committed to protecting existing occupied sites, needs to ensure that all these sites are off limits from commercial harvest of any kind, because logging will create forest edges and openings that will expose these nest sites to an increased risk of predation. Additionally, even if these sites are in reserves this does not guarantee their protection because of the logging permitted in reserves that can downgrade or remove older forest.

300 Feet: In two of the BLM Alternatives the BLM proposes to protect Marbled Murrelet nest sites with a buffer of 300 feet as opposed to a half mile. This results in marbled murrelet occupied sites are approximately 6.5 acres in size as opposed to approximately 500 acres in size. The BLM provides no analysis or scientific justification that these 300 feet buffers will ensure protection of the nest site. Almost assuredly, a 6 acre nest site for the murrelet will result in the failure or predation of that nest site. We have attached numerous studies on the murrelet to that regard. Therefore, the BLM's assumption in the DEIS, that these sites will not be "taken" because of this 300 foot buffer is false and has zero scientific justification or rationale. This prescription will result in violations of the ESA, the MAMU Recovery Plan, the 5 Year Review Recommendations, and the NWFP Recommendations.

Potential or Suitable Habitat: We are concerned that the BLM is defining potential or suitable survey habitat for these alternatives too narrowly, and will accordingly miss certain types of Marbled Murrelet nest sites from this survey regiment. Murrelets will nest in younger stands if a single legacy tree is present, but the BLM is taking a stand level approach. When averaged, stands that provide nesting trees and habitat for murrelets could have average DBH, tree height, and various measurements that will not satisfy the BLM survey standards laid out above. Please provide scientific justification for the assertions that a large cohort of legacy trees within a forest stand is necessary for marbled murrelet habitat.

The BLM either needs to delete the DBH and height limitations or any limitations based on the number of platform trees present, or the BLM needs to factor in the percentage of nest sites that will occur outside of survey habitat and account for their loss and destruction in the modeling of the impacts. As an illustration, the BLM admits that over 10% of the existing occupied sites exist outside of what the agency has modeled or considered "nesting habitat." DEIS at 733. The agency needs to take a hard look at this issue.

35 Mile Delineation: Please explain or provide ecological or scientific justification for the 35 mile mark in Alternative B. It seems entirely arbitrary and will result in the take of murrelets nesting outside this area.

Habitat "Maintenance": Under the alternatives where surveys are required in the future, we are concerned that the BLM's habitat maintenance program will not result in adequate protection of the newly discovered nest site, not make it safe to assume that new sites will be retained, or that

Marbled Murrelets will continue to reproduce at these locations. The BLM is permitting logging, as long as the large legacy trees with platforms are not removed. Again, it is inadequate to just protect potential Marbled Murrelet nest trees in a stand. Logging trees that provide canopy closure around these legacy trees opens the stand up to corvids and will result in dramatic risk of nest predation and failure. The entire contiguous stand with large buffers needs to be protected in perpetuity to protect murrelets.

Large Block Habitat: The BLM should have considered blocking up large areas of habitat known to contain legacy and platform trees to provide refuges for the marbled murrelet. Aside from the no action alternative, it appears every alternative is reducing protections for the Marbled Murrelet. Given the species flat lining or declining population levels, coupled with an alarming drop in juvenile numbers which signal problems with reproduction, should implicate an alternative that strengthens protections for the species and creates special reserves for the species to guarantee viability of the species.

False Assumptions: In numerous places throughout the DEIS, the BLM assumes that murrelet populations are increasing. This is false, and we have attached numerous recent studies to this regard. Alternatives that all reduce protections for the species because they are based upon this false assumption flaws the NEPA process.

Studies: We have attached numerous studies that provide scientific support for the points made above. Please contact us for further scientific information or any questions regarding the studies and science provided.

XIII. OREGON SPOTTED FROG

Analysis and survey data are needed for the Oregon spotted frog because it has been proposed for federal listing and proposed critical habitat identified. The federal register notice (78FR53582-53632) for proposed listing of the Oregon spotted frog identifies two Oregon spotted frog populations in the planning area. The BLM must identify the need for a field survey in the decision area to locate additional populations in the Lakeview District and Medford District Ashland Resource Area. In the absence of a systematic field survey the BLM must assume that suitable spotted habitat is occupied and will be adversely impacted from grazing, water withdrawals, and potential introductions of alien predator species. The BLM must identify suitable Oregon spotted frog habitat for spatially explicit analysis purposes and to guide needed field surveys. The BLM must treat a species proposed for listing as if it is already listed. The RMP must identify conferencing with US Fish and Wildlife Service to guide the final decision of needed conservation actions and field surveys for the Oregon spotted frog.

XIV. NORTHERN SPOTTED OWL

WOPR Proposed Actions Common to All Action Alternatives:

"Protect stands of older, structurally complex conifer forest" and "maintain habitat for NSO" In LSR.

*Maintain means keep Nesting Roosting and Foraging Habitat (NRF) and dispersal. (Cites III-15 of recovery plan for management allowed in NRF)

*Maintain NRF, Nesting Roosting and Foraging Habitat defined as multi-layered, multi-species canopy, diameter over 30 inches dbh and canopy cover over 60% and decadence components

*Harvest generally prohibited, but road construction allowed, hazard logging allowed unless it downgrades habitat (NRF to dispersal).

*Fire suppression, fuels reduction, insect and disease logging, or any other logging to promote overall health of stand allowed even if it downgrades or removes habitat.

*No requirement for surveys.

*Alternatives A and C: No protections for spotted owl known or historic sites, no requirement for spotted owl surveys. Entirely based on land allocations.

*Alternative B: Is the same as A, except that the Sub-Alternative will protect known and historic sites within the Harvest Land Base, treating these areas as Reserves.

*Alternative D: Maintains all known and historic sites, like Sub B.

NRF and Recovery Action 32 Habitat: It is unclear from the DEIS, but is NRF habitat now being defined as only multi-layered, multi-species canopy, diameter over 30 inches dbh and canopy cover over 60% and decadence components? Spotted owls can and do nest in forests over 80 years old, even if they have not yet developed full decadence components present in unique old-growth forests like RA 32 habitat. In this new plan and DEIS, is the BLM equating RA 32 habitat to NRF habitat?

Better Comparison with NFP:

Generally, spotted owl management under the Northwest Forest Plan consisted of a land allocation approach (Late-Successional Reserves, Riparian Reserves, etc.) and site specific management. In LSRs, timber harvest was not allowed in stands over 80, and in stands under 80 only thinning was permitted to accelerate growth of the stand. In the Matrix, the agency was required to retain 100 acres of best NSO habitat as close as possible to the nest site or owl activity center as a core. Cores are managed as LSR, even if later unoccupied. Additionally within an owl home range (historic, modeled, or documented), the agency is required to maintain certain percentages of the owl's home range (appx. 1.5 mile radius) and certain percentage of the owl's nest core (appx. .6 miles radius). This maintenance of owl habitat generally required the agency to maintain over 60% canopy cover in the area post-treatment.

Also across the Matrix were Connectivity Blocks, where individual tree retention was higher, and the agency was required to maintain 25% of the best habitat within these blocks. Also within each fifth field watershed, 15% of all Matrix lands had to be late-successional forest to help meet spotted owl needs.

The agency is also required to survey for the species in potential habitat, and abide by recommendations made by USFWS to mitigate or eliminate adverse impacts to the species and critical habitat. The agency is also required to comply with the owl's recovery plan.

Under WOPR, almost every alternative shifts these various layers of protection to one land allocation based approach. But the WOPR analysis is unclear and not specific on the impact of the removal of these various protections. For example, if the BLM retained that 15% standard what would still be protected vs. what would be lost? This side by side comparison specific to former individual protective standards is needed to fully grasp the impact of the proposed changes, and to better analyze which changes would be most beneficial or harmful to the species. Please elaborate on a protective standard by standard basis in the FEIS.

Importance of BLM Lands: As an initial point, it is unclear from the NEPA documents produced by the BLM how important BLM lands are to the northern spotted owl. From the logging numbers and conclusions from the modeling in Appendix S, it appears that the differences in harvest land base allocations and volume to be logged will not make any significant impact on owl habitat or recovery objectives. Accordingly, BLM concludes that the primary role of its lands for the northern spotted owl is connectivity in the "central Klamath," coast province.

But this contradicts the DEIS (p 746), that states that BLM are "indispensable" for the northern spotted owl, and critical for both east-west and north-south dispersion. Given the critical nature of BLM reserves, and the critical dispersal element these lands play, the BLM should choose an alternative or modification of an alternative that maximizes reserve size and maximizes dispersal corridors.

In the agency description of riparian reserve objectives, the contribution of conservation and recovery of species is limited to "special status riparian associated species". Formerly the reserves contributed to dispersal and connectivity corridors for terrestrial species as well.

Riparian reserves were originally designed in part to facilitate spotted owl movement between reserves. Given the BLM's lands indispensable need towards owl connectivity, these riparian dispersal corridors should be increased, but it appears that almost every alternative is moving to shrink these riparian corridors. In fact, in the purpose and need for riparian corridors, benefit to terrestrial species like the northern spotted owl was completely ignored, even though this was one of the primary reasons for this allocation's original creation. The BLM should consider an alternative that increased riparian reserve size and protections in order to benefit dispersal capabilities for the northern spotted owl and other terrestrial species. Also it appears the BLM failed to take a hard look at the terrestrial species benefits that are provided by the riparian reserves, or the potential for these benefits to continue.

Scale of Analysis: We are concerned that the spotted owl's scale of analysis was too broad, and may have eliminated many conservation potential benefits by operating on such a large scale. We understand that this scope of analysis is needed for overall harvest projections and a bigger picture, but more local and detailed analysis is needed to more fully capture impacts to individual owl sites, areas of threatened connectivity, and how to rehab or connect isolated patches of owl habitat.

It is clear from the conservation needs of the spotted owl, spelled out on page 747-48, that all high quality habitat is needed for owl recovery, and all sites need to be protected. We are concerned that the definitions of what is considered high-quality habitat has changed, and may have led to much potential habitat falling through the cracks.

Generally under the Northwest Forest Plan, forests over 80 years in age were considered to have developed some older forest characteristics that benefited spotted owls, and was considered nesting, roosting, and foraging habitat (NRF). NRF habitat was considered high-quality owl habitat. It appears that the BLM has not adapted this definition of owl habitat, but has used a more complex metric by factoring in tree height, diameter, canopy cover and a range of other variables that are captured in a rating based on owl selection, i.e. "strongly selected for" or "strongly selected against."

The WOPR NEPA description of the models used for spotted owl habitat are not elaborated upon well. Spotted owl habitat suitability is rated on a 0 to 100 scale (higher numbers indicating better habitat) and the scale is based upon canopy cover, mean tree diameter, and slope. This new metric raises a lot of questions. Exactly what variables were included, and how are they weighted? Were legacy trees accounted for or secondary older cohorts accounted for and how? Additionally, the BLM divided owl habitat into four categories "strongly selected for", "selected for", "selected against", and "strongly selected against." I believe this means that a "strongly selected for" area had a high proportion of northern spotted owl nest locations based on the relative habitat suitability value.

It would be beneficial to the public and our organization to see how this new metric rates against the more simple analysis of stand age. In other words, we would like to know and see maps of how much of the BLM land is over 80 years in age, and how much of this land falls within the different new allocations. We need to see these maps and tables side by side with the new interpretations of owl habitat. How many forests over 80 were lost with this new metric and in what areas, or how many forests were gained based on this new habitat value interpretation?

It was make sense based on the owl's crashing demography that the BLM would err on the side of caution, and use the definition of habitat that would capture the most possible acreage to conserve based on the owl's needs and the indispensable nature of BLM lands to these needs. Additionally, it appears that the BLM excluded habitat that was not in large chunks of certain sizes from its modeling or consideration for conservation. Again it would be nice to see on a map and in tables, how much habitat was lost through these consolidations, and in what areas were they lost. It is a hard reality that much of BLM land in western Oregon is in the checkerboard and highly fragmented, but it would be nice to know that the habitat restoration efforts over the past 20 years were not in vain. Perhaps many of these isolated areas are close to being connected by recovering riparian corridors, or recently thinned forests nearing 80 years in age and attaining mature forests characteristics.

We are worried, that this block defining may have incidentally excluded a good deal of habitat that was formerly the focus of numerous recovery efforts. It would also be beneficial to see maps of where thinning had formerly taken place, so that the BLM could take full advantage and consideration of past restoration efforts. It could be that forests poised to more quickly attain habitat characteristics that would benefit the owl because of restoration efforts, will be lost in the definition shuffle and large scale approach taken by the BLM here.

Please include this analysis, these tables and maps, and comparisons in the FEIS.

Appendix S Modeling: The BLM states that it modeled in all potential timber harvest when calculating and modeling effects from the alternatives to the species. They specifically did not

include any patches under 10 acres, any forests over 500 meters from a road, any early-seral forest, and any forest logged within 50 years. DEIS at 1484.

We are concerned that BLM also did not account for in the model logging defined as "fire-suppression, fuels reduction, insect and disease control, and other activities needed to protect health of the stand or adjacent stands." This type of logging is permitted in LSRs even if it downgrades or removes spotted owl habitat. DEIS at 938.

We have seen numerous timber sales under the Northwest Forest Plan that have logged extensively, downgrading and removing spotted owl habitat that has been classified as "fire-suppression, fuels reduction, insect and disease control" and almost every timber sale planned is justified as a promotion of stand health.

Based on historic rates of this logging, the BLM needs to anticipate and account for a similar degree of this type of forest activity into the future, and needs to model its impact to the Northern Spotted Owl. BLM's failure to do so fails to satisfy the "hard look" required under NEPA.

Additionally, the modelling for the northern spotted owl appears to have an improper baseline. The No Action Alternative is defined as the existing 1995 RMPs for the various BLM districts. DEIS at 27. However, the models for impacts to Northern Spotted Owl habitat uses a baseline of no timber harvest. Appendix S, Page 1464. This is misleading to the public. Under the existing 1995 RMPs, the BLM was largely focused on restorative thinning projects to expedite the creation of Northern Spotted Owl habitat. By in essence changing the baseline to no timber harvest when analyzing impacts to the owl, the BLM masks the beneficial effect of the thinning regiment because under a no timber harvest baseline, these plantations are going to take much longer to development into taller, larger trees and other metrics the BLM is using to define good spotted owl habitat, or "strongly selected for" spotted owl habitat.

The analysis needs to be consistent with its baseline approach, and the modeling for the Northern Spotted Owl needs to be based upon the current management regime under the 1995 RMPs.

Protection of existing sites:

Generally, Northern Spotted Owl management under the 1995 RMPs consisted of a land allocation approach (Late-Successional Reserves, Riparian Reserves, etc.) and site specific management. In LSRs, timber harvest was not allowed in stands over 80, and in stands under 80 only thinning was permitted to accelerate growth of the stand. In the Matrix, the agency was required to retain 100 acres of best NSO habitat as close as possible to the nest site or owl activity center as a core. Cores are managed as LSR, even if later unoccupied. Additionally within an owl home range (historic, modeled, or documented), the agency is required to maintain certain percentages of the owl's home range (appx. 1.5 mile radius) and certain percentage of the owl's nest core (appx. .6 miles radius). This maintenance of owl habitat generally required the agency to maintain over 60% canopy cover in the area post-treatment. To facilitate this management surveys were required for Northern Spotted Owls, and the BLM was also required to comply with the spotted owl's recovery plan.

It appears in every action alternative that surveys for Northern Spotted Owls are not required. Are spotted owl surveys required for management actions in reserves under the various alternatives? The purpose of creating and protecting these reserves is to protect and recover the

Northern Spotted Owl. Thinning efforts that have been occurring for decades in Late-Successional Reserves were done to accelerate the development of spotted owl habitat. Riparian Reserves and dispersal habitat have been maintained to allow spotted owls to recolonize this new habitat, which the BLM models to be extensive in the future in Appendix S.

However, as touched on above, management activities and logging is permitted in the reserves even if it downgrades or removes spotted owl habitat. Surveys should be required for the Northern Spotted Owl for projects in the reserves because the BLM is not modeling for future owl sites, and we want to protect owls that are recolonizing thinned/restored habitat. This would also be an essential monitoring tool for the species, to determine if indeed the species is recolonizing commercially thinned forests.

In order to satisfy Recovery Action 10 and the mandate to conserve spotted owl sites, the BLM needs to conduct surveys for spotted owls and protect sites that it finds. The BLM states that it will, "[i]n areas of significant population decline, sustain the full range of survival and recovery options for the species in light of significant uncertainty." Page 747. The entire planning area is defined as an area of significant population decline. The BLM's insistence on abandoning the unified federal management plan for public lands within the range of the Northern Spotted Owl (NSO) may result in significant unintended consequences that curtail timber production. Existing Habitat Conservation Plans (HCP) and designated critical habitat necessary for the survival and recovery of NSO populations rested upon the assumption that the BLM would implement the NWFP including the protection of terrestrial connectivity values provided by full NWFP Riparian Reserve buffers. The BLM's action alternatives call that assumption into question.

As stated on page 749 of the DEIS:

> *analyses differs from the analyses done by the US Fish and Wildlife Service to inform its decisions on NSO recovery and NSO critical habitat (USDI FWS 2011Aa, Appendix C; USDI FWS 2012). These differences arise from differences in planning needs and regulatory requirements, as well as differences in data availability. The Service delineated critical habitat units, in part, assuming that existing NWFP land use allocations and management standards would continue, including on BLM-administered lands. In contrast, the BLM evaluated scenarios in which NWFP land use allocations and management standards would change on BLM-administered lands in the planning area." –DEIS page 749.*

By withdrawing from the NWFP, the BLM puts existing HCPs, the NSO Recovery Plan, and the basis for NSO critical habitat designations at immediate risk. In contrast, the NWFP provided regulatory certainty that contributes directly to the stated purpose of the RMP Revision Process to contribute to economic stability.

Please note page 769 of the DEIS acknowledges that alternatives A and C would provide less east-west NSO habitat connectivity between the Oregon Coast Range and the Oregon Western Cascades. This is a key distinction in that the USFWS has "identified east-west connectivity through this area as essential the conservation" of the species. DEIS page 769.

Given that the NSO Recovery Plan identifies habitat loss via fire as a significant issue for NSO survival and recovery, the BLM decision on page 774 of the DEIS not to analyze the effects of

its management on this aspect of NSO recovery is noteworthy. We would again point out that page 194 of the DEIS indicates that:

> *The HITA includes management such as thinning and regeneration harvest with no retention and rapid reforestation on a relatively short rotation. This management approach would result in continuous horizontal and vertical fuel profiles and conditions more closely aligned with high severity fire.- DEIS page 194.*

As stated on page 798 of the DEIS "*the NSO currently is under significant biological stress, and at risk of extirpation, over much of the moist forest portion of its range."* Given this reality, and given the BLM's proposal to dramatically increase even-age harvest that increases fire hazard in moist forests, the BLM must analyze and disclose the impacts of its activities on NSO survival and recovery.

Page 804 of the DEIS indicates that the BLM is aware of Recovery Action 6 which calls for thinning of moist forest plantations in order to develop structurally complex forests. Yet the DEIS contains no analysis of the BLM's proposal to greatly increase the creation of moist forest plantations that will presumably then require thinning to attain structural complexity. Indeed, the BLM appears committed to eliminating the leave tree and wood retention standards and guidelines that provide at least some structural complexity in NWFP regeneration harvest units. The US Fish and Wildlife Service relied upon the retention of structural legacies in harvest units over time in development of the NSO Recovery Plan and in the designation of NSO critical habitat.

The final decision on this plan revision should emphasize a large, well-connected reserve system, and do the most to emphasize the unique role of BLM lands in terms of connectivity, productive low-elevation habitat, and demographic support.

DEIS at 746 says -

> *In the Coast Range, the BLM has no opportunity, through habitat management, to reduce risks to the northern spotted owl during the next 50 years, and there are no substantive differences among the alternatives in their potential effects on those risks. However, in the western Cascades and Klamath Basin, the BLM, under all alternatives, would contribute to self-sustaining northern spotted owl populations during the next 50 years. ... The alternatives differ substantively in their contributions to east-west northern spotted owl movement between the Coast Range and western Cascades.*
>
> ** BLM-administered lands are indispensable:*
>
> ** To northern spotted owl reproduction, movement and survival in the southern half of the Coast Range, and in western and central portions of the Klamath Basin;*
>
> ** And in supporting north-south species movement through the southern portion of the Coast Range, and east-west species movement between the Coast Range and western Cascades."*

The final decision must address these "indispensables" with larger reserves, and high quality dispersal habitat (e.g., wider stream buffers, light-touch forestry, etc.) We remain concerned that the scale of analysis under-represents the importance of BLM lands elsewhere.

XV. BARRED OWL: INCREASED LOGGING OF HABITAT WILL INCREASED SPOTTED OWL EXTINCTION RISK

The Revised Recovery Plan for the Northern Spotted Owl includes Recovery Action 32 (RA 32) which recommends protection of a subset of high quality spotted owl habitat. The DEIS fails to clearly articulate the specific purpose of RA 32, which is to mitigate for the invasion of the barred owl. BLM should definitely meet FWS' RA 32 recommendation, but BLM must also consider how to address the more fundamental issue, which is how to manage owl habitat so that the two owls are more likely to co-exist on the landscape.

Since the Revised Recovery Plan for the NSO is not a NEPA document, BLM must conduct a full NEPA analysis to evaluate the efficacy of RA 32 as a mitigation and whether there is more than BLM can do to achieve the goal of spotted owl recovery in the face of barred owl competition, such as conserve *all suitable owl habitat* instead of just a *subset of high quality habitat*. Neither BLM nor FWS has conducted a NEPA analysis to consider whether conserving all suitable habitat, rather than just a subset, would better meet spotted owl recovery objectives. A NEPA analysis of this issue will show that protecting all suitable NRF habitat will not only increase the chances of spotted owl recovery, but provide a host of complementary benefits, including clean water, carbon storage, prevent new species listings, enhance recreation and scenic values, maintain quality of life, and provide community stability.

When deciding whether to protect all suitable nesting, roosting, foraging habitat for the spotted owl or just a subset of high quality habitat, it is important that BLM consider the best available information which is contained in part in the latest meta-analysis of all the spotted demography studies. We expect this report to show that the spotted owl is doing worse than expected, providing support for a cautionary decision to protect all suitable owl habitat instead of just a subset. BLM and others appear to be trying to keep this information out of the public record by saying it is in peer review. Nevertheless, the Department of Interior helped pay for this study; its employees helped collect data and write the report; the report is likely in BLM's possession; and we understand the BLM officials have been briefed on its contents, so it would be arbitrary and capricious not to fully consider the latest meta-analysis and make it part of the administrative record.

In DEIS Appendix S, BLM considered a model that segregated landscape patches into groups ("bins"), including "selected for" owl habitat and "strongly selected for" owl habitat. BLM should protect all selected for habitat, not just strongly selected for. Conserving all suitable/all selected habitat is more likely to advance recovery in several ways. First, it prevents the loss of habitat available for both species, thus reducing the risk of adverse competitive interactions between the two owls. (See more on that below.) Second, it increases the likelihood of future recruitment of additional high quality habitat. Suitable habitat that is not yet "high quality" habitat, is likely the best candidates for future recruitment of high quality habitat. If such habitat is instead logged it will prevent or delay recruitment of more high quality habitat.

The DEIS also needs to critically review the assumption implicit in RA 32 that "allowing for other threats, such as fire and insects, to be addressed by restoration management actions" will in fact enhance rather than detract from spotted owl recovery objectives. As explained in great detail in the fire and fuel section, forest treatments intended to reduce the threat of fire are more likely to cause harm to the owl than fire itself. See the fire and fuel section and Heiken, D. 2010. Log it to save it? The search for an ecological rationale for fuel reduction logging in Spotted Owl habitat.[196]

Barred owl competition and displacement are significant concerns documented in the recent status reviews for the northern spotted owl. The 2004 status review panel unanimously identified barred owls as a future threat to the spotted owl. [197]

The invasion of the barred owl undermines a critical assumption underlying the Northwest Forest Plan - that all *suitable* owl habitat is *available* to spotted owls. With the invasion of the barred owl, tens of thousands of acres old forest owl habitat (which was in short supply even before the barred owl arrived) are now occupied and defended by barred owl to the exclusion of spotted owls. Many acres that were previously assumed to be available to spotted owls is no longer available because the barred owl is there. The logical response now is to protect and restore more suitable owl habitat to reach previously established spotted owl recovery goals.

Based on well-established scientific principles, such as the species/areas relationship, BLM needs to protect more suitable habitat to ensure that these two owl species can co-exist, and to decrease the likelihood of competitive exclusion. This is corroborated by FWS' Final Recovery Plan for the Northern Spotted Owl, which recommends protection of "substantially all of the older and more structurally complex multi-layered conifer forest outside of MOCAs" in westside provinces (as well as on non-federal lands). "These forests are characterized as having large diameter trees, high amounts of canopy cover, and decadence components such as broken-topped live trees, mistletoe, cavities, large snags, and fallen trees."[198] This recovery action is intended to reduce competitive pressures between spotted and barred owls, but unfortunately an analysis has not been done to show *how much* additional habitat needs to be protected to help assure co-existence of the competing owls, and the USFS and BLM have not taken steps to implement this recovery plan recommendation.

The FY2014 Annual Report On Northern Spotted Owl Monitoring states:

> *There is mounting evidence that barred owls may be negatively impacting the spotted owl population within the KSA [Klamath Study Area]. This is illustrated by several apparent population trends: (1) spotted owl detections have been steadily decreasing (Figure 6) and reached the lowest point in 2014, when barred owl detections reached their highest level; (2) fecundity rates appear to be declining (Figure 8) and in only 2 of the previous 10 years was the rate above the 25 year average; and (3) the fecundity rate for sites with known barred owl presence was lower than at other sites and is continuing to decline. Forsman et al. (2011a) noted that the consistency of the negative associations between spotted owl demographic rates and the presence of barred owls supports the conclusion*

[196] Oregon Wild. V 1.0. May 2010. http://dl.dropbox.com/u/47741/Heiken_Log_it_to_Save_it_v.1.0.pdf
[197] https://web.archive.org/web/20060927184758/http://www.sei.org/owl/meetings/Presentations/June/Gutierrez%20Threats.pdf.
[198] See Recovery Action 32.

that barred owls are having a negative effect on spotted owl populations. The recent KSA data, with the combination of decreasing occupancy and reduced fecundity, appears to reinforce this conclusion.[199]

A recent telemetry study showed that in fragmented landscapes barred owls have a survival advantage relative to spotted owls, but that survival advantage diminishes in landscapes with a higher proportion of older forest. In other words, conservation of mature & old-growth forest should be favored because spotted owls are able to compete nearly equally with barred owls in landscapes with a high proportion of old forest.

[200]

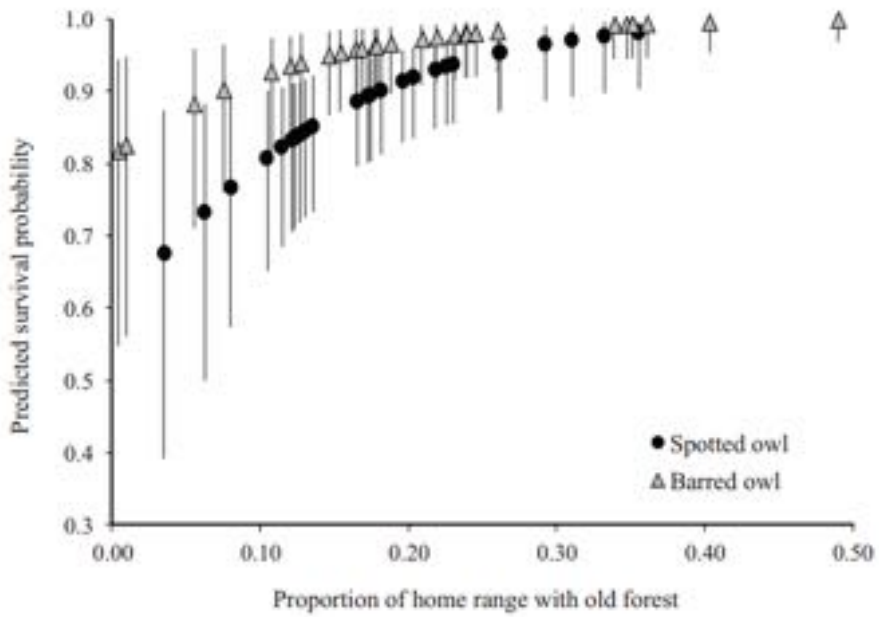

Figure 13. Predicted relationship between mean proportion of old conifer forest within the home range and seasonal (6-month) survival probabilities of radio-marked northern spotted owls ($n = 29$) and barred owls ($n = 28$) in western Oregon, USA, 2007–2009. We calculated point estimates with 95% confidence intervals at observed mean values for each individual under the best-supported model of survival, which included the additive effects of species and proportion of old conifer forest within the home range.

BLM has no NEPA analysis to tier to that supports RA 32 and addresses (on a range-wide scale) how to mitigate the adverse competitive interactions between spotted owls and barred owls. Before BLM adopts a plan that degrade more suitable owl habitat they must consider a range of NEPA alternative that protects more than just the "structurally

[199] Hollen, Horn, et al 2015. Demographic characteristics of northern spotted owls (*Strix occidentalis caurina*) in the Klamath Mountain Province of Oregon, 1990-2014. http://www.reo.gov/monitoring/reports/nso/KLA%20nso%20demog%20annual%20report%202014.pdf

[200] Wiens, J.D., Anthony, R.G., and E.D. Forsman. 2014: Competitive Interactions and Resource Partitioning Between Northern Spotted Owls and Barred Owls in Western Oregon. Wildlife Monographs 185:1–50; 2014; DOI: 10.1002/wmon.1009. https://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/48214/AnthonyRobertFisheriesWildlifeCompetitiveInteractions.pdf

complex older forest" in order to increase the chances that spotted owls and barred owls can co-exist.

The final Recovery Plan for the Northern Spotted Owl has partially addressed the barred owl issue by adopting Recovery Action 32 which urges the FS and BLM to "Maintain substantially all of the older and more structurally complex multi-layered conifer forests on Federal lands outside of MOCAs…" based on the idea that "protecting these forests will not further exacerbate competitive interactions between spotted owls and barred owls as would occur if the amount of shared resources were decreased.[201]" The revised critical habitat for the northern spotted owl was also expanded to "… increase the likelihood that spotted owls would be able to persist in areas where barred owls are also present. … [A]dditional critical habitat may allow for coexistence of the two species, potentially reducing competition. [202]

In considering this recommendation the agencies must prepare NEPA analysis which considers the full potential of suitable habitat quantity and quality and its mediating influence on the interactions between spotted owls and barred owls. Maintaining a subset of suitable habitat as recommended by the recovery plan is one option, but the agencies must consider the full benefits of protecting all suitable habitat, not just a subset, and providing additional mitigation in matrix areas such as managing the matrix to enhance habitat for owl prey species. The recovery plan is not a NEPA document and FWS was not required to consider all reasonable alternatives. Action agencies like the FS and BLM on the other hand are required to fully consider alternatives. It would be wise to do so at a range-wide level, but until that is done, the agencies should not adversely modify any suitable habitat. The recovery plan purports to offer the agencies an exception to the recommendation in Recovery Action 32 ("Land managers have made significant investments of time and resources in planning projects that may have been developed prior to the approval of this Recovery Plan, thus some forests meeting the described conditions might be harvested…"[203] however, FWS cannot exempt the action agencies from NEPA. Protection of additional suitable habitat in order to reduce competitive interactions between the two owls is now a recognized tool in the toolbox and represents significant new information about *any* proposal to modify suitable habitat regardless of how far the planning process may have proceeded.

A 2010 Draft report "Population Demography of Northern Spotted Owls" corroborates the need to protect more than just the highest quality spotted owl habitat as contemplated in the draft Recovery Action 32.

> *We also found a negative relationship between recruitment rates and the presence of Barred Owls and a positive relationship between recruitment and the amount of suitable owl habitat in the study areas. Recruitment was higher on federal lands where the amount of suitable owl habitat was generally highest. [p 96].*
>
> *While our observational results do not demonstrate cause-effect relationships, they provide support for the hypothesis that the invasion of the range of the Spotted Owl by Barred Owls is at least partly the cause for the continued decline of Spotted Owls on*

[201] FRP p 34.
[202] Dugger et al. 2011; Forsman et al. 2011." FWS 2012. CHU draft EA, p 53, 62. http://www.fws.gov/oregonfwo/Species/Data/NorthernSpottedOwl/Documents/CH_DRAFTEnvAssmnt_6.1.12.pdf.
[203] FRP p 35.

federal lands. Our results also suggest that Barred Owl encroachment into western forests may make it difficult to insure the continued persistence of Northern Spotted Owls.[204] *The fact that Barred Owls are increasing and becoming an escalating threat to the persistence of Spotted Owls does not diminish the importance of habitat conservation for Spotted Owls and their prey. In fact, the existence of a new and potential competitor like the Barred Owl makes the protection of habitat even more important, since any loss of habitat will likely increase competitive pressure and result in further reductions in Spotted Owl populations.*[205]

Our results and those of others referenced above consistently identify loss of habitat and Barred Owls as important stressors on populations of Northern spotted Owls. In view of the continued decline of Spotted Owls in most study areas, it would be wise to ***preserve as much high quality habitat in late-successional forests for Spotted Owls as possible****, distributed over as large an area as possible. This recommendation is comparable to one of the recovery goals in the final recovery plan for the Northern Spotted Owl,*[206] *but* ***we believe that a more inclusive definition of high quality habitat is needed*** *than the rather vague definition provided in the 2008 recovery plan. Much of the habitat occupied by Northern Spotted Owls and their prey does not fit the classical definition of "old-growth" as defined by Franklin and Spies (1991), and a narrow definition of habitat based on the Franklin and Spies criteria would exclude many areas currently occupied by Northern Spotted Owls. [p 99]...*[207] *"Population Demography of Northern Spotted Owls." DRAFT COPY 17 December 2010. This draft manuscript is in press at the University of California Press with a projected publication date of July 2011. It will be No. 40 in Studies In Avian Biology, which is published by the Cooper Ornithological Society.*[208]

A well-known axiom of the species-area relationship from island biogeography holds that as habitat area increases, the number of cohabiting species also increases.[209]

The major causes of population and species extinction worldwide are habitat loss and interactions among species. ... The most robust generalization that we can make about population extinction is that small populations face a particularly high risk of extinction. ... [E]mpirical support for the extinction-proneness of small populations has been found practically wherever this issue has been examined. ... The loss of habitat reduced population size ... Larger habitat patches have larger expected population sizes than smaller patches. Therefore, other things being equal, we could expect large habitat patches to have populations with a lower risk of extinction than populations in small

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[204] *See also* Olson et al. 2004.
[205] Horn and MacArthur 1972, Olson et al. 2004, Carrete et al. 2005. [pp 97-98]
[206] USDI Fish and Wildlife Service 2008.
[207] Eric D. Forsman, Robert G. Anthony, Katie M. Dugger, Elizabeth M. Glenn, Alan B. Franklin, Gary C. White, Carl J. Schwarz, Kenneth P. Burnham, David R. Anderson, James D. Nichols, James E. Hines, Joseph B. Lint, Raymond J. Davis, Steven H. Ackers, Lawrence S. Andrews, Brian L. Biswell, Peter C. Carlson, Lowell V. Diller, Scott A.Gremel, Dale R. Herter, J. Mark Higley, Robert B. Horn, Janice A. Reid, Jeremy Rockweit, Jim Schaberl, Thomas J. Snetsinger, and Stan G. Sovern.
[208] http://www.reo.gov/monitoring/reports/nso/FORSMANetal_draft_17_Dec_2010.pdf.

[209] *See especially,* Part III - Competition in a Spatial World *in* Tilman, D. and P. Karieva, Eds. 1997. Spatial Ecology: The Role of Space in Population Dynamics and Interspecific Interactions. Monographs in Population Biology, Princeton University Press. 368 pp.

patches. ... More generally, the relationship between patch size and extinction risk provides a key rule of thumb for conservation: other things being equal it is better to conserve a large than a small patch of habitat or to preserve as much of a particular patch as possible. ... [T]here are likely to be many complementary reasons why large patches have populations with low risk of extinction. " [210]

The territorial occupancy model developed by Lande (1987), extended here to include two competing species, represents a useful tool for evaluating how equilibrium breeding numbers could be affected by changes in habitat availability, demographic parameters, dispersal behavior and interspecific competition … Its application shows that **increases in the exclusive suitable habitat of each species is the best option to maintain viable populations of territorial competitors** in a same area, given that it reduces competition for territories. Increases in habitat overlap by reducing the exclusive habitat available for one species strongly affected the outcome of competition, resulting in extinction of the species for which exclusive habitat had been eliminated.[211]

From these ecological foundations, one can see that the barred owl, by invading, occupying suitable habitat and excluding spotted owls, has reduced the effective size of the reserves that were established in 1994, and thereby reduces the potential population of spotted owls. Extinction risk is increased by this loss of habitat and smaller population. If we provide more suitable habitat, the population potential increases, and the risk of extinction decreases. The most rational way to respond is to protect remaining suitable habitat, expand and restore the reserve system to provide more suitable habitat to increase the likelihood that the two owl species can co-exist.[212]

This view is corroborated by owl biologist David Wiens who was interviewed on the Lehrer News Hour, he said: "*The more habitat you protect, the more you're going to alleviate the competitive pressure between the species. Rather than reducing it and increasing the competitive pressure between these two species, we need to provide as much habitat as possible for them*."[213] Robert Anthony agrees, "*If you start cutting habitat for either bird, you just increase competitive pressure.*"[214] And in the same article Eric Forsman added "*You could shoot barred owls until you're blue in the face," he said. "But unless you're willing to do it forever, it's just not going to work*."

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[210] Oscar E. Gaggiotti and Ilkka Hanski. 2004. Chapter 14 - Mechanisms of Population Extinction. *In* Ecology, Genetics, and Evolution of Metapopulations. Elsevier. 2004. http://web.archive.org/web/20070612211945/http://www.eeb.cornell.edu/sdv2/Readings/Gaggiotti&Hanski.pdf

[211] Martina Carrete, Jose´ A. Sa´nchez-Zapata, Jose´ F. Calvo and Russell Lande. Demography and habitat availability in territorial occupancy of two competing species. OIKOS 108: 125-136, 2005 http://www.ebd.csic.es/carnivoros/personal/carrete/martina/recursos/13.%20carrete%20et%20al%20%282005%29%20oikos%20108-125.pdf.

[212] Put another way, when threatened with extinction, "the best defense is a strong offense" that is, species are more likely to persist if they have a large, well-distributed population size and if we minimize all manageable threats. Dunham, Jason. 2008. Bull trout habitat requirements and factors most at risk from climate change. http://www.fs.fed.us/rm/boise/AWAE/projects/bull_trout/bt_Dunham.html

[213] DAVID WIENS. News Hour interview. "Biologists Struggle to Save the Spotted Owl." December 18, 2007. http://www.pbs.org/newshour/bb/science/july-dec07/owl_12-18.html.

[214] Welch, Craig. 2009. The Spotted Owl's New Nemesis. Smithsonian Magazine. January 2009. http://www.smithsonianmag.com/science-nature/The-Spotted-Owls-New-Nemesis.html?c=y&page=2

The book "Signs of Life: How Complexity Pervades Biology" by Sole and Goodwin has an interesting discussion that immediately brings to mind the barred owl/spotted owl issue. Chapter 7 of the book describes work being done by a Japanese researcher named Kaneko who developed and explored a modeling concept called "coupled map lattices." The lesson from these models is that when habitat is abundant, competing species operate within the "coexistence regime" but when habitat becomes scarce the model switches to a new attractor and operates in the "exclusion regime." This model strongly supports the idea that retaining more habitat increases the likelihood that spotted and barred owls can coexist, and if we eliminate reserves or continue to log suitable habitat in the matrix, then barred owl may competitively exclude and extirpate the spotted owls. Similar results are demonstrated in resource competition models described by Tilman, Lehman, and Thompson. 1997.[215]

XVI. SISKIYOU MOUNTAIN SALAMANDER

The proposal to eliminate the survey and manage program and to allow for ground-disturbing activities in the majority of Siskiyou Mountain Salamander (SMS) sites managed by the BLM may directly contribute to the need to list the species under the Endangered Species Act (ESA). Implementation of the action alternatives in the DEIS would undermine several key elements of the 2007 SMS Conservation Strategy that were deemed necessary in order to "maintain well-distributed populations" and "avoid a trend towards listing under the ESA."

The BLM is planning to eliminate the Adaptive Management Area (AMA) land use allocation that contains 67% of known SMS sites according to page 12 of the 2007 SMS Conservation Agreement to which the BLM is a party. The BLM is also proposing to significantly reduce the width of Riparian Reserves that were relied upon as a selection criterion for determining "high priority" SMS sites.

Page 5 of the SMS 2007 Conservation Agreement and page 5 and 40 of the 2007 Conservation Strategy indicate that "*significant changes in Forest Service or BLM land-use allocation within the area of the conservation strategy"* must trigger *"immediate review of the Conservation Agreement."*

Page 3 of the Conservation Agreement acknowledges, *"habitat loss, degradation and additional fragmentation of discrete populations are all potential threats to the species."* The BLM RMP action alternative may directly contribute to all three of these threats to species persistence.

Page 4 of the Conservation Strategy indicates that the location of reserves (including Riparian Reserves) influenced the selection of high priority SMS sites and page 18 indicates that an objective of the strategy was to *"utilize the existing federal land use allocations as a foundation*

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[215] Tilman, Lehman, and Thompson. 1997. Plant diversity and ecosystem productivity: theoretical considerations. Proceedings of the National Academy of Sciences. 94:1857-1861. http://www.cedarcreek.umn.edu/biblio/fulltext/t1694.pdf. See also, Tilman, D. and P. Karieva, Eds. 1997. Spatial Ecology: The Role of Space in Population Dynamics and Interspecific Interactions. Monographs in Population Biology, Princeton University Press. 368 pp. and Valenti D., Fiasconaro A., Spagnolo B. Pattern formation and spatial correlation induced by the noise in two competing species http://arxiv.org/PS_cache/cond-mat/pdf/0401/0401424v1.pdf.

for providing a high likelihood of continued persistence." This objective, and the underlying assumptions of the Conservation Strategy, are undermined by BLM plans to abandon the land-use allocations of the NWFP.

Page 17 of the Conservation Strategy indicates that it rests upon the reasonable assumption that *"clearcut logging is no longer carried out on Forest Service or BLM lands within the range of this species."* The RMP DEIS renders this assumption invalid.

Please note that page 21 of the Conservation Strategy indicates *"if intervening lands become highly disturbed and unsuitable habitat conditions predominate, connectivity to retain interacting individuals across the landscape may need to be re-addressed."*

Page 21 of the Conservation Strategy also notes "long-term effects on the species from federal land management of occupied salamander habitat sites that are not chosen as high priority sites are unknown." The RMP DEIS does not disclose or analyze the uncertainties associated with BLM plans for non-high priority SMS known sites.

Please note that the January 24, 2008 Federal Register Notice by the USFWS denying ESA protection to SMS specifically states that "*given the stability of Federal Land and Resource Management Plans and the Northwest Forest Plan since its establishment in 1994, we assume that significant changes to current land management practices on Federal lands are not likely to occur within 20 years*."[216] This RMP DEIS renders that assumption invalid.

The USFWS also relied upon the belief that SMS management would include *"NWFP Matrix Standards and Guidelines [that] are designed to provide for important ecological functions such as dispersal of organisms, carryover of some species from one stand to the next, and maintenance of ecologically valuable structural components…"* 4388. The BLM RMP revisions undermine the NWFP conservation strategy relied upon by the USFWS in its determination that SMS need not be listed.

Additionally, as stated by the USFWS, the "*Survey and Manage guidelines have provided additional security for salamander populations across the vast majority of the range of the Siskiyou Mountains salamander.*" 4390. That security would be removed under every BLM RMP action alternative.

The USFWS determination not to list SMS under the ESA specifically mentions the 2007 Conservation Agreement and its assumption that *"many additional populations will continue to persist in reserved lands and in Matrix where habitat is retained for other reasons."* 4390. As discussed above, the BLM is proposing to reduce the size of Riparian Reserves and eliminate Matrix tree retention standards that were relied upon in both the Conservation Agreement and in the USFWS listing assessment.

XIII. PROPOSED TO BE LISTED SPECIES

Original RMPs under the NFP required the protection and conservation of proposed to be listed species. The new purpose and need for BLM WOPR eliminates this category of species for conservation mandates (likely overlooked in No Action Alternative). There is no analysis in the

[216] Vol. 73, No. 16. 4381.

DEIS of these particular limbo species. These species would be considered Bureau Sensitive Species, but the BLM states that it will only be providing conservation measures for these species to the extent that they are compatible with O&C Act purposes. Proposed to be listed species, deserve ESA protections, but the FWS is unable to address these protections given other higher priorities. These species should deserve special treatment under the plans, as they did under the NFP. Merely conserving to extant compatible with the O&C Act will lead to conflicts with the ESA, and potential future listings of these species.

OFF ROAD VEHICLES

While there is responsible Off Road Vehicle (OHV) use in western Oregon, illegal off road vehicle (ORV) use is predictable, widespread, and systemic on some BLM lands in the analysis area.

> *In this analysis, the BLM assumed that OHV users would operate vehicles consistent with BLM decisions about OHV use. Although the BLM has some site-specific and anecdotal information about illegal OHV use, the BLM does not have a basis for predicting the location or effects of any widespread or systemic illegal OHV use. – DEIS, 321*

Throughout the DEIS, the BLM refuses to analyze or disclose the significant, predictable, ongoing impacts of illegal off-road vehicle (ORV)[217] use. There is no rationale basis for the agency's contention that off-road vehicle users will abide by BLM rules and regulations.

Off-road vehicle damage to meadow and riparian habitats is particularly pronounced, significant, and predictable. Numerous meadow and riparian sites have been blocked or rehabilitated by the BLM on a continuous basis, only to be trashed by motorized use again and again.

The analysis contained in the DEIS repeatedly assumes that off-road vehicle damage is limited by steep forested landscape, yet page 623 of the document acknowledges that in "most of the interior south, the ability to track numerous different routes across the open space can lead to degradation and erosion…."

Rather than disclosing and analyzing the foreseeable impacts of illegal ORV use, the DEIS repeatedly claims that "the BLM does not have a basis for predicting the location or effects of any wide spread or systemic illegal OHV use." This is not an accurate statement. By observing past illegal OHV impact acres, it is reasonable to assume that sites that have been repeatedly trashed will be trashed again. Additionally, the BLM ignores the need to create an ORV enforcement strategy rather than relying on a strategy of user compliance that has been proven ineffective.

Please note that there is at least one website dedicated to advocating that the public violate BLM travel management policies in the Medford District.[218]

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[217] Please note, the BLM refers to such vehicles as "off highway vehicles" (OHVs) when it is much more accurate to describe them as "off road vehicles" (ORVs).

The agency's reliance on regulations and land use allocations to mitigate significant and foreseeable ORV damage to watersheds, wildlife and recreation has been proven ineffective. Approximately 75% of ORV riders regularly ignore regulations such as speed limits and closures. *See, e.g.*, Testimony of Jack Gregory, Special Agent in Charge (Ret.) USFS Southern Region, Before Subcommittee on National Parks, Forests, and Public Lands, U.S. House of Representatives, March 13, 2008, (hereafter "Gregory Testimony"). The testimony at 8 states:

> *Even if agency ORV route planning makes sense in downtown offices and public meeting rooms, there must also be a well-funded on-the-ground monitoring and enforcement component. This is where [agencies have] failed time after time. Once plans are drawn up and implemented, there is not adequate funding for field resources to police this activity where it's actually occurring. Throughout my years of working for the FS, I witnessed the development of many good plans, but a failure to provide the field resources to properly execute them. It is unfortunate that the FS is long on "plans" and seemingly good intentions, but very short on effective field implementation, particularly with providing necessary LE [law enforcement] resources for dealing with serious problems.*

Similarly, another law enforcement officer has publicly testified "about the growing burden on local law enforcement caused by a growing minority of reckless OHV riders and the need for effective management." Statement of Frank Adams, Executive Director of the Nevada Sheriffs' and Chiefs' Association, at the Senate Energy and Natural Resources Off-Highway Vehicle Management on Public Lands, Jun 2008. Sheriff Adams noted that "any kind of public lands law enforcement [is] challenging, but particularly with OHVs given the technology that allows users to cover vast distances in remote areas over a short period of time." *Id*. The Sheriff observed:

> *With such great land-masses and so few enforcement officers, it does not take a large group of individuals disobeying federal and local laws to cause a problem. We have determined that a small number of individuals riding OHVs that use our outdoors for recreation are causing the problems. They are reckless in the operation of their vehicles; they disregard instructions to stay off of sensitive lands and are destructive to the facilities that are provided for their use. This is evident by the increase in the number of injuries that are being reported and the increase in the number of search and rescue mission that occur. We see blatant disregard for areas that are posted as "do not travel" as they have been designated sensitive areas. Part of the problem that encourages this reckless behavior stems from the feeling of anonymity that many of the OHV riders have because there is no way of identifying them or their vehicles. Most States do not require a license plate for such vehicles. Those States that do require tagging, the tags are not large enough to be seen with out being in almost on top of the vehicle. If you are able to determine that there is a tag on the OHV, determining the tag number is almost impossible. Id*. at 3.

While assuredly many ORV riders have lawful intentions and "follow the rules," a disturbingly high percentage show a pronounced preference and practice among off-road vehicle

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[218] http://www.grantedright.com/Home_Page.html

recreationists to travel cross-country and ride off of legal routes. Indeed, this conclusion is derived from publically available data generated by the ORV community itself.

Monaghan and Associates, a marketing research firm, conducted a 2001 study at the behest of the Colorado Coalition for Responsible OHV Riding, a coalition of off-road vehicle representatives, environmentalists and public officials. *See* Status and Summary Report; OHV Responsible Riding Campaign. Researchers surveyed Colorado off-road vehicle riders through a series of three focus groups.

Monaghan and Associates found that the majority of off-roaders understand that staying on designated routes is "fundamental trail etiquette" and that going off trail is not "correct" off-road vehicle behavior. *Id*. at 11. The survey revealed, however, that regardless of this knowledge "as many as two-thirds of adult users go off the trail occasionally." *Id*. A significant percentage of riders, 15-20%, admitted to frequently breaking the rules and riding off of legal routes often. *Id*. Survey participants also stated that "others" ride off-route and cause most of the damage. *Id*. at 7. "Many reluctantly admit to having gone off trail 'a couple times' but felt that it is permissible if rarely done .... '*just this one time. '" Id.* (emphasis in original). Tellingly, the report concluded: "In a 'nutshell,' it is our premise that further ***information*** and ***education*** per se - will <u>not</u> result in substantial behavioral change." *Id*. at 1 (emphasis in original).

Similar results were found in Utah. In 2002, the Utah Division of Parks & Recreation commissioned Utah State University to survey riders to determine their "OHV uses and owner preferences." The university conducted a telephone survey of 335 riders from a random sample of the 50,676 people who registered off-road vehicles with the state in 2000. *See* Fisher, Andrea L., Dale J. Blahna, and Rosalind Bahr, 2001; Off Highway Vehicle Uses and Owner Preferences in Utah. Logan, Utah. Utah State University, at iv,

The Utah report reveals that an inordinate number of riders prefer to ride "off established trails." Of the ATV riders surveyed, 49.4% prefer to ride off established trails, while 39% did so on their most recent excursion. Of the dirt bike riders surveyed, 38.1% prefer to ride off established trails, while 50% rode off established trails on their most recent excursion. *Id*.

It should be noted that pro-ORV groups commissioned both of the studies cited above. Additionally, these data are ratified by two other recent reviews. In 2006, the Montana Fish, Wildlife and Parks received survey responses from 446 owners of registered off-road vehicles. *See* Lewis, M.S., and R. Paige. 2006: Selected Results From a 2006 Survey of Registered Off-Highway Vehicle (OHV) Owners in Montana. Responsive Management Unit Research Summary No. 21. Prepared for Montana Fish, Wildlife and Parks. Among the full sample of respondents, almost a quarter, 23%, "never" or "sometimes" comply with Montana's law against cross-country driving even though off-route riding has been illegal there since 2001. *Id*. at 2. Over 28% "never" or "sometimes" avoid riparian areas and wetlands, in violation of rules for federal and state public lands in Montana. Sixty-four percent of those surveyed have used an off-road vehicle while hunting. *Id*. at 2. The majority of this hunting subset admits to illegally riding cross-country — over 58% have traveled off of legal routes to retrieve downed game. *Id*. In the context of the assumption that land use allocations and designated BLM routes will cure unlawful ORV behavior, this figure is notable to the extent that the survey found that "[t]wo-thirds of the respondents who have used an OHV when hunting reported they have seen written materials (e.g., brochures, posters, articles, etc.) that address the topic of hunting and responsible OHV

use." *Id*. The survey concluded, therefore, "most OHV owners in Montana have been exposed to a variety of safety and responsible use information." *Id*. at 4. Regardless of this "education," the survey noted:

> *OHV owners do not always follow important guidelines for responsible use when operating OHVs. For instance, about a third of the respondents who have used an OHV when hunting disagree or strongly disagree that "OHV users should NOT travel off legal routes to retrieve harvested game." Only 42 percent of the respondents who have used an OHV when hunting reported they always follow this guideline. Nearly 7 percent reported they never follow this guideline. And, 52 percent reported they follow this guideline sometimes. Id*. (emphasis in original).

Echoing these findings are the results of a 2003 survey of Wisconsin ATV users. A study of "motivations and attitudes" by graduate student Robert A. Smail at the University of Wisconsin - Steven's Point, included a survey of user preferences for riding and found nearly two-thirds of respondents prefer to ride off maintained trails.

> *[S]urvey respondents were asked to indicate where they prefer to ride their ATV. Of the five possible choices, 'On maintained trails' (28.5%) ranked third. The top choice was 'On user created trails' (33.3%) followed closely by 'Cross country, off trails and roads' (32.0%). In other words, 65.3% of all users prefer to ride off of maintained trails." Id. Dr. Smail concluded that the survey results demonstrated that past orthodoxies premised on education and the assumed "positive peer-pressure" flowing from membership in established "rider clubs" are not adequate to generate trail-riding compliance; they had "no influence." Id. at 69. Rather, "[t]hese results indicate that messages promoting responsible ATV riding or use will need to be reformulated and law enforcement will need to be increased in order to prevent resource damage and user conflict.*[219]

Finally, the U.S. Fish and Wildlife Service found a near universal disregard for motorized guidelines when the BLM experimented with a "voluntary off-road vehicle route system" in Nevada. The area in question serves as a refuge for the disappearing Sand Mountain Blue butterfly, a species proposed for listing under the Endangered Species Act. A 2006 monitoring report compiled over a three-year period found that "98 percent of all existing routes continued to be used and new routes were created, indicating an ongoing expansion of habitat degradation." Nevada Fish and Wildlife Office, U.S. Fish and Wildlife Service. 2007. 12-Month Finding on a Petition to List the Sand Mountain Blue Butterfly (*Euphilotes pallescens ssp. arenamontana*) as Threatened or Endangered with Critical Habitat. Federal Register, Vol. 72, No. 84. *See* pages 24260-61. The study also found that "about 50 percent of all noncompliance points occurred *at or near red carsonite posts installed to alert riders that travel was discouraged in areas behind the posts*" to protect sensitive butterfly habitat. *Id*. at 24261, (emphasis added). The cumulative impacts of such "noncompliance points" were four-fold as each discouraged route experienced multiple incursions. *Id*. The FWS noted that "[h]igh levels of noncompliance occurred *from the*

[219] Robert A. Smail, July 2007, Wisconsin All Terrain Vehicle Owners: Recreational Motivations and Attitudes Toward Regulation, A Thesis Submitted in partial fulfillment of the requirements of the degree Master Of Science In Natural Resources Resource Policy And Planning College Of Natural Resources University Of Wisconsin, Stevens Point, Wisconsin, copy obtained from author.

onset of implementation of the voluntary system, and the number of incursions into habitat outside of the encouraged routes *increased* in 2006. *Id*. at 24260-61.

Providing a broader overview, in September 2007, the Izaak Walton League, one of the country's oldest conservation groups, released a study of state game and fish managers revealing that 83% of wildlife managers have seen "resource damage to wildlife habitat" caused by ORVs and 72% cited "disruption of hunters during hunting season" as another impact from ORVs. "Off-Road Vehicle Impacts on Hunting and Fishing, The Izaak Walton League of America, 2007, at 15.

Similarly, fully 60% of fisheries managers deemed ORV use to generate adverse impacts on Riparian resources. *Id*. at 16. Notably, 41% of wildlife and 50% of fisheries managers do not believe that current standards and protections adequately protect the resources they are responsible for with the perceived attitude of lawlessness playing a central role: "We have numerous rules and regulations, but many ORV riders have an attitude that they should not apply to them and many just ignore some rules because they want to ride someplace. It increases law enforcement effort and takes time from other areas." *Id*. at 15. "There seems to be a misconception that just because you own a piece of equipment that can go almost anywhere, that you are entitled to go almost anywhere including public land dedicated to wildlife management. This needs to change." *Id*. at 16. Further, "They go where they please, when they please, if they please. Not all do this, but many do. They cause significant upland erosion as well as stream side and in-stream damage." *Id*. "Many ORV riders seemingly have no conservation ethic or appreciation for habitat management or understanding of the damage they cause." *Id*. Another said: "While there is regulatory ability, there is insufficient enforcement response capability to adequately respond to illicit ORV use." *Id*. at 15.

In a tracking review on federal land managers, in December 2007, the Public Employees for Environmental Responsibility ("PEER") released the first-ever survey of federal rangers' views on off-road vehicle issues. "Rangers for Responsible Recreation: Off-Road Vehicle Issues Survey of SW Law Enforcement Professionals - Bureau of Land Management (BLM) & Forest Service (FS), 2007.

Strikingly:

> *• 91% of respondent rangers agree "off-road vehicles present a significant law enforcement problem in my jurisdiction";*
>
> *• More than half (53%) feel "off-road vehicle problems in my jurisdiction are out of control"; and*
>
> *• 74% say that off-road abuses "are worse than they were five years ago" while fewer than one in six (15.2%) believe the situation is improving. Id. at 1.*

Moreover, the survey found that rangers believe their agencies are unequal to the task of controlling ORV abuse:

> *• 62% believe their agency is not "prepared to deal with the ORV problems we are experiencing"; and*

• 78% do not think their department "devotes adequate resources to cope with ORV problems." Id. at 3.

An article published in the Washington Post entitled "'Off-Road Rage' Climbs as Trails Get More Crowded," was published on August 12, 2008, and appeared in section A at page 2. The report provides additional documentation of many ORV riders' unlawful — even violent — disregard of the rules and regulations applicable to ORV use on public lands.

Additionally, in the Roseburg BLM District, the White Rock OHV area is listed in Table N-287 (Appendix N, page 1284) as "managed as Extensive Recreation Management Areas (ERMA)" under alternatives C and D. However, this is the only place in the entire DEIS where the White Rock OHV area is mentioned. There is no NEPA analysis of the environmental impacts of creating this new OHV area. In fact, the DEIS makes it seem as if it is an existing OHV emphasis area. It is not. Local OHV enthusiasts have asked the BLM to create the White Rock Emphasis Area, but the Roseburg BLM has not acted on this request. The BLM cannot now choose alternative C or D and create it without any NEPA analysis.

OHV recreationists have severely degraded this area by riding off trails, riding through wetlands, and by creating play mud-bogs in areas like Yellow-Jacket Springs. They have violated closed and barricaded roads to do this. The Roseburg BLM has admitted they are powerless to enforce current regulations that forbid resource damages. Making a new White Rock OHV area, without NEPA analysis would only exasperate this problem.

I. THERE IS GREATER DEMAND FOR NON-MOTORIZED RECREATION THAN FOR EXPANDED ORV OPPORTUNITIES.

As illustrated on Table 3-126 (page 448) of the DEIS, there are currently three times as many participants interested in wildlife viewing and nature study on BLM lands than in motorized off-highway vehicle travel. Similarly, driving on *existing BLM roads,* camping and picnicking, non-motorized travel and hunting all draw more than one million participants yearly and significantly exceed the demand for motorized ORV travel.

In the Medford District the demand for non-motorized recreation compared to ORV use is even more pronounced. Page 462 of the DEIS projects 85,000 hiking trail users at sites within 30 minutes of Medford and only 18,589 ORV visits in the same area. Within an hour of Medford the BLM anticipates 137,371 hiking visits and only 30,041 ORV participants.

Please note that page 493 of the DEIS clearly establishes that "the most common outdoor recreation activities, requiring the least equipment or specialized skill, have the greatest participation numbers, and…provide the greatest total net benefit."

Given that the public prefers non-motorized recreation and that it provides the most social and economic benefits, it is arbitrary and capricious for the BLM to continue to emphasize ORV use

on tens of thousands of acres of public lands to the detriment of terrestrial and aquatic forest resources, neighboring landowners and other forest users.

II. BLM ORV ROUTE DESIGNATION CRITERIA

Page 638 of the DEIS indicates that the agency is aware of the route designation criteria in 43 CFR 8342 which directs the agency that ORV "[a]reas and trails shall be located to minimize damage to soil, watershed, vegetation, air, or other resources of the public lands and to prevent impairment of wilderness suitability." Yet all of the action alternatives appear to codify ORV routes that directly harm soils, streams, riparian vegetation, and lands with wilderness character.

Page 638 also acknowledges that 43 CFR 8342 directs the BLM that ORV"[*a]reas and trails shall be located to minimize harassment of wildlife or significant disruption of wildlife habitats. Special attention will be given to protect[ing] endangered or threatened species and their habitats."* Yet the action alternatives appear to codify numerous ORV routes that directly harm listed species such as the northern spotted owl (NSO).

The DEIS must analyze, disclose, avoid, or mitigate the impacts of foreseeable ORV noise harassment from proposed motorized use on NSO reproductive success and behavior patterns.

We bring to your attention the following language from pages 82-83 of the Rogue River/South Coast Biological Assessment FY04-08 for the Medford District BLM and the Rogue River-Siskiyou National Forests, July 11, 2003:

> *Noise above ambient levels may disturb or flush from their nest site, could cause a juvenile to prematurely fledge or could interrupt foraging activity. While the effects of noise are not clear, any of these impacts could result in the reduced fitness or even death of an individual bird due to missed feedings, or reduced protection of the young if adults are disturbed.*
>
> *There has been little data regarding the impacts of noise on spotted owls and other listed species. However, the Service has recently analyzed the available data on spotted owls, murrelets and other species (USFWS 2003c; Appendix D), and has consulted species experts who have worked extensively with spotted owls to determine the extent to which above-ambient noises affect spotted owls. The results of this analysis indicate that spotted owls may flush from their nest or roost or may abort a feeding attempt of their young when the following activities occur up to the specified distances (Table 11). The Lacy Washington office of the Service in two biological opinions has used this data and it is the Service's current understanding of harassment distances based on the best available science. Consequently, it will be incorporated into this Opinion as current guidance for harassment distances for various activities as it relates to adverse effects to the spotted owl from harassment due to disturbance. If the Services' understanding of these distances changes, adjustments to these distances may be recommended in the future.*
>
> *Above-ambient noises further than these Table 11 distances from spotted owls are expected to have ether negligible effects or no effect to spotted owls. The types of reactions that spotted owls could have to noise that the Service considers to have a*

negligible impact, include flapping of wings, the turning of a head towards the noise, hiding, assuming a defensive stance, etc.[220]

The risk to spotted owls from noise disturbance is tied to the timing of the activity and is highest when adults are defending young or eggs in a nest or are feeding and protecting recently fledged juveniles. During this period, the separation of adults and their young could result in death or injury to the young as a result of predation. The leading known causes of mortality in juvenile spotted owls are starvation and predation by great horned owls (Miller 1989; USDI 1990a~listing document). The time period when adults or offspring are unable to move away from threats or noises is between the time that the eggs are laid and when the young can fly, which is generally about two weeks after the young fledge from the nest. After the young are able to fly, we assume that adults and young may move, but would stay together if annoyed by noise from the proposed action.

The timing of these development benchmarks (nesting and fledging) varies geographically, although spotted owls are generally believed to start laying their eggs around the beginning of March. In Oregon, data based on fledge dates indicate June 30th is the date by which almost all juveniles are capable of flight. This 1 March – 30 June period of vulnerability is called the "critical nesting period."

Activities that may result in above-ambient noise levels include the use of mechanized tree harvest equipment, road hauling, aircraft/helicopters, heavy equipment, hydraulic hammers, blasting, and road construction and maintenance equipment. In some instances, noise levels produced by these activities can remain above ambient levels out to one mile (for blasting) and still affect spotted owls. If potentially disturbing activities are implemented during the spotted owl critical nesting season (March 1 – June 30) within the prescribed distances in Table 11 of occupied or unsurveyed spotted owl habitat, those activities may adversely affect spotted owls by causing adults to flush from their nest site, abandon a nest, or cause juveniles to prematurely fledge, interrupt foraging activity, or result in increased predation due to less protection when the adult flushes. After June 30, it is presumed that most fledgling spotted owls are capable of sustained flight and can avoid harmful disturbances; thus, disturbance from proposed actions within the prescribed distances shown in Table 10 of known activity centers or unsurveyed suitable habitat, and between July 1 and September 30, may affect, but are not likely to adversely affect, spotted owls.

The SW Oregon administrative units typically utilize minimization measures to avoid adverse impacts to nesting spotted owls wherever they occur, but it is likely that some adverse impact may occur to owls due to disturbance in unsurveyed habitat within or adjacent to project areas. The SW Oregon administrative units and the Service, used an average of the new Service disturbance distances to assess the potential impacts associated with tree harvest activities (the average of disturbance distances associated with tree harvest =100 yards - Table 10), they estimated 40 percent of an average zone of 300 feet around a standard project area (presumed to be 50 acres) would be NRF (as

[220] USFWS 2003.

determined by the percentage of suitable habitat in the matrix according to the Environmental Baseline Tables in the Assessment).

We also bring to your attention that page III-85 of the Rogue River-Siskiyou Draft Environmental Impact Statement for Motorized Vehicle Use indicates that noise disturbance from OHV use is roughly the equivalent of that which occurs from chainsaw use:[221]

Page 638 of the DEIS further acknowledges that 43 CFR 8342 directs the BLM that ORV:

> *"[a]reas and trails shall be located to minimize conflicts between of[f]-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors."* Yet the BLM continues to emphasize and prioritize ORV use near homes and communities. As stated on page one the May 5, 2009 comments of the City of Jacksonville regarding the Draft Timber Mountain Recreation Management Plan DEIS, "[*n]oise from BLM sponsored OHV trails is not compatible with the existing and proposed non-motorized reaction of Jacksonville land. The BLM must provide sufficient distance and buffers between BLM trails and Jacksonville land so that OHV noise does not disturb the peace and quiet desired by hikers, equestrians, picnickers and other non-motorized recreational pursuits."*

With regard to public off-road vehicle travel the BLM must analyze the "closed" option for the as a first step to protect sensitive public lands from motorized vandalism and associated illegal activities (trash dumping, poaching, meth labs, marijuana gardens, soil/plant destruction, invasive plant introduction, pathogen introduction of *P. lateralis*, and mobilization of fish killing fine sediment).

Circumstances have changed since 1995 with exponential growth of motorized vehicle activity on public lands. Deferring analysis for basic RMP decision about motorized use designations would jeopardize other outcomes for soil productivity, timber production, quality traditional recreation, fire prevention, public safety, endangered species recovery, and water quality. Deferring basic analysis and motorized use designations would not be consistent with BLM directives to minimize damage from motorized use. Analysis needs to clearly distinguish between unauthorized motorized use that damages lands (vandalism) and motorized use that is currently authorized (recreation). Lumping these creates huge amounts of confusion and misinformation.

It is prudent to single out the Medford District for motorized use analysis and subsequent designations with RMP decision as the Medford District has had unprecedented and ongoing damage from motorized users due to its context. A network of historic but unauthorized mining roads are regularly used by off highway vehicles to access fragile Jeffrey pine savannas, meadows, and wetlands where rare plants are destroyed and meadow hydrology irreparably damaged. Similarly, a large system of abandoned native service logging roads are regularly damaged during the wet season to access off road areas within timber stands. The French Flat ACEC on the Medford District receives nearly daily damage by off road vehicles despite official

[221] http://www.fs.fed.us/r6/rogue-siskiyou/projects/travel/deis.shtm

vehicle closures to protect *Lomatium cookii*, a federally listed species. Similar damage occurs on most serpentine lands in the Medford District with naturally sparse vegetation, mining history, and gentle slopes that make these areas attractive to motorized vandals. The interspersion of hundreds of home-owners adjacent Medford District BLM lands provides for illegal motorized access that is largely unregulated.

Analysis must inform the public and decision makers that ongoing and largely unregulated motorized access to Medford District BLM lands is connected to illegal and undesirable activities such as: destruction of critical habitat for coho salmon; destruction of listed plant species critical habitat; increased soil compaction; destruction of upland and riparian plants; animal poaching; timber theft; toxic trash dumping; meth labs; stream water pollution; marijuana gardens; rodenticide use that kills spotted owls, fishers, foxes; fertilizer applications that poison streams with excessive nitrates; stolen vehicle abandonment and stripping; wildfire ignitions; chronic illegal occupancy; and illegal mining. All of these transgressions have been repeatedly reported on Medford District lands by our staff and others. BLM cannot dismiss this as a "law enforcement" issue because no amount of law enforcement could effectively reverse current trends and impacts because of the network of off road activity not visible from most system road. The DEIS needs to analyze a combination of actions for the Medford RMP to effectively address motorized vehicle activities that can easily undermine other resource allocations. Streams and wetlands in the Medford District predicted to be protected from logging are being severely damaged with off road vehicles. In severe cases, cumulative soil impacts from OHV and past logging would exceed the 15% soil compaction standard making some timber stands off limits for programmed harvest.

We recommend that motorized analysis include a combination of spatially explicit "closed" designations, legal administrative prohibitions, law enforcement, physical barriers, coordination with adjacent land owners (especially the Forest Service), signs, agency monitoring, citizen monitoring, outreach, and education. We agree that intensive recreational development for off highway vehicle could be deferred from this RMP decision, but ongoing off highway vandalism must be effectively reduced. Currently, it is not practical to have "limited" off highway use areas on the Medford District except for areas currently being analyzed for legitimate recreation (e.g.,Johns Peak, Quartz Creek). Managed recreation and unregulated vandalism are two distinct issues and must be kept separate. Analysis assumptions that areas designated "closed" would not have significant impacts is false, however, anticipated off highway damage would be accounted for in "cumulative effects" that would include "illegal" use.

Recovery actions need to be incorporated into an alternative in the DEIS. At a minimum, coho passage issues both on and off public lands need to be addressed in systematic and timely manner. Similarly, reductions in non-point pollution from roads and off road use need to by systematically addressed with spatially explicit analysis. Priorities for restoration and protection would focus on spatially explicit occupied critical coho habitat. An annual timetable for specific recovery actions must be incorporated into analysis. Habitat quality contingent for increasing coho abundance is directly correlated with road densities in small 6th or the coho spawning watersheds.

III. THE DEIS UNDER-ESTIMATED THE ECONOMIC VALUE OF RECREATION

Recreation and other amenity values associated with forest conservation, not only provide direct economic benefit to those who enjoy those activities, but there are indirect benefits for the whole economy. Public land recreation and amenities like clean water and scenic views, help attract people to the region, help create jobs in non-recreation sectors, and help grow the whole economy.

Speaking about the natural amenities in the Northern Rockies, the National Parks and Conservation Association says:

Three million acres of national parks and protected wildlands—and eight million more of other public lands— give rise to our rivers and lakes, and support world-class biodiversity as well as ski hills, hiking trails, and fishing access sites.

Combined, these amenities drive a powerful economic engine, fueled by a core of national parks and adjacent protected lands. Tourism brings more than $3 billion to the Crown each year—Glacier National Park alone generates more than $110 million in new money to local economies, not to mention those entrepreneurial tourists who choose to relocate and start businesses here.

The stories in this report point to the Crown's spectacular wildlife, its scenic appeal, and its unmatched outdoor recreation as anchors to which our economic success is tethered.

[A] growing number of "footloose" businesses—outfits that locate where they choose, often far from markets, but close to amenities that deliver a high quality of life.[222]

From this perspective, recreation is not just another industry that provides a few direct jobs, rather recreation and amenities are an engine of economic growth across diverse economic sectors. The EIS needs to recognize this.

In 2012 Oregon BLM lands recreation generated $223 million in economic activity while timber production only provided $23 million. DEIS at 472.

"*The most common outdoor recreation activities, requiring the least equipment or specialized skill, have the greatest participation numbers, and...provide the greatest total net benefit."* [223] BLM should therefore reduce emphasis on OHV recreation. These noisy, dangerous, polluting machines displace and conflict with other low impact recreation. Only a small fraction of all recreation visits are associated with OHVs. There were 10.8 million recreation participants on Oregon BLM lands in 2013. Only 826,556 "participants" utilized BLM lands for ORV travel in 2012, while 2,564,574 "participants" visited Western Oregon BLM lands for wildlife viewing and nature study.

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[222] NPCA 2012. Pathways to Prosperity - The Natural Roots of Economic Success in the Crown of the Continent http://www.npca.org/assets/pdf/Pathways-to-Prosperity-Final.pdf. See also, Todd Cherry, Dan Rickman, 2010, "Environmental Amenities and Regional Economic Development", Routledge, 336 pages. http://www.gbv.de/dms/zbw/597954267.pdf ; https://books.google.com/books?id=PWiNAgAAQBAJ&printsec=frontcover#v=onepage&q&f=false

[223] DEIS at 493.

Oregon/BLM recreation related jobs are growing at a much faster rate (and with less volatility) than are timber jobs. DEIS at 567.

SALVAGE LOGGING

I. BLM CANNOT ADOPT A PROGRAM OF SALVAGE LOGGING WITHOUT TAKING A HARD LOOK

This is a programmatic EIS and BLM is clearly contemplating a program of salvage logging where commodity extraction trumps ecological values after natural disturbance events, including within reserves. This will conflict with a wide variety of management objectives (late successional habitat, complex early seral habitat, recovery of listed species, watershed protection, carbon storage, community stability, fire hazard reduction, etc.)

This program of salvage logging will cause very significant cumulative effects. BLM has never produced an adequate programmatic analysis of the effects of salvage logging, yet significant salvage logging was conducted during the last 20 years without any credible programmatic analysis of its effects on late successional habitat objectives. There is significant new information about the adverse effects of salvage logging since the last programmatic NEPA analysis was done. Now is the time to take the required "hard look" at the effects of salvage logging, and the time to adopt scientifically sound and ecologically appropriate policies for management of forest ecosystems following natural disturbance.

II. SALVAGE LOGGING IS INCOMPATIBLE WITH ECOSYSTEM MANAGEMENT

The DEIS (p 434) says "In all alternatives, salvage would take place in the Harvest Land Base after a high or moderate severity fire event." And under Alternative C "Within the Late-Successional Reserve, the BLM would conduct timber salvage after disturbance,…" (DEIS p 62). This is not consistent with the best available science regarding how to achieve ecological objectives in reserves. BLM was a cooperating agency in the Interior Columbia Basin Ecosystem Management Project which asked (and concluded) –

> **Can salvage timber sales be compatible with ecosystem-based management?**
> … Our findings suggest that this type of harvesting is not compatible with contemporary ecosystem-based management. Ecosystem-based management would emphasize removing smaller green trees with greater attention to prevention of mortality rather than removal of large dead trees.[224]

The DEIS does not fully and accurately describe the benefits of retaining large dead trees and the benefits of natural recovery after natural disturbance, nor does the DEIS fully and accurately describe the adverse effects of salvage logging.

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[224] Quigley, Thomas M., tech. ed. 1996; The Interior Columbia Basin Ecosystem Management Project: Scientific Assessment.) Gen. Tech. Rep. PNW-GTR-382; Page 178.

We strongly urge BLM to adopt an alternative that prohibits post-disturbance salvage logging in all reserves (only allowing felling of imminent hazard trees in areas of high public use). Based on current ecological science, this is the best way to meet objectives for reserves. Large dead trees which are the target of salvage logging are old growth structurally elements that provide significant ecological value even if they are not surrounded by green trees. Large snags provide "life boats" allowing many late successional organisms to persist in "young" forests. Science shows that best way to develop complex old forest is to maintain complex young forest and allow forest to regenerate naturally and move through succession without interference. Salvage logging is adverse to reserve objectives because it removes late successional habitat components that take a long time to develop once they are removed and creates atypical simplified habitat structures and patterns.

BLM cannot take a hard look at the issues of snag habitat and complex young forests without considering the dynamics of snags and dead wood in natural forests. Natural young forests are typified by large amounts of dead wood. Salvage logging results in atypical and undesirable ecological conditions.

> Spies et al. (1988) reported that amounts of CWD were high in the youngest successional stages, were lowest in 60-80-year-old forests, and were high in old stands (< 500 years). After 500 years CWD amounts declined to an intermediate level. Spies and Franklin (1988) reported that CWD input may be low in young stands because of the small size of dead and dying stems. Volumes in these stands are often high, however, due to residual CWD from the previous stand.[225]

Jerry Franklin's long career studying old forests led him to the conclusion that salvage logging is not compatible with conservation of old growth ecosystems.

> There are implications for management of old-growth stands selected for perpetuation. Salvage logging is inappropriate since it removes at least two of the major structural components -dead and down- that are key elements of the system. In all likelihood, some of the more decadent, live trees would also be removed. Salvage logging is also inappropriate because of the damage inevitably done to root systems and trunks of the residual stand which results in accelerated mortality of trees and overall deterioration of the stand.[226]

We also urge BLM to minimize salvage logging in other areas including the timber management areas. The purpose of this recommendation is to realize the benefits of complex early seral

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[225] Lofroth, Eric. 1998. The dead wood cycle. In: Conservation biology principles for forested landscapes. Edited by J. Voller and S. Harrison. UBC Press, Vancouver, B.C. pp. 185-214. 243 p. http://www.for.gov.bc.ca/hre/deadwood/DTrol.htm.

[226] Franklin, J.F., K. Cromack, Jr., W. Denison, A. McKee, C. Maser, J. Sedell, F. Swanson, and G. Juday. 1981. Ecological characteristics of old-growth Douglas-fir forests. PNW-GTR-118. USDA Forest Service. PNW Research Station. February 1981.
http://www.fs.fed.us/pnw/pubs/gtr118part1.pdf
http://www.fs.fed.us/pnw/pubs/118part2.pdf

habitat which is one of the most under-represented forest habitat types in western Oregon. Unsalvaged, naturally regenerated, young stands are one of the rarest forest types in the Pacific northwest, and their biodiversity rivals that of old-growth forests.

> Indeed, naturally developed early-successional forest habitats, with their rich array of snags and logs and nonarborescent vegetation, are probably the scarcest habitat in the current regional [Pacific Northwest] landscape.[227]
>
> "There has been a loss of diverse young forests on all ownerships. … Conservation of diverse young forests has received little attention in forest policy."

Janet Ohmann; Science Findings, Issue 56; Seeing the trees for the forest: mapping vegetation biodiversity in coastal Oregon forests; (September 2003). http://www.fs.fed.us/pnw/sciencef/scifi56.pdf.

III. BLM NEEDS TO CONSIDER ALTERNATIVE APPROACHES TO SALVAGE LOGGING

In timber management areas BLM should consider alternative approaches to salvage logging modeled on the recommendations of the Beschta report. Specifically:

- prohibit post-fire logging AND roadbuilding on all sensitive sites, including: severely burned areas (areas with litter destruction), on erosive soils, on fragile soils, in roadless/unroaded areas, in riparian areas, on steep slopes, and any site where accelerated erosion is possible. We would add: Late-Successional and Riparian Reserves, and protective land allocations or designations including Botanical and Scenic River Areas;
- protect all live trees;
- protect all old snags over 150 years old;
- protect all large snags over 20 inches dbh;
- protect at least 50% of each size class of dead trees less than 20 inches dbh.[228]

BLM should also consider alternatives for salvage logging that address the recommendations in the following publications:

- *Society for Conservation Biology Scientific Panel on Fire in Western U.S. Forests. Reed F. Noss (editor), Jerry F. Franklin, William Baker, Tania*

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[227] Lindenmayer, David B. and Jerry F. Franklin. 2002. Conserving Forest Biodiversity: A Comprehensive Multiscale Approach. Island Press. Washington, DC: 69. *See also*, DellaSala, D.A., J.E. Williams, C. Deacon-Williams, and J.F. Franklin. Beyond smoke and mirrors: a synthesis of fire policy and science. Conservation Biology, Pages 976–986. Volume 18, No. 4, August 2004. http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/17521/Beyond%20smoke%20and%20mirrors.pdf

[228] *See* Beschta RL, Frissell CA, Gresswell R, Hauer R, Karr JR, Minshall GW, Perry DA, and Rhodes JJ. 1995. Wildfire and Salvage Logging: recommendations for ecologically sound post-fire salvage logging and other post-fire treatments on Federal lands in the West. Corvallis, OR: Oregon State University. Available at: http://www.fire-ecology.org/science/Beschta_Report.pdf.

Schoennagel, and Peter B. Moyle. Ecological Science Relevant to Management Policies for Fire-prone Forests of the Western United States. February 24, 2006. http://www.conservationbiology.org/sections/namerica/FireWhitepaper.pdf.

- *See also the published version, Reed F. Noss (editor), Jerry F. Franklin, William L. Baker, Tania Schoennagel, and Peter B. Moyle. 2006. Ecology and Management of Fire-prone Forests of the Western United States. Society for Conservation Biology Scientific Panel on Fire in Western U.S. Forests. August 2006. http://www.conbio.org/images/content_policy/2006-8_SCB_NA_Statement_Wildland_Fire.pdf.*

BLM in the DEIS at 212 states "The ability to conduct salvage harvest for purposes of protecting human health and safety within the dry forest would be available under all alternatives." We are concerned that this authority is not adequately constrained. We support felling of real and imminent hazard trees in areas that are frequently used by workers and the public (e.g., in developed recreation sites and along paved roads). However, we have too often seen hazard tree removal used as an excuse for commodity extraction in areas that are not a high priority for hazard removal (e.g., remote locations where people visit infrequently and/or risk exposure is brief periods such as passing by large snags along a remote road or trail). BLM should consider (1) felling and retaining hazard trees onsite for ecological benefits, (2) keep workers out of the way of hazards as a way to retain high value large snags; (3) recognize that the public is risk tolerant when they are visiting wild forests. The public does not want a sanitized recreational experience on their public lands.

The DEIS at 813 concludes "In northern spotted owl critical habitat in the Harvest Land Base, the No Action alternative and Alternative B, Sub-alternative B, and Alternative D would allow salvage operations that meet down wood and snag retention standards, the minimum level needed 'to conserve and restore habitat elements.'" We are concerned about "managing for minimums." BLM should be managing for optimal levels of key habitat elements such as large trees, and dead and down wood. This requires retaining abundant levels of green trees for long-term recruitment of high levels of snags. BLM should consider alternatives that meet DecAID 50-80%+ tolerance levels for species associated with dead wood and sensitive to low levels of dead wood.

Appendix B "Management Direction" regarding salvage logging raises several concenrs. It urges BLM to minimize commercial loss and deterioration" but it does not balance with objective with any of the significant trade-offs including: recovery of listed species; protecting soil, water, and watersheds; mitigating the landscape shortage of large snags in the checkerboard lands; mitigating the temporal "snag gap" caused by stand replacing disturbance; development of future complex habitat (early seral or late seral); or carbon storage.

IV. BLM MUST TAKE A HARD LOOK AT THE ADVERSE EFFECTS OF SALVAGE LOGGING

Salvage logging also causes a host of adverse effects associated with logging in general, e.g., watershed degradation, erosion, sedimentation, road impacts, habitat fragmentation, soil

compaction, visual blight, etc. Many of these effects are worse than green timber sales because the soil lacks structure and protection normally found in green forests.

Renowned fisheries expert James Karr said:

> … I joined eight other scientists to explore whether forests might be restored by logging soon after a fire. We had among us a wealth of knowledge across a wide range of fields. We pored over several decades of research but found nothing to show that fire-adapted forests might be improved by logging in the wake of a fire.
>
> In fact, we found just the opposite: Most plants and animals in these forests are adapted to periodic fires; they have a remarkable way of recovering – literally rising from the ashes.
>
> These forests have evolved with fire. Periodic fires have been part of a normal cycle lasting thousands of years. Logging a burned forest damages the soil, carrying away nutrients, robbing seedlings of moisture and clogging nearby streams. Trees in a burned landscape, both dead and alive, continue to provide homes for wildlife after a fire and form the building blocks of new forests.[229]

BLM should carefully review the post-fire science summary prepared by the World Wildlife Fund in 2006.

> In general traditional forestry has viewed fire as bad and dead trees as a waste. These views have skewed public policies about post-fire logging. However, current scientific understanding recognizes that disturbance and dead trees are in fact critical to forest health. Of the approximately thirty scientific papers on post-fire logging and additional government reports published to date, not a single one indicates that logging provides benefits to ecosystems regenerating post-disturbance. In general, post-fire logging impedes regeneration when it compacts soils, removes "biological legacies" (e.g., large dead standing and downed trees), introduces or spreads invasive species, causes soil erosion when logs are dragged across steep slopes, and delivers sediment to streams from logging roads. Further, a large body of science on disturbance ecology (e.g., recent books on Mt. St Helens and studies in the Yellowstone Ecosystem and elsewhere) indicate that when natural disturbance events are preceded and/or followed by land management activities they often impair the recovery of forest ecosystems.[230]

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[229] Karr, James. 2005 Nature doesn't benefit from logging fire-damaged lands | The News Tribune, Tacoma, WA. ftp://ftp2.fs.fed.us/incoming/r5/Klamath/Mt.HebronRestoration/MountHebron.Records/MtHebronRestoration.ProjectRecord/D.%20ScopingComments.Analysis/ArtleyAttachment9.FullArticles/Pub10.Karr2005.Tribune.pdf

[230] Dominick A. DellaSala 2006. POST-FIRE LOGGING SUMMARY OF KEY STUDIES AND FINDINGS. World Wildlife Fund, February 2006. ftp://frap.cdf.ca.gov/pub/incoming/IMMP/Post%20Fire%20Salvage%20Logging%20Papers/Post%20Fire%20Logging%20Review%202006.pdf

In October 2013, 250 scientists signed a letter urging greater attention to the conservation of complex early seral forests and natural recovery after fire. These scientists conclude that the

> *"current state of scientific knowledge, … indicates that [salvage logging] would seriously undermine the ecological integrity of forest ecosystems on federal lands. … This post-fire habitat, known as 'complex early seral forest,' is quite simply some of the best wildlife habitat in forests and is an essential stage of natural forest processes. Moreover, it is the least protected of all forest habitat types and is often as rare, or rarer, than old-growth forest, due to damaging forest practices encouraged by post-fire logging policies. While there remains much to be discovered about fire in our forests, the scientific evidence indicates that complex early seral forest is a natural part of historical fire regimes in nearly every conifer forest type in the western U.S. (including ponderosa pine and mixed-conifer forests) … Numerous studies also document the cumulative impacts of post-fire logging on natural ecosystems, including the elimination of bird species that are most dependent on such conditions, compaction of soils, elimination of biological legacies (snags and downed logs) that are essential in supporting new forest growth, spread of invasive species, accumulation of logging slash that can add to future fire risks, increased mortality of conifer seedlings and other important re establishing vegetation (from logs dragged uphill in logging operations), and increased chronic sedimentation in streams due to the extensive road network and runoff from logging operations."*[231]

The EIS needs to carefully and comprehensively disclose and consider the following issues before approving a program of post-disturbance salvage logging:

a. the natural range of variability and existing rarity of complex young forests (e.g., young forests that are unsalvaged after disturbances). Since large snags are outside the natural range of variability across the landscape, the agency must retain all large snags to start moving the landscape toward the natural range of variability, or the agency must carefully justify in the NEPA analysis every large snag it proposes to remove. See Jerome J. Korol, Miles A. Hemstrom, Wendel J. Hann, and Rebecca A. Gravenmier. Snags and Down Wood in the Interior Columbia Basin Ecosystem Management Project. PNW-GTR-181. http://www.fs.fed.us/psw/publications/documents/gtr-181/049_Korol.pdf. This paper estimates that even if we apply enlightened forest management on federal lands for the next 100 years, we will still reach only 75% of the historic large snag abundance measured across the interior Columbia Basin, and most of the increase in large snags will occur in roadless and wilderness areas.
b. the ecological values (such as wildlife habitat) associated with snags, dead wood, and complex young forests. See Rose, C.L., Marcot, B.G., Mellen, T.K., Ohmann, J.L., Waddell, K.L., Lindely, D.L., and B. Schrieber. 2001. Decaying Wood in Pacific

[231] Della Sala, D. et al (2013) Open Letter to Members of Congress from 250 Scientists Concerned about Post-fire Logging. October 30, 2013. http://geosinstitute.org/images/stories/pdfs/Publications/Fire/Scientist_Letter_Postfire_2013.pdf or http://www.scribd.com/doc/181401520/Open-Letter-to-Members-of-Congress-from-250-Scientists-Concerned-about-Post-fire-Logging-October-30-2013

Northwest Forests: Concepts and Tools for Habitat Management, Chapter 24 *in* ***Wildlife-Habitat Relationships in Oregon and Washington*** (Johnson, D. H. and T. A. O'Neil. OSU Press. 2001) http://web.archive.org/web/20060708035905/http://www.nwhi.org/inc/data/GISdata/docs/chapter24.pdf

c. Given the regional deficit of young complex forests and the fact that many species, such as woodpeckers and secondary cavity users, appear to be adapted to exploit the structure and resources available within disturbed forests, the agencies should comprehensively consider and disclose the direct and indirect effects of salvage logging on species associated with young complex forests. The Forest Service has numerous Management Indicator Species whose populations have not been monitored, so the agencies lack the information necessary to that the salvage logging program will maintain species viability.

d. the effects of salvage logging on the development of complex forest habitat; "The early post-disturbance period of forest ecosystem development - pre-tree-canopy closure - is profoundly important!" because it is heterogeneous, light-energy rich, structure rich, biodiversity rich, and process rich. "**Removal of legacies is most profound long-term impact**" because of the "Importance of Coarse Wood:
   - Habitat for species
   - Organic seedbeds (nurse logs)
   - Modification of microclimate
   - Protection of plants from ungulates
   - Sediment traps
   - Sources of energy & nutrients
   - Sites of N-fixation
   - Special source of soil organic matter
   - Structural elements of aquatic ecosystems"

   Jerry Franklin - What is a 'Good' Forest Opening? – Powerpoint http://courses.washington.edu/esrm315/Lectures/FranklinEarlySuccession.pdf

e. all the new science related to salvage logging and dead wood, including but not limited to: Beschta R.L., J.J. Rhodes, J.B. Kauffman, R.E. Gresswell, G.W. Minshall, J.R. Karr, D.A. Perry, F.R. Hauer, and C.A.Frissell, 2004. Postfire management on forested public lands of the western USA. Cons. Bio.,. http://pacificrivers.org/files/post-fire-management-and-sound-science/Beschta-etal2004.pdf and Rose, C.L., Marcot, B.G., Mellen, T.K., Ohmann, J.L., Waddell, K.L., Lindely, D.L., and B. Schrieber. 2001. Decaying Wood in Pacific Northwest Forests: Concepts and Tools for Habitat Management, Chapter 24 in Wildlife-Habitat Relationships in Oregon and Washington (Johnson, D. H. and T. A. O'Neil. OSU Press. 2001) http://web.archive.org/web/20060708035905/http://www.nwhi.org/inc/data/GISdata/docs/chapter24.pdf

f. "Conservation of diverse young forests has received little attention in forest policy." USDA PNW Research Station. *Science Findings.* Sept 2003. http://www.fs.fed.us/pnw/sciencef/scifi56.pdf. "[T]here's a looming shortage of diverse young forests - where seedlings intermingle with fallen logs, standing dead

snags, and shrubs - that provide specialized habitat for certain animals and plants. … there's a looming gap in diverse, young, early-successional conifer forest, the type of forest that once came in naturally after forest fires. These young forests, up to 10 years old, have a diversity of forest structures - fallen logs and dead snags - and a diversity of plant life. They are important habitat for the western bluebird and other birds that prefer open areas, as well as some shrub species. Today, because of intense timber management on private lands, young forests don't get the chance to develop much diversity." OSU. 2001. Press Release: Researchers Assess Forest Sustainability. http://web.archive.org/web/20060914032259/http://oregonstate.edu/dept/ncs/newsarch/2001/Oct01/assess.htm According to the CLAMS project: "Diverse young forests: also rare but receiving less attention. Legacy tree habitat: uncertain future.." Ohmann, Spies, Gregory, Johnson. 2002. Vegetation Biodiversity in the Oregon Coast Range. http://www.fsl.orst.edu/clams/download/presentations/j02s_ohmann_10june02.pdf (slide 24).

g. Hutto, R.L., 2006. Toward Meaningful Snag-Management Guidelines for Postfire Salvage Logging in North American Conifer Forests. Conservation Biology Volume 20, No. 4, 984–993. http://web.archive.org/web/20090310114517/http://avianscience.dbs.umt.edu/documents/hutto_conbio_2006.pdf ("Species such as the Black-backed Woodpecker (*Picoides arcticus*) are nearly restricted in their habitat distribution to severely burned forests. Moreover, existing postfire salvage-logging studies reveal that most postfire specialist species are completely absent from burned forests that have been (even partially) salvage logged. I call for the long-overdue development and use of more meaningful snag-retention guidelines for postfire specialists, and I note that the biology of the most fire-dependent bird species suggests that even a cursory attempt to meet their snag needs would preclude postfire salvage logging in those severely burned conifer forests wherein the maintenance of biological diversity is deemed important.")

h. A recent study of birds that use post-fire mosaics highlighted the importance of resprouting shrubs and forbs on the re-establishment of nesting birds following wildfire. "Of the 39 species for which nests were found, 14 (37%) used cavities and 25 (63%) built open-cup nests.... Species that built cup nests used snags, residual live trees, resprouting hardwoods, and other ground vegetation and downed wood. The associations between the presence of breeding species and forb and shrub cover indicate that these are important components of the early establishment of bird populations following stand-replacing fires. These data suggest that post-fire management of resprouting hardwoods and herbaceous vegetation should consider potential impacts to bird species that nest and forage in burned forests." CFER 2007. Response of Birds to Fire Mosaics. CFER News. Winter 2007. http://www.fsl.orst.edu/cfer/pdfs/Vol7_1.pdf.

i. BLM's Western Oregon Plan Revision (WOPR) DEIS (p. LII) admits that structurally complex young forests develop old forest characteristics twice as fast as structurally deprived initial conditions.

j. Mark E Swanson, Jerry F Franklin, Robert L Beschta, Charles M Crisafulli, Dominick A DellaSala, Richard L Hutto, David B Lindenmayer, and Frederick J

Swanson 2010. The forgotten stage of forest succession: early-successional ecosystems on forest sites. Front Ecol Environ 2010; doi:10.1890/090157

k. Bats find favorable habitat in burned areas with abundant and diverse snags and abundant and diverse flying insects. Salvage logging will remove potential roost sites, and food sources. Carol Chambers and Erin Saunders. BATS IN THE BURNS - Studying the impact of wildfires and climate change. BATS. Bat Conservation International. Winter 2013, Volume 3, No. 4. http://www.batcon.org/index.php/media-and-info/bats-archives.html?task=viewArticle&magArticleID=1154

l. "Leaving a damaged forest intact means the original conditions recover more readily," says David Foster, … director of the NSF Harvard Forest LTER site. "Forests have been recovering from natural processes like windstorms, fire and ice for millions of years. What appears to us as devastation is actually, to a forest, a natural and important state of affairs." 10-16-2012 Press Release 12-198, In Blown-Down Forests, a Story of Survival To preserve forest health, the best management decision may be to do nothing. http://www.nsf.gov/news/news_summ.jsp?cntn_id=125744; Audrey Barker Plotkin, David Foster, Joel Carlson, and Alison Magill 2013. Survivors, not invaders, control forest development following simulated hurricane. Ecology, 94(2), 2013, pp. 414–423. http://harvardforest.fas.harvard.edu/sites/harvardforest.fas.harvard.edu/files/publications/pdfs/BarkerPlotkin_Ecology_2013.pdf

m. "Unmanaged early-seral stages of forest development are now considered to be among the most threatened habitat types in coniferous regions of the western United States (Noss et al. 2006, Thomas et al. 2006). Not surprisingly, concern has arisen over viability of populations that use broadleaf vegetation in early-seral forest, particularly as this habitat type contributes disproportionately to forest biodiversity (Halpern and Spies 1997). In the northwestern United States, a number of bird species thought to be strongly associated with early-seral broadleaf habitat have declined and are considered conservation priorities (Altman 1999, U.S. Fish and Wildlife Service 2002). Because the PNW represents a substantial portion of the ranges of these species, loss of quality early-seral habitat could increase risk of extinction." M. G. BETTS, J. C. HAGAR, J. W. RIVERS, J. D. ALEXANDER, K. MCGARIGAL, AND B. C. MCCOMB. 2010. Thresholds in forest bird occurrence as a function of the amount of early-seral broadleaf forest at landscape scales. Ecological Applications, 20(8), 2010, pp. 2116–2130. http://www.fsl.orst.edu/flel/pdfs/Betts%20et%20al%202010%20Ecol%20Apps.pdf

Before adopting a widespread salvage logging program, BLM needs to carefully consider and disclose reasons NOT to remove snags. Science tells us that natural forests develop after disturbance with abundant structural legacies. These legacy features include snags and down wood which play a wide variety of valuable ecological services for the developing forest, including but not limited to:

- nutrient uptake, storage, and release
- water uptake, storage, and release
- mycorrhizal colonization

- wildlife habitat, in particular for primary cavity species which are recognized as a "keystone" element of healthy forests
- allowing some forest species to linger in burned forests after disturbance and to recolonize burned forests sooner after disturbance, thereby shortening the period during which burned stands are unsuitable for wildlife
- providing food for insects that in turn feed a wide variety of other wildlife such as birds and bats
- favorable sites for seed germination and establishment
- mechanical thinning of the regenerating stand due to the process of snag fall
- shade and cover for everything from seedlings to big game
- perches, nest, and den structures.
-

In general, the larger the piece size, the longer they tend to last. But salvage logging removes those very elements that are most valuable for wildlife and most difficult to replace.

Since this project involves post-fire commodity extraction (also often referred to erroneously as "salvage" logging) please carefully analyze, consider, and disclose the site-specific analysis of the many reasons NOT to do post-fire commodity extraction, including but not limited to:

- adverse impacts to soil, such as erosion, compaction, displacement, litter disturbance, nutrient depletion; loss of chemical buffering; loss of soil organic matter; loss of burrowing wildlife that help aerate soils; reduction of nitrogen fixing plants that boost soil fertility; loss of slope and snow stabilizing effects which could lead to mass wasting or eliminate mechanisms that may mitigate mass wasting;
- loss of down wood functions s such as trapping sediment and aiding water infiltration, and creating microsites favorable for germination and establishment of diverse plants, and habitat for diverse wildlife;
- loss of decaying wood and depletion of the "savings account for nutrients and organic matter" which affects site productivity through the removal of dead trees which store nutrients and slowly release them to the next stand. Marañón-Jiménez, S., Fernández-Ondoño, E., and J. Castro. 2013. Charred wood remaining after a wildfire as a reservoir of macro- and micronutrients in a Mediterranean pine forest. International Journal of Wildland Fire. http://dx.doi.org/10.1071/WF12030 ("Partially charred wood represented a considerable pool of nutrients, due to both the relatively high concentrations and to the great amount of biomass still present after the fire. Potential contributions of the charred wood were particularly relevant for N and micronutrients Na, Mn, Fe, Zn and Cu, as wood contained 2–9 times more nutrients than the soil. Post-fire woody debris constitutes therefore a valuable natural element as a potential source of nutrients, which would be lost from ecosystems in cases where it is removed")
- Recent studies indicate that wood may release nutrients more rapidly than previously thought through a variety of decay mechanisms mediated by means other than microbial decomposers, i.e. fungal sporocarps, mycorrhizae and roots, leaching, fragmentation, and insects;
- loss of nutrients from live trees that are determined to be "dying." Live trees produce serve as refugia for animals, invertebrates, and mycorrhizae; produce litter fall; and help cycle nutrients which are all extremely valuable in the post-fire landscape;

- loss of wood that serves to buffer soil chemistry and prevent extreme changes in soil chemistry;
- water quality degradation;
- loss of water storage capacity in down logs;
- altered timing of storm run-off which could lead to peak flows that erode stream banks and scour fish eggs;
- delaying the pace of vegetative recovery and reducing the quality/diversity of the vegetation community;
- dead trees serve as a natural fence that protects young seedlings from browse by cattle and big game. This is one way that young aspen and other valuable species can get their start;
- spread of invasive weeds through soil disturbance and extensive use of transportation systems;
- loss of legacy structures that can carry species, functions, and processes over from one stand to the next;
- loss of terrestrial and aquatic habitat (mostly snags and down logs) potentially harming at least 93 forest species (63 birds, 26 mammals, and 4 amphibians) that use snags for nesting, roosting, preening, foraging, perching, courtship, drumming, and hibernating, plus many more species that use down logs for foraging sites, hiding and thermal cover, denning, nesting, travel corridors, and vantage points for predator avoidance;
- Depletion of large wood structures in streams that can cause: 1) simplification of channel morphology, 2) increased bank erosion, 3) increased sediment export, 4) decreased nutrient retention, 5) loss of habitats associated with diversity in cover, hydrologic patterns, and sediment retention;
- commercial salvage usually removes the largest trees, but this will disproportionately harm wildlife because: (1) larger snags persist longer and therefore provide their valuable ecosystem services longer and then serve longer as down wood too, and (2) most snag-using wildlife species are associated with snags >14.2 inches diameter at breast height (dbh), and about a third of these species use snags >29.1 inches dbh.
- Truncation of symbiotic species relations and loss of biodiversity. Sixteen species are primary cavity excavators and 35 are secondary cavity users; 8 are primary burrow excavators and 11 are secondary burrow users; 5 are primary terrestrial runway excavators and 6 are secondary runway users. Nine snag-associated species create nesting or denning structures and 8 use created structures.
- Reduced avian and terrestrial species diversity which affects plant and invertebrate diversity. Since different wildlife help disperse different sets of seeds and invertebrates, reduced wildlife diversity can significantly affect pace of recovery and the diversity of the regenerating stand. Snag- associated wildlife play a greater role in dispersal of invertebrates and plants, while down wood-associated wildlife play a greater role in dispersal of fungi and lichens. Down wood-associated species might contribute more to improving soil structure and aeration through digging, and to fragmenting wood which increases surface area encouraging biological action that releases nutrients.
- loss of partial shade that helps protect the next generation of forest;
- loss of cover quality and fawning areas for big game;

- loss of future disturbance processes such as falling snags that help thin and diversify the next generation of forest;[232]
- increased human activity and human access that can increase fire risk;
- increased fine fuels on the forest floor that can cause an increase in fire hazard;
- loss of seed sources, and
- loss of diversity of vegetation and microsite conditions.
- The fact that regional standards for snags and down wood fail to incorporate the most recent science indicating that more snags and down wood (especially large snags and logs) are required in order to maintain species viability and sustain site productivity.
- Arguments in support of the "reburn hypothesis" are specious. (1) partial reburn may be completely natural and desirable in some cases to consume some fuel and diversify the regenerating forest, and (2) salvage logging will cause a pulse of fine fuels on the ground and actually increase the reburn risk/hazard above natural levels, and (3) fuels that fall to the ground over time will to some extent decay as they fall.
- Uncertainty calls for a cautious approach.
-

Compare these adverse impacts of salvage logging to the few scant reasons to salvage (e.g., economic recovery of fiber).

V. THE DEIS FAILS TO RECOGNIZE THE SIGNIFICANT ECOLOGICAL VALUE OF RETAINING LARGE SNAGS

Protecting large snags from salvage logging is particularly important. Because large snags last much longer than small snags, large snags are disproportionately valuable as wildlife habitat, nutrient and water reservoirs, soil stabilizers, etc. If the agency chooses to conduct a salvage operation in this fire area, they must use a diameter cap and protect these scarce and valuable forest structures.

Jerry Franklin, in commenting on a large fire salvage project in 2015 said:

> Large snags and logs are the most important surviving structural elements or biological legacies of a forest disturbance (Franklin et al. 2002), excepting only surviving large live trees. Importance, in this case, refers to the roles of these structures in:
>
> (1) Providing essential habitat for an immense array of species;
> (2) Maintaining important ecosystem functions; and
> (3) Structurally enriching the young forest stand, making it possible for mid- and latesuccessional species to re-colonize the stand much earlier in its chronological development than would otherwise be the case (Franklin et al. 1987).

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[232] JAMES A. LUTZ AND CHARLES B. HALPERN. 2006. TREE MORTALITY DURING EARLY FOREST DEVELOPMENT: A LONG-TERM STUDY OF RATES, CAUSES, AND CONSEQUENCES. Ecological Monographs, 76(2), 2006, pp. 257–275. This study showed that mortality from mechanical damage ("crushing disturbance") from falling limbs and trees and snow loads can be a more significant factor than suppression mortality. See also, Brown, Martin J.; Kertis, Jane; Huff, Mark H. 2013. Natural tree regeneration and coarse woody debris dynamics after a forest fire in the western Cascade Range. Res. Pap. PNW-RP-592. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 50 p. "Snag fall and fragmentation added so much wood to the ground—thousands of meters of log length per hectare—that it probably constitutes a significant ecological disturbance in itself, a kind of rain of logs.")

The importance of large snags and down wood for a broad array of species is recognized in the EIS document. These structures provide habitat for early as well as late successional species and sustain many important ecosystem processes (e.g., Harmon et al. 1986). However, the long persistence and multiple roles played by the large pulse of snags, logs, and other CWD provided by the stand-replacement event (Harmon et al. 1986; Maser et al. 1988) do not appear to be adequately recognized in the analysis of how much of this wood should be retained. For example, large Douglas-fir logs continue to fulfill important ecological functions, such as habitat for small mammals and salamanders, for 200 to 250 years after their death. Cedar snags can persist for at least as long as 1 ½ centuries and as logs for over twice that long.

The massive input of large dead wood is characteristic and critical to stand development processes and the ultimate provision of habitat for late-successional species following stand replacement fires (Maser et al. , 1988; Franklin et al. 2002). As noted these wood structures may persist and play functional roles for several centuries, particularly in the case of decay resistant species. Large pines may also persist as snags for several decades and additional periods as logs on the forest floor. In fact, the entire recovering forest ecosystem will depend upon this pulse of CWD until it reaches a point in its development where the new stand begins to generate snags and logs of comparable size and heartwood content-generally between 100 and 200 years (Maser et al. 1988; Franklin et al., 2002). Consequently, basing snag and CWD retention following salvage on levels of these structures found in existing mature and old forests is not appropriate; *all of this initial pulse of wood is needed to reach those levels one to two centuries from now!* Indeed, the use of mature forests as a standard for CWD is particularly inappropriate since this is the period when CWD levels are at their lowest level during the entire natural developmental sequence from stand-replacement fire to old growth (see diagram in paper by Spies in Maser et al. 1988). It certainly does not appear to me that the approach taken in the DEIS reflects an appreciation of the fact that this one-time input oflarge and decay resistant CWO is all that the recovering forest ecosystem is going to get for the next 100 to 200 years.

The importance of snags, logs, and other CWD is recognized in FEMAT's (1993) scientific analysis. For example (my underlining for emphasis):

> *Because of the important role of dead wood in late-successional and old-growth forest ecosystems, and because there is much to learn about the role of dead wood in the development of forests, only limited salvage is appropriate in Late-Successional Reserves. .. <u>The Final Draft Recovery Plan [for the NSO] would allow removal of small-diameter snags and logs, but would also require retention o[snags and logs likely to persist until the new stand begins to contribute significant quantities of coarse woody debris</u>." FEMAT 1993, p. IV-37.*
>
> *Snags provide a variety of habitat benefits for a variety of wildlife species associated with late-successional forests. <u>Accordingly, following stand-replacing disturbances. management should focus on retaining snags that are likely to</u>*

> *persist until late-successional conditions have developed and the new stand is again producing large snags. FEMAT 1993, p. III-37.*
>
> *Following a stand replacing disturbance, management should retain adequate coarse woody debris quantities in the new stand so that in the.fi1ture it will contain amounts similar to natural regenerated stands. The analysis that determines the amount of coarsewoody debris to leave must account for the filii period of time before the new stand begins to contribute coarse woody debris .... FEMA T 1993, p. III-37.*

> In summary, general salvage of large snags and logs is clearly antithetical to the goal of rapid recovery of fully functional late-successional forest habitat and inappropriate within the Late Successional Reserves.

Jerry Franklin. Comments on the Klamath NF, Westside Fires Salvage DEIS. 6 April 2015.

Retaining large snags is necessary to mitigate the "snag gap" caused by stand replacing disturbance. It may seem counter-intuitive but fire results in a snag shortage. One of the most significant and lasting effects of stand replacing disturbance such as fire, wind, or regeneration logging is to bring the process of snag recruitment to a virtual standstill for many decades. Even if snags are not removed by the disturbance, snags created by the disturbance will fall down over time and few if any snags are created. This results in a "snag gap" that has serious adverse consequences for habitat and many other ecological processes. The apparent abundance of large snags after a stand replacing disturbance masks a severe shortage of large snags down the road.

In Congressional testimony in July 2004, Jerry Franklin said:

> It is sometimes argued that following a stand-replacement fire in an old-growth forest that snags and logs are present in "excess" of the needs of the site, in terms of ecosystem recovery. In fact, the large pulse of dead wood created by the disturbance is the only significant input of woody debris that the site is going to get for the next 50 to 150 years—the ecosystem has to "live" off of this woody debris until the forest matures to the point where it has again produced the large trees that can become the source for new snags and logs (Maser et al. 1988).

Dr. Jerry F. Franklin, Professor of Ecosystem Studies, College of Forest Resources, University of Washington. July 15, 2004. TESTIMONY FOR THE RECORD ON OVERSIGHT HEARING ON "RESTORING FORESTS AFTER CATASTROPHIC EVENTS" BY HOUSE COMMITTEE ON RESOURCES, SUBCOMMITTEE ON FOREST AND FOREST HEALTH. http://www.signaloflove.org/clearcutting/reports/fire3/Franklin%20Jerry%20July%202004%20testimony.pdf.

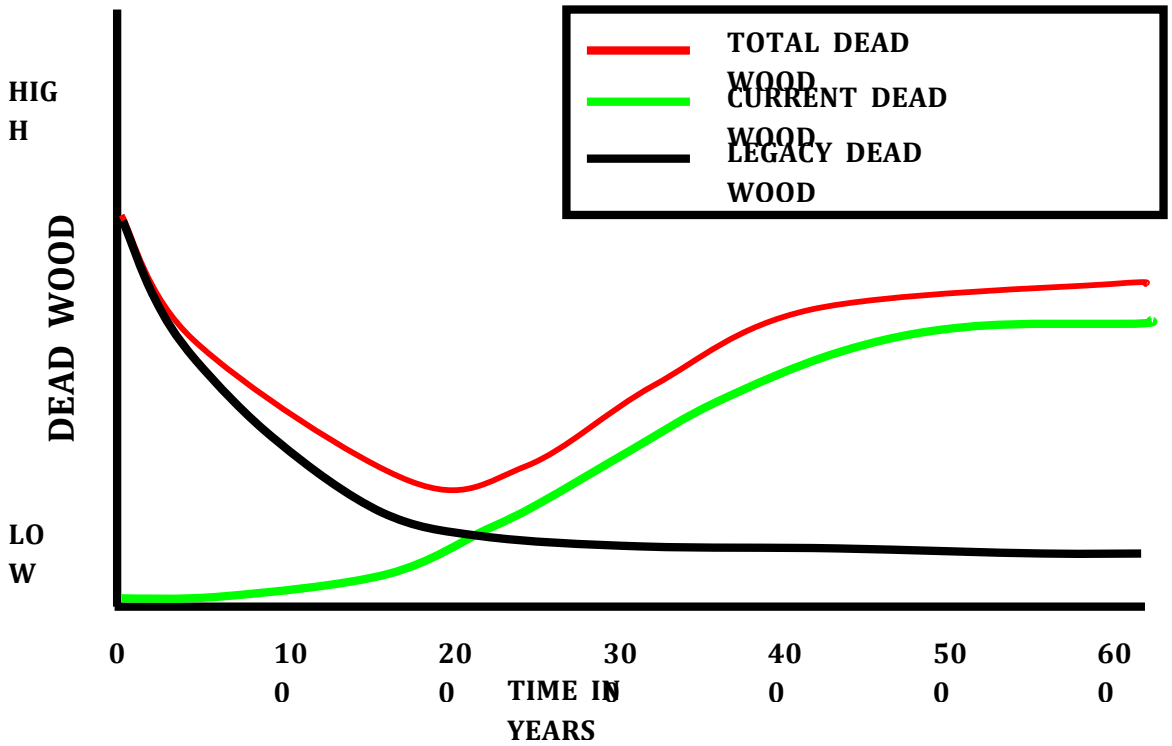
Similarly, Johnson & Franklin's 2008 Forest Plan for the Klamath Tribes says of large fires;

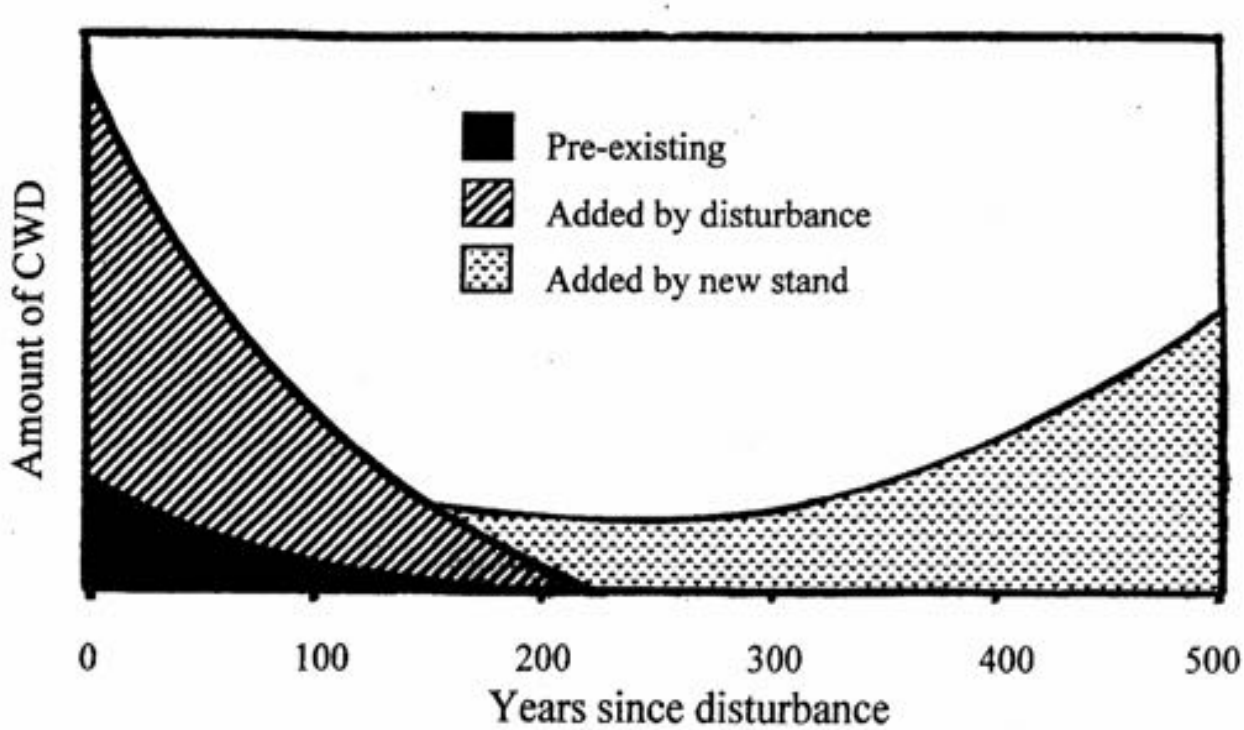
> Such fires do generate a large pulse of dying, dead and down material. After a stand-replacement fire, that pulse of large wood is all of the large wood that the recovering

ecosystem is going to get for the next century or more—i.e., until trees of large size are once again a part of the stand. Some of this dead wood legacy will persist and fulfill important functional roles in the recovering forest for many decades and, in the case of the largest and most decay resistant material, even for a century or more.

1. The agency must recognize the asymmetric nature of snag dynamics after all types of stand replacing disturbance. High rates of snag fall would be expected in the decades following disturbance, while low rates of snag recruitment would be expected in the decades following a disturbance. This unavoidably results in a serious deficit of snags at some point in the future.
2. In order for the NEPA analysis to fully address the snag habitat issue it must look carefully at the snag gap from both ends.
    a. The snag gap begins when too many of the current snags are gone. So the snag gap is exacerbated on the front end by salvage logging which removes too many large snags.
    b. The snag gaps ends when the next stand grows to the point that it contains large trees and some of them die, so the snag gap is exacerbated on the back end if there is a significant delay in tree regeneration.
3. The agency has a tendency to focus on the back end of the snag gap which is allegedly mitigated by tree replanting, but this benefit is in the distant future and remains speculative. The agencies tend to ignore the effect of logging on the front end of the snag gap (which is concrete and unavoidable).
4. Logging which retains only enough snags to meet snag requirements after harvest will not meet snag requirements in a few years after those few retained snags fall.
5. Both the RMP and the Northwest Forest Plan (p C-13) require that snags be maintained through time, so our goal must be to manage snags to minimize the time period that there is a deficit of snags.
6. The NEPA analysis must account for snag fall rates and figure out how to minimize the snag gap. Every day that the "snag gap" is lengthened by salvage logging is a violation of the RMP. Models that may be used to analyze snag dynamics can be found here: http://www.for.gov.bc.ca/hre/deadwood/DTmod.htm.
7. There is a strong correlation between the size of the snags and the length of time it is likely to remain standing, so salvage must be designed to retain all the large snag and only remove trees from smaller size classes.
8. Consider this example: Assume that the stands currently have 30 large trees/acre and 24 of those will be removed via salvage logging while 6 trees/acre will be retained for snag habitat. Further assume that in 50 years 2 percent of the large snags will remain standing as snag habitat. Two percent of 6 trees/acre is FAR LESS than 2 percent of 30 trees/acre, so there is a virtual statistical certainty that salvage logging will exacerbate the snag gap.
9. The snag gap is really exacerbated by salvage logging in two ways — first by targeting removal of the large and most persistent component of the snag population, and second by accelerating the rate that remaining snags fall and are lost from the snag population. New science from Idaho reveals that Ponderosa pine snags persist longer in unlogged areas. See Russell, R.E., Saab, V.A., Dudley, J.G., and J.J. Rotella. 2006. Snag longevity in relation to wildfire and postfire salvage logging. Forest Ecology and Management 232 (2006) 179-187. http://www.fs.fed.us/rm/pubs_other/rmrs_2006_russell_r001.pdf ("The predicted half-life of

a ponderosa pine snag was 7-8 years in salvage logged plots and 9-10 years in unlogged plots.”)





The agency often compares their proposed snag retention levels to the *average* number of snags across the landscape, without recognizing that after a significant disturbance such as fire “the

rate of input [of snags] to the CWD pool is 100-1000x the rate expected for an unburned steady-state forest (Harmon et al 1986). Even afterwards, in the next 5 or 6 years, the rate of input is still 5 or 10 or even 100 times that steady-state rate."
http://web.archive.org/web/20050428020846/http://www.brownandbrown.tv/warner-presentation-2002-05-14b.pdf

The shortage of snags in the decades following stand replacing fire is acknowledged by the Forest Service on page 136 of the Wallowa-Whitman National Forest's Trail Vegetation Management Project EA (October 2012). http://www.fs.usda.gov/project/?project=34482

The BLM has previously admitted that a "high proportion" of snags "are expected to persist for at least 50 years." Roseburg BLM 2009, Little Wolf 3 Density Mgt EA. http://www.blm.gov/or/districts/roseburg/plans/files/LittleWolf3EA.pdf. This means that salvage logging can exacerbate the snag gap the front end by at least 50 years.

An example of how salvage would lengthen the period that a forest remains inhospitable to wildlife is provided by the following study, Payer, D.C., and D.J. Harrison. 2000. Structural differences between forests regenerating following spruce budworm defoliation and clear-cut harvesting: Implications for marten. Canadian Journal of Forest Research 30(12): 196572. ("Summary: The authors looked at the use of clearcuts and areas where spruce budworm has caused mortality in relation to the American marten. When establishing new territories, martens avoid clearcuts but do not avoid stands with a history of extensive tree mortality caused by eastern spruce budworm. Although live tree basal area was similar between stand types, the results showed that the vertical structure provided by large snags can offset the limited availability of live trees for the marten, particularly where coarse woody debris and understory vegetation are plentiful.") http://www.umaine.edu/cfru/documents/payer.pdf

Salvage Logging is Incompatible with Watershed Recovery
Salvage logging should be avoided and minimized because it will violate the O&C Act mandate to protect watersheds and favorable conditions of water flow. Salvage retards watershed and aquatic recovery.

> In short, by adding another stressor to burned watersheds, postfire salvage logging worsens degraded aquatic conditions accumulated from a century of human activity (CWWR 1996,NRC 1996, 2002,McIntosh et al. 2000). The additional damage impedes the recovery and restoration of aquatic systems, lowers water quality, shrinks the distribution and abundance of native aquatic species, and compromises the flow of economic benefits to human communities that depend on aquatic resources (Beschta et al. 2004).

Karr, J. R., J. J. Rhodes, G. W. Minshall, F. R. Hauer, R. L. Beschta, C. A. Frissell, and D. A. Perry. 2004. The effects of postfire salvage logging on aquatic ecosystems in the American West. BioScience 54:1029-1033.

http://www.sierraforestlegacy.org/Resources/Conservation/FireForestEcology/SalvageLoggingScience/Salvage-Karr04.pdf *citing* Beschta, ,R.L., J. J. Rhodes, J. B. Kauffman, R. E. Gresswell, G. W. Minshall, J. R. Karr, D.A. Perry, F.R. Hauer, C. A. Frissell. 2004. Postfire Management on Forested Public Lands of the Western United States. Conservation Biology 18: 957–967.

Downloadable at:
https://www.researchgate.net/publication/227654964_Postfire_Management_on_Forested_Public_Lands_of_the_Western_United_States?ev=prf_pub

The quantity, quality, and rate of revegetation has a direct contribution to controlling erosion and sedimentation. USGS has described the role of vegetation in slope stability and erosion as follows:

> In a watershed, vegetation provides five major physical functions that help control soil erosion during rainfall events (Spittler, in press):
>
> - Interception of rainfall, which extends the time for water to reach the ground surface and absorbs raindrop impact energy.
> - Mulching of the ground surface to provide temporary water storage and slow release, slope roughness, and energy absorption.
> - Structural support of loose, surficial material.
> - Reinforcement of the deeper soil by roots, which increases the natural slope stability.
> - Maintains conditions necessary for soil micro-organisms that provide soil structure.
> -

http://web.archive.org/web/20040218052053/http://landslides.usgs.gov/html_files/ofr95-508/skrep2.html *citing* Spittler, T.E., in press, Fire and the debris-flow potential of winter storms, in, Proceedings of the Symposium on Brush Fires in California Wildlands: Ecology and Resource Management: International Association of Wildland Fire.

Wagenbrenner et al (2015) found that –

- Post-fire salvage logging increased soil compaction and decreased vegetative cover.
- Salvage logging greatly increased sediment production from more disturbed plots. ("Sediment production from the skidder plots was 10–100 times the value from the controls.")
- Salvage logging delayed post-fire recovery of vegetation and sediment production. ("The relative differences in sediment production between the disturbed plots and the controls tended to increase over time as the controls exhibited more rapid regrowth." Data were taken 2-8 years post-harvest.)
-

Joseph W. Wagenbrenner, Lee H. MacDonald, , Robert N. Coats, Peter R. Robichaud, Robert E. Brown. 2015. Effects of post-fire salvage logging and a skid trail treatment on ground cover, soils, and sediment production in the interior western United States. Forest Ecology and Management. Volume 335, 1 January 2015, Pages 176–193.
http://www.nrel.colostate.edu/assets/nrel_files/labs/macdonald-lab/pubs/Salvage-logging-Wagenbrenner%20et%20al-ForEcolMgmt-2015.pdf

Salvage logging will set back vegetative recovery that has already started and thereby retard attainment of riparian and aquatic management objectives. In research on post-fire logging on the Winema NF, Sexton (1998) found that salvage logged sites produced only about 38% of the

understory biomass of that on the unlogged site; and one year later produced only about 27% of the understory biomass of that on the unlogged site. In fact, Sexton's (1998) study comparing salvaged and unsalvaged areas of a fire on the Winema NF one and two years after logging showed:

Salvage Areas	**Unsalvaged Areas**
reduced vegetation biomass	greater vegetation biomass
reduced species diversity	greater species diversity
reduced species richness	greater species richness
reduced growth of planted seedlings	greater growth of planted seedlings
reduced survival of planted seedlings	greater survival of planted seedlings

Sexton, Timothy O. 1998. Ecological effects of post wildfire activities (salvage-logging and grass-seeding) on vegetation composition, diversity, biomass, and growth and survival of *Pinus ponderosa* and *Purshia tridentata*. MS Thesis Oregon State University. Corvallis, OR. 121p

Similarly, Dan Donato, looked at the effects of salvage logging at the Biscuit fire in SW Oregon and found that cutting down dead trees and hauling away logs killed 71 percent of the naturally established seedlings which were abundant after the fire but scarce after logging. D. C. Donato, J. B. Fontaine, J. L. Campbell, W. D. Robinson, J. B. Kauffman, B. E. Law. Post-Wildfire Logging Hinders Regeneration and Increases Fire Risk. www.sciencexpress.org. 5 January 2006. Shatford and Hibbs recently found similarly encouraging results of natural regeneration.

> Over the 2005 field season, natural regenerating conifers were sampled in 38 plots within 11 historic fires in the Klamath-Siskiyou Region … Years since stand replacing wildfire ranged from [18 years to 9 years] … The density of natural regenerating conifers ranged over three orders of magnitude … Although the abundance of natural regeneration was frequently high, the age and size of saplings ranged considerably … Frequently, the regenerating saplings were overtopped by shrubs and hardwoods. There was no evidence of recent conifer mortality (i.e. no dead or dying saplings) caused by competition … Saplings were generally in good condition with dominant trees having live crown ratios of 50% or greater.

Shatford, J., Hibbs, D.E. 2005. Predicting Post-fire Regeneration Needs: Spatial and Temporal Variation in Natural Regneration in Southwestern Oregonadn Northern California. Pp 29-32 *in* Cooperative Forest Ecosystem Research Program (CFER) 2005 Annual Report. http://www.fsl.orst.edu/cfer/pdfs/CFER_ar05.pdf. This data reveals that natural regeneration is not only demonstrably successful but also species diverse and variable both spatially and temporally. All of these attributes are highly beneficial in terms of both wildlife habitat and fuel hazard.

The adverse effects of salvage logging on vegetative recovery described by Sexton are not unique to the Ponderosa pine forest type. The results are in fact quite consistent with the results found by Michael Grifantini et al after salvage logging in Douglas fir forests in northwestern California. Grifantini, M.C., Stuart J.D., and L. Fox III, 1992. "Deer Habitat Changes Following Wildfire, Salvage, Logging and Reforestation, Klamath Mountains, California," Proceedings of

the Symposium on Biodiversity of Northwestern California, Oct 28-30, 1991, Santa Rosa, CA. UC Wildland Resource Center Report 29. December 1992.

Climate change is expected to increase the magnitude and intensity of rain events which can cause significant erosion, especially after disturbances such as fire and logging. It would be wise to retain extra material on site after fire in order to intercept and absorb the energy of rain drops, absorb and store water, stabilize soil, capture and store mobile sediment, etc. Garbrecht, J. D., J. L. Steiner, and C. A. Cox (2007), Climate change impacts on soil and water conservation, Eos Trans. AGU, 88(11), 136. http://www.agu.org/eos_elec/2007/11-136_climate.html. The agency needs to ensure that the hydrology and erosion models used in the NEPA analysis accurately account for the expected increase in storm impacts due to climate change.

The adverse effects described by Sexton appear to be long lasting. Busse at al 1996 found that the annual growth rate of pines was reduced by almost 20% where understory vegetation had been removed thirty years earlier. In addition, research has shown a direct relationship between the level of on-site coarse woody debris and the amount active ectomycorrhizal root tips. Graham, R. T., Harvey, A. E., Jurgensen, M., F., Jain T. B., Tonn, J. R., and Page-Dumroese, D. S. 1994. Managing coarse woody debris in forests of the Rocky Mountains. Res. Pap. INT-RP-477. Ogden, UT: U. S. Department of Agriculture, Forest Service, Intermountain Research Station, 13 p. See also Russell T. Graham, Theresa Benevidez Jain, and Alan E. Harvey FUEL: LOGS, STICKS, NEEDLES, DUFF, AND MUCH MORE. The Joint Fire Science Conference and Workshop
http://web.archive.org/web/20060829024013/http://jfsp.nifc.gov/conferenceproc/T-10Grahametal.pdf

Undisturbed litterfall after wildfire reduces soil erosion caused by both rain and overland-flow. By disturbing needle cover and effectively reducing the soil coverage, logging and yarding will cause increased in erosion compared to not logging. Pannkuk, C. D., and P. R. Robichaud. 2003. Effectiveness of needle cast at reducing erosion after forest fires, *Water Resources Research*, Vol. 39, No. 11, doi:10.1029/2003WR002318, 2003.
http://www.agu.org/pubs/crossref/2003/2003WR002318.shtml They found that a 50 percent ground cover of Douglas fir needles reduced water flow erosion by 20 percent and rain-induced erosion by 80 percent. A 50 percent ground cover of ponderosa pine needles reduced water flow erosion by 40 percent and rain-induced erosion by 60 percent.

VI. SALVAGE LOGGING IS INCOMPATIBLE WITH SPOTTED OWL RECOVERY

The Revised Recovery Plan for the northern spotted owl recommends retention and restoration of structure function and process across the dry forest landscape. This includes legacy retention after fires. The 2011 Final Revised Recovery Plan for the Northern Spotted Owl says,

> In general, we recommend that dynamic, disturbance-prone forests of the eastern Cascades, California Cascades and Klamath Provinces should be actively managed in a way that reconciles the overlapping goals of spotted owl conservation, responding to climate change and restoring dry forest ecological structure, composition and processes,

including wildfire and other disturbances (Noss et al. 2006, Spies et al. 2006, 2010a, Agee and Skinner 2005, Healey et al. 2008, Mitchell et al. 2009). …

…[O]ur intent in this Revised Recovery Plan is to embed spotted owl conservation and recovery within broader dry forest ecosystem restoration efforts to increase the likelihood spotted owl habitat will remain on the landscape longer and develop as part of this fire adapted community … To accommodate future disturbances and restore ecosystem resiliency, we believe it is essential to restore ecosystem structure, composition and processes. Restoring ecosystem structures that provide resiliency will necessitate maintaining and restoring the biological legacies that typically persist through disturbance events and influence the recovery process in the post-disturbance landscape (Franklin et al. 2000). With respect to the dry forest landscapes, structural legacies include not only the large trees that tend to be fire tolerant, but the snags and downed wood that were created as a result of the disturbance event. Structural legacies serve valuable functions such as reproductive structures that facilitate plant propagation, modifying microclimates, or improving connectivity through the disturbed area (Franklin et al. 2007). … These principles should be part of any dry forest restoration treatment: … Retain and restore heterogeneity within stands (i.e., manage for fine-scale mosaic within stands). This includes both vertical and horizontal diversity. …

… [P]ost-fire timber harvest activities "undermine many of the ecosystem benefits of major disturbances" (Lindenmayer et al. 2004:1303) and frequently "ignore important ecological lessons, especially the role of disturbances in diversifying and rejuvenating landscapes" (DellaSala et al. 2006:51). … studies of spotted owls in post-fire landscapes indicate that spotted owls use forest stands that have been burned, but generally do not use stands that have been burned and logged. Consistent with restoration goals, post-fire management in these areas should promote the development of habitat elements that support spotted owls and their prey, especially those which require the most time to develop or recover (e.g., large trees, snags, downed wood). Such management should include retention of large trees and defective trees, rehabilitation of roads and firelines, and planting of native species (Beschta et al. 2004, Hutto 2006, Peterson et al. 2009). We anticipate many cases where the best approach to retain these features involves few or no management activities. … Many researchers supported the need to maintain habitat for spotted owl prey. For example, Lemkuhl et al. (2006) confirmed the importance of maintaining snags, downed wood, canopy cover, and mistletoe to support populations of spotted owl prey species. Gomez et al. (2005) noted the importance of fungal sporocarps which were positively associated with large downed wood retained on site post-harvest. Carey et al. (1991) and Carey(1995) noted the importance of at least 10 to 15 percent cover of downed wood to benefit prey. The costs and benefits of post-fire harvest to the development of habitat for spotted owls and their prey should be evaluated by interagency teams (e.g., Level 1 teams) during the consultation process.

> · Recovery Action 12: In lands where management is focused on development of spotted owl habitat, post-fire silvicultural activities should concentrate on conserving and restoring habitat elements that take a long time to develop (e.g., large trees, medium and large snags, downed wood). Examples of areas where we

> believe this recovery action would greatly benefit future spotted owl habitat development include such fire-affected areas as the Biscuit fire, the Davis fire and the B&B complex.

USFWS 2011. Final Revised Recovery Plan for the Northern Spotted Owl. pp III-20, III-32 – III-34, III-48 – III-49. Note also, the 1994 Northwest Forest Plan ROD (page C-11, and 1994 FSEIS page F-146) says that " ... activities required by recovery plans for listed threatened and endangered species take precedence over Late-Successional Reserve standards and guidelines."

Also, keep in mind the FWS' June 28, 2011 Response-to-Comments on the Revised Recovery Plan says "Whether a burned area could support nesting spotted owls is not relevant to our recommending focusing on spotted owl habitat restoration and conservation of legacy habitat elements in areas where pre-fire management focused on developing spotted owl habitat. This recovery action is designed to provide for legacy habitat elements remaining after high-intensity fires which will contribute to future habitat development." http://web.archive.org/web/20130315193800/http://www.fws.gov/oregonfwo/Species/Data/NorthernSpottedOwl/Recovery/Library/Documents/Comments.Responses.pdf And, keep in mind "where pre-fire management focused on developing spotted owl habitat" includes all dry forests, e.g. "[O]ur intent in this Revised Recovery Plan is to embed spotted owl conservation and recovery within broader dry forest ecosystem restoration efforts"

The 2008 FRP (p 116) also says "Large and old trees, either living or dead, are important wherever they occur." The FWS response-to-comments on the draft recovery plan says "post-fire harvest recommendations stress the need to conserve large trees, both living and dead, as they are important components to the restoration of owl habitat after wildfire events." And recommends that after fire or other disturbance the agencies should "conserve the remaining large trees and snags." http://www.fws.gov/pacific/ecoservices/endangered/recovery/pdf/NSO_RPApp_F_Response_to_Comments_5_7_08.pdf. Since large snags take a very long time to grow and recruit, salvage logging should retain all large snags. Any salvage logging proposal must also carefully disclose and balance all detrimental effects and alleged beneficial effects of salvage logging and connected actions like road building.

Clark (2007) looked at post-fire habitat selection by spotted owls after several wildfires in southern Oregon and determined that low severity fire in nesting, roosting, foraging habitat appears to benefit spotted owl occupancy and colonization.

> Initial occupancy was positively influenced by the amount of roosting and foraging habitat with low severity burn within the core ($\beta = 0.08$, 95% C.I. = -0.02 – 0.17) … Colonization rates were positively influenced by the amount of nesting, roosting and foraging habitat that received a low severity burn within the core ($\beta = 0.08$, 95% C.I. = 0.02 – 0.15).

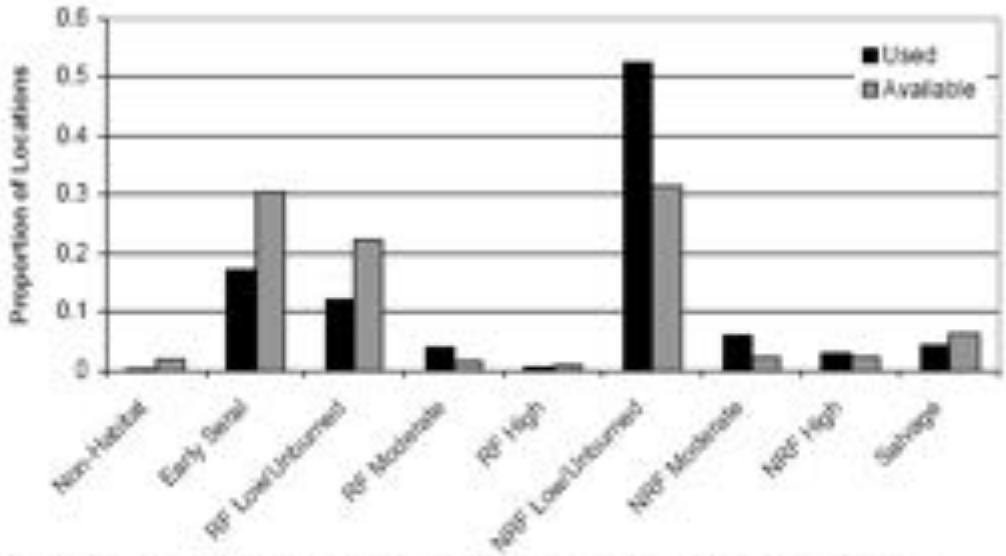


Figure 6.1. Proportions of used and available habitats for northern spotted owls monitored at the Timbered Rock Fire and surrounding areas from September, 2004 to August, 2006.

Darren A. Clark. 2007. Demography and Habitat Selection of Northern Spotted Owls in Post-Fire Landscapes of Southwestern Oregon. M.S. Thesis. Oregon State University. Robert Anthony, Advisor. Figure 6.1 shows that nesting, roosting, foraging habitat is used more frequently than random sites even after it has experienced moderate or high severity fire, while areas that were salvage logged were used less frequently than random sites.

See also, Clark, Anthony & Andrews 2013. Relationship Between Wildfire, Salvage Logging, and Occupancy of Nesting Territories by Northern Spotted Owls. The Journal of Wildlife Management 77(4):672–688; 2013; DOI: 10.1002/jwmg.523 ("Timbered Rock had a 64% reduction in site occupancy following wildfire (2003–2006) in contrast to a 25% reduction in site occupancy at South Cascades during the same time period. This suggested that the combined effects of habitat disturbances due to wildfire and subsequent salvage logging on private lands negatively affected site occupancy by spotted owls. In our second analysis, we investigated the relationship between wildfire, salvage logging, and occupancy of spotted owl territories at the Biscuit, Quartz, and Timbered Rock burns from 2003 to 2006. Extinction probabilities increased as the combined area of early seral forests, high severity burn, and salvage logging increased within the core nesting areas.")

VII. SALVAGE LOGGING WILL INCREASE FIRE HAZARD AND IS INCOMPATIBLE WITH FUEL MANAGEMENT OBJECTIVES

BLM should avoid salvage logging and replanting because it increases fire hazard by moving small hazardous fuels from the canopy to the ground where they are more available for combustion and replanting creates a dense continuous fuel profile that is conducive to fire severity and fire spread.

The DEIS needs to disclose that salvage logging will increase fire hazard, e.g.:

> "The slash created by the harvest and fuels treatments that is left on the ground for site protection and future site productivity, would create a short term (zero - eight years) fire hazard. The fuel-bed created by these treatments would be, in large part, comprised of material in the smaller size classes. These fuels would contribute to the flammability and continuity of fuels on a local level, as well as across the landscape. Under good burning conditions, fires burning in these slash fuel types have the potential to spread rapidly and extensively."

Bitterroot NF Burned Area Recovery DEIS, p. 3-12.

> "There's no science that demonstrates re-burn potential in areas where there is downed wood or decayed wood."

Craig Bobzien, Bitterroot NF Acting Supervisor (Missoula Independent, July 19, 2001)

> "We found no studies documenting a reduction in fire intensity in a stand that had previously burned and then been logged."

Environmental Effects of Postfire Logging (USDA Forest Service, 2000)

> "[We] are aware of no evidence supporting the contention that leaving large dead wood material significantly increases the probability of reburn."

Wildfire and Salvage Logging (Beschta, et al., Oregon State University, 1995)

> "The removal of large, merchantable trees from forests does not reduce fire risk and may, in fact, increase such risk."

Dept. of Agriculture and Interior, Report to the President (September 2000)

The best available science indicates that salvage logging increases small fuels that are most hazardous, and reduces large wood which is most valuable to wildlife.

> Our study examined fuel succession patterns by surveying downed woody fuels across a chronosequence of dry coniferous forest stands that burned with high fire severity (95–100% overstory tree mortality) within mixed- and high-severity wildfires in eastern Washington and Oregon, USA, between 1970 and 2007. We sampled forests in which ponderosa pine (*Pinus ponderosa*) and Douglas-fir (*Pseudotsuga menziesii*) are the dominant early-seral tree species … Relative to unlogged stands, post-fire logging initially increased surface woody fuel loads, increasing small diameter fuel loads by up to 2.1 Mg/ha during the first 5 years after fire and increasing medium diameter fuel loads by up to 5.8 Mg/ha during the first 7 years after fire. Logging subsequently reduced surface woody fuel loads, reducing large diameter fuel loads by up

> to 53 Mg/ha between 6 and 39 years after wildfire … The initial pulse of elevated surface fuels in logged stands was expected under our first hypothesis. Post-fire logging transfers woody debris in tree branches and tops from the canopies of fire-killed trees to the forest floor, producing well-documented conditions of higher surface woody fuels in logged stands than in unlogged stands in the first 1–4 years following logging (Donato et al., 2006, 2013; McIver and Ottmar, 2007; Monsanto and Agee, 2008; Keyser et al., 2009). Higher amounts of surface woody fuels – especially small and medium diameter woody fuels – can increase short-term fire hazards in logged stands by increasing potential rate of spread and fire-line intensity … Post-fire logging was most effective for reducing large diameter surface fuels, consistent with our second hypothesis. By removing tree boles, post-fire logging reduced maximum large diameter fuel loadings and produced a long period of reduced large diameter fuels, including both sound and rotten fuels. Although large diameter fuels may contribute little to fire spread rates (Hyde et al., 2011) and are typically disregarded in fire behavior modeling ….

David W. Peterson, Erich K. Dodson, Richy J. Harrod 2015. Post-fire logging reduces surface woody fuels up to four decades following wildfire. Forest Ecology and Management 338 (2015) 84–91.
http://www.firescience.gov/projects/06-3-4-16/project/06-3-4-16_Peterson_et_al_-_2015_-_FEM_-_post-fire_logging_and_fuels.pdf. This study showed that salvage logging is most effective at reducing large fuels, which contribute least to fire hazard, but the study strangely failed to consider the effect on habitat. Reducing large wood for 40 years or more will have a significant adverse effect on wildlife habitat. It s also notable that this study focuses on fuels, but failed to note whether any of the numerous fire areas they looked at across Oregon and Washington had actually reburned. Studies that have looked at this issue, show that the risk of reburn (with or without salvage logging) is small, while the risk to wildlife from salvage logging is great.

Similar results were found in a "NecroDynamics" model that looked at 7 fires in the eastern slopes of the Oregon Cascades.

> Salvage logging immediately increased surface fine woody fuel loadings by 160–237% above maximum loadings observed in unmanipulated stands, and were higher during the initial 18–22 years post-fire … [O]ur modeling results suggest salvage logging has mixed effects on reducing hazardous fuel conditions since it increases fine woody fuel loadings and decreases coarse woody fuel loadings. … [P]rescriptions can be altered. For example, [to] retain a higher abundance of snags which would reduce the magnitude of difference in fine woody fuels between salvaged and unmanipulated stands during early in post-fire succession …. Although salvage logging reduces coarse woody fuel loadings, alone it does not mitigate re-burn hazard because it increases fine woody fuel loadings …. Additionally, intensive reforestation typically substitutes conifer biomass for shrub biomass, limiting hazardous fuels reduction unless additional efforts are employed … Understory woody vegetation reestablishes rapidly in these dry-mixed conifer forests (Dunn and Bailey, in press) and can be a highly-flammable fuel layer (Weatherspoon and Skinner, 1995), as well as a source of post-fire fine woody fuels when shrub crowns die (Table 4). This suggests salvage logging alone will not mitigate contributions to re-burn hazard from dead biological legacies when the temporal dynamics of multiple fuelbeds

(e.g. fine woody fuels, coarse woody fuels, and regenerating vegetation) are evaluated. R … Salvage logging to enhance ecosystem resilience may not be appropriate if multiple ecosystem functions and resources are considered, including; coarse wood use by wildlife (Cahall and Hayes, 2009; Hutto, 1995; Fontaine et al., 2009; Saab et al., 2005), functional attributes of early seral vegetation (Swanson et al., 2010), compounding effects on soil and nutrient pools (Brais et al., 2000; Triska and Cromack, 1980) and reduced water and carbon storage (Harmon et al., 1986).

Christopher J. Dunn, John D. Bailey 2015. Modeling the direct effects of salvage logging on long-term temporal fuel dynamics in dry-mixed conifer forests. Forest Ecology and Management 341 (2015) 93–109. http://www.sierraforestlegacy.org/Resources/Conservation/FireForestEcology/SalvageLoggingScience/Dunn&Bailey2015.pdf The authors suggested modifying salvage logging prescriptions to retain more snags, which would help retain fine fuels in the canopy longer and reduce the amount of fine fuels that are moved from the canopy to the ground.

A study of the portions of the Biscuit fire that were previously burned by wildfire, reveals that salvage logging did not reduce the severity of subsequent fires, and in fact salvage logging appeared to increase the severity of subsequent wildfires. See Jonathan R. Thompson, Thomas A. Spies, and Lisa M. Ganio. 2007. **Reburn severity in managed and unmanaged vegetation in a large wildfire.** Proceedings of the National Academy of Sciences. *PNAS* published online Jun 11, 2007. http://www.fs.fed.us/pnw/pubs/journals/pnw_2007_thompson001.pdf ("In places that burned with high severity in the Silver Fire, areas that were salvage-logged and planted burned with even higher severity than comparable unmanaged areas.") http://www.fs.fed.us/pnw/research/PNAS_Biscuit_Author_Comments_PNW.doc. This represents significant new information about salvage logging. ("Some, including forest scientists, would have expected fire severity to be lower in the logged and planted sites, where large wood was removed, broadcast burning done to reduce fine surface fuels, and some vegetation management conducted possibly reducing the cover of flammable shrubs. That our findings were the opposite of this expectation indicates that the large diameter wood is not a major factor in flammability …").

A recent scientific study scientific study of post-fire logging (McIver and Ottmar 2007) showed that salvage logging causes a four-fold increase in fine fuels and that increase can last for 15 years. Fine fuels tend to cause wildfires to rapidly spread which is more likely to kill young trees and set back forest recovery. Unlogged fire areas (the controls) had lower levels of fine fuels but had higher levels of large fuels. Large fuels do not tend to exacerbate the spread of fire but they can heat the soil. However, soil heating is a patchy phenomena that forests have evolved with and can tolerate. Retaining the large wood is also important for wildlife habitat and soil conservation. The scientific consensus in the fuel management literature is that it is more important to control small fuels. J.D. McIver, and R. Ottmar. 2007. Fuel mass and stand structure after post-fire logging of a severely burned ponderosa pine forest in northeastern Oregon. Forest Ecology and Management. Volume 238, Issues 1-3 , 30 January 2007, Pages 268-279. http://www.sierraforestlegacy.org/Resources/Conservation/FireForestEcology/SalvageLoggingScience/Salvage-McIver07.pdf

Donato looked at the effects of salvage logging after the Biscuit fire and found that—

> Postfire logging significantly increased both fine and coarse downed woody fuel loads (Fig. 1B). This pulse was comprised of unmerchantable material (e.g., branches), and far exceeded expectations for postfire logging-generated fuel
> loads (5, 6). In terms of short-term fire risk, a reburn in logged stands would likely exhibit elevated rates of fire spread, fireline intensity and soil heating impacts (7). Postfire logging alone was notably incongruent with fuel reduction goals. Fuel reduction treatments (prescribed burning or mechanical removal) are frequently intended following postfire logging, including in the Biscuit plan, but
> resources are often not allocated to complete them (8). Our study underscores that, after logging, mitigation of short-term fire risk is not possible without subsequent fuel reduction treatments.

D. C. Donato, J. B. Fontaine, J. L. Campbell, W. D. Robinson, J. B. Kauffman, B. E. Law. Post-Wildfire Logging Hinders Regeneration and Increases Fire Risk. www.sciencexpress.org. 5 January 2006.

The 1987 Bland Mountain fire burned east of Canyonville and was heavily salvage logged. The same area then reburned in 2004 with high fire intensity. Salvage logging did not appear to save these plantations from intense fire, in fact, the removal of large logs and dense replanting may have made the fire more intense. One fact is unquestionable, that is that fire hazard is high in young plantations even when they are salvaged. Salvage logging does nothing to address this fact, and may in fact lead to increased density of conifer vegetation types that are more flammable than the mixed conifer-broadleaf vegetation types that may be less flammable.

The NEPA analysis asserts that leaving large numbers of snags is unsafe and the NEPA document describes an undesirable scenario with respect to the no action and action alternatives, but the NEPA document must acknowledge the fire risks associated with salvage logging including: (a) salvage logging will remove most of the largest logs that least prone to burn (because large logs hold the most water the longest and they have relatively high ratios of volume to surface area), (b) salvage logging leave behind almost all of the smallest material which is most prone to drying and burning (e.g., relatively low ratio of volume to surface area), (c) the proposed action may lop and scatter the tops of large trees that are too big for the ground-based harvest machinery, (d) salvage logging equipment and workers could start fires, (e) increased human access increases the risk of human caused ignition, (f) the replanting will create a fuel load that is dense, uniform, extensive, volatile, and close to the ground (During an extreme weather conditions this is one of the most extreme fire hazards in the forest).

There is little empirical support for the idea that salvage logging reduces the intensity or severity of subsequent fire. Recent data show an actual increase in fire severity where post-fire logging had occurred. McIver, James D.; Starr, Lynn; [Technical Editors] 2000. Environmental effects of postfire logging: literature review and annotated bibliography Gen. Tech. Rep. PNW-GTR-486. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 72 p. http://www.fs.fed.us/pnw/pubs/gtr486.pdf. Harma K., and P. Morrison. 2002. Analysis of Vegetation Mortality and Prior Landscape Condition, 2002 Biscuit Fire

Complex. Pacific Biodiversity Institute.
http://web.archive.org/web/20060518211529/http://www.siskiyou.org/issues/pbivegetative.pdf
Dennis C. Odion, Evan J. Frost, James R. Strittholt, Hong Jiang, Dominick A. Dellasala§, And Max A. Moritz. 2004. Patterns of Fire Severity and Forest Conditions in the Western Klamath Mountains, California. Conservation Biology. Volume 18 Issue 4 Page 927 - August 2004. http://www.blackwell-synergy.com/links/doi/10.1111/j.1523-1739.2004.00493.x.

Salvage typically removes the largest logs that act as water "reservoirs" and are least prone to drying. *See* Amaranthus, M.P.; Parrish, D.S.; and D.A. Perry. 1989. Decaying Logs as Moisture Reservoirs After Drought and Wildfire. In: Alexander, E.B. (ed.) Proceedings of Watershed '89: Conference on the Stewardship of Soil, Air, and Water Resources. USDA-FS Alaska Region. RIO-MB-77. p. 191-194. This study found that large down logs in a post-fire landscape contain 25 times more moisture than the surrounding soil. While the authors recommended preventing large accumulations of "woody residue" (which the author described as very small diameter material--branches, twigs, etc.), they also recommended leaving down logs after fires to PREVENT future fire severity. They concluded that, "When forest managers are analyzing for fire risk, they should take into account the high water content of fallen logs during the period in which wildfire potential is greatest... Fallen trees, in a range of decay classes, therefore provide a long-term reservoir of moisture. A continuous supply of woody material left on the forest floor, not only protects the productive potential of the forest soil, but also provides a sanctuary for ectomycorrhizae and a significant source of moisture in the event of prolonged drought or wildfire." The study was conducted in the Klamath region in an area with roughly 40 inches of annual rainfall. It was published in 1989 in Proceedings of Watershed '89: a conference on the stewardship of soil, air and water resources. USDA Forest Service, Alaska Region: pp. 191-194 (1989).

VIII. SALVAGE LOGGING IS INCOMPATIBLE WITH COMMUNITY STABILITY

The DEIS admits that the timber industry is inherently volatile and timber production causes community instability. Salvage logging amplifies these adverse effects by creating unpredictable temporary pulses in log supply.

The DEIS (p 277) assumed that salvage logging would occur at the rate of 359 acres per year. This is misleading because fires do not occur in a steady rate over time. This are highly episodic, with some years producing few wildfires and other years producing many thousands of acres of wildfires. Salvage logging would likely following this episodic, boom-bust pattern. The DEIS did not disclose this disruptive effect on community stability.

ROADS, TRANSPORTATION, AND TRAVEL MANAGEMENT

Approximately 30 percent of the [BLM] road mileage is in fair to poor condition, primarily due to depleted surfacing aggregate and worn-out minor culverts. Currently the deferred maintenance backlog exceeds $300 million.

All of the BLM developed action alternatives call for increasing the size of the transportation network[233] despite the fact that the BLM already has a $317 million-dollar deferred road maintenance backlog of which $127 million is within the Medford District. DEIS at 646. Hence the range of action alternatives is arbitrarily narrow and excludes consideration of a reasonable action alternative that would avoid new road construction.

Additionally, the proposed new road construction is likely to have disproportionately large impacts on watershed and wildlife values. As stated on page 317 of the DEIS, "within the sediment delivery distance (200 feet), newly constructed roads would primarily be constructed to provide access for forest thinning within the riparian reserves" thereby harming water quality and terrestrial wildlife habitat connectivity. Already 36% of the 14,330 miles of inventoried BLM logging roads (that the agency cannot afford to maintain to standard) are located within 200' feet of streams. DEIS page 314. Every action alternative will contribute to the road maintenance backlog to the detriment of aquatic and wildlife objectives and values.

As indicated on page 650 of the DEIS, the Medford District will be disproportionately impacted by the BLM's proposal to increase the size of the existing transportation system. The Medford District has be far the most projected new road construction to access timber harvest with the lowest comparative volume per acre. This strategy undercuts the sustainable harvest mandate of the O&C Act and the stated purpose of sustainable forest production for the RMP Revisions.

Please note that the BLM is deferring transportation management planning and analysis of environmental and social effects to a hypothetical future NEPA planning process[234] while preparing to authorize a significant increase in the size and impacts of its road system in this planning process. NEPA does not permit such an approach.

I. BLM MUST PROVIDE ADDITIONAL INFORMATION WHEN DEFERRING TRAVEL PLANNING DECISIONS

We are concerned that the Draft RMP does not go far enough to set the legal existing footprint of travel routes and curtail additional route proliferation while the travel planning process is in deferment. BLM's Travel and Transportation Manual (Manual 1626) requires BLM to complete certain tasks through the RMP if it is deferring travel planning, as it is here. Among these required tasks include producing a map of the known network of transportation linear features and defining interim management objectives for areas where route designations were not completed concurrent with the RMP.[235] According to both the TMP Manual and Handbook, delineating travel networks can be deferred for up to 5 years after signing the Record of Decision for the RMP.[236] However, BLM must also come up with an action plan and planning schedule to indicate areas that will have travel planning completed concurrently with the RMP process and which areas will be deferred.[237]

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[233] DEIS at 648.
[234] DEIS at 636.
[235] BLM Manual 1626.06(B)(2).
[236] BLM Manual 1626.06(B)(3); BLM Handbook 8342(I)(C)(ii).
[237] BLM Handbook 8342(IV)(B).

We appreciate the work that has been completed in Appendix P of the Draft RMP entitled "Off-highway Vehicle Management Guidelines." The Draft RMP explicitly states that BLM developed these guidelines consistent with BLM Handbook H-8342. We acknowledge that several of the guidelines of Handbook H-8342 have been met for a deferred travel plan, there are some outstanding measures that have yet to be taken. We urge BLM to incorporate the following documentation and information in the RMP:

II. BLM SHOULD MAP THE CURRENT SYSTEM OF AUTHORIZED EXISTING TRAVEL ROUTES.

BLM Handbook 8342 states that BLM must assess the current ground transportation linear feature database during the pre-planning stage for the RMP since it is essential that that a credible baseline inventory is available for eventual TMP efforts and to decide which areas are higher priority for designating routes.[238] Thus, even though BLM can defer designation of a travel network, it still must document the current system of existing authorized routes now, during the RMP stage. Appendix P of the Draft RMP states that BLM is "*currently working on an inventory of all user-created motorized and non-motorized routes within the decision area . . . as a baseline to guide future implementation-level route designations within the areas that are designated "Limited to Existing Routes."* [239](emphasis added). The Draft RMP goes on to state that *"[r]ecreation routes (authorized and unauthorized) have been created in response to demand for trail-based recreation*."[240]

We encourage gathering inventory data on all routes, including user-created and unauthorized, for the purposes of knowing what exists on the ground. However, BLM should not be adding user-created or unauthorized routes to its baseline inventory maps of the existing travel network as these routes were not authorized by the agency. The baseline route inventory should only include those that were legally created or authorized by the agency and all other routes should be slated for closure and rehabilitation.

III. BLM SHOULD SET CRITERIA FOR PRIORITIZING AREAS FOR TRAVEL PLANNING AND PROVIDE A CLEAR PLANNING SCHEDULE.

Handbook 8342 mentions that BLM should consider completing certain units for travel planning during the RMP process, such as smaller areas or sub-units that have sufficient travel and transportation information, areas that are most heavily used, or areas that have existing social conflicts, resource concerns, or a defined need for route definition or development for administrative, public access or other needs first.[241] The Handbook also states that RMPs should "provide a clear planning sequence, including public process (focusing on user groups and stakeholders), initial route selection criteria, and constraints for subsequent road and trail selection and identification." [242]

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[238] BLM Handbook 8342(IV)(A).
[239] DEIS at 1377.
[240] Id.
[241] BLM Handbook 8342(IV)(B).
[242] BLM Handbook 8342(IV)(H)(iv)(2).

While the Draft RMP describes the process for selecting a final road and trail network, it does not set areas that should be prioritized for travel planning after the ROD is signed. The Draft RMP also does not provide a clear planning sequence or schedule for completing travel planning for the planning area within 5 years of signing the ROD. Setting criteria, priority areas and a schedule for completion will provide both the agency and the public with the expectations that travel planning will occur in a reasonable and timely fashion, in addition to following the policy guidance of BLM Handbook 8342.

One good example of setting a schedule for deferred travel planning at the RMP level is in the Proposed RMP for the Lander Field Office. In the Lander Proposed RMP, Appendix W, Table W.1 sets forth priority ranking, timeframes for completion and interim and final restrictions for each travel management planning zone. This is an appropriate approach to deferred travel planning that BLM should adopt in this RMP.

BLM also has broad authority to close areas in the interim to protect public lands and resources.[243] In addition, BLM must immediately close any areas where the agency finds that off-road vehicles are or will cause considerable adverse effects upon natural or cultural resources.[244] BLM has policy guidance (IM 2013-035) that describes how RMPs and TMPs should address temporary closures including defining thresholds for when ORV related closures will take place. BLM should issue temporary closures for any area where ORVs are currently harming or may harm natural or cultural resources in the interim period before BLM can designate the appropriate travel network.

IV. BLM SHOULD GATHER INVENTORY DATA FROM THE PUBLIC RELATED TO NON-MOTORIZED TRAVEL ROUTES.

Handbook 8342 provides that the RMP should *"[o]utline additional data needs and a strategy for collection."*[245] *In addition, the Handbook states that "[i]t is essential that the BLM identify all existing routes to the extent feasible*." [246]

Historically, non-motorized trails have been an underrepresented linear feature through BLM travel planning. The same is true with considering non-motorized recreational experiences. However, BLM must ensure that it is incorporating all non-motorized trail data from the public. In order to do so, BLM should gather as much data from the public on non-motorized trails as possible including trail location, use, time of use and compatibility with other uses. BLM should make clear in its data calls that data should be submitted in line with the step-by-step process outlined in *BLM Technical Reference 9113-1, Planning and Conducting Route Inventories.*

The following guidance set out in BLM Handbook 8342 provides additional considerations for gathering data from non-motorized users of the public lands in the decision area:

[243] 43 C.F.R. § 8364.1.
[244] 43 C.F.R. § 8341.2.
[245] BLM Handbook 8342(IV)(H)(iv)(1).
[246] BLM Handbook 8342(V)(D).

While the BLM should collect as much relevant information as possible during the RMP planning process, the data collection should be informed and guided by the issues and concerns identified by the ID team and through public scoping. Transportation data at the RMP level may tend to overlook the most recently created routes and fail to identify trails to a greater degree than roads. Input and collaboration with trail user groups, research through guidebooks and online trail information sources may be helpful in identifying areas where additional field data collection is important. Areas that are important local or regional destinations for trail use, or where dispersed recreation activities are highly popular (e.g., rockhounding) may require an interactive approach to data collection and public review of the transportation inventory.

The importance of making effective use of GIS technology cannot be overemphasized. For example, GIS can be utilized in the public involvement process to allow the public to have an interactive interface with the route data being presented. This can greatly facilitate the public's ability to understand and comment on the accuracy of the data that will be evaluated for possible inclusion in the designated route network (see Appendix 9 for examples of how GIS can facilitate the TTM process.)

Recommendations: BLM must map and document the existing authorized route system as of the date of this RMP and clarify that user-created or unauthorized routes will not be considered as part of the baseline inventory. BLM should prioritize areas for comprehensive travel planning with interim closures and restrictions and specific timeframes for completion, no later than 5 years from the signing of the ROD. BLM should gather inventory data from the public related to non-motorized travel routes to inform the travel planning process.

V. BLM HAS A DUTY TO MINIMIZE IMPACTS OF ROUTE DESIGNATIONS.

In response to the growing use of ORVs and corresponding environmental damage, Presidents Nixon and Carter issued executive orders mandating that BLM only allow ORV use on the public lands if certain conditions were met.[247] Pursuant to those orders, BLM regulations require that designated ORV "areas and trails shall be located:

(1) "to minimize damage to soil, watershed, vegetation, air, or other resources of the public lands, and to prevent impairment of wilderness suitability;"
(2) "to minimize harassment of wildlife or significant disruption of wildlife habitats;" and
(3) "to minimize conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors."[248]

[247] Exec. Order No. 11,646, 37 Fed. Reg. 2877 (Feb. 9, 1972); Exec. Order No. 11,989, 42 Fed. Reg. 26,959. May 25, 1977.
[248] 43 C.F.R. § 8342.1(a)-(c); *see also* Exec. Order 11,644, § 3(a) (similar language).

BLM's Travel Management Manual 1626 states that BLM must pay particular attention to thoroughly documenting how the minimization criteria was considered in making both ORV designations (Manual 1626.06(A)(2)(a)) and route designations (Manual 1626.06(B)).

Together these mandates impose a rigorous process and high threshold for BLM to designate OHV areas and travel routes in the planning area. BLM must carefully assess and document how *each* designated area or route will: (1) minimize impacts to the soil, watershed, vegetation, air, wilderness or other resources, and (2) minimize conflicts between motorized users and the visitors engaging in quiet, non-motorized forms of recreation. BLM must be sure to address those and other impacts through careful application of the minimization criteria on a route-by-route basis.[249]

The Draft RMP provides that *"[t]he BLM applied designation criteria in 43CFR 8342 when designating lands as open, limited, or closed to off-road vehicles. All designations are based on the protection of the resources of the public lands, the promotion of the safety of all the users of the public lands, and the minimization of conflicts among various uses of the public lands.*" [250] However, the Draft RMP provides no information on how the criteria were applied.

A number of federal courts have held that BLM and other federal land management agencies must *apply* these so-called "minimization criteria" to area and trail designations and *articulate* a reasonable basis for concluding that the designation minimizes impacts to important resources. For example, in addressing a BLM planning process, one federal court held that *"[a]cknowledging the minimization standards is not the same as applying them.*" [251] Further, BLM must provide sufficient information "*for someone other than the BLM to know why or how the routes were chosen.*" [252] "[*r]ecord does not demonstrate whether or how [the agency] implemented and incorporated the minimization criteria*" (under analogous Forest Service regulations);[253] (detailed survey and inventory of routes inadequate where "there is nothing in the record to show that the minimization criteria were in fact applied when OHV routes were designated").

The Ninth Circuit Court of Appeals recently struck down a plan for failing to properly apply the minimization criteria. [254] In *WildEarth Guardians*, the Ninth Circuit held that, *"[w]hat is required is that the Forest Service document how it evaluated and applied the data on an area-by-area basis with the objective of minimizing impacts*." [255] "Moreover, as various district courts have held, "*mere consideration of the minimization criteria is not sufficient to comply with the regulation."*[256]

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[249] *See, e.g.*, *SUWA*, 981 F. Supp. 2d at 1105 (BLM must apply minimization criteria "at the route specific level" to assess "the effects of route designations," and must provide sufficient information "for someone other than the BLM to know why or how the routes were chosen").
[250] DEIS at 638.
[251] *S. Utah Wilderness Alliance v. Burke*, 981 F. Supp. 2d 1099, 1104-06 (D. Utah 2013).
[252] *Id.* at 1105. *See also, Idaho Conservation League v. Guzman*, 766 F. Supp. 2d 1056, 1071-74 (D. Idaho 2011)
[253] *Ctr. for Biological Diversity v. BLM*, 746 F. Supp. 2d 1055, 1071-81 (N.D. Cal. 2009)
[254] *WildEarth Guardians v. USFS*, No. 12-35434 (9th Cir. June 22, 2015).
[255] *Id*., slip op. at 24.
[256] *Id*., slip op. at 25.

Thus, it is unequivocally clear that BLM cannot designate OHV areas or routes without applying the minimization criteria and documenting how it was applied for individual designations. The draft has nothing to show how the criteria was applied to the decision area.

***Requested Remedy*:** BLM must design OHV areas in the plan that minimizes conflicts among users and damage to natural resources. Areas must be evaluated to ensure that they are located and bounded to meet the minimization criteria for purposes of BLM management and enforcement. We request that BLM apply the minimization criteria by showing how it is specifically minimizing impacts to resources and conflicts to other uses for each route as required by law.

VI. BLM MUST PROVIDE A RANGE OF ALTERNATIVES FOR OHV AREA DESIGNATIONS.

The range of alternatives is "*the heart of the environmental impact statement*."[257] NEPA requires BLM to "*rigorously explore and objectively evaluate*" a range of alternatives to proposed federal actions.[258] "*An agency must look at every reasonable alternative, with the range dictated by the nature and scope of the proposed action.*" [259]An agency violates NEPA by failing to "*rigorously explore and objectively evaluate all reasonable alternatives*" to the proposed action.[260] This evaluation extends to considering more environmentally protective alternatives and mitigation measures.[261]

In regards to OHV area designations, BLM has not met its obligation to consider a reasonable range of alternatives. As stated in the Draft RMP, *"[e]ven under the most restrictive alternative for OHV use (Alternative C), the BLM would close less than 1 percent of BLM-administered lands in the decision area to OHV use.*"[262] This is the same analysis that was overturned by the district court and upheld by the 9th Circuit Court of Appeals five years ago for the BLM RMP for Southeastern Oregon. The 9th Circuit held:

The ORV analysis is also flawed . . . It considered no alternative that proposed closing more than a fraction of the planning area to ORV use, as opposed to merely designating areas for "limited" use. As ONDA observes, the BLM did not consider any alternative that would have closed more than 0.77% of the planning area to ORVs. Indeed, every alternative would have reduced the extent of closed areas from that in effect previously. It is precisely this sort of "uncritical[ ]" privileging of one form of use over another that we have held violates NEPA. Closures, not just "limited" designations, must be considered to comply with NEPA.

Or. Natural Desert Ass'n. v. BLM, 625 F.3d 1092, 1123-1124 (9th Cir. Or. 2010) (citations omitted).

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[257] 40 C.F.R. § 1502.14.
[258] *See* 40 C.F.R. §§ 1502.14(a), 1508.25(c).
[259] *Nw. Envtl. Defense Center v. Bonneville Power Admin*., 117 F.3d 1520, 1538 (9th Cir. 1997).
[260] *City of Tenakee Springs v. Clough*, 915 F.2d 1308, 1310 (9th Cir. 1990) (quoting 40 C.F.R. § 1502.14).
[261] *See, e.g., Kootenai Tribe of Idaho v. Veneman*, 313 F.3d 1094, 1122–23 (9th Cir. 2002) (and cases cited therein).
[262] DEIS at 640.

The BLM nonetheless maintains that its analysis of ORV designations is adequate because it considered a wide range of use allocations between open and limited ORV designations, and because it could implement emergency closures if necessary. We disagree. Limited ORV use is simply not identical to no ORV use. A limited designation, even with the possibility of closure, does not provide protection equivalent to a straightforward closure.[263]

Here, as in the RMP for Southeastern Oregon, the BLM has not considered closing more than 0.7% of the planning area to OHV use.[264] This does not meet BLM's legal obligation to consider a reasonable range of alternatives as discussed by the 9th Circuit in the case cited above.

Recommendation: BLM must consider alternatives that consider closing more than a very small fraction of the planning area to OHV use.

SOCIOECONOMICS

The draft RMP and DEIS are based on flawed economic reasoning and analysis that attempt to justify an expanded timber sale program that creates more economic harm than good.

The most significant economic and social effects of the preferred RMP alternative (Alternative B) will be associated with a 60% increase in timber harvests over current levels at a time when markets are severely distorted by negative externalities and logging subsidies and affected communities are evolving away from an unhealthy dependence on the timber industry.[265] The DEIS fails to provide an explanation of why the increase in logging proposed under alternatives A, B, and C is economically justified and why the no harvest and natural selection alternatives were rejected when they represent the only alternatives that can fulfill statutory sideboards that specify under what conditions BLM timber should be offered for sale.

I. BLM'S NEEDS AN ECONOMICALLY RATIONAL TIMBER SALE PROGRAM.

The BLM has misconstrued its legal mandate as one that requires an increase in logging. While there are dozens of statutes, regulations, and executive orders that have bearing on management of western Oregon BLM lands the controlling authority with respect to timber supply is the Oregon and California Railroad and Coos Bay Wagon Road Grant Lands Act (O&C Act; 43 U.S.C. 1181a et seq.).

In pertinent part, the O&C Act requires that western Oregon O&C lands be managed "for permanent forest production, and the timber thereon shall be sold, cut, and removed in conformity with the princip[le] of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities."[266] The O&C Act also provides that "timber from said lands in an amount not less than . . . the

[263] *Or. Natural Desert Ass'n. v. BLM*, 625 F.3d 1092, 1123-1124 (9th Cir. Or. 2010) (citations omitted).
[264] Draft RMP, Table 3-220, p. 639
[265] The timber harvest baseline in the DEIS is 144.3 million board feet (mmbf) in 2012. Alternative B, the preferred alternative, would increase this cut to 230.2 mmbf.
[266] 43 U.S.C. § 1181a.

annual sustained yield capacity . . . shall be sold annually, or so much thereof as can be sold at reasonable prices on a normal market."[267]

BLM has invoked this legal mandate as the primary purpose and need for the RMP revision process. In particular, the driving force behind the RMP revision and the proposed increase in timber harvest is to respond to what the agency has determined to be a "substantial, long-term departure from the timber management outcomes predicted under the 1995 RMPs." The 1995 RMP estimated a sustained yield allowable sale quantity, and current harvest levels are roughly 1/3 of that. However, there is nothing in the O&C Act that requires the BLM to actually sell that amount of timber each year. Indeed, the O&C Act puts significant conditions on BLM's timber sale program: (1) it must be offered at reasonable prices; (2) under normal market conditions, and (3) to achieve a variety of purposes, including community stability. If none of these conditions can be met, then no timber sale program much less an expanded one need be implemented. Against this backdrop, it is clear that the proposed increase in logging cannot be justified.

II. REASONABLE PRICES PRECLUDE ANY ADDITIONAL TIMBER SALES DURING THIS PLANNING CYCLE

In developing the RMP and DEIS, the BLM has not discussed the process the agency intends to use to ensure that when offered for sale, its timber receives reasonable prices. While current practice is to offer timber for sale at or below a fair market value based on current market prices for comparable timber,[268] there is nothing to suggest that this price setting method is reasonable, especially when the agency has at its disposal other methods for determining fair market value that are designed to cover all costs of production from the seller's (BLM) perspective. The issue of sales below fair market value from the seller's perspective is an issue that has plagued the agency for decades, and one that could be remedied in this planning cycle. As stated succinctly in 1997 in a PEER white paper on the subject, "[b]ecause no seller would perpetually sell a product for less than its cost, this suggests that Congress intended that BLM appraisals insure cost-recovery when the fair market value of timber is estimated."[269]

For a private entity a reasonable price that covers the costs of production includes direct material costs, labor costs, sale and administration costs, and provisions for markup to achieve a desired internal rate of return on investment plus markup for profits. This is simply known as full cost pricing. But the BLM is not a private firm. It also bears responsibility for the economic, social and environmental costs it may pass on to society – negative externalities. OMB Circular A-94 ("General Principles" Section 5) is explicit in this requirement for federal programs:

> Analyses should include comprehensive estimates of the expected benefits and costs to *society* based on established definitions and practices for program and policy evaluation. Social net benefits, and not the benefits and costs to the Federal Government, should be the basis for evaluating government programs or policies that have effects on private citizens or other levels of government. Social benefits and costs can differ from private

[267] Id.
[268] DEIS at 479.
[269] Public Employees for Environmental Responsibility (PEER). 1997. Land of No Return$. Bankruptcy of the BLM Public Domain Forestry Program. White Paper Number 13. Hood River, OR: PEER.

> benefits and costs as measured in the marketplace because of imperfections arising from: (i) *external economies or diseconomies* where actions by one party impose benefits or costs on other groups that are not compensated in the market place; (ii) monopoly power that distorts the relationship between marginal costs and market prices; and (iii) taxes or subsidies (emphasis in original).[270]

The Department of Interior (DOI) has fully embraced OMB's mandate to consider negative externalities in planning decisions:

> *In many cases the benefits provided by the raw materials and products that flow from DOI managed lands, as well as the production, distribution and use of these products, also may cause adverse effects on the environment, economy, or society. Economists typically characterize these adverse effects as* negative externalities…. *The ability to evaluate these negative externalities is an important component to strengthening the set of information available to decision makers" (emphasis in original).*[271]

To correct for the presence of negative externalities, the DOI has stated its commitment to full cost accounting to "help promote more cost-effective investments on public lands."[272] The BLM has further reinforced this mandate through an agency-wide directive to account for all of the market and non-market values affected by management activities with a strong preference for quantitative methods when certain criteria are met: (a) when significant non-market values are at risk; (b) when alternatives present a strong contrast between extractive and non-extractive uses of the land, and; (c) when the magnitude of the proposed change in management is large.[273] The draft RMP meets each of these.

In the draft RMP, there are no provisions for or even discussion of how the BLM intends to go about offsetting both the federal financial costs and negative externalities of an increased timber sale program. The range of negative externalities associated with BLM timber sales includes a wide array of costs associated with diminished recreational and commercial fish landings, sediment removal, increased flooding, loss of water quality, increased habitat restoration costs, loss of tourism revenues, and social costs of carbon emissions, to name a few.[274] The most logical way to account for these and one most consistent with market principles, DOI commitments, and BLM guidance is to incorporate these costs into minimum bid prices. The methods and sources of information needed to meet the reasonable price standard and set minimum bid prices that reflect all agency and social costs are well established, and have been

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[270] The full text of Circular A-94 is available online at: https://www.whitehouse.gov/omb/circulars_a094#6.
[271] US Department of Interior (DOI). 2012. The Department of The Interior's Economic Contributions. Fiscal Year 2011, Chapter 7 – The Externalities of DOI Activities: Moving Towards Full Cost Accounting. Washington, DC: US DOI.
[272] Id.
[273] Bureau of Land Management. 2013. Instruction Memorandum 2013-131, Change 1, attachment 1, "Economic Methods for Estimating Nonmarket Environmental Values. Accessible online at: http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2013/IM_2013-131__Ch1.print.html.
[274] *See, e.g.* Niemi, Ernie and Ed Whitelaw. 1999. Assessing Tradeoffs in Forest Management. General Technical Report PNW-GTR-403. Portland, OR: USDA Forest Service, Pacific Northwest Research Station; Talberth, John and Karyn Moskowitz. The Economic Case Against National Forest Logging. Santa Fe, NM: Forest Conservation Council and Forest Guardians.

for decades. To illustrate, consider the negative externalities associated with lost recreation value and carbon emissions and what they imply for reasonable prices of BLM timber.

The value of recreation on BLM and other public lands is typically expressed in terms of consumer surplus – or the amount people are willing to pay over and above the costs of travel, supplies, lodging, fees, and other financial outlays they make in association with particular recreation experiences. For all BLM administered lands in western Oregon, the DEIS estimates consumer surplus associated with outdoor recreation to be $222,872,000 per year ($232,676,040 in 2015 dollars).[275] Although a significant portion of this value is generated on lands allocated to Recreation Management Areas (RMA), recreation use is widely dispersed because many of those who participate in recreation activities seek access to the secluded sites and old growth forests provided by even small and isolated patches of BLM lands in an otherwise heavily logged landscape for uses such as wildlife viewing, camping, hunting, and nature study.[276] So recreation value is spread out on all BLM lands, included those allocated to timber management.

The BLM administers roughly 2.5 million acres of land. This implies that an average acre yields $93.07 in recreation related consumer surplus benefits each year. Even aged management as planned under all action alternatives destroys this recreation value since such stands are in abundance while mature and old growth forests are increasingly scarce and so substitute sites are already in short order. This is especially true because the greatest scarcities in the western Oregon region are for camping, trails, and other recreation opportunities that bring people closest to nature and provide solitude.[277] The most suitable sites for expansion of camping opportunities and trail use are in these unmanaged forests. Assuming this value is destroyed for all future years (50) in the analysis period yields an average present value cost to recreation of $2,395 per acre at a 3% discount rate. This is a cost of providing federal timber that must be factored into the BLM's determination of reasonable price, or minimum bid.

Historically, minimum bids are set close to current appraised values – roughly $300 per thousand board feet (mbf) anticipated under this RMP. An average acre of mature forest in the suitable timberland base on BLM lands in western Oregon yields roughly 46.2 mbf and so minimum bids will probably be close to $13,860 per acre.[278] Adding the recreation externality to this would boost the minimum bid needed to cover costs to $16,255 per acre or $351/mbf – an increase of 17.3%.

As another example, consider the social costs of carbon dioxide emissions (SCC) associated with logging activities. A typical acre of mature or old growth forest in the Pacific Northwest stores roughly 500 metric tons of carbon per acre.[279] The DEIS estimates 150 metric tons per acre on

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[275] DEIS at 494, Table 3-150.
[276] DS Consulting. 2013. Summary and Key Findings for the Bureau of Land Management Recreation Outreach and Public Participation of the Resource Management Plans for Western Oregon. Portland, OR: DS Consulting, Prepared for the Oregon BLM.
[277] ECONorthwest. 2015. Outdoor Recreation Scarcity and Abundance in Western Oregon: A Spatial Analysis. Portland, OR: ECONorthwest.
[278] Department of Interior. 1992. Report of the Secretary of the Interior to the Endangered Species Committee. Related to the Application by the Bureau of Land Management for Exemption from the Requirements of Section 7(a)2 of the Endangered Species Act.
[279] DellaSala, Dominick. 2015. Comments on Revised Draft CEQ Guidelines on Greenhouse Gas (GHGs) Emissions and Climate Change NEPA analysis. Ashland, OR: Geos Institute.

western Oregon BLM lands – a figure that includes clearcuts, plantations, and natural forests.[280] When logged, about half of this is released as a carbon dioxide CO^2 pollutant after accounting for the amount temporarily stored in wood products before they decay.[281] The emissions associated with a typical mature or old growth logging unit thus generates 917.5 metric tons of carbon dioxide equivalent (CO^2-e) per acre.[282] The social cost of these carbon dioxide emissions (SCC) have been well studied, and incorporated into federal agency decision making as the BLM notes in the DEIS.[283] At a SCC price of $42.77 per metric ton CO^2-e[284], this means $39,241 per acre in social costs. If the BLM minimum bid price is adjusted to offset both the social costs of carbon dioxide and the cost to recreation values it would thus have to be set at $55,496 per acre or $1,201/mbf – an increase of 400% over present minimum bid levels.

Another approach for internalizing negative externalities of logging into minimum bid requirements would be to incorporate the growing body of literature on ecosystem service values and studies on how logging affects them. This is the "lost services" approach and may present a more tractable alternative to estimating negative externalities on a case-by-case basis. For example Niemi (2015) quantified the annual ecosystem service benefits associated with provision of biological diversity (northern spotted owl habitat), water quantity, water quality, and carbon storage and then estimated the effects of an increase in industrial logging activities proposed on western Oregon BLM lands. He found that "[t]he value of these lost services likely would average at least $50,000 per acre and perhaps more than $100,000 per acre, especially on lands with large trees."[285] By the same methods used above, this would translate into minimum bid prices between 1,382/mbf and $2,465/mbf needed to offset these negative externalities.

Regardless of which approach is used – lost services or case-by-case estimation of the negative externalities associated with logging – the BLM has an obligation to incorporate this information into the design of its timber sale program so that minimum bids received reflect the true social cost of providing timber from federal land and thus reflect a reasonable price. But offering BLM timber sales at minimum bid prices of $1,200/mbf or more would be prohibitive for buyers now purchasing logs on the open market at roughly half this amount, at best. But this is a reasonable outcome, by law, since the O&C Act sets conditions on whether or not (reasonable prices and normal markets) BLM timber must be offered for sale at all. Thus, by the reasonable price standard alone, the BLM should adopt the no-harvest alternative. The DEIS and draft RMP must be revised to consider this outcome.

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[280] Calculated by multiplying the teragrams carbon figure from DEIS Table 3-23 (373.02) x 1,000,000 (metric tons per teragram) divided by the 2.5 million acres of western Oregon BLM lands.
[281] DellaSala. 2015. Note 6.
[282] Converting carbon to carbon dioxide equivalent (CO2-e) units requires multiplication by an adjustment factor of 3.67. The 500 metric tons carbon thus represents 1,835 metric tons of CO2-e. If half of this is lost to logging it thus represents a per acre emission factor of 917.5.
[283] DEIS at 483.
[284] This is the 2007 average social cost of carbon figure of $37 per metric ton CO2-e (DEIS at xx) converted into current (2015) dollars.
[285] Niemi, Ernie. 2013. Economic Value of Goods and Services Produced by the O&C Lands With and Without Industrial Logging. Eugene, OR: Natural Resource Economics.

III. NORMAL TIMBER MARKET CONDITIONS DO NOT EXIST

The second condition Congress set on the offering of timber from O&C lands is the condition that BLM only participate in "normal" markets. The concept of normal markets is a precise term for economists. It means markets that are not distorted by one or more market failures that take the form of externalities, public goods, missing markets, subsidies, monopoly power, barriers to competition, and asymmetrical information.[286] Markets for BLM timber are severely distorted by many of these market failures. The presence of negative externalities has been discussed above. In particular, each acre of BLM timber offered for sale may generate negative externalities of up to $100,000.[287]

Timber subsidies also abound. These subsidies take the form of numerous federal, state, and local government programs and policies that result in more timber being cut than would be in the absence of such programs and policies. The BLM and US Forest Service, for example, help supply timber from private lands through right of way and log haul permits that grant private logging companies unlimited use of federal roads to bring their logs to markets. The State of Oregon offers tremendous tax breaks to logging companies. In 1999, former Governor Kitzhaber rescinded the timber harvest privilege tax, which has now led to a $60 million a year shortfall in school funding. Timber companies do not have to pay property taxes at the rate most landowners pay. Instead, they pay based on what is known as "current use valuation" that translates into property taxes of just 10% of what other private landowners pay.

Another major subsidy takes the form of unemployment insurance paid by other businesses to compensate for the timber industry's failure to maintain community stability by overcutting its lands, exporting wood, and engaging in other practices harmful to labor. As noted by Niemi and Whitelaw (1999):

> *The amount of benefits paid to workers in the lumber and wood products industry often has exceeded the industry's premiums. Between 1980 and 1991, for example, the unemployment-insurance benefits paid to workers laid off from Oregon's lumber and wood products industry exceeded the total premiums paid by more than $221 million (1992 dollars).[288] Business owners in other industries, and their workers, bore the burden of making up this difference.*

The problem of missing markets is, perhaps, the greatest market failure in play with respect to BLM timber sales. While clean water, carbon storage, recreation, pollination, scenery, and biological diversity are public goods with vastly more value than timber they are not paid for because they are non-exclusive and non-rivalrous.[289] The typical results are:

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[286] Various forms of market failure are discussed in depth in most intermediate level macroeconomics courses. But a more accessible list has been compiled by Economics Online at: http://www.economicsonline.co.uk/Market_failures/Types_of_market_failure.html.

[287] Niemi, 2013, Note 21.

[288] ECONorthwest with data provided by the Oregon Employment Division. Data on file with: ECONorthwest, 99 W. Tenth, Suite 400, Eugene, OR 97401.

[289] This is also known as the public goods market failure. Public goods are goods that are non-exclusive (meaning no one can be excluded from enjoying them) and non-rivalrous (meaning one person's use does not diminish the next). Because of these characteristics, private markets cannot supply them. The outcome is that they are under-provided. For a useful synopsis, see: http://www.pitt.edu/~upjecon/MCG/MICRO/GOVT/Pubgood.html.

> *...underprovision of a good, service, or amenity relative to the efficient level of provision; excessive levels of discommodities and disamentities, relative to the efficient level; overexploitation of a resource, relative to the efficient level of exploitation; and underinvestment in the management, conservation, and productive capacity of a resource.*[290]

This is an accurate portrayal of what is occurring on Oregon's federal, state, and private timberlands. While development of missing markets in the form of payments for ecosystem services (PES) is forthcoming, the lack of PES markets at this time is one of the key explanatory factors in the dramatic overcutting of Oregon's state and private timberlands (see below) and use of techniques such as short rotation clearcutting that are so damaging to soils, watersheds, long term forest productivity, wildlife, scenery, biological diversity.[291] Adding more BLM timber to the mix in this context of missing markets is unjustified. Despite Congress's unambiguous language, the draft RMP and DEIS are silent on the entire concept of normal markets, these market failures, and how the proposed increase in logging is justified in the presence of them.

Additional timber sales will not meet the purpose of protecting watersheds, regulating stream flow, and contributing to economic stability. Congress also put constraints on BLM's timber sale program in the form of a set of purposes that a sustained yield supply of timber is supposed to serve alongside the purpose of a permanent source of timber supply. These include "protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities."[292] But the proposed increase in logging of 60% and 688 new miles of road[293] (Alternative B) runs counter to these purposes.

As demonstrated elsewhere in these comments, all remaining tracts of mature and old growth forest need protection because they are key landscape components for regulating stream flow, water quality, and water temperature and for responding to increasing scarcities of campsites, trails, and other recreation needs that depend on unlogged forests. Putting more of these stands on the chopping block is thus inconsistent with O&C Act requirements. So is the plan to build new logging roads. It is remarkable that the BLM is proposing new road construction when, in fact, forest roads in western Oregon already represent an extreme disruption of healthy watershed function.[294] The dominant effects of these high road densities on stream and riparian networks are well known and involve "alteration of routing of water, water-born chemicals, sediment, and mass movements to and through native stream networks."[295]

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[290] Randall, Alan. 1981. Resource Economics: An Economic Approach to Natural Resource and Environmental Policy. Columbus, OH: Grid Publishing.
[291] Zwick, Steve. 2010. Oregon Company Taps California Protocol to Earn More by Logging Less. Published online at Ecosystem Marketplace: http://www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page_id=7520&section=home
[292] 43 U.S.C. § 1181a.
[293] DEIS at 648.
[294] *See, e.g.*, Oregon Department of Forestry (ODF). 2000. Report of the Ad Hoc Forest Practices Advisory Committee on Salmon and Watersheds to the Oregon Board of Forestry. Section B: Forest Roads. Salem, OR: ODF.
[295] Swanson, Fred, Julia Jones, Beverly Wemple and Kai Snyder. 1999. "Roads in Forest Watersheds – Assessing Effect from a Landscape Perspective." Published in Proceedings of the Seventh Biennial Watershed Management Conference, Charles W Slaughter, editor. Water Resources Center Report No. 98. Davis, CA: University of California.

With respect to community stability, even the DEIS concedes that additional BLM timber supplies make no sense: "[b]ecause the timber industry has a long, national history of high volatility, alternatives with harvest volumes that exceed current levels are likely to introduce greater instability into local economies, based on past business cycles."[296] Thus, not a single one of the criteria Congress cited as purposes of a timber sale program on lands managed under the proposed RMP can be met through an increase in logging over current levels.

IV. OVERCUTTING ON PRIVATE LANDS DEMANDS A REDUCTION IN BLM TIMBER SALES

To the extent that BLM timber sales are offered during this planning cycle, Congress requires the timber sale program to be consistent with permanent forest production and the principle of sustained yield. In making this consistency determination, it is essential for the BLM to account for logging on non-BLM ownerships and consider how the pattern of logging on those lands relates to the demand and supply of goods and services provided by BLM lands. This duty is amplified by NEPA's requirement to take connected actions and cumulative effects into account.[297] Moreover, there is nothing in the O&C Act that limits the concepts of forest production and sustained yield to timber only. Indeed, as noted by DellaSala et al. (2005) "the O&C term 'forest production' interpreted in today's climate means more than timber volume and includes multiple natural resource objectives related to watershed health, carbon sequestration, fish and wildlife habitat, recreation, endangered species, and other values inherent to BLM lands that also contribute to community stability."[298]

In light of this, if the rate of harvest on private timberlands is unsustainable then BLM must adjust its allowable sale quantities (ASQ) calculations downward to ensure that the overall supply of timber and other goods and services from all Oregon's forestlands comes closer to a level that is commensurate with maintaining permanent forest production and the principle of sustained yield. If BLM fails to do this, then it will be exacerbating rather than countering the effects of overharvesting on lands outside its jurisdiction.

Unsustainable logging is indeed the situation in Oregon on state and private forestlands within the western Oregon BLM ownership matrix. Using a GIS dataset provided through World Resources Institute's Global Forest Watch Program[299] CSE conducted a watershed-by-watershed analysis of the rate of forest cover loss versus forest cover gain during 2000-2013.[300] Net forest cover change is a more important indicator of sustainability than volume-based measures such as growth versus removal since it is forest cover that determines the overall ability to provide a suite of ecosystem goods and services. The results indicate a significant overcutting on state and private forestlands. In particular, as compared with 2000, there are 452,364 fewer acres that meet minimum definitions (30% canopy closure of trees 5 meters in height). This is a result of forest

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[296] DEIS at 568.

[297] Connected actions include private timber harvests facilitated by BLM's programs such as road right of way and log haul permits (40 CFR § 1508.25(a)1) Cumulative impacts analysis requires consideration of non-federal actions affecting the planning area (40 CFR § 1508.7).

[298] DellaSala, Dominick, Nancy Staus and Erik Fernandez. 2005. Importance of Western Oregon BLM Lands and Reserves to Fish and Wildlife Conservation. Ashland, OR: World Wildlife Fund.

[299] Available online at www.globalforestwatch.org.

[300] Talberth, John and Erik Fernandez. 2015. Deforestation, Oregon Style. Lake Oswego, OR: Center for Sustainable Economy. Available online at:

loss (1,476,209 acres) exceeding acres of forest cover gain (1,023,845 acres). If sustained yield is measured by sustained forest cover (forest gain = forest loss) than this implies an overall rate of overcutting of 42%. In some watersheds the rate overcutting is much worse. In the McKenzie River's Quartz Creek drainage, since 2001, nearly 7,200 acres (2,913 ha) of forest cover have been lost to extensive clearcutting while only 2,576 acres (1,043 ha) have been gained through natural afforestation or reforestation – an overcutting rate of 279%.[301]

Federal timber sale planners have often adjusted ASQ to compensate for overcutting on private lands, as they should. For example, in 1991 the Lolo National Forest had to adjust its ASQ downward to compensate for "higher than anticipated" rates of logging on private industrial timberlands within its checkerboard ownership pattern.[302] The BLM should follow suit and revise the ASQ during this planning cycle to compensate for dramatic overcutting on Oregon's state and private forestlands. To compensate adequately, the ASQ should be set close to zero.

The BLM arbitrarily rejected analysis of the no-harvest and natural selection alternatives when they represent the only economically rationale choices. As the foregoing suggests, neither a continuation of nor an increase in BLM's timber sale program can be economically justified during this planning cycle. A reasonable price for BLM timber that offsets agency costs and internalizes the negative externalities of logging would too high at current market prices to attract timber sale purchasers. But the law, DOI policy, and BLM guidance all require such a reasonable price. Nor can the BLM justify its timber sale program in the face of markets that are not normal but severely distorted by negative externalities, subsidies, missing markets, and other well-known sources of market failure. Nor can the BLM demonstrate that its timber sale program meets Congressionally imposed sideboards designed to ensure that the timber sale program protects watersheds, water flow, economic stability, and recreation. Because of this, BLM's decision to reject the no harvest and natural selection alternatives is groundless.[303] Overcutting on adjacent state and private lands underscores not only the need to consider in detail, but need to select one of these reasonable alternatives.

V. REMEDIES THAT MUST APPEAR IN THE FINAL RESOURCE MANAGEMENT PLAN

To remedy these deficiencies in the DEIS's socioeconomic analysis, we request that the following:

1. A detailed explanation of the process the agency intends to use to ensure that when offered for sale, its timber receives reasonable prices that compensate for all agency costs and negative externalities.
2. A detailed assessment of the negative externalities generated by timber sales under each action alternative. As discussed above, the methods and sources of information are readily available.

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[301] Talberth, John and Catherine Koehn. 2015. The Liquidation of Forests in McKenzie's Quartz Creek, Oregon. Lake Oswego, OR: Center for Sustainable Economy. Available online at: http://sustainable-economy.org/forest-liquidation-in-quartz-creek/.

[302] Hirt, Paul W. 1994. A Conspiracy of Optimism. Management of the National Forests Since World War Two. Omaha, NE: University of Nebraska Press.

[303] DEIS at 77, 79.

3. A detailed assessment of the ecosystem service values generated by BLM forestlands in their natural state. Again, the agency has at its disposal both the methods and sources of information to do so.
4. A detailed assessment of externalities, subsidies, missing markets and other timber market failures in the planning area that distort normal market conditions. In light of these market failures, the FEIS should discuss how the final RMP offers corrections.
5. A detailed assessment of the rate of harvest on adjacent state and private forestlands and the implications this has for the relative value of goods and services from BLM lands. As part of this analysis, the BLM should discuss adjustments needed to its long term allowable sale quantity estimates (ASQ) needed to compensate for unsustainable timber harvesting on these lands and meet the goal of sustainable forest cover.
6. A detailed consideration of both the no-harvest and natural selection alternatives.

VI. TIMBER SUPPLY AND DEMAND

> *[An] upward shift in the [BLM] timber supply curve would lead to lower stumpage prices (between 1 and 9 percent) and reductions in private harvests as timberland owners adjust their harvest downwards as prices fall." -DEIS page 516.*

Downward market pressure on timber prices from increased harvesting on public lands negatively impacting private timberland owners is an inappropriate outcome from this planning process.

VII. ECONOMIC STABILITY

> *Because the timber industry has a long, national history of high volatility, alternatives with harvest volumes that exceed current levels are likely to introduce greater instability to local economies, based on past business cycles." –DEIS page 568.*

Introducing greater instability to local economies is an inappropriate outcome for BLM land management. The O&C Act specifically mandates that BLM forest management must have the objective of "contributing to the stability of local communities and industries."[304] Selecting an alternative that will increase instability in local communities will violate the O&C Act.

VIII. THE TIMBER YIELD PROJECTIONS

BLM must have a reduction factor determined to reduce to reduce modeled timber volume on lands that are at high risk for erosion and subsequent sediment pollution into streams. Similarly, timber yield must exclude salvage from riparian reserves, critical spotted owl habitat, and black-backed woodpecker breeding range located generally east of I-5.

[304] 43 USC 1181(a).

Many BLM timber stands have not been logged because the areas have low standing volume and are too steep and erosion prone for building roads. Timber yield projections need to make a large reduction in timber harvest on the Medford District due to high erosion risk lands, economics of building long risky roads for low timber volumes, and ecological risks to coho salmon. The analysis needs to be explicit (quantitative) when it creates sediment risks to coho salmon critical habitat while providing certainty for timber volumes. We believe this unanalyzed trade-off is illegal because of the ESA. Many medium and large scale mass erosion incidents will deliver sediment to streams because they are "in-channel" events and not likely to be effectively buffered by proposed riparian reserves (e.g. debris flows, stream-side slides) thus the need for full one tree protection buffers on headwater channels, erosion prone swales, unchanelled valleys and unstable erosion prone headwalls. Analysis needs to take a hard look at choosing for the outcome of reduced mass erosion with wider no cut riparian buffers since many if not most smaller streamside slides occur within a few hundred feet of the stream. Models exist for predicting mass erosion due to geology, slope and morphology (Lee Benda attachment) but these features are best determined during site specific project analysis. Nevertheless, timber yield needs to be reduced using these mass erosion models. Economics of road construction to low volume and very steep areas on the Medford District is also a limiting factor. Timber yield cannot assume all trees can be equally accessed with roads.

IX. INCREASED LOGGING ON BLM LAND WILL UNDERMINE COMMUNITY STABILITY.

The O&C Act provides that O&C lands:

> *shall be managed . . . for permanent forest production, … for the purpose of … contributing to the economic stability of local communities and industries …*

The Oregon Department of Forestry recognizes that conservation of federal lands helps provide regulatory stability for non-federal lands

> [T]he Northwest Forest Plan … serves as the conservation *anchor for the Oregon Plan for Salmon and Watersheds. The Northwest Forest Plan in turn took pressure off of private lands to provide for recovery of spotted owls, murrelets, and salmonids listed under the ESA. Our fear is that a leaner forest plan would no longer provide adjacent non-federal forest lands protection from added land use restrictions to comply with federal environmental laws.*- Roy Woo, Oregon Department of Forestry letter to Forest Service regarding new forest planning rules, 4-7-03.

BLM should not threaten regulatory stability on non-federal lands by increasing timber harvest in older forests or using controversial regeneration harvest methods.

"Because the timber industry has a long, national history of high volatility, alternatives with harvest volumes that exceed current levels are likely to introduce greater instability into local economies, based on past business cycles." DEIS (p 568).

DEIS at 472 concludes:

> *Over the long-term (1969-2007), timber-based industries nationally exhibited low or negative growth rates with high volatility compared with the United States economy as a*

whole, indicating that these industries tend to be inherently volatile. Increases in timber industry activity in the planning area could bring additional exposure to greater economic instability.

The DEIS acknowledges that the timber industry is far more volatile than other industries so boosting timber jobs does not necessarily translate to community stability. This new information requires a fundamental shift in thinking and must be a significant factor in making a final decision on this Plan revision.

DEIS at 568-569 states "*The expansion of existing timber-based firms or the addition of new ones would bring additional jobs and earnings to the planning area, but could make the whole planning area more vulnerable to large fluctuations inherent in domestic and international timber markets."* This statement seems to imply that volatility may adversely affect the region but benefit local communities. This is exactly backwards. The EIS needs to look at the adverse effects of volatility at the local level. Volatility would have its greatest effect in local communities that have the lowest levels of economic diversity, the greatest dependence on commodity production, and would therefore see the greatest fluctuations in jobs and income. The gain and loss of jobs caused by timber industry volatility would cause a variety of social problems related to job insecurity, depression, substance abuse, health care insecurity, domestic abuse, etc. which would in turn cause an increase in the demand for social services that are not adequately funded. If BLM would emphasize development of less volatile economic sectors through provision of amenities instead of commodities, the social problems described above would be diminished and the demand for social services would be reduced.

Proponents of more logging on federal land still subscribe to the outdated view that logging is good for communities. The evidence does not bear this out.

NWFP monitoring results found that -

> *Assumptions were challenged regarding both socioeconomic and ecological relationships, with implications for both. One of the more important set of findings concerns the role of the federal lands. From a socioeconomic perspective, it was assumed that timber flow from federal lands was a key determinant of community well-being. This turns out to be true in some communities, but not in most.*[305]
>
> *Historically, employment in solid-wood products manufacturing (SIC 24) has been volatile. ... Over the entire period of 1965 through 2000, employment positively or negatively changed more than 5 percent 13 times between successive years. Since 1991, changes in employment between years have generally varied between 1 and 2 percent, with a high of a 4-percent decline in 1996.* [306]

The DEIS needs to disclose that increasing federal timber supply will not prevent the overall declining trend of employment in the timber industry. Only "[*a]bout 400 of the 11,000 jobs lost in the timber industry since 1994 were based on reductions in timber harvesting on federal*

[305] Draft synthesis of the NWFP 10-year monitoring reports. 4-15-05. Pps 13-14.

[306] USDA/USDI. 5-volume Northwest Forest Plan, 10-Year Socioeconomic Monitoring Report, http://www.fs.fed.us/pnw/publications/gtr649/pnw-gtr649_vol3_pt5.pdf pp 40-41

lands. The remaining 10,600 job losses occurred during a period of an increased log supply and were the result of less efficient mills closing and mills continuing to invest in labor-saving technologies. ... The FS and BLM no longer play significant roles in the supply of timber in the Plan area as a whole."[307]

All things being equal, a more diversified economy is a more stable economy. Oregon will always have a timber industry based on non-federal forest lands. The highest and best use of BLM lands, in terms of community stability, is to conserve the resources on those lands to provide a stable flow of ecosystem services such as clean water, carbon storage and recreation opportunities, that will help diversify the economy, and mitigate the economic instability caused by logging on non-federal lands.

Increased logging threatens the economic stability of local communities by: recoupling counties to the boom-bust timber industry, by increasing local communities dependence on a volatile and declining industry, and by reducing the quality of life that helps sustain and grow a more healthy and diverse economy. Logging is a boom-bust industry that undermines community stability rather than enhancing it. The final decision should uphold the O&C Act (43 USC 1181a) mandate to foster community stability through increased forest conservation which helps stabilize communities by enhancing quality of life and helping to diversify the economy so communities are less dependent on the inherently volatile timber industry.

The Sonoran Institute has conducted a study of rural economies in the west and identified some insightful correlations. "*It turns out there is an inverse relationship between resource dependence and economic growth; the more dependent a state's economy is on personal income earned from people who work in the resource extractive industries, the slower the growth rate of the economy as a whole."* When one looks at resource dependence, Douglas County looks a lot like Wyoming whose economic performance is at the bottom of the pack. Given BLM's mandate for community stability, they should be trying to steer the economy *away* from commodities and toward a more diverse economic base. [308]

The Sonoran Institute's Report also found that proximity to "protected public lands" is positively correlated with economic growth. Other growth factors include access to education, transportation, airports, entertainment, and mountains. Western Oregon's economic assets are notable: proximity to Interstate 5, numerous airports and sea ports, diverse cities with lots of high wage jobs in "producer services," good educational infrastructure, high rates of in-migration, proximity to public lands, ready public access to both mountains and the Pacific coast, etc. All these factors reinforce the idea that the highest and best economic use of BLM lands is to help diversify the economy, not turn the clock back toward commodity dependence. The best way to do this is to protect the best (mature & old-growth) and restore the rest (thin the plantations).

Ray Rasker makes a compelling case for an economic stability strategy based on non-consumptive uses of public lands -

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[307] 10-Year Socio-Economic Report. pp 46-47. http://www.fs.fed.us/pnw/publications/gtr649/pnw-gtr649_vol3_pt5.pdf

[308] Ray Rasker. Prosperity in the 21st Century West. Sonoran Institute. 2004. http://www.sonoran.org/pdfs/Prosperity%20Report.pdf

The fallacy of the community stability policy can be exposed at two levels. First, as learned from lessons of the former Soviet Union, centrally planned economies do not work. Even if it were possible to manipulate natural ecosystems- of which we know very little-to produce a steady and predictable flow of grazing, mineral, energy, and timber resources, it is unlikely that the economy of nearby communities would remain stable. Factors such as price, the application of labor-saving technologies, international competition, the availability of capital, and the changing preferences of consumers all play as much a role in determining the health of local resource dependent industries as does the supply of raw materials from public lands.

Second, the premise that public resources such as forage, timber, minerals, and energy can stimulate local economic stability presumes that the local economy is indeed dependent on federally-owned resources. All too often the role public land managers play in community development is based on an antiquated, mythical view of the economy.

Three forces are at work in shaping the world economy. First, the industrial economy is becoming uncoupled from the primary products economy (i.e., raw materials). Many of the most valuable "products" in today's economy, like computer software and medical technology, require few raw materials. Second, within the industrial economy itself, employment has become uncoupled from production. Manufacturing efficiency has decreased the demand for physical labor. Instead, human resources are increasingly applied in research, design, engineering, finance, marketing, and other "knowledge-based" or "value-added" applications. Third, capital has become "footloose"-money follows good ideas, no matter where they occur on the globe.

Today, where the final product rolls off the assembly line is less important than who adds the most value to production. And, if most of a finished product's value lies in the amount of human ingenuity and modern technology that is applied, then those countries with the best-trained and educated work force will command the largest piece of the economic pie.

Lester Thurow points out that the seven key industries of the next few decades are all "brainpower" industries: microelectronics, biotechnology, new materials industries, civilian aviation, telecommunications, robots and machine tools, and computers and software. An important aspect of these industries is that they are "footloose"-they can locate anywhere in the world. According to Thurow:

Where they will be located depends upon who can organize the brainpower to capture them. In the century ahead comparative advantage will be man-made."

[T]he common mythology of the region is that the extraction and export of raw materials are what matter. A commonly heard phrase is that "true wealth comes from the ground." [I]t is clear that a "rear-view mirror" approach to economic development will not suffice. Communities in the West must shift their focus from what worked in the past, and ask

instead what will work in the future. Economic wealth consists of much more than raw materials. There is also wealth in the quality of the environment for non-consumptive uses.

… For many rural communities, the economic benefit of living adjacent to public lands has historically been access to vast repositories of raw material. Because of this economic history there has been a tremendous bias on the part of public agencies to equate quantitative expansion in commercial activities with social and economic well-being. Lacking is a perspective on economic development that measures the role of quality of life as provided to community residents living next to public lands: the mountains, scenery, wildlife, clean water, wilderness, and other non-commercial amenities.

Community stability can best be assured by economic diversity.

The cornerstone of an economic diversity strategy is the creation of a favorable business climate and the protection of the cultural, social, and environmental qualities that make a community a pleasant place to live and do business. In addition, the strategy should include investment in the infrastructure, such as education and telecommunications facilities, in order to promote entrepreneurial activity. In many instances, the most economically productive role of public lands is not in resource extraction or tourism, but in protecting the landscape, the wildlife, the rivers and streams, and the scenery-all those things that collectively enhance the quality of life for local residents.

In the 1800's the challenge for the West was to promote growth-to make the most use of the natural resource endowments of the region. In the 1990's, the challenge is to use this endowment intelligently, without despoiling the quality of life for the region's residents, and without foreclosing opportunities for economic diversification. Simply put, if scenery is part of what attracts and retains modern business activity, beyond tourism, then an unsightly clearcut will have more than ecological costs; it will be bad for the economy.

[A] community stability strategy which emphasizes commodity extraction has been shown to be counter-productive, particularly when those activities threaten the amenity-based foundation of the new economy.[309]

A study in Finland showed that the employment effects of forest conservation are not adverse, and this study did not even consider the long-term stabilizing effect from the quality of life provided by healthy forests.[310]

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[309] Raymond Rasker. A New Look at Old Vistas: The Economic Role of Environmental Quality in Western Public Lands. Colorado Univeristy Law Review. 1994. http://www.sonoran.org/programs/pubs/Rasker%20-%20CU%20Law%20Review%201994.pdf

[310] Kniivilä, M. & Saastamoinen, O. 2002. The opportunity costs of forest conservation in a local economy. Silva Fennica 36(4): 853–865. http://www.metla.fi/silvafennica/full/sf36/sf364853.pdf

BLM should emphasize forest conservation and restoration as the best way to ensure community stability. BLM can meet the social and economic objectives by focusing their efforts on forest restoration, including thinning dense young tree farms that were established following clearcutting. This will help meet the restoration objectives of the Northwest Forest Plan, while also creating jobs and producing some woods projects.

The FEIS needs to consider the economic impacts of shifting the regulatory burden to non-federal lands, and the economic costs of increasing communities' dependence on the inherently boom-bust timber industry. The Northwest Forest Plan and ESA protections allow private timber owners to continue logging with fewer environmental restrictions. If BLM disengages from the Northwest Forest Plan, then private logging may have to be restricted. This could cause uncertainty and instability for local communities and industries. BLM's NEPA analysis must explicitly address this cause-effect relationship on community stability.

Global warming and ocean acidification caused by more logging will also cause community instability, as reflected in part by the Social Cost of Carbon (SCC). To meet the O&C Act mandate for community stability, BLM should adopt the alternative that emits the least greenhouse gases and stores the most carbon in the forest.

Intact forests provide a wide variety of ecosystem services that contribute to community stability. These include: clear drinking water, carbon sequestration & climate stability, recreation opportunities, scenic beauty, viable populations of a wide variety of wildlife functional groups such as pollinators, nitrogen fixers, non-timber commodities such as salmon, mushrooms, & greenery, habitat for socially valued imperiled species, hunting and fishing opportunities.

REGENERATION HARVEST IS NOT NEEDED

BLM should not be managing forests in a way that makes rare old forests even more rare, and makes over abundant young forests even more common. Logging proponents say that regeneration harvest of mature forest is needed to enhance early seral forest, which is in short supply, but this assertion is not well supported.

> *The amount of early-successional forest on the landscape within the range of the northern spotted owl is probably greater now than at any time in the past. ... Any species that find optimum habitat in burned forests must have had the dispersal and reproductive capabilities to find and reproduce in these dispersed and infrequent patches of habitat. In general, species associated with early-successional conditions are good dispersers, have high reproductive rates, and are able to persist in small patches of habitat that result from small-scale disturbance* (Hunter 1990, Smith 1966)....

Compared to their historic populations, species associated with these early-successional conditions have increased in abundance. For example, Raphael et al. (1988) estimated that populations of 11 species of birds have probably tripled over historic numbers, and another 4 species have more than doubled. Raphael et al. (1988) and Raphael (1988) compared the estimated abundance of amphibians, reptiles, birds, and mammals from historic times to their present abundance and concluded that the early-successional associates that have increased over

time were associated with more open, drier conditions; were widely distributed (larger total geographic ranges than species associated with late-successional conditions); and, had wider ecological tolerances (i.e., they occupy a greater variety of habitat types). As noted by Harris (1984), birds associated with early-successional forest are more often migrants whereas late-successional associates are generally permanent residents. These studies also show that whereas some species associated with early-successional conditions reach their maximum abundance in early-successional forest, none of the species were restricted to that successional stage.

The creation of early-successional conditions as a result of logging has produced a different pattern on the landscape than the pattern that likely would have resulted solely from natural disturbance. Patches of early-successional forest are now more evenly distributed across the landscape, and sizes of patches are smaller. This pattern may have resulted in a more widespread distribution of early-successional species than in the past.

[T]here is currently additional acreage of early-successional forest intermixed in a fragmented pattern within all of the Late-Successional Reserves and Riparian Reserves on federal lands within the range of the northern spotted owl. As well, natural disturbances will continue to create early-successional conditions. The federal forest lands occur within a broader landscape of nonfederal lands where additional early-successional forest will be created through logging and other management activity. These lands will contribute to the maintenance of early-successional forest over time.[311]

Also, there is no shortage of early seral forest. In fact, thre's already too much early seral in the Oregon Coast Range.[312]

BLM's analysis for the 2015 RMP Revisions DEIS (Vol 1, p 183) indicates that the "current condition" shows no shortage of "early seral forest" across 1.3 million acres of dry Douglas fir forests.

[311] 1994 NWFP FSEIS, pp 3&4-203 – 204.
[312] . Janet Ohmann. Trends in Early Seral Forest at the Stand and Landscape Scale. http://www.slideshare.net/ecoshare/janet-l-ohmann-trends-in-early-seral-forest-at-the-stand-and-landscape-scale. (Slides 12, 29 show there is "no shortage of early seral" in Coastal Oregon, and early seral "exceeds the HRV" [historic range of variability].)

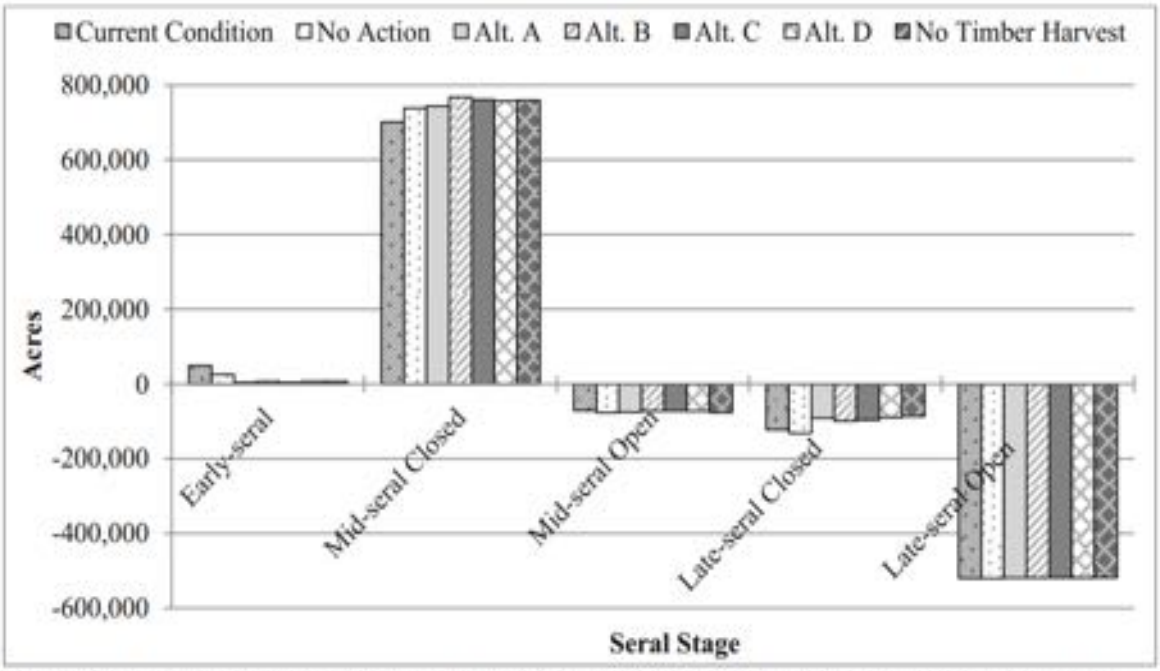

Figure 3-32. Departure from reference conditions in the Douglas-fir/dry vegetation type by seral stage; current conditions and by alternative and the No Timber Harvest Reference Analysis in 2063.

[313] This figures shows that the biggest shortage is late seral and BLM's main focus should remain transitioning over-abundant mid-seral stands to help mitigate the persistent deficit of late-seral stands.

There are many ways of enhancing early-seral habitat without sacrificing mature forests, for instance, we could:

- Modify the way we fight fire and how we react after fire, e.g., leave areas to recover naturally after fire instead of salvage logging and replanting which more closely resembled industrial clearcutting;
- Modify practices on non-federal lands to encourage greater retention of live and dead trees during harvest, tolerate slower conifer re-establishment and greater diverse of native vegetation, e.g., discourage herbicide spraying to control competing native vegetation;
- Embed structure-rich "gaps" (e.g. patches of very heavy thinning) in young stand thinning projects. See Miller, Randall. 2014. Practitioners Approach to Early Seral Habitats on Lands Managed Primarily for Older Forest, or There is More to Healthy Forests than Conifer Trees. Siuslaw NF.[314]
- Extend the early seral character of existing very young stands that are starting to become dominated by conifers.

[313] http://www.blm.gov/or/plans/rmpswesternoregon/files/draft/RMP_EIS_Volume1_pg_173-235.pdf
[314] http://www.slideshare.net/ecoshare/09-practitionersapproachtoearlyseralhabitatsonlandsmanagedprimarilyforolderforestorthereismoretohealthyforeststhanconifertreesmiller; Cheryl Friesen and Norm Michaels 2010. Effects of Incorporating Gaps into Commercial Thinning Prescriptions: Best Available Science, 3-30-2010, Central Cascades Adaptive Management Partnership (CCAMP). http://ecoshare.info/projects/central-cascade-adaptive-management-partnership/synthesis-papers-tools/

Oregon Wild's scoping 2011 comments on the Coos Bay Wagon Road and Roseburg BLM Secretarial Pilot Projects shed further light on this issue.

I. COMPLEX EARLY SERAL FOREST

One of the primary restoration objectives we keep hearing for these projects is the need to restore complex early seral forest. This may well be an important goal. However, this goal needs to be validated and if valid, alternative means of meeting the goal must be explored. With a little thought and creativity one can see that many ways to increase rare early seral habitat without sacrificing rare mature & old-growth forests.

Validation of the early seral habitat objective requires, among other things, asking if the current and projected amount of early seral habitat might be adequate to meet the needs of the opportunistic and generalist species that tend to occur in those areas. Only the interior valleys (and a few ridgetops) of western Oregon likely had persistent early seral conditions, while most of the federal forest landscape had transient early seral conditions associated with disturbances. Early seral wildlife species likely evolved to take advantage of early seral conditions when and where it could be found in the shifting mosaic of seral conditions.

Natural disturbance processes continue to operate across the landscape, including fire, wind, ice storms, landslides, floods, volcanoes, native insects, native disease, etc. Each of these helps create various sized patches of early seral forests every year. Many predict that climate change will increase the frequency of these natural events, suggesting that any shortage of early seral conditions might just take care of itself. "Ecologically, increased distribution and frequency of disturbances may result in increased distribution and dominance of early successional ecosystems dominated by fire adapted species..." [315] Conversely, it may become harder to maintain existing late-seral ecosystems and species, so existing late-successional old-growth forests should be retained in order to avoid making the shortage of late seral forest worse.

There is widespread recognition that early seral forest is produced in abundance on non-federal lands (through industrial clearcutting). Current industrial forest practices do not produce *high quality* or *long-lasting* early seral forest. It is also true, but not widely recognized that the *absolute abundance* of early seral forest on non-federal lands might partially mitigate for its lack of quality.

Early seral vegetation also exists along many streams, rock outcrops, meadows, as well as roadsides, landings, and other disturbed sites throughout the forest. An honest assessment of the early seral shortage must account for the quantity, quality and functionality of all these early seral forest elements.

If there is indeed a shortage of complex early seral forest, we must evaluate a full range of alternative ways of increasing either the quantity and/or quality of such features. Alternatives that have been suggested include:

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[315] Lemieux, Christopher J., Daniel J. Scott, Rob G. Davis and Paul A. Gray. 2008. Changing Climate, Challenging Choices: Ontario Parks and Climate Change Adaptation. University of Waterloo, Department of Geography: Waterloo, Ontario http://web.archive.org/web/20101023221023/http://www.fes.uwaterloo.ca/geography/faculty/danielscott/PDFFiles/NRCAN-Report-FINAL.pdf

Possible policy changes---- Private Lands

Goal: create more diverse early seral forest without increasing landowner cost or regulatory burden

Ideas:

- Remove free-to-grow requirement
- Remove regeneration requirement in its entirety
- Allow substitution of an invasives eradication plan, enhanced wildlife tree plan, or logging debris retention plan

(a) Reform forest practices on non-federal lands to retain more legacy structures and allow a longer period of conifer establishment and more vegetation diversity after harvest, as suggested by Norm and Debora Johnson in 2007. [316]

(b) Rely on natural processes such as fire, wind, insects, etc. Since the public has been misinformed that natural forest mortality processes are undesirable, this approach would work best if we increase public tolerance for natural processes. This approach may also require reform of fire suppression policies and post-fire salvage logging and replanting, as suggested by Norm Johnson, Jerry Franklin, and others in 2007 Early Seral Forest Symposium. [317]

(c) Aggressive pre-commercial thinning in existing very young stands or failed plantations to extend the early seral stage, as suggested in the Chalk Parker Project on the Middle Fork District of the Willamette NF;

(d) Create patches of heavily-thinned, structure-rich "gaps" in variable density thinning projects in dense planted stands <80 years old, as suggested by numerous projects around the region.

All these alternative methods would allow meaningful restoration of early seral forest conditions without unnecessarily sacrificing mature forests.[318]

Another reason that regeneration logging is not needed is because climate change may increase early seral. Efforts to artificially enhance early seral should recognize that climate change might take care of this for us, and in fact might make it much harder to hang on to the mature forests we have. "Ecologically, increased distribution and frequency of disturbances may result in increased distribution and dominance of early successional ecosystems dominated by fire

[316] K. Norm Johnson, Debora L. Johnson. 2007. Policies to Encourage Diverse, Early Seral Forest in Oregon: What Might We Do? http://www.reo.gov/ecoshare/ccamp/good_forest_opening/powerpoints/Early%20seral%20talkrevfinal.ppt

[317] http://www.reo.gov/ecoshare/ccamp/Good_Forest_Opening.shtml.

[318] Oregon Wild 2011. Scoping Comments on the Wagon Road and Roseburg BLM Secretarial Pilots. http://www.oregonwild.org/oregon_forests/forest-management/in-your-forests/files-for-eyes-on-the-agencies/Wagon_Road_and_Roseburg_Pilots_scoping_6-29-2011_BLM.pdf

adapted species..."[319] Conversely, it may become harder to maintain existing late-seral ecosystems and species, so existing late-successional old-growth forests should be retained in order to avoid making the LSOG shortage worse.

II. CURRENT RESTORATION THINNING PROGRAMS ARE MEETING OBJECTIVES

There is a pervasive misconception circulating among many people including local, state, and federal politicians and journalists that environmental restrictions have shut-down logging on our federal forests. It has become popular to repeat this misinformation and it has become nearly a full-time job refuting it. The facts speak for themselves.

The most recent data from the Forest Service and BLM on timber offered for sale under the Northwest Forest Plan between 1995 and 2010 reveal that the agencies have offered for sale 8.7 billion board feet of timber. This is equivalent to 1.74 million log truckloads. If parked end-to-end, these trucks would stretch along Interstate 5 from Seattle to San Diego more than 14 times. This is not gridlock – far from it.

Furthermore, any suggestion that a "promise" of timber was made and not kept is highly misleading. The timber industry likes to say that the NWFP promised them 1 billion board feet per year. However, the timber volumes described in the NW Forest Plan are clearly presented as "estimates," not hard targets. "*The PSQ [probable sale quantities] levels shown are estimates. ... They represent our best assessment of the average amount of timber likely to be awarded annually in the planning area over the next decade, following a start-up period."*[320] *"PSQ levels are presented as an effect, not a goal, of the standards and guidelines. Therefore, harvests within areas specified for habitat protection will be greatly curtailed."*[321]

The real timber targets are set each year by Congress. Data provided by the FS and BLM show that since 1995 the agencies have met 82% of the cumulative timber targets established by Congress. The small short-fall is primarily the result of two major legal blunders that agencies brought upon themselves (i.e., failure to comply with Survey and Manage and the Aquatic Conservation Strategy requirements). It is unfair to blame conservationists when the agencies simply failed to protect streams and wildlife as promised in the plan.

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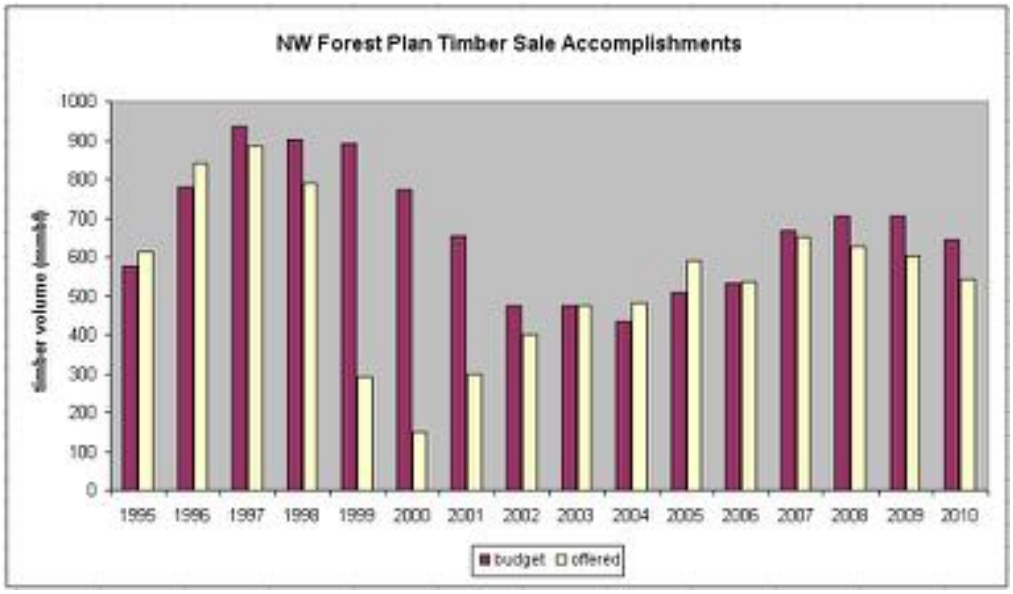
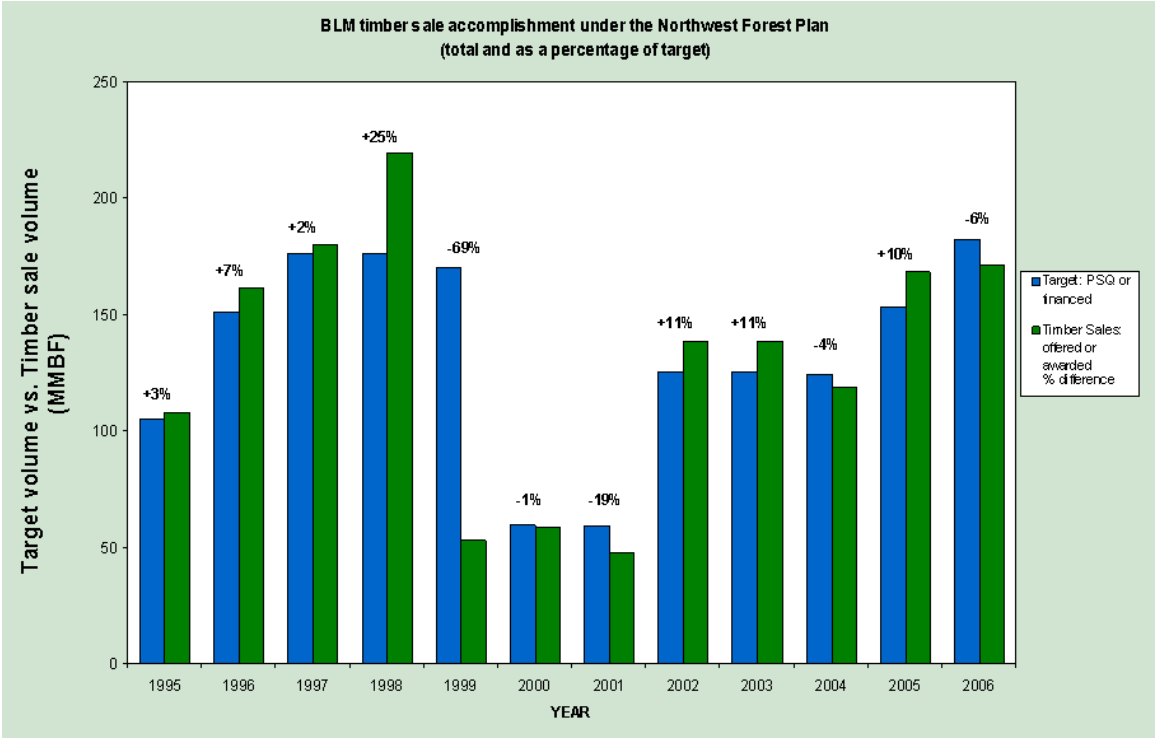
[319] Lemieux, Christopher J., Daniel J. Scott, Rob G. Davis and Paul A. Gray. 2008. Changing Climate, Challenging Choices: Ontario Parks and Climate Change Adaptation. University of Waterloo, Department of Geography: Waterloo, Ontario.http://web.archive.org/web/20101023221023/http://www.fes.uwaterloo.ca/geography/faculty/danielscott/PDFFiles/NRCAN-Report-FINAL.pdf

[320] 1994 NWFP ROD, p 19.

[321] 1994 NWFP ROD, p 66.

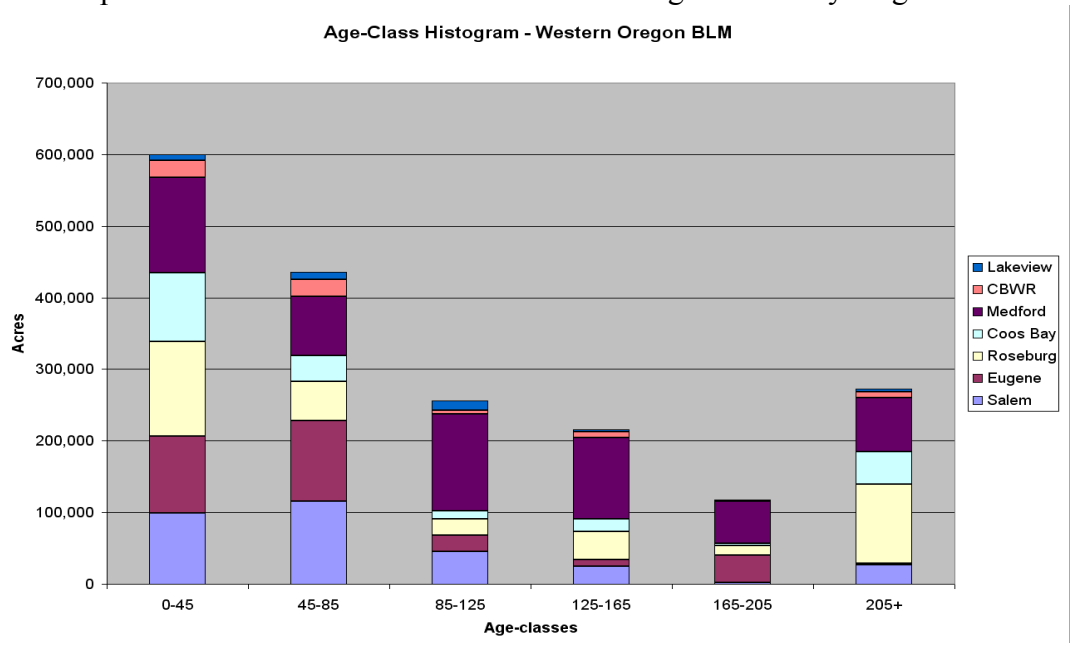


Timber Sale Accomplishments of USFS And BLM (Regionwide) Under The Northwest Forest Plan

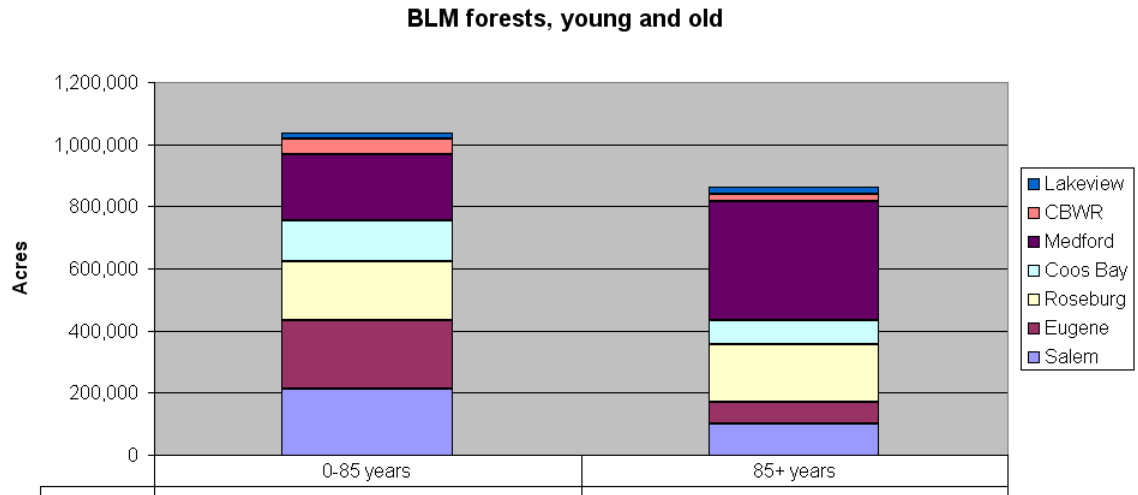


Timber Sale Accomplishments For Western Oregon BLM Districts Under The Northwest Forest Plan

The following age-class histogram created using BLM data shows that older forests are relatively under-represented and the bulk of the needed thinning work is in young stands.



This is the same data showing young versus old forests, split at 85 years.



	0-85 years	85+ years
Lakeview	18,660	22,519
CBWR	47,263	23,981
Medford	215,659	382,826
Coos Bay	132,714	76,680
Roseburg	186,901	185,587
Eugene	219,917	71,618
Salem	214,483	99,795

FIRE AND FUELS

The DEIS at page 10 indicates that restoring fire-adapted ecosystems to increase fire resiliency is part of the purpose of the RMP revisions. Page 10 additionally acknowledges that the "owl recovery plan recommends active management within the dry forest landscape to restore ecosystem resiliency," and that "under the O&C Act, BLM management must account for potential loss of this timber to fire." Hence "the purpose of this action includes restoring fire-adapted ecosystems to increase fire resiliency."

The fire resiliency purpose of the RMP revisions is directly thwarted by the BLM proposal to conduct:

> *"management such as thinning and regeneration harvest with no retention and rapid reforestation on a relatively short rotation. This management approach would result in continuous horizontal and vertical fuel profiles and conditions more closely aligned with high severity fire." DEIS page 194.*

It appears that every action alternative developed by the BLM will include logging techniques known by the agency to increase fire hazard. This directly inhibits the alleged purpose and need of increasing fire resiliency stated on page 10 of the DEIS. "The purpose of the action includes restoring fire-adapted ecosystems in increase fire resiliency." DEIS page 10.

The BLM's proposal to utilize logging techniques to known to increase fire resiliency in some instances while concurrently utilizing logging techniques to decrease fire hazard in other instances is arbitrary and capricious.

The DEIS fails to analyze or disclose an action alternative that would codify the dry forest restoration developed by Franklin and Johnson and successfully implemented in the BLM "pilot projects."

I. INCREASE FIRE RESISTANCE BY MAXIMIZING THE EXTENT OF LATE SUCCESSIONAL RESERVES

One of the purposes of this EIS is to restore fire-adapted ecosystems to increase fire resiliency. Recognizing that all forests in western Oregon are "fire-adapted," this purpose should be clarified to maintain fire resistance in mature and old growth forests, and to avoid regeneration harvest that creates dense young plantations that represent a very hazard fuel condition. BLM should pursue this important purpose across all forest types.

In the final decision on this RMP revision, BLM should avoid both high- and moderate-intensity timber harvest because DEIS (p 194) admits that:

The High Intensity Timber Area includes management such as thinning and regeneration harvest with no retention and rapid reforestation on a relatively short rotation. This management approach would result in continuous horizontal and vertical fuel profiles and conditions more closely aligned with high severity fire. ... [T]here currently exists an overabundance of young and closed conditions and the likelihood of large, high severity fire has increased. Large areas of no retention are not representative of the prevailing

vegetative patterns and structure associated with frequent fire, low-severity or mixed-severity fire regimes.[322]

Moderate Intensity Timber Area includes thinning and regeneration harvest with 5-15 percent basal area retention, and longer rotations and rapid reforestation. This management approach would result in more continuous horizontal and vertical fuel profiles and conditions more closely aligned with high severity fire. Additionally, contiguous fuel profiles have reduced stand-level fire resistance.

Adopting high- or moderate-intensity timber harvest is therefore inconsistent with the purpose and need for this EIS to *"restore fire-adapted ecosystems to increase fire resiliency."*

Figures 3-40 and 3-41 clearly show that areas with less logging (i.e. the reserves) create conditions that are much more fire resistant, while areas with more logging (i.e., the harvest land base) creates conditions that present much greater fire hazard.

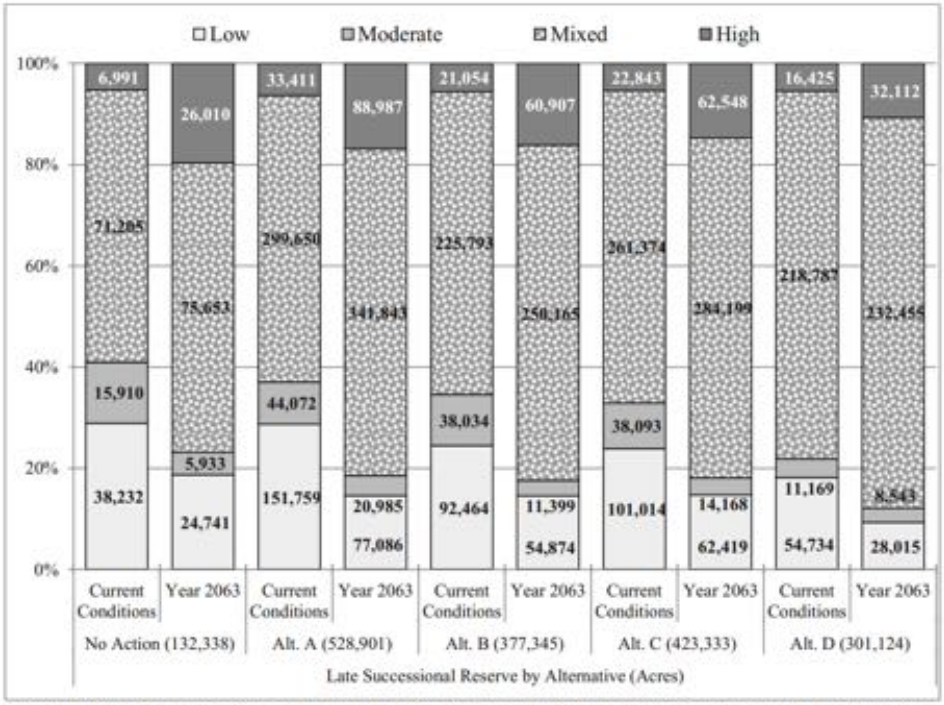


Figure 3-40. Stand-level fire resistance categories in the Late-Successional Reserves in the dry forest in the interior/south for the current condition and each alternative in 50 years.

[322] Taylor and Skinner 2003, Larson and Churchill 2012.

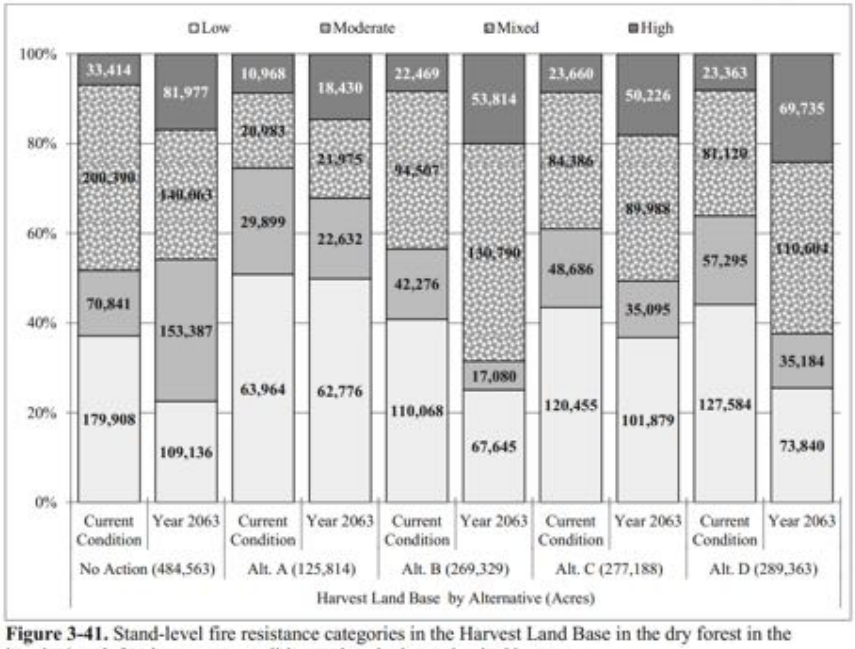


Figure 3-41. Stand-level fire resistance categories in the Harvest Land Base in the dry forest in the interior/south for the current condition and each alternative in 50 years.

Furthermore, the harvest land base probably has a greater fire hazard than this analysis recognizes given the fact that the EIS relies on some faulty assumptions about the effects of thinning on forest structure and fire hazard (explained below).

II. FOREST CONSERVATION HELPS MODERATE FIRE BEHAVIOR

DEIS 187 says that lower density stands tend to have higher fire resistance. The DEIS also adopts the notion that fire exclusion increases fire hazard. DEIS (p 194) says:

Uneven-Aged Timber Area [and] the Owl Habitat Timber Area … Both of these management scenarios would result in the greatest reduction of low and moderate stand-level resistance and the largest increase in the mixed- and high-resistance acres.

However, these DEIS assertions are not supported by the evidence from SW Oregon. The EIS needs to reflect the best available science which indicates that open stands (such as those resulting from thinning) tend to have more surface and ladder fuels (over time), as well as greater wind penetration, lower humidity, dryer fuels, longer flame lengths, and higher fire intensity at the flame front. Forests with a dense canopy tend to have a more cool, moist, and less windy fire microclimate, and the canopy helps suppress the growth of surface and ladder fuels.

Table 3-41 (DEIS p 187) needs to reflect the fact that complex older forests tend to be more fire resistant and resilient compared to young forests and logged forests. “Mixed” resistance is not described or defined. It would be useful for the public and the decision-maker to understand the complex old forests have several characteristics making them more fire resistant (e.g., thick bark, high canopies, hardwood understory that acts as a heat sink, canopy that suppresses ladder fuels and helps maintain cool-moist-les-windy microclimate) and know that this mixed-resistance old forest is the condition that historically dominated the forest landscape, and this is the condition

that results in the mixed severity fires that wildlife evolved with. Logging complex old forests is likely to reduce fire resistance and increase fire hazard.

The DEIS (p 187) says that only single-storied mature forests have HIGH resistance to wildfire. The EIS needs to disclose that open canopy forests tend to have more severe fire effects and that logging to create open forest conditions on large areas of BLM land (such as by logging to simplify complex forests) will have significant trade-offs for wildlife that need more complex forests. Forests lacking complex dead wood and complex understory do not provide high quality habitat for spotted owls and numerous other species.

The EIS needs to reflect the best available information (provided below) indicating that greater time-since-fire actually increases fire resistance. That is, fires are likely burn more severely in forests that have been more recently logged or burned, and are likely to burn less severely in closed-canopy forests that have not been recently logged or burned. This may be related to the fact that closed canopy forests maintain a cool-moist microclimate that helps retain higher fuel moisture and more favorable fire behavior. Canopy cover also helps suppress the growth of ladder fuels. The significance of this is that it may make sense to variably retain more canopy cover while thinning and don't focus on treatment of canopy fuels except to provide some well-spaced "escape hatches" for hot gases generated by surface fires.

Odion et al (2004) studies fire in the Klamath Mountains region and found -

> *Long absence of fire predicts low severity fire effects. Absence of fire enables closed canopy forest vegetation to replace shrub and open forest vegetation through succession. Shade reduces available fuel below the canopy as well as its potential surface heat output during fire events, making canopy fires less likely to occur. Therefore, severe fire effects are not correlated with the age of woody fuels. Instead, weather and climate dictate canopy fire behavior in closed canopy forests.*
>
> *Tree plantations, which typically follow high-severity fires under traditional forestry practices, exhibited "twice the burn severity" of closed canopy forests (20 percent), even though they accounted for only four (4) percent of the study area. The relative combustibility of structurally homogeneous tree plantations supports a self-reinforcing "feedback" dynamic of high-severity fires, and the authors anticipate continued high-severity fires in roaded and planted portions of the landscape.*

IMPLICATIONS- The central conclusion of the paper is that long absence of fire predicts low-severity fire effects in Klamath mixed evergreen forests. This conclusion has four management implications:

1. The fuel build-up model formulated for southwestern ponderosa pine forests does not apply to Klamath mixed evergreen forests, and fuel treatments intended to prevent crown fires based on this model are misdirected.

2. Fuel treatments designed to impose a low-severity fire regime may be ecologically detrimental because highly severe fire effects, to some degree, support diverse vegetation community structures and habitats for which the Klamath region is globally unique. Some fuel treatments also may adversely affect soils, water quality, wildlife habitat, and spread noxious weeds.

3. Fuel treatments may be ecologically beneficial in tree plantations where past logging left behind unnatural fuel profiles.

4. Naturally ignited wildland fires may be beneficial to a variety of conservation objectives in Klamath forests. Home ignitability mitigation in the wildland-urban interface may increase options for backcountry wildland fire use.

Fuel reduction projects in SW Oregon must consider the implications of Odion, D.C., E.J. Frost, J.R. Strittholt, H. Jiang, D.A. DellaSala and M.A. Moritz. 2004. Patterns of fire severity and forest conditions in the western Klamath Mountains, California. Conservation Biology 18(4): 927-936. [323]

In a mixed-conifer, mixed-severity fire regime study area in SW Oregon, Crystal Raymond found that,

> *Fire severity was greater in thinned treatments than untreated. … The additional fine wood left from the thinning operation (despite whole-tree yarding) most likely caused higher fire intensity and severity in the thinned treatments*."
>
> *… [T]he presence of activity fuels increased potential surface fire intensity, so increases in canopy base height did not decrease the potential for crown fire initiation. … [C]rown fire is not a prerequisite for high fire severity; damage and mortality of overstory trees in the wildfire was extensive despite the absence of crown fire, and the low predicted crown fire potential before and after the fuel treatment. Damage to and mortality of overstory trees were most severe in thinned treatments (80 – 100% mortality), least severe in the thinned and under-burned treatment (5% mortality), and moderate in untreated stands (53-54% mortality) following a wildfire in 2002. Fine fuel loading was the only fuel structure variable significantly correlated with crown scorch of overstory trees. Percentage crown scorch was the best predictor of mortality 2 years post-fire. Efforts to reduce canopy fuels through thinning treatments may be rendered ineffective if not accompanied by adequate reduction in surface fuels*. [324]
>
> *A greater percentage of pre-fire fine wood was consumed in the thinned plots than in the unthinned plots during the Biscuit fire suggesting that fine fuel moisture may have been lower in the thinned plots*." And "*the Biscuit Fire was observed to have more moderate fire behavior in stands with a sub-canopy tree layer compared to more open stands, suggesting that the sub-canopy trees did not function as ladder fuels. … Higher foliar moisture of broad-leaved species could have dampened fire behavior, inhibiting rather than aiding crown fire initiation."*

Similarly, Hanson and Odion (2006) compared wildfire behavior in seven previously thinned mixed-conifer forests vs. adjacent unthinned forest in the Sierra Nevada and found —

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[323] http://nature.berkeley.edu/moritzlab/docs/Odion_etal_2004.pdf.

[324] Crystal L. Raymond. 2004. The Effects of Fuel Treatments on Fire Severity in a Mixed-Evergreen Forest of Southwestern Oregon. MS Thesis. http://depts.washington.edu/nwfire/publication/Raymond_2004.pdf.

> *Contrary to our hypothesis, the mechanically thinned areas had significantly higher fire-induced mortality (p =.016, df = 6) and combined mortality (p =.008, df = 6) than the adjacent unthinned areas. Thinned areas predominantly burned at high severity, while unthinned areas burned predominantly at low and moderate severity … Possible explanations for the increased severity in thinned areas include persistence of activity fuels, enhanced growth of combustible brush post-logging, desiccation and heating of surface fuels from increased insolation, and increased mid-flame windspeeds. Given that sampling transects in thinned versus unthinned areas were only 100 m apart in each experimental unit, fire weather should have been the same for the thinned and unthinned areas sampled in each site. Thus, mechanical thinning on these sites appears to have effectively lowered the fire weather threshold necessary for high severity fire occurrence.*[325]

A study in mixed-conifer forests in California showed that forest reserves were more effective than logging in terms of reducing fire hazard.

> *[T]he efficacy of seven traditional silvicultural systems and two types of reserves used in the Sierra Nevada mixed conifer forests is evaluated in terms of vegetation structure, fuel bed characteristics, modeled fire behavior, and potential wildfire related mortality. The systems include old-growth reserve, young-growth reserve, thinning from below, individual tree selection, overstory removal, and four types of plantations. These are the most commonly used silvicultural systems and reserves on federal, state, and private lands in the western United States. Each silvicultural system or reserve had three replicates and varied in size from 15 to 25 ha; a systematic design of plots was used to collect tree and fuel information. The majority of the traditional silvicultural systems examined in this work (all plantation treatments, overstory removal, individual tree selection) did not effectively reduce potential fire behavior and effects, especially wildfire induced tree mortality at high and extreme fire weather conditions. Overall, thinning from below, and old-growth and young-growth reserves were more effective at reducing predicted tree mortality.*[326]

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[325] Hanson and Odion. 2006. Fire Severity In Mechanically Thinned Versus Unthinned Forests of the Sierra Nevada, California 2006 Fire Congress Proceedings. ftp://ftp2.fs.fed.us/incoming/r5/VMS/reference_library/Fire%20and%20Fuels%20References/Hanson%20and%20Odion%20%202006%20Fire%20severity%20in%20thinned%20vs%20unthinned%20forests%20.pdf

[326] Scott L. Stephens and Jason J. Moghaddas. 2005. Silvicultural and reserve impacts on potential fire behavior and forest conservation: Twenty-five years of experience from Sierra Nevada mixed conifer forests. Biological Conservation 125 (2005) 369–379. See also Morris Johnson, David L. Peterson, and Crystal Raymond 2009. Fuel treatment guidebook: illustrating treatment effects on Fire hazard. Fire Management Today 69(2) http://www.fs.fed.us/fire/fmt/fmt_pdfs/FMT69-2.pdf p 32-33

III. BLM NEEDS TO REFLECT THAT WILDFIRE MAY BE MORE CONTROLLED BY WEATHER THAN FUELS

DEIS p 175 discusses the effects of fire exclusion in dry forests. This analysis over-emphasizes the effects of fuel and under-emphasizes the effects of weather on fire. Forests throughout BLM lands in western Oregon almost always have enough fuel to carry fire. Weather conditions are a large determinant of the extent and severity of fire. Protecting homes and communities require treatments in the "structure ignition zone" immediately around structures, not across the forest landscape.

The agencies must recognize that most large fires are climate driven, not fuel driven.

> *Within forests, annual burned area correlated at least as strongly with spring–summer vapour pressure deficit (VPD) as with 14 other drought-related metrics, including more complex metrics that explicitly represent fuel moisture. Particularly strong correlations with VPD arise partly because this term dictates the atmospheric moisture demand."* [327]

Littell et al (2009) looked at a large number of fires that occurred in the western U.S. during the 20th Century and found -

> *Our analyses indicate that year-of-fire climate is the strongest influence on area burned in forested ecosystems, but fire size may be limited secondarily by fuel continuity between or within forest stands (Rollins et al. 2002). For example, continuity may be less limiting for fire regimes in which crown fires are the dominant mechanism than in lower-elevation forests characterized by surface fires…*
>
> *[R]elationships described in Westerling et al. (2006) hold for more of the 20th century than previously shown.... These relationships all support our claim that drying of fuels is the primary mechanism for large WFAB [Wild fire area burned] in the higher-elevation and northern mountainous ecoprovinces. Wild fire area burned in these ecoprovinces thus appears to be limited by climate rather than fuel availability, ...*
>
> *Our analyses indicate that year-of-fire climate is the strongest influence on area burned in forested ecosystems, but fire size may be limited secondarily by fuel continuity between or within forest stands (Rollins et al. 2002). For example, continuity may be less limiting for fire regimes in which crown fires are the dominant mechanism than in lower-elevation forests characterized by surface fires, ...*
>
> *Climate controls on the area burned by wildfire in the western United States are strong, even during the dominant period of fire suppression and exclusion in the last two-thirds of the 20th century. Roughly 39% (1916–2003) to 64% (1977–2003) of the fire area burned can be related directly to climate. The variance explained by climate implies that fuel treatments, for example, might be tailored to specific ecosystems and climate–fire relationships. Recognizing that most ecoprovinces have significant ecological variability,*

[327] A. Park Williams, Richard Seager al 2014. Correlations between components of the water balance and burned area reveal new insights for predicting forest fire area in the southwest United States. International Journal of Wildland Fire 24(1) 14-26 http://dx.doi.org/10.1071/WF14023 http://www.publish.csiro.au/?paper=WF14023

climate-limited ecoprovinces may be less influenced by fuel treatment than fuellimited ecoprovinces (at least for area burned, if not fire severity).[328]

The fire and fuels analysis does disclose trade-offs associated with logging. The DEIS says that forest management is a surrogate for fire, but wildfire creates complex forest structures that wildlife evolved with, while logging causes far different effects than fire. Logging requires roads and removes forest structure. The EIS needs to disclose the many ways in which logging is not a surrogate for fire.

IV. LOGGING HABITAT TO "SAVE" IT FROM FIRE COULD DEGRADE HABITAT

The DEIS (p 195) says "*BLM assumed that the restoration approach taken in the Late Successional Reserve in the dry forest would include stand density reductions, cultivation of large trees with old-growth characteristics, and introductions of heterogeneity into increasingly uniform stands, and treatments to reduce fire risk adjacent to high-value habitat."* The DEIS does not adequately disclose the adverse effects of these habitat-modifying treatments that will likely be conducted with commercial logging that removes primary constituent elements of spotted owl habitat.

DEIS (p 158) describes for thinning as a "no regrets" approach to climate adaptation. This is misleading. No regrets describes strategies that are beneficial whether or not climate driven disturbance occurs. This is not the case here. Forest thinning involves complex trade-offs that could help or harm the forest and its inhabitants, and the alleged benefits often accrue only if treated areas subsequently burn during the brief window that fuel reduction treatments may be effective. This is not a no regrets strategy.

A more specific example is the spotted owls that prefers to live in fuel-rich forests with high canopy cover. Thinning to reduce climate stress will likely result in adverse effects on spotted owls. Thinning is therefore NOT a "no regrets" strategy for spotted owls. In fact, leaving suitable spotted owl habitat unmanaged is probably the closest thing to a no regrets climate strategy for the spotted owl. The EIS fails to make this important point clear. Even when logging is conducted with an intention to reduce fire effects, such logging will still cause net negative effects on spotted owls and other wildlife that prefer to live in forests with dense canopy cover and complex structure. The DEIS failed to adequately disclose trade-offs between the needs of wildlife and the adverse effects of logging for fire resiliency. The net effects of logging plus wildfire are far worse for wildlife than the effects of fire alone.

Logging intended to benefit dense forest habitat will also reduce the quality of habitat by removing various constituent elements of their preferred habitat, and the NEPA analysis must therefore include some evaluation of ecological costs and benefits — e.g., the high probability that logging will degrade habitat vs. the low probability that fuel reduction logging will interact favorably with fire and thus benefit habitat. This evaluation requires an estimate of the probability of future wildfire. To assume, as many analyses do, a 100% chance of future wildfire

[328] Jeremy S. Littell, Donald McKenzie, David L. Peterson, Anthony L. Westerling (2009) Climate and wildfire area burned in western U.S. ecoprovinces, 1916–2003. Ecological Applications: Vol. 19, No. 4, pp. 1003-1021. http://naldc.nal.usda.gov/download/34676/PDF.

over-estimates the likelihood of treatments will interact with fire, thus over-estimating the ecological value of fuel treatments, and under-estimating the ecological effects of logging on habitat.[329]

There is a strong interest among the federal land management agencies to conduct widespread logging in suitable spotted owl habitat in order to reduce the effect of fire. The agencies view fuel reduction logging as beneficial to owl habitat because modeling shows that fire behavior is moderated by fuel reduction, but proponents never seem to conduct a careful evaluation of the relative probability, and the relative harms, of logging versus wildfire. Strangely, the probabilistic aspects of this issue have been largely ignored in the owl science literature, but recently explored in the forest-carbon literature which recently showed that although thinning can modify fire behavior, logging to reduce fire effects is likely to remove more carbon by logging than will be saved by modifying fire.[330] The reason for this seemingly counterintuitive outcome is a result of the "law of averages." As explained by Cathcart et al 2009 —

> *The question is—if the implementation of fuels treatments within the Drews Creek watershed had the beneficial effect of reducing the likelihood of wildfire intensity and extent as simulated in this study, why is the expected carbon offset from fuels treatment so negative? The answer lies in the probabilistic nature of wildfire. Fuels treatment comes with a carbon loss from biomass removal and prescribed fire with a probability of 1. In contrast, the benefit of avoided wildfire emissions is probabilistic. The law of averages is heavily influenced that given a wildfire ignition somewhere within the watershed, the probability that a stand is not burned by the corresponding wildfire is 0.98 (1 minus the average overall conditional burn probability …*
>
> *Thus, the expected benefit of avoided wildfire emissions is an average that includes the predominant scenario that no wildfire reaches the stand. And if the predominate scenario for each stand is that the fire never reaches it, there is no avoided CO2 emissions benefit to be had from treatment. So even though severe wildfire can be a significant CO2 emissions event, its chance of occurring and reaching a given stand relative to where the wildfire started is still very low, with or without fuel treatments on the landscape.*[331]

Both carbon and spotted owl habitat tend to accumulate in relatively dense forests with intermediate or longer fire return intervals. Thus, we can likely read these studies and replace the word "carbon" with the word "spotted owl habitat" and the results will likely hold.

DEIS pp 773-774 identifies "Issue 3" whether the alternatives will help reduce the loss of habitat due to wildfire, but the DEIS says no additional analysis is required, and the reasons given are

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[329] See Heiken, D. 2010. Log it to save it? The search for an ecological rationale for fuel reduction logging in Spotted Owl habitat. Oregon Wild. v 1.0. May 2010. http://dl.dropbox.com/u/47741/Heiken_Log_it_to_Save_it_v.1.0.pdf.

[330] Mitchell, Harmon, O'Connell. 2009. Forest fuel reduction alters fire severity and long-term carbon storage in three Pacific Northwest ecosystems. Ecological Applications. 19(3), 2009, pp. 643–655 http://www.fs.fed.us/pnw/pubs/journals/pnw_2009_mitchell001.pdf.

[331] Jim Cathcart, Alan A. Ager, Andrew McMahan, Mark Finney, and Brian Watt 2009. Carbon Benefits from Fuel Treatments. USDA Forest Service Proceedings RMRS-P-61. 2010. http://www.fs.fed.us/rm/pubs/rmrs_p061/rmrs_p061_061_079.pdf.

confusing: "As explained in **Appendix S**, the relative habitat suitability surfaces the BLM developed to address Conservation Needs 1, 2 and 4 include forecasts of habitat change from wildfire. Thus, the evaluations of Conservation Needs 1, 2 and 4 also address Conservation Need 3. The BLM needed no additional analysis." We could find no analysis in Appendix S or elsewhere in the EIS explaining that alternatives with more logging will create hazardous fuel condition and expose spotted owls to greater risk from wildfire.

In an effort to advance the discussion and help the agencies conduct better risk assessments in the NEPA context we have prepared a white paper in an attempt to clarify the critical considerations in a probabilistic risk assessment that compares the risk of logging versus wildfire.[332] Log it to save it? The search for an ecological rationale for fuel reduction logging in Spotted Owl habitat.[333] This report is most relevant in SW Oregon but the proposed evaluative framework is applicable in the east Cascades, northern California, and elsewhere. This report focuses on carbon and spotted owl habitat, but the analysis is relevant for any species or forest value that requires relatively dense forest cover, such as American marten, Pacific fisher, pileated woodpecker, northern goshawk, etc.[334]

To justify such fuel reduction logging in suitable owl habitat on ecological grounds requires several findings: (1) that wildfire is highly likely to occur at the site of the treatment, (2) that if fire does occur it is likely to be a severe stand-replacing event, and (3) that spotted owls are more likely to be harmed and imperiled by wildfire than by logging at a scale necessary to reduce fire hazard. Available evidence does not support any of these findings, which raises serious questions about the need for and efficacy of logging to reduce fuels in western Oregon and other forests lacking frequent fire return intervals.

The probabilistic element of the risk equation demands careful consideration. Both logging and fire have meaningful consequences, so the issue really boils down to a comparative probabilistic risk assessment where risk is characterized by two quantities: (1) the magnitude (severity) of the possible adverse consequence(s), and (2) the likelihood (probability) of occurrence of each consequence.

Framework for Assessing the Risk of Wildfire vs. Fuel Reduction Logging			
	Likelihood of event	Magnitude of harm	Net Benefit
Wildfire	LOW: Stand replacing wildfire is not common in western Oregon. Fire suppression policy prevails. The chance that any given acre of forest will experience wildfire is low.	LOW: The majority of wildfire effects are not stand replacing. Fire is a natural process to which native wildlife are adapted. There is still a deficit of natural fire processes on the landscape.	Fire is likely less harmful to habitat than fuel reduction logging.

[332] Heiken, D. 2010.
[333] Oregon Wild. v 1.0. May 2010. http://dl.dropbox.com/u/47741/Heiken_Log_it_to_Save_it_v.1.0.pdf.
[334] See for instance, Aubry et al 2013. Meta-Analyses of Habitat Selection by Fishers at Resting Sites in the Pacific Coastal Region. The Journal of Wildlife Management 77(5):965–974; 2013; DOI: 10.1002/jwmg.563.

Logging	HIGH: To be effective in controlling fire, logging must be very extensive, and sustained. Many more acres would need to be logged than would burn.	HIGH: Widespread logging will have significant impacts on canopy, microclimate, understory vegetation, down wood, and long-term effects on recruitment of large trees and snags.	Fuel reduction logging is likely more harmful to habitat than wildfire.

The white paper is organized around these risk evaluation parameters.

In spite of what we often hear, that federal forests are not at imminent risk of destruction by wildfire. Fire return intervals remain relatively long, due to both natural factors and active fire suppression policies. Wildfire severity also remains moderate. Most wildfires are NOT stand replacing. Most fires are in fact low and moderate severity.

The location, timing, and severity of future fire events cannot be predicted making it difficult to determine which forests will benefit from treatment - consequently fuel treatments must be extensive and many stands will be treated unnecessarily, thus incurring all the costs of fuel logging, but receiving none of the beneficial effects on fire behavior.

Furthermore, logging for purposes of fuel reduction has impacts on owl and prey habitat that remain under-appreciated, especially the reduction of complex woody structure, and the long-term reduction in recruitment of large snags and dead wood. Fuel reduction logging also has complex effects on fire hazard with potential to increase fire hazard, especially when fuel reduction efforts involve removal of canopy trees.

When all this evidence is put together, it becomes clear that "saving" the spotted owl by logging its habitat to reduce fuels often does not make any sense.

Similar conclusions were reached is several studies, reviews, and expert commentaries, such as:

Odion et al. 2014, who looked at the relative effects of fire versus thinning and fire on spotted owl habitat in two regions of interest: the Klamath and dry Cascades --

> *Using empirical data, we calculated the future amount of spotted owl habitat that may be maintained with these rates of high-severity fire and ongoing forest regrowth rates with and without commercial thinning. Over 40 years, habitat loss would be far greater than with no thinning because, under a "best case" scenario, thinning reduced 3.4 and 6.0 times more dense, late-successional forest than it prevented from burning in high-severity fire in the Klamath and dry Cascades, respectively. Even if rates of fire increase substantially, the requirement that the long-term benefits of commercial thinning clearly outweigh adverse impacts is not attainable with commercial thinning in spotted owl habitat. It is also becoming increasingly recognized that exclusion of high-severity fire may not benefit spotted owls in areas where owls evolved with reoccurring fires in the landscape.*

We found that the habitat recruitment rate exceeded the rate of severe fire by a factor of 4.5 in the Klamath and 10 in the dry Cascades, leading to a deterministic increase in dense forest habitat over time, assuming no other disturbance events. In contrast, previous published assessments of fire on spotted owls have not explicitly considered fire and forest regrowth rates (Wilson and Baker 1998, Lee and Irwin 2005, Roloff et al. 2005, 2012, Calkin et al. 2005, Hummel and Calkin 2005, Ager et al. 2007, Lehmkuhl et al. 2007). Not including the probability of high-severity fire, which is low, leads to highly inflated projections of the effects of thinning versus not thinning on high-severity fire (Rhodes and Baker 2008, Campbell et al. 2012).

Our calculations of thinning effects included rates of forest regrowth along with high-severity fire. The calculations illustrate how the requirement that the long-term benefits of thinning clearly outweigh adverse impacts (USFWS 2011) is not attainable as long as treatments have adverse impacts on spotted owl habitat. This is because the amount of dense, late-successional forest that might be prevented from burning severely would be a fraction of the area that would be thinned.

This would not be a concern if thinning effects were neutral, but the commercial thinning prescriptions being implemented call for forests with basal area reduced by nearly half to 13.5-27.5 m2/ha, which is mostly well below the minimum level known to function as nesting and roosting habitat (ca. 23 m2/ha) (Buchanan et al. 1995, 1998). … Even an immediate doubling of fire rates due to climate change or other factors would result in far less habitat affected by highseverity fire than thinning. In addition, much of the highseverity fire might occur regardless of thinning, especially if the efficacy of thinning in reducing high-severity fire is reduced as fire becomes more controlled by climate and weather (Cruz and Alexander 2010). Clearly, the strategy of trying to maintain more dense, late-successional forest habitat by reducing fire does not work if the method for reducing fire adversely affects far more of this forest habitat than would high-severity fire, and the high-severity fire might occur anyway because it is largely controlled by climate and weather.

While much of the concern about fire and thinning in dry forests of the Pacific Northwest has focused on spotted owls, it may also apply to other biota associated with dense, old forests, including species of conservation concern, such as Pacific fisher (Martes pennanti pacifica), which research indicates may benefit from mixed-severity fire (Hanson 2013), the Northern Goshawk (Accipiter gentilis), and, following fire, the Black-backed Woodpecker (Picoides arcticus), … Our findings highlight the need to be cautious about conclusions that thinning treatments are needed for species found in dense forest and that they will not have unintended consequences (e.g., Stephens et al.2012) until long-term, cumulative impacts are better understood. As we found with spotted owls, long-term and unintended consequences may be substantial for species that rely on dense, late-successional forests.[335]

[335] Dennis C. Odion, Chad T. Hanson, Dominick. A. DellaSala, William L. Baker, and Monica L. Bond. 2014. Effects of Fire and Commercial Thinning on Future Habitat of the Northern Spotted Owl. The Open Ecology Journal, 2014, 7, 37-51 37. http://benthamopen.com/toecolj/articles/V007/37TOECOLJ.pdf.

V. REGENERATION HARVEST REDUCES FIRE RESILIENCY

The DEIS did not adequately disclose the extent to which regeneration logging will convert naturally resistant and resilient mature forests into tree plantations which have a dense homogenous fuel structure close to the ground and represents a significant fire hazard.

Logging in many cases will actually increase fire hazard, but the EIS does not fully account for the impacts on wildlife. DEIS Figure 3-40 and 3-41 clearly show that timber management areas tend to have fuel conditions with greater fire hazard compared to the reserves where forests are better conserved. The DEIS does not carry this analysis forward into the analysis of effects on the northern spotted owl habitat (and numerous other wildlife that prefer to live in dense forests). Based on the fuel conditions created by logging, fires will likely be larger and more severe. There will likely be spill-over effects from the harvest areas to the reserves. The EIS needs to more fully disclose the adverse effects of logging on spotted owls

DEIS at 159 states,

> *In dry forests under all action alternatives, management would emphasize increasing fire resistance and resilience, which would often also increase resistance to drought, insects, and pathogens. The No Action alternative does not explicitly prohibit management to increase fire resistance and resilience, but does not have the same emphasis as in the action alternatives, especially within the Late-Successional Reserve and the Riparian Reserve*."

This is flawed for several reasons.

- First, BLM seems to assume that active management to reduce fire, insects, and drought will provide net benefits. In reality, fire and insects are natural processes that forests evolved with. Logging removes important features of wildlife habitat and is far more likely to cause adverse effects on wildlife compared to natural processes like fire and insects.
- Second, BLM seems to assume that active management (i.e. logging) will provide net ecological benefits. In reality, active management will interfere with these natural processes and cause more harm than good. For instance, beetle mortality is likely to kill the trees most susceptible to beetles, while sparing those trees that are best adapted to defend themselves from beetle attack. Logging removes trees without regard to their adaptive capacity. Logging will be removing adaptive genes from the forest, while natural processes recruit those individuals most likely to offer adaptive traits.
- Third, logging for resistance and resilience to fire and other natural disturbance agents will most often involve dramatic reduction in stand densities. This will imperil many species that prefer to live in dense forests, including spotted owls, and primary prey such as flying squirrels and red tree voles. In short, increasing resilience to fire, reduces resilience for spotted owls.
- Fourth, risk reduction logging is allowed in LSRs under the Northwest Forest Plan (as long as the benefits of action are clear and compelling) so BLM cannot cast aspersions on the no action alternative. In fact, BLM needs to give the action alternatives lower marks because they grant BLM more discretion to conduct active management In reserves that is not properly conditioned on ensuring net ecological benefits.

DEIS at 159 also says, "*Comparing recent satellite imagery of western Oregon with that collected in the mid-1990s, Reserves with minimal or no active management tended to become homogeneous with respect to stand density, age, and condition. Such landscapes appear to be increasingly vulnerable to large, stand-replacing fire*." This is highly speculative, misleading, and not supported by any evidence.

- First, reserves were intended to be spatially distributed and redundant, so that the system of reserves could absorb large disturbance events and still function. See Jerry Franklin's statements following the Biscuit Fire.
- Second, mature forests are less vulnerable to fire, while dense stands of young trees are more vulnerable to fire, so it's really the timber management areas with abundant areas of young reproduction that pose the greatest fire hazard. (See the science excerpts below.)
- Third, the assertion that large reserves are more vulnerable is contradicted in the DEIS. DEIS (p 194) admits that:

> *The High Intensity Timber Area includes management such as thinning and regeneration harvest with no retention and rapid reforestation on a relatively short rotation. This management approach would result in continuous horizontal and vertical fuel profiles and conditions more closely aligned with high severity fire. … [T]here currently exists an overabundance of young and closed conditions and the likelihood of large, high severity fire has increased. Large areas of no retention are not representative of the prevailing vegetative patterns and structure associated with frequent fire, low-severity or mixed-severity fire regimes*.[336]

Moderate Intensity Timber Area includes thinning and regeneration harvest with 5-15 percent basal area retention, and longer rotations and rapid reforestation. This management approach would result in more continuous horizontal and vertical fuel profiles and conditions more closely aligned with high severity fire. Additionally, contiguous fuel profiles have reduced stand-level fire resistance.

Contrary to popular belief, old forests present much less of a fire hazard compared to dense young plantations resulting from regenharvest. Older forests spend most of their lifecycle in a condition of tall trees where most of the fuels are held high above the ground and relatively unavailable for combustion by surface fires. Mature forest canopies also help maintain cool, moist conditions, reduce wind speeds, and suppress the growth of ladder fuels. Regeneration harvest results in young forests of short-stature where the fuels are densely packed and close to the ground where they are available for combustion and present more of a hazard.

> *Large blocks of old-growth forests – rather than large contiguous blocks of young growth or highly simplified forests – are the best scenario for reducing catastrophic wildfire.*[337]

Lindenmayer et al (2009) say –

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[336] Taylor and Skinner 2003, Larson and Churchill 2012.

[337] Jerry Franklin, David Perry, Reed Noss, David Montgomery, Christopher Frissell. Simplified Forest Management To Achieve Watershed And Forest Health: A Critique. National Wildlife Federation. http://www.coastrange.org/documents/forestreport.pdf

> *Contrary to claims by some commentators (e.g., National Association of Forest Industries 2009a,b,c), industrial logging is likely to make some kinds of forests more, not less, prone to an increased probability of ignition (Krawchuk & Cumming 2009) and increased fire severity and/or fire frequency (Uhl & Kauffman 1990; Thompson et al. 2007; Bradshaw et al. 2009; Malhi et al. 2009).*[338]

The 1992 Draft Recovery Plan for the Northern Spotted Owl says, "*High surface fire potential during early succession in Douglas fir was identified by Isaac (1940) as a 'vicious cycle' of positive feedback...*"[339] while "Mature to old-growth forests [in the west Cascades subregion] have a low surface fire behavior potential (Agee and Huff (1992)."[340]

Cochrane et al (2012) recently showed that a patchwork of small clearcuts in areas of the Umpqua National Forest actually increased the size and spread of recent fires. *"[T]he simulated exacerbation of overall fire spread rates is still realistic owing to increased crown fire prevalence caused by the continuous, even-aged fuel complexes of the treated areas.*"[341]

The 2000 National Forest Roadless Area Conservation FEIS (p 3-92 -93) noted the fire hazard associated with regeneration logging:

> *[E]arly successional vegetative growth often forms into dense thickets that create a highly flammable situation. New tree growth, whether from natural regeneration or planted nursery stock, produces needles and twigs that become the fine fuel that contributes to wildland fire spread. ... Post-harvest fuel conditions commonly found in some managed forests prompt many scientists to conclude that harvested forests have a higher propensity for large, severe wildland fires than forests that have not been harvested. A recent report by the National Research Council (2000) speaks to the issue of post-harvest fuel management in Pacific Northwest forests.*
>
> *"Logging has been proposed as a possible surrogate for fire in reducing fuel accumulation with the added benefit of economic return (Agee 1993), but logging and clearcutting do not necessarily reduce flammable fuels…rapid regeneration of early-successional shrubs and trees can create highly flammable fuel conditions within a few years of cutting. Without adequate treatment of small woody residues, logging may exacerbate fire risk rather than lower it (Agee 1993)…"*

Two fires in 2002 on the Umpqua National Forest were evaluated for their effect on the forest. Excerpts from the March 2003 Wildfire Effects Evaluation Project by the Umpqua N.F. make clear the impact of creating more tree plantations:

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[338] David B. Lindenmayer, Malcolm L. Hunter, Philip J. Burton, & Philip Gibbons. 2009. Effects of logging on fire regimes in moist forests. Conservation Letters xx (2009) 1–7. http://soln.org/wp-content/uploads/2010/01/effects-of-logging-on-fire-regimes-in-moist-forests.pdf

[339] 1992 NSO Recovery Plan page 444

[340] 1992 NSO Recovery Plan page 452

[341] M. A. Cochrane, C. J. Moran, M. C. Wimberly, A. D. Baer, M. A. Finney, K. L. Beckendorf, J. Eidenshink, and Z. Zhu. 2012. Estimation of wildfire size and risk changes due to fuels treatments. International Journal of Wildland Fire. http://dx.doi.org/10.1071/WF11079. http://www.publish.csiro.au/?act=view_file&file_id=WF11079.pdf

> *"Plantations had a tendency to increase the rate of fire spread and increased the overall area of stand-replacement fire effects by spreading to neighboring stands." Page 4*
>
> *"Fire burned most plantations with high intensity and spread rapidly through the canopy of these young stands." Page 20.*
>
> *"Plantation mortality is disproportionately high compared to the total area that plantations occupied within the fire perimeter. Page 26-27.*
>
> *"Crown fire spreads readily through these young stands: rates of fire spread can be high, and significant areas or mortality can occur in and adjacent to these stands." Page 32.*

Finally, the report says that the fire behavior in forest that had not been converted to tree farms was normal. "*The pattern of mortality in the unmanaged forest resembles historic stand-replacement patch size and shape*."[342]

The 2013 BAER Report for the Douglas Complex Fires in SW Oregon said "While the severity varied throughout the fire area, young timber plantations carried the fire while older stands tended to be more resistant. This is mostly due young timber plantations having a high density of ground fuels."[343]

VI. FIRE AND FUEL IN THE WILDLAND URBAN INTERFACE

The EIS should provide a map showing the Wildland Developed Areas, including the one-mile buffer. Where BLM intends to protect people and property from fire, we urge BLM to focus fuel treatments on the structure ignition zone, which is generally within 100 feet of structures. Treatment beyond the structure ignition zone should focus on harmonious goals including ecological restoration, carbon storage and clean water.

We urge BLM to focus fuel treatments on dense young plantations that are the most hazardous rather than mature forests that tend to be much more fire resistant and resilient.

The DEIS (p 202) says –

> *The extent of the Harvest Land Base under each alternative and the associated changes in vegetation due to differing management direction would influence the overall patterns in stand-level fire hazard, rather than changes within the reserves. … all alternatives would have similar effects on fire resistance within the Late-Successional Reserve.*

The EIS should do more to highlight the fact that alternatives with greater timber harvest, especially regeneration timber harvest and logging in mature forests, will result in greater fire hazard to homes and communities, while greater forest conservation in reserves would result in greater fire safety for communities.

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[342] Page 64. Umpqua NF. Wildfire Effects Evaluation Project. March 2013. http://web.archive.org/web/20041118062947/http://www.fs.fed.us/r6/umpqua/publications/weep/weep.html.

[343] HSG9 – Douglas Complex Fire Burned Area Emergency Rehabilitation Plan. BLM Douglas Complex BAER Team. Sept 5, 2013. (p 12).

SOIL RESOURCES

I. DETRIMENTAL SOIL DISTURBANCE.

"Detrimental soil disturbance could result in some reduction in future tree growth."[344] Detrimental soil disturbance directly inhibits the "sustained yield of timber" that forms part of the purpose and need for this planning process.

As stated on page 608 of the DEIS:

> *"The alternatives would increase the acreage of detrimental soil disturbance from timber harvest, road construction and fuels treatments by 13 to 30 percent of current amounts during the first decade."*

Further, on page 616 of the DEIS the BLM acknowledges that increased soil compaction and organic matter removal "*have the greatest potential to reduce forest productivity*."

Hence the BLM should have developed a reasonable action alternative that would have reduced, as opposed to increased the amount of detrimental soil disturbance associated with intensive harvest activities and road construction that are emphasized in the action alternatives. Such a reasonable action alternative would best meet the alleged planning purpose of sustained forest production in the long-term while avoiding significant harm to soil resources.

II. MACHINE SLASH PILING

On page 618 of the DEIS the BLM appears to indicate that machine piling may occur within logging units (and not just on log landings). This comes as a surprise to our organizations. The impacts of machine piling on soil resources, and hence on long-term forest productivity, are significant and avoidable.

Please note that the impacts of additional machine piling in logging units located in forest stands currently protected (under the NWFP) as Riparian Reserves or as known Survey and Manage sites is not disclosed or analyzed in the DEIS.

Machine piling increases the disturbance to groundcover and soil. Soil displacement results from the ground-based machine use when the heavy equipment turns and pushes the slash throughout logging units. This displacement has many impacts. First, it removes the organic debris and exposes the soil. This in turn can cause surface sealing and crusting. Erosion and decreased infiltration can also result from this. Second, displacement results in the loss of important soil biota, like mycorrhizal fungi, which assists plant nutrient uptake. It is not an unreasonable request to ask for the BLM to consider the other methods of slash treatment. Most project planners on public lands in the Klamath Siskiyous tend to avoid post-harvest machine piling because of the known impacts and availability of other slash reduction practices.

Please note that recently federal timber planners in the Six Rivers National Forest concluded:

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[344] *DEIS at 615.*

"Machine piling/burn piles would increase ground disturbance and soil displacement when the machine turns."[345]

Please note how the Medford BLM recently responded to requests from the timber industry to authorize machine piling on federal lands:

> *Comment 4: We asked that BLM provide some flexibility in how fuels would be treated by focusing on the desired goals. The BLM has restricted fuels treatments to handpiling and burning. Contractors could use lightweight equipment to treat fuels without detrimentally compacting soils.*
>
> *Response: The commenter has not provided details on methodology or supporting science that would support the claim that machine piling could be done without detrimentally compacting soils in excess of RMP standards for percent area compacted by current activities.*
>
> *Resource management plans call for limiting compaction in harvested areas in order to minimize soil productivity losses. Therefore, no additional use of mechanical equipment for fuels reduction was proposed, as ground-based logging would compact up to 12 percent of the harvest units. This is particularly important in the Cottonwood planning area as the majority of soils contain high rock content. It was identified that ripping the soils in this area would bring rocks and cobbles to the surface. The priority was given to minimizing the soil area compacted instead of trying to mitigate the effects. Additionally, the harvest prescription resulting in relatively few trees per acre being cut minimizes the slash, and consequently, also reduces the need for mechanical fuel treatment.*[346]

Mechanical piling is universally recognized as an outdated practice that has disproportionately harmful significant impacts on watershed and soil resources.

Please see:

> *Evelyn Bull et al. Trees and Logs Important to Wildlife in the Interior Columbia River Basin PNW-GTR-391 (1977).*
>
> *BLM, USGS, Biological Soil Crusts: Ecology and Management (Technical Reference 1730-2 (2001) (Available from BLM Publication Management Distribution Service, Bldg 41, E-16 (BC-650B) Denver, CO 80255*

Please note that machine slash piling will condense soil and decrease its porosity. This leads to a decrease in the productivity of that soil which affects the plant life. This can reduce root growth, timber volume, and tree height.[347] These impacts can come as a result of as little as one pass by

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[345] *Little Doe and Low Gulch Timber Sale DEIS p 110.*

[346] Medford BLM Cottonwood Project EA Appendix A, Response to Comments Page 3-2: http://www.blm.gov/or/districts/medford/plans/files/Revised_EA_Final.pdf

[347] Greacen and Sands 1980; Froehlich and McNabb 1984.

the logging equipment across a site.[348] This loss in productivity can impact individual trees (Froehlich 1979,[349] Helms and Hipkin 1986)[350] or whole sites (West and Thomas 1981)[351]. Even the microbial population in the soil can be adversely impacted (Amaranthus et al. 1996)[352].

BLM should examine the monitoring reports on soil compaction from 1985 through 1997, on the Payette National Forest. The study area in that planning effort contains different soil and ecotypes than those covered by the BLM RMP, but the documented long-lasting effects are still relevant to the DEIS at hand.

We also encourage the agency to review the findings of Geppert, R.R., Lorenz, C.W., and Larson, A.G., 1984. Cumulative Effects of Forest Practices on the Environment: A State of the Knowledge. Wash. For. Practices Board Proj. No. 0130, Dept. of Natural Resources, Olympia, Wash.

Manual piling or underburning is far preferable to tractor piling. Manual piling and underburning have none of the negative impacts to soils associated with tractor piling, and they provide an increased opportunity for local employment while significantly reducing long-term damage to soil health and productivity. Hence manual piling or underburning would better achieve the stated purpose and need for the RMP revisions. Given that these practices can reduce fuels without the negative impacts associated with machine piling, they are reasonable to implement and reasonable to consider and analyze as an action alternative.

MODELING CONCERNS

Several recent scientific publications and government reports refute some of the important but controversial modeling assumptions in the DEIS. The BLM fails to identify existing scientific information that answer the stated questions. The BLM must use the best available science for managing fish and wildlife on public lands.

The BLM examined several existing models for analyzing timber growth and harvest and selected a proven model for use (Woodstock). But for most other ecologically important issues, simplistic and untested models (often lifted from failed 2008 WOPR) when sophisticated and tested peer reviewed models already exist. For example, the BLM identifies a novel and untested model for large wood recruitment to streams when a sophisticated wood recruitment model developed by regional government scientists already exists[353]. Similarly, the untested and simplistic model for analyzing fine sediment delivery to fish streams is not an appropriate

[348] Wronski 1984.
[349] Froehlich, HA. 1979. Soil compaction from logging equipment: effects on growth of young ponderosa pine. *Journal of Soil and Water Conservation* 34:276-278.
[350] Helms, JA, and C Hipkin. 1986. Effects of soil compaction on tree volume in California ponderosa pine plantation. *Western Journal of Applied Forestry.* 1:121-124.
[351] West, S and BR Thomas. 1981. Effects of skid roads on diameter, height, and volume growth in Douglas-fir. *Soil Science Society of America Journal* 45:629-632.
[352] Amaranthus, MP, and DA Perry. 1989. Rapid root tip and mycorrhizal formation and increased survival of Douglas-fir seedlings after soil transfer. *New Forests* 3:77-82.
[353]Spies et al. 2013.

starting point when many more sophisticated and tested models exist for modeling sediment delivery to streams[354].

In the RMP Planning Criteria at 76, the BLM reports that "[Northern spotted owl] Conservation Need 3 includes "a monitoring program to clarify whether these risk reduction methods are effective and to determine how owls use habitat treated to reduce fuels However, *the creation of such a monitoring program is not a BLM responsibility and will not be included in the BLM evaluation."* (emphasis added) It is not appropriate for BLM to ignore FLPMA, NEPA and Congress, which also call for the stated effectiveness monitoring. Why is BLM spending millions on reducing fire risk if it does not work or is harmful to spotted owl recovery? In the absence of monitoring, it would at least seem logical and prudent for BLM to employ modeling to determine the trade-offs between logging impacts to owl habitat, when reducing fuels, and loss of spotted owl habitat to fires. Two independent studies (i.e. new information) have found that the BLM's commonly asserted assumption (that logging to reduce fuels in fire prone spotted owl habitat is beneficial) have found that fuels reduction at a landscape scale is actually harmful to spotted owl habitat[355]. Each of these studies is relevant to dry forests in the Medford and Lakeview Districts. Thus, the science finds that thinning resulted in much larger losses to owl habitat over a 40 and 100 year period than living with more fire killed habitat. Several other studies soon to be published are also finding that the spotted owls are better off with fire and no pre-emptive fuels reduction logging. Add to this the need for large patches of fire killed snag forests for "status review" black-backed woodpeckers in these same districts and logging to reduce fires is not a win-win technique as once thought. Large scale fuels reduction projects have now been shown to be lose-lose for the wildlife on at least the Medford and Lakeview Districts.

SPECIAL DESIGNATIONS

We support the Illinois Valley as a "salmon and botanical area" because this unique area has extraordinary potential for wilderness recreation, Wild and Scenic River recreation, botanical recreation, unmatched steelhead fishing opportunities, and high value conservation of rare and endangered wildlife, rare plants, and native fishes. The free flowing Illinois River basin hosts one of the largest remaining Coho salmon populations of the SONCC. The BLM needs to initiate cooperative and coordinated management of the Eight Dollar Mt. complex with the Forest Service, Oregon parks and recreation and nature conservancy similar to management agreements in place at Table Rock complex.

The Illinois Valley is a large interior valley of the Rogue River basin in the Klamath-Siskiyou ecoregion of southwestern Oregon/northwestern California. The BLM managed lands have exceptional plant and animal diversity because of elevation gradients, a hierarchy of perennial streams, and complex serpentine geology. A large number of the endemic plant species of the Klamath Siskiyou ecoregion are found in the Illinois Valley. Some of these plants are found nowhere else in the world and two are federally listed due to limited range. Plant protection is the focus of three existing ACECs, two Research Natural Areas, and two proposed ACECs. ACEC's and RNA's often abut similar Forest Service botanical area designations and require

[354] See BLM Timber Rock Final EIS.
[355] See Hanson et al. 2009 and Raphael et al. 2013.

close coordination to prevent damage from off road vehicles, mining, and undesirable introductions of alien species such as Alyssum. The Eight Dollar Mountain Area is a complex of BLM ACEC, Forest Service Botanical Areas, Oregon State Parks Lands, and Nature Conservancy lands with numerous Darlingtonia fens, associated rare plants and recreational facilities. The BLM manages a boardwalk that provides handicapped access to a Darlingtonia fen at the base of Eight Dollar Mountain. Coordinated management is needed to protect fragile ecosystems and provide appropriate recreational opportunities for plant areas and the Wild and Scenic Illinois River. Additional recreational areas are identified along the West Fork Illinois and for the 80 acre BLM parcel within Forks State Park.

In addition to the exceptional plant diversity of the Serpentine Siskiyous, large areas of oak woodlands and mixed evergreen forests provide high tree and shrub diversity in the Oak Savanna Foothills and Inland Siskiyous ecoregions of the Illinois Valley. Neotropical and resident bird species diversity is high. The endemic Del Norte salamander occupies talus areas. Rare Pacific fishers and federally listed northern spotted owls inhabit these forested areas. Beaver create ponds for declining western pond turtles (e.g. a beaver dam occupied by pond turtles is at proposed Logan Cut recreation area)

Illinois Valley streams and rivers support robust runs of native winter steelhead, Chinook salmon, coho salmon, cutthroat trout, and Pacific lamprey. Anadromous fishes can access nearly all historical habitat because the mainstem Illinois River and its major tributaries have no high dams. All fish species sustain themselves with natural production and with no hatchery fish supplementation, thus assuring a high degree of genetic integrity. The Illinois Valley is a major stronghold for the federally listed coho salmon because several tributaries have viable populations. High elevation headwater areas have dependable snowpacks that provide cool perennial water through the long hot summers. Winter Steelhead that spawn and rear in BLM streams are caught in a recreational fishery as adults in the mainstem Illinois. Selmac Lake, an artificial impoundment, near Selma provides year round fishing for primarily non-native fishes such as bass and perch.

Timber harvest is primarily directed at upland forests that have been categorized as “dry” forests where thinning young trees is the principal silvicultural technique. High priority for harvest are densely stocked plantations and encroaching Douglas-fir trees that have invaded oak woodlands and are a threat to plant biodiversity because they shade out understory shade intolerant species. Fuels treatments to break up dense shrub patches and remove flammable small trees are augmented with controlled fires.

ACECS

We hereby incorporate by reference KS Wild et al. comments on ACECs submitted on the DEIS.

WILD AND SCENIC RIVERS

The BLM should identify streams being considered by congress for inclusion in the national wild and scenic rivers system and also seek out candidate streams with mixed BLM and Forest Service management.

The BLM cannot pre-empt the will of Congress by failing to protect streams currently being considered in federal legislation. Specifically the streams identified for Wild and Scenic designation in Senator Wyden's O&C Bill must be treated as candidate wild and scenic rivers. The O&C Bill identifies the Nestucca River, Walker Creek, North Fork Silver Creek, Jenny Creek, Spring Creek, Lobster Creek, Wasson Creek and Franklin Creek. These streams and adjacent ¼ mile must be reserved from timber harvest modeling and any management actions that would damage wild and scenic characteristics. These streams and adjacent lands would also need to be identified for mineral withdrawal in the RMP. Additionally the BLM must coordinate with the Forest Service to conduct a geospatially explicit analysis to identify potential BLM wild and scenic streams that are adjacent existing Forest Service candidate wild and scenic streams. Some examples are Rough and Ready Creek, West Fork Illinois River, Sucker Creek, and Althouse Creek in the Medford District.

CARBON AND CLIMATE CHANGE

Global climate change is a new and significant threat to humanity and forests. We have a moral and legal obligation to minimize and mitigate this threat.[356] Climate change is caused by excess CO_2 and other greenhouse gases transferred to the atmosphere from other pools. All temperate and tropical forests, including those in this project area, are an important part of the global carbon cycle. Since all forests are an important part of the global carbon cycle, the agency must do its part by managing forest to maintain and increase carbon storage. Global warming is caused by the *cumulative* build-up of greenhouse gases, especially carbon, in the atmosphere. Logging will add to the cumulative total carbon emissions so it is clearly part of the problem and must be minimized and mitigated. Logging will not only transfer carbon from storage to the atmosphere but future regrowth is unlikely to ever make up for the effects of logging, because carbon storage in logged forests will lag carbon storage unlogged forests for decades or centuries. Since the time the resource management plan was written, there is significant new information reinforcing the need to conserve all existing large stores of carbon in mature & old-growth forests in order to keep carbon in forests and out of the atmosphere in order to mitigate climate change. Please review the report on "Forests, Carbon & Global Warming" prepared by Oregon Wild. The report explains how climate change is likely to affect Pacific Northwest forests as well as how forest conservation and restoration (including sensible changes to this project) may help mitigate climate change.[357] And see this related slideshow that helps debunk some of the flawed arguments used by logging advocates: http://www.slideshare.net/dougoh/forest-carbon-climate-myths-presentation/.

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[356] See 2015 Oslo Principles on Global Climate Change Obligations. http://www.osloprinciples.org/.

[357] https://dl.dropboxusercontent.com/u/47741/Oregon%20Wild%20Report%20on%20forests%2C%20carbon%2C%20and%20global%20warming%2C%20ver.%201.4.pdf.

On June 25, 2013, President Obama released his Climate Action Plan which includes forest conservation among the "first pillar"[358] of efforts to reduce emissions, saying: "**Preserving the Role of Forests in Mitigating Climate Change:** *America's forests play a critical role in addressing carbon pollution, removing nearly 12 percent of total U.S. greenhouse gas emissions each year. … Conservation and sustainable management can help to ensure our forests continue to remove carbon from the atmosphere …* " [359] "[A]dvancing efforts to protect our forests" is also mentioned in the 6th U.S. Climate Action Report under the United Nations Framework Convention on Climate Change (UNFCCC). The agency should advance this national climate goal by conserving public forests. Carbon emissions from logging public lands directly conflict with this important national goal and indicate potential significant impacts requiring an EIS.

The Copenhagen Accord recognizes the need to avoid dangerous climate change and the role of forests in climate mitigation. *"…To achieve the ultimate objective of the Convention to stabilize greenhouse gas concentration in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system, we shall, recognizing the scientific view that the increase in global temperature should be below 2 degrees Celsius… We recognize the crucial role of reducing emission from deforestation and forest degradation and the need to enhance removals of greenhouse gas emission by forests and agree on the need to provide positive incentives to such actions*"[360] This likely requires reducing atmospheric CO_2 concentrations below 350 ppm[361] and avoiding logging that would increase atmospheric carbon emissions.

In the DEIS, "key points" described under "climate change" include: "*Carbon storage would increase under all alternatives. … Greenhouse gas emissions associated with BLM-administered lands would increase under all Alternatives…*" This is misleading. It is more useful to provide the public and the decision-maker with information on what distinguishes the alternatives. Which alternative would store the most carbon in the forest? Which alternatives would cause the most GHG emissions? How does carbon storage compare to the baseline of natural forests growing without being logged? These are the key points that need to be disclosed. We applaud BLM for preparing a "No Timber Harvest Reference Analysis" and this should have been reflected in the "key points" to highlight the fact that logging sacrifices carbon storage.

The DEIS (p 136) says "*harvesting removes carbon and shifts stand characteristics, such as mean diameters and heights, in more of the landscape to smaller trees and younger age classes that store less carbon*." This is good, but the EIS analysis needs to clearly disclose the carbon consequences of the various discrete policy choices that the decision-maker is facing. For instance, the EIS needs to disclose that:

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[358] U.S. Dept of State 2013. draft 6th Climate Action Report http://www.state.gov/e/oes/climate/ccreport2014/index.htm (page 12).
[359] http://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf
[360] http://www.climatesciencewatch.org/file-uploads/Copenhagen_Accord.pdf.
[361] Rockström, J., W. Steffen, K. Noone, Å. Persson, F. S. Chapin, III, E. Lambin, T. M. Lenton, M. Scheffer, C. Folke, H. Schellnhuber, B. Nykvist, C. A. De Wit, T. Hughes, S. van der Leeuw, H. Rodhe, S. Sörlin, P. K. Snyder, R. Costanza, U. Svedin, M. Falkenmark, L. Karlberg, R. W. Corell, V. J. Fabry, J. Hansen, B. Walker, D. Liverman, K. Richardson, P. Crutzen, and J. Foley. 2009. Planetary boundaries:exploring the safe operating space for humanity. *Ecology and Society* **14**(2): 32. [online] URL: http://www.ecologyandsociety.org/vol14/iss2/art32/. http://www.stockholmresilience.org/download/18.1fe8f33123572b59ab800012568/pb_longversion_170909.pdf. http://www.ecologyandsociety.org/vol14/iss2/art32/figure6.html.

- Wider stream buffers store more carbon than narrow stream buffers;
- Forest reserves store more carbon that timber management areas;
- Large reserves store more carbon than smaller reserves;
- Reserves with strict limits on logging store more carbon than reserves that allow logging;
- Thinning stores more carbon that regeneration harvest;
- Regeneration harvest with ≥30% retention stores more carbon than regeneration with little of no retention;
- Logging to try to limit carbon emissions from fire will likely emit more carbon from logging than will be prevented via fire control. Law, B. & M.E. Harmon 2011. Forest sector carbon management, measurement and verification, and discussion of policy related to mitigation and adaptation of forests to climate change. Carbon Management 2011 2(1). [362]
- Meeting RA 32 by protecting all forests over 80 years old will store more carbon than meeting RA 32 by conserving forests 150 years and older.

Similarly, wider stream buffers and large, well-protected reserves, will better prepare forests for the extremes of climate change. In most cases, logging will reduce forest resilience, not increase it. The DEIS (p 132) says "*Active management would provide opportunities to implement climate change adaptive strategies*." However, there is strong evidence that unmanaged forests have great capacity for self-correction and self-organization. BLM should look carefully at all the evidence, including competing experts viewpoints before concluding that logging is beneficial. Complex native forests are more resilient to climate change than logged forests and simplified plantations. The IPCC recognizes that –

> *... [R]educing emissions from deforestation and degradation may also yield co-benefits for adaptation by maintaining biodiversity and other ecosystem goods and services, while plantations, if they reduce biological diversity may diminish adaptive capacity to climate change (e.g., (Chum et al., 2011). Primary forests tend to be more resilient to climate change and other human-induced environmental changes than secondary forests and plantations (Thompson et al., 2009).*[363]

BLM should maintain the existing Aquatic Conservation Strategy and its wider riparian buffers because it will help make hydrologic systems and aquatic ecosystems more resilient to climate change by moderating cumulative watershed effects, reducing the extent of the road system, emphasizing maintenance of riparian areas, shade, floodplain processes, recruitment of large wood from both near stream areas and unstable slopes, and connectivity and fish passage.

DEIS (p 133) says "*the potential error in the estimate for any one alternative likely exceeds the amount of variance between the alternatives*." This should be clarified to say that in spite of these uncertainties, confidence the relative effects of alternatives remains strong, i.e., alternatives

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[362] http://terraweb.forestry.oregonstate.edu/pubs/lawharmon2011.pdf;

[363] IPCC AR5, Working Group III, Mitigation of Climate Change, Chapter 11 Agriculture, Forestry and Other Land Use (AFOLU) (Final Draft 2014) pp 46-47.http://report.mitigation2014.org/drafts/final-draft-postplenary/ipcc_wg3_ar5_final-draft_postplenary_chapter11.pdf

with less logging and larger reserves will result in relatively greater carbon store, while alternatives with more logging and small reserves will result in greater GHG emissions.

The DEIS does not explain how BLM arrived at the conclusions presented in Figure 3-24, the pie chart showing that fire emits more carbon than "harvest operations." The DIES does not say what kinds of emissions are include in harvest operations. Is it just the fuel used for machinery and transport? Does it include carbon removed from the forest via logging and slash fires? Does it account of the decay of wood products removed from the forest in current and prior years? Etc.

The "affected environment section" of the climate change section of the DEIS needs to describe the forest carbon cycle (pools and flows), how carbon flows into and out of the forest, the fate of carbon removed via logging, processes that control the net gain/loss of carbon,

The effects analysis needs to disclose the different consequences of carbon emissions in different time periods (e.g., near-term emissions are not compensated by delayed carbon uptake because global climate change and ocean acidification were made worse during the timber that extra carbon was in the atmosphere and future uptake cannot effectively mitigate for that). BLM should incorporate the concept of "carbon debt" and lag time associated with logging related carbon emissions in the near terms, and carbon recapture via forest regrowth over the long-term.

DEIS Figure 3-26 shows that all alternatives will increase carbon emissions but Alt. D will emit much less than the other alternatives. This makes sense based on the fact that Alt D allows more forests to continue growing and storing carbon, but this result requires further explanation in light of the DEIS assertion that carbon emissions are dominated by by wildfire, rather than logging. Does this result imply that forest growth dominates the net carbon balance of BLM forests regardless of wildfire effects, or that Alt D is expected to maintain more forests that are resistant to wildfire and therefore cause less carbon emissions from both logging and fire? If so, this should be made more explicit.

DEIS (p 145) describes a pattern of increased tree mortality related to climate change. The EIS should explain that this is a beneficial system-level adaptation to increasing climate stress. Trees that die free up resources so that surviving trees have a better chance of survival. This is an example of forests' self-correcting, self-organizing behavior common to many complex systems that are far from equilibrium.

DEIS (p 149) says "*analysis of Oregon large fires using data from the Monitoring Trends in Burn Severity site (http://mtbs.gov/index.html) indicates that the proportion of high-severity fire in forests generally has increased by 11 percent since 1984, with much of the increase since 2000.*" This appears to be contradicted in DEIS Appendix D which

> *… examined the MTBS data for any obvious temporal trends in wildfire severity, but did not detect a strong signal (Figure D-6). Over the course of 25 years, there appears to be a slight increase in the percentage of area burned by low and moderate severity wildfire, and a slight decrease in the percent of area burned in high severity wildfire, although these trends are not statistically significant. … While several studies have indicated that high severity fires are increasing across the western United States (Westerling et al.*

2006, Dillon et al. 2011a, Miller et al. 2012), no such trends were apparent in the observed record within the range of the northern spotted owl (Figure D-6).[364]

DEIS (pp 149-150) describes increasing stream temperatures as a result of climate change. The DEIS does not fully disclose the likely consequences on cold-water fish and other temperature-sensitive aquatic organism. For instance, stream temperatures are increasing most during summer when fish are most vulnerable. BLM should attempt to mitigate this by avoiding any shade loss caused by logging, and by reducing other anthropogenic stresses such as sediment from logging and roads and grazing.

DEIS Figure 3-28 shows that climate change seems to be causing an increase precipitation during spring. This is a significant concern for spotted owl nest success, which is inversely related to spring precipitation. DEIS (p 150) has a brief discussion of climate change and spotted owl declines, but the DEIS effects analysis (p 157) needs to consider alternative ways of mitigating the likely effects of climate change, such as by maintaining more suitable habitat which will support a larger owl population that is less vulnerable to stochastic variation and uncertainty caused by climate change and other factors.

DEIS (p 156) says "in the Northwest, warming air temperatures and declining summer base flows are strongly associated with warming stream temperatures" BLM needs to disclose how this trend intersects with the proposed reduction in stream protection and increases sin logging near streams. BLM should maintain wide stream buffers to maintain maximum shade and mitigate for global warming.

DEIS (p 157) says climate change will result in "*changes in disturbance regimes [that] could disfavor species associated with old-growth forests, by shifting more of the landscape into earlier seral stages, altering species compositions to ones less preferred, reducing the extent of large trees and structurally-complex forest, and decreasing patch sizes preferred for different life stages, such as nesting…*" The NWFP assumed that eventually 80% of the reserves would grow old and provide late successional habitat, while at any given time approximately 20% of the reserves might be affected by disturbance. As a result of climate change these proportions are likely to shift toward greater disturbance and more younger forests. BLM should mitigate for this by adopting a final alternative that protects all suitable owl habitat, not just a subset of high quality habitat, and by protecting larger LSRs and riparian reserves so that there is a larger part of the landscape given a chance to grow old and provide complex habitat.

To meet legal requirements including those under the O&C Act related to watersheds and community stability, BLM should adjust the purpose and need for this plan revision to include carbon storage and climate change adaptation. BLM should therefore strive to maintain and increase carbon storage and maintain biodiversity, not just focus on recovery of ESA-listed species. Maintaining biodiversity is an important way to prepare for global climate change, because the diversity of organisms and genes represent the complete range of evolutionary adaptations to past (and near future) climate change.

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[364] Ray Davis et al 2015. RMP Revisions for Western Oregon BLM DEIS. Appendix D – Modeling Wildfires and Fire Severity. http://www.blm.gov/or/plans/rmpswesternoregon/files/draft/RMP_EIS_Volume3_appd.pdf

I. THE FEDERAL LAND POLICY & MANAGEMENT ACT REQUIRES BLM TO TAKE ACTION ON CLIMATE CHANGE

BLM has a duty to prepare a current and up-to-date inventory of public lands and their new and emerging resource values.[365] This requires BLM to carefully inventory all the carbon stored in forests and soils on western Oregon BLM lands and the value of BLM lands to store more carbon if managed appropriately to grow more mature & old-growth forest forests.

BLM must give priority to identifying ACECs where special management is needed to prevent irreparable damage and protect life and safety from safety from natural hazards. This requires BLM to identify all mature & old-growth forest forests as ACECs because they must be conserved in order to avoid and mitigate climate change which is a natural hazard predicted to cause irreparable harm to important natural systems that need protection.

BLM must consider "potential uses of public lands." [366] This requires BLM to consider an alternative that uses BLM lands for carbon storage and climate mitigation, arguably the highest and best use of the highly productive forest lands in western Oregon. The analysis will reveal significant complementary benefits for water quality, quality of life, fish & wildlife habitat, community stability, etc.

FLMPA requires BLM to consider scarcity of values and available alternatives.[367] This requires BLM to recognize that western Oregon BLM lands are capable of growing very high levels of biomass per acre and such places are relatively rare. This also requires BLM to consider and compare the carbon consequences of various alternative management schemes.

Some forests are far better at sequestering carbon than others. And BLM has some great ones — low elevation forests with long growing seasons and mild winters and disturbance regimes that allow longer periods of growth and carbon accumulation. Forests on the westside of the PNW (where BLM's western Oregon holding are located) are twice as productive as forests in other parts of the country. Western Oregon forests can grow 100 cubic feet of wood per acre per year, while forests of the NE, SE, and mid-west generally produce half or less than that.[368] In addition to prodigious growth, westside forests are able to store that carbon for long periods. The "carbon density" of Westside forests exceed that of any forests in North American[369], possibly the world. This means that BLM lands are uniquely suited for sequestering carbon.[370] These highly

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[365] 43 USC § 1711.
[366] 43 USC § 1712.
[367] Id.
[368] Powell, Douglas S.; Faulkner, Joanne L.; Darr, David R.; Zhu, Zhiliang; MacCleery,l Douglas W. 1993. Forest resources of the United States, 1992 Gen. Tech. Rep. RM-234. Fort Collins, CO: U.S. Department of Agriculture, Rocky Mountain Forest and Range Experiment Station. 132 p. + map. [Revised, June 1994]. http://www.fs.fed.us/rm/pubs_rm/rm_gtr234.html
[369] Carbon density is a measure of the carbon in live and dead vegetation plus soil carbon measured on a per-acre basis. The westside of the Pacific Northwest is uniquely suited to growing and storing carbon in forests. See Figure 6 in Ingerson, Ann L. 2007. U.S. Forest Carbon and Climate Change. Washington, D.C.:The Wilderness Society. http://www.wilderness.org/Library/Documents/upload/ForestCarbon-ClimateChange.pdf

[370] See Christine L. Goodale, Michael J. Apps, Richard A. Birdsey, Christopher B. Field, Linda S. Heath, Richard A. Houghton, Jennifer C. Jenkins, Gundolf H. Kohlmaier,

productive forests of the northwest are losing carbon due to short-rotation forestry. From 1990 to 2010 western Oregon and western Washington are expected to lose 97.4 million tons of carbon under business-as-usual forest management.[371] There is a great potential to adopt new forest practices to reverse this trend. In fact, the Northwest Forest Plan reserves are already recognized as a step toward wise management of forest carbon. "Federal forest management policies are already contributing significantly to this goal with the extensive series of forest reserves established in the Northwest Forest Plan. Tens of thousands of acres of cutover federal forest land are being managed for restoration of late-successional forest conditions and, coincidentally, much higher levels of carbon stocks." [372] If BLM reduces the extent of the reserves and reduces protection of the carbon in large trees, and reduces the goals for restoration of previously logged sites, then these recognized carbon storage values will be lost. The EIS must address the impacts of this on climate, ecology, and social systems.

Recent studies show that northern forests are experiencing "A trend toward hotter and drier conditions is likely to exacerbate the effects of fire by increasing the frequency, intensity, and size of burns."[373] Some northern forests are also facing unprecedented mortality from insects, which could cause large-scale changes in boreal forest systems. These changes point to the very real possibility that boreal forests may be entering a positive feedback that shifts the northern forests from net carbon sinks to net carbon sources. This highlights the "scarcity" of forest sites with high potential to store carbon and the dwindling alternatives to storing carbon on BLM lands.

Scientists and policy-makers recognize that forests can play a significant role in mitigating climate change by storing more carbon. The UN says that 35% of the global opportunity to store carbon in forests is outside the tropics. Scientists have estimated that compared to other forest types, temperate conifer forests are likely to be one of the most persistent forest types in the face of climate change.[374] This makes old-growth on BLM land a potentially very rare and valuable reserve in terms of carbon storage.

Compared to other sectors, the forestry sector has a high benefit/cost ratio for carbon mitigation actions. That means that carbon storage in forests is a relatively efficient way to mitigate climate change. BLM must consider this in the EIS.

Werner Kurz, Shirong Liu, Gert-Jan Nabuurs, Sten Nilsson, And Anatoly Z. Shvidenko. 2002. Forest Carbon Sinks In The Northern Hemisphere. Ecological Applications, 12(3), 2002, pp. 891–899q 2002. http://www.whrc.org/resources/published_literature/pdf/GoodaleEcolAppl.02.pdf
("Over 80% of the estimated sink occurred in one-third of the forest area …")

[371] Haynes, Richard W.; Adams, Darius M.; Mills, John R. 1995. The 1993 RPA timber assessment update General Technical Report RM-259. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 66 pp. http://www.treesearch.fs.fed.us/pubs/20058

[372] LAURIE A. WAYBURN, JERRY F. FRANKLIN, JOHN C. GORDON, CLARK S. BINKLEY, DAVID J. MLADENOFF, NORMAN L. CHRISTENSEN, JR. 2007. Forest Carbon in the United States: Opportunities & Options for Private Lands. Pacific Forest Trust. http://www.pacificforest.org/publications/pubpdfs/ForestCarbonReport-07Update.pdf

[373] Jill Sakai. 2007. Wildfire drives carbon levels in northern forests. University of Wisconsin News. Oct. 31, 2007. http://www.news.wisc.edu/14399 *citing* work by Dr. Tom Gower and others.

[374] Staley, TNC Climate Conference 2007.

BLM must consider long-term vs short-term benefits.[375] This requires BLM to recognize that the benefits of logging are very short-term, while the benefits of climate mitigation through conserving and restoring mature & old-growth forests are both short-and long-term.

II. BLM MUST MANAGE FOR COMPLEMENTARY MULTIPLE USES

The O&C Act's mandate to correct market failures and sell timber only at "reasonable prices on a normal market" is an implicit acknowledgement of the multiple use concepts in the Federal Land Policy and Management Act. The O&C Act does not conflict with multiple use or FLPMA because Congress sought to further the public interest by normalizing markets. FLPMA requires that BLM produce appropriate amounts of public goods like watersheds, fish & wildlife, scenery, and scientific values. FLPMA's multiple use mandates require consideration of future generations and harmonious management of the multiple values, without any one use impairing the others.[376] This is accomplished in part by correcting market failures so that appropriate amounts of public goods are produced and prices reflect the full costs of production (including the cost of mitigating climate change and impaired water quality, and the cost of replacing old growth habitat where it has been lost).

III. O&C ACT REQUIRES BLM TO TAKE ACTION ON CLIMATE CHANGE

BLM views the forest as just trees and they view the O&C Act as a simple mandate to cut them down as fast as they grow. This grossly over-simplified view of the forest is inconsistent with the current understanding of forests and inconsistent with the O&C Act itself.

The O&C Act of 1937 provides: *"[T]imberlands … shall be managed … for permanent forest production, and the timber thereon shall be sold, cut, and removed in conformity with the principal of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities … [T]imber from said lands … shall be sold annually, or so much thereof as can be sold at reasonable prices on a normal market."* [377]

> *Forests are not just trees, but part of ecosystems that underpin life, economies and societies. …[A]ll forests provide a wide range of ecosystem services. These services include prevention of soil erosion, maintenance of soil fertility, and fixing carbon from the atmosphere as biomass and soil organic carbon. Forests host a large proportion of terrestrial biodiversity, protect water catchments and moderate climate change. Forests also support local livelihoods, provide fuel, traditional medicines and foods to local communities, and underpin many cultures. The harvesting of forest products is putting severe stress on the world's forests. … {Ecosystem] services have been reduced by the decline in total forest area and by continued forest degradation, especially in production and multipurpose forests … Greater emphasis on conservation of biodiversity may lead*

[375] 43 USC § 1712.
[376] 43 USC § 1702(c).
[377] http://www.blm.gov/or/plans/wopr/files/OCAct.pdf

to increased benefits in terms of resilience, social relations, health, and freedom of choice and action.[378]

The best way to safely store carbon and mitigate climate change to achieve permanent forest production, sustained yield, regular water flow, protect watersheds, and community economic stability is to protect all mature & old-growth forest forests and allow young forests to grow while increasing their diversity through variable density thinning, while maintaining forests that are prone to drought stress below their water-limited carrying capacity through thinning small trees and prescribed fire. This should have been considered as an alternative.

IV. BLM MUST HELP MITIGATE CLIMATE CHANGE TO REGULATE WATER FLOW AND TO PROTECT WATERSHEDS

"*Forest ecosystem services are threatened by increasing human demands. Exploitation of forests has been at the expense of biodiversity and natural regulation of water and climate…* "[379]

Logging mature & old-growth forests will exacerbate climate change and cause altered precipitation patterns, reduced snow pack, and increased evaporative demand which will violate the O&C Act's mandate to regulate water flow and protect watersheds. Logging mature and old-growth forest will tend to make water flow less regular and watersheds less protected from hydrologic extreme hydrologic events. If BLM protects mature & old-growth forest forests and grows more, water flow will be more regular and watersheds will be more protected.

Climate change is expected to increase winter precipitation and more of that precipitation will fall as rain instead of snow. This will increase peak flows in the winter and spring. Peak flows that exceed the natural pattern are harmful to watershed values. Peak flows cause erosion of stream banks and bottoms and cause landslides by undercutting slopes.

The forests and watersheds have had 2 million years to adapt to the climatic swings between glacial and interglacial periods, but now climate change threatens to push the pendulum beyond the normal interglacial into new territory that is warmer than the earth has experienced for millions of years. Both the rate and magnitude of climate change are unprecedented.

Warming will increase evaporative water demand and soil water deficit ,which will decrease late summer stream flow. Low stream flow harms not only fish but also agriculture, communities, and industries that rely on summer water supply.

There has been progressively more information highlighting the hydrologic consequences of climate change:

- The IPCC Second Assessment Report in 1995 predicted that "Warmer temperatures will lead to a more vigorous hydrological cycle; this translates into prospects for more severe

[378] Dent, David. Chapter 3 – Land *in* Global Environment Outlook (GEO4). http://www.unep.org/geo/geo4/report/03_Land.pdf
[379] Dent, David. Chapter 3 – Land *in* Global Environment Outlook (GEO4). http://www.unep.org/geo/geo4/report/03_Land.pdf

droughts and/or floods in some places and less severe droughts and/or floods in other places. … Potential North American climate change impacts include increased winter/spring runoff and decreased summer soil moisture and runoff."[380]

- IPCC's 2001 Third Assessment Report found "It is likely that summer continental drying and associated risk of drought will increase over most mid-latitude continental interiors [leading to] decreased crop yields, increase forest fire risk, decreased water quality/quantity."[381]
- An analysis of water run-off using the climate models in the IPCC Fourth Assessment Report projected a 10-30% decreases in runoff in western North America by the year 2050 "Such changes in sustainable water availability would have considerable regional-scale consequences for economies as well as ecosystems" C. Milly et al. 2005 Global pattern of trends in streamflow and water availability in a changing climate. Nature.
- In summary, "Air temperatures are virtually certain to warm further [and] Warmer air temperatures would probably severely reduce the quantity of water resources." Martin Hoerling and Jon Eischeid. Emerging Issues for Water in the West: 21st Century Drought. Climate Action Panel. 20 Nov 2006. [382]

"*[M]odel results indicate that severe droughts (5% frequency today) will occur about 50% of the time by the 2050…..due primarily to temperature increase".* [383]

Small changes in stream flow can have large impacts on water storage and power generation. *"A 20% reduction in natural runoff would cause mean annual reductions in storage of 60 to 70% reductions in power generation of 60%…"* [384]

V. BLM MUST HELP MITIGATE CLIMATE CHANGE TO STABILIZE COMMUNITIES AND INDUSTRIES

The economic and social impacts of climate change are widely recognized. "Global warming could have impacts right here in the Rogue Valley, boosting the number and size of wildfires, harming salmon and reducing the snowpack people rely on for drinking water and irrigation." [385]

The Oregon Legislature passed a bill in 2007 with the following findings[386]:

> *(3) Global warming poses a serious threat to the economic well-being, public health, natural resources and environment of Oregon.*
> *(4) Oregon relies on snowpack for summer stream flows to provide energy, municipal*

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[380] IPCC. 1995. The Regional Impacts of Climate Change: An Assessment of Vulnerability.
[381] IPCC Third Assessment Report, Climate Change 2001
[382] http://www.resourcesaver.com/ewebeditpro/items/O14F10014.pdf
[383] David Rind, Jim Hansen et al. 1990. Potential Evapotranspiration and the Likelihood of Future Drought. Journal of Geophysical Research.
[384] L. Nash and P. Gleick. The Colorado River Basin and Climate Change: The sensitivity of streamflow & water supply to variations in temperature & precipitation. EPA Report, Policy, Planning and Evaluation 1993.

[385] Vickie Aldous. 2007. Global warming could alter Valley life. Ashland Daily Tidings. October 29, 2007. http://www.dailytidings.com/2007/1029/stories/1029_climate1.php.
[386] Oregon Legislature - House Bill 3543 http://www.leg.state.or.us/07reg/measpdf/hb3500.dir/hb3543.en.pdf

water, watershed health and irrigation. Also, a potential rise in sea levels threatens Oregon's coastal communities. Reduced snowpack, changes in the timing of stream flows, extreme or unusual weather events, rising sea levels, increased occurrences of vector-borne diseases and impacts on forest health could significantly impact the economy, environment and quality of life in Oregon.
(5) Oregon forests play a significant role in sequestering atmospheric carbon, and losing this potential to sequester carbon will have a significant negative effect on the reduction of carbon levels in the atmosphere.
(6) Global warming will have detrimental effects on many of Oregon's largest industries, including agriculture, wine making, tourism, skiing, recreational and commercial fishing, forestry and hydropower generation, and will therefore negatively impact the state's workers, consumers and residents.
(7) There is a need to ... take necessary action to begin reducing greenhouse gas emissions in order to prevent disruption of Oregon's economy and quality of life and to meet Oregon's responsibility to reduce the impacts and the pace of global warming.

Governor Kulongoski's Advisory Group On Global Warming says:

Absent decisive actions across the globe of the sort proposed in this report, the warming already underway is expected to lead to changes in the earth's physical and biological systems that would be extremely adverse to human beings, their communities, economies and cultures. ... The impacts of such changes on Oregon citizens, businesses and environmental values are likely to be extensive and destructive." The Governor of Oregon is being urged by a broad cross-section of advisors to think of the economic costs of addressing climate change as "investments" that result in net gains relative to the economic costs of failing to make those investments, or the costs of addressing climate change can be thought of as buying an insurance policy that reduces future expenses related to coping with climate change. Forest conservation is among the committee's recommendations for addressing the climate problem: "The Advisory Group recommends actions to increase the amount of carbon that can be captured and fixed in new or restored forest and field growth and in the soil beneath. ... While we will continue to work the lands that must feed, clothe and shelter us, there are still land management choices that will restore much of this natural sequestration capability.[387]

The West Coast Governors' Global Warming Initiative Report says:

The world's scientists are clear: Global warming is happening, and the world must act now to reduce greenhouse gas emissions. Global warming will have serious adverse consequences on the economy, health and environment of the West Coast states. While these consequences are not entirely predictable, the effects of global warming are already evident in the form of higher temperatures, reduced snow pack, insect infestation and increased fire danger in our forests, and rising sea levels on our ocean shores. These

[387] Oregon Strategy for Greenhouse Gas Reductions - Governor's Advisory Group On Global Warming. State of Oregon, December 2004. http://www.oregon.gov/ENERGY/GBLWRM/docs/GWReport-Final.pdf

impacts will grow significantly in coming years if we do nothing to reduce greenhouse gas emissions.

VI. THE COSTS AND IMPACTS OF INACTION

In addition to the direct economic benefits of investing in low-carbon energy sources, acting against global warming hedges against the risks posed by global warming itself. The economic costs of unchecked global warming are projected to be immense.

Sea level rise, coupled with more frequent and severe storm events, would threaten beaches, ports, low-lying towns and cities, and other coastal resources, causing severe disruption for people and ecosystems. The increased frequency and severity of storm surges may be more significant for low-lying areas than sea level rise alone. Increased storms and wave height could lead to saturated ground, increased erosion, and more slope failure in the coastal bluffs and hills.

A reduction in the mountain snowpack will exacerbate already tight water supplies, restrict agricultural production, and alter the pattern of power generation. For example, in California, the $30 billion agriculture industry is one of the sectors most vulnerable to changes in climate and water supply.

With an increased proportion of winter precipitation falling as rain, winter flooding is more likely. Ski areas at lower elevations will likely disappear. Scenarios of future climate change in the Northwest from the University of Washington Climate Impacts Group show a snow pack decline by 2090 that could reach 72 percent below the base period of 1960 to 1990.4

Energy generation, salmon recovery, and infrastructure operations, including roads, bridges, and dams, are likely to be directly affected by climate change impacts, according to the Climate Impacts Group. Many of these changes may be felt within 20 years. (See Appendix D.)

Forest fires, smog, and extreme weather events, along with the attendant costs of fighting fires and protecting public health, will worsen. There have been high fluctuations in wet-dry climate cycles for the last 30 years in the Northwest. Climate change may increase the annual and decadal variability of precipitation. Climate variability, far more than fire suppression, has led to the sudden rise and severity of wildfires in recent years. In fact, climate variability is the primary determinant of fire occurrence, location, and timing.[388]

Logging that exacerbates climate change will violate the O&C Act's mandate to foster stability of industries and communities in other ways.

- Climate change will likely lead to social unrest and economic upheaval at a global scale that will reverberate at a local level in western Oregon. Extreme weather events and rising sea levels will displace millions of people who will seek refuge in new lands. Our borders are only marginally effective in controlling economic refugees from the south today. This could become must worse in the future. "Climate change is the largest environmental change expected this century. It is likely to intensify droughts, storms and floods, which will undoubtedly lead to environmental migrations and potential conflicts in the areas migrated to. … People facing environmental disasters have no choice but to leave the affected area.

[388] West Coast Governors' Global Warming Initiative; Staff Recommendations to the Governors; November, 2004. http://www.oregon.gov/ENERGY/GBLWRM/docs/WCGGWINov04Report.pdf

The larger the migration and the shorter the period over which it occurs, the harder it is to absorb the migrants, raising the likelihood of conflict. For instance, migrants clash over jobs, resources and way of life, and violent interactions such as theft, beating, armed scuffles, seizure of resources and property, murders and insurgencies are likely." Springer (2007, November 28)[389]

- Climate change will alter growing conditions and displace agricultural and forest industries. Climate change will increase forest disturbance and impair seedling establishment and harm the timber industry.
- Warming is expected to lead to denser vegetation, higher fuel loads, as well as more frequent and intense droughts which is a recipe for more wildfire.[390] Increasing wildland fires will threaten the stability homes and communities located within or adjacent to fuel-rich wildlands. Climate change is expected to increase the length of fire seasons. Communities will have to spend more money preparing for and fighting fires. Wildfire in the urban interface is disruptive to communities and climate change will increase fire hazard in the community zone. U.S. Forest Service Chief Gail Kimbell said that warming globe and urban sprawl are making fires increasingly dangerous. "Fires are burning hotter and bigger, becoming more damaging and dangerous to people and to property," she said. "Each year the fire season comes earlier and lasts longer." Nation's Forest Chief warns of 'hotter and bigger' fires[391], BLM must store more carbon in mature & old-growth forest forests in order to reduce this hazard to communities and industries.
- Climate change will increase competition for limited water resources, which will adversely impact community and economic stability in western Oregon. Increasing frequency and duration of droughts caused by climate change will limit water supply for electricity generation, as well as municipal, industrial, and agricultural uses causing a destabilizing influence on communities and industries that rely on snow, water, energy, and a stable climate. Reduced snow pack will destabilize the agricultural industry, the winter recreation industry, the reservoir recreation industry, and municipal and industrial water supply. "Human well-being and ecosystem health in many places are being seriously affected by changes in the global water cycle, caused largely by human pressures. … The warming of the ocean, in particular its surface waters, and the feedback of heat to the atmosphere are changing rainfall patterns, affecting the availability of freshwater and food security, and health. Due to the ocean's great heat storage capacity and slow circulation, the consequences of its warming for human well-being will be widespread." [392] "The 2000 report by the Global Water Partnership calls upon the international community to work towards 'Water Security'

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[389] Climate Change Likely To Result In Eco-migration: What Can Be Done?. ScienceDaily. Retrieved November 29, 2007, from http://www.sciencedaily.com- /releases/2007/11/071126134703.htm *citing* Reuveny R (2007). Ecomigration and violent conflict: case studies and public policy implications. Human Ecology (DOI 10.1007/s10745-007-9142-5)

[390] Joint Fire Science Program. The Fire-Climate Connection. Fire Science Digest Issue 1, October 2007. http://www.firescience.gov/Digest/Fire_Science_Digest_1.pdf

[391] Thursday, October 25, 2007. By Erik Robinson, Columbian staff writer. http://www.columbian.com/news/localNews/2007/10/10252007_Nations-forest-chief-warns-of-hotter-and-bigger-fires.cfm

[392] Russell Arthurton, Sabrina Barker, Walter Rast, and Michael Huber. Chapter 4 – Water *in* Global Environment Outlook (GEO4). http://www.unep.org/geo/geo4/report/04_Water.pdf

as an overarching goal at all levels from local through to global."[393] This will require urgent action to avoid and mitigate climate change.

- The agricultural sector is particularly vulnerable to water supply constraints caused by climate change. For instance, "In most areas of the Willamette Basin, surface water supplies have been fully allocated — no further water is available for new surface water rights and in dry years more junior water rights are not satisfied."[394] Climate change will only make this situation worse. Warming is expected to raise temperatures, increase evaporative demand, reduce water stored as snowpack, and reduce water availability during summer periods when water supplies are already in short supply and over appropriated. Summers are expected to get warmer and dryer. The irrigation season in western Oregon overlaps with periods of expected increasing water scarcity.[395] Water availability is also a major factor in the value of farm land, so climate change is likely to decrease land values where water supply is limited.[396] BLM should analyze the expected impact of climate change on agricultural water supply[397] and use that information to inform its decision whether it is wise to make climate change worse by logging more mature and old-growth forest.
- Climate change will alter the incidence of diseases affecting humans, crops, and forests potentially impacting community health and stability.

Consider the following maps showing the examples of watersheds that are expected to suffer from low summer streamflows (even without considering climate warming).[398] These areas are likely to become even more water stressed under a warmer climate. What happens to the farmers, community water supplies, and fish if BLM does not stop logging mature and old-growth forests?

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[393] Motoyuki Suzuki. Water in Our Future, Chapter 11, Global Water Crisis. http://202.253.138.71/ENV/Files/Global%20Water%20Crisis%20Suzuki.doc

[394] J. Baker J. Van Sickle D. White. Water Sources and Allocation. *in* Willamette River Basin Atlas 2nd Edition. Chapter 3 - Water Resources. http://www.fsl.orst.edu/pnwerc/wrb/Atlas_web_compressed/3.Water_Resources/3h.water_sources_alloc_web.pdf

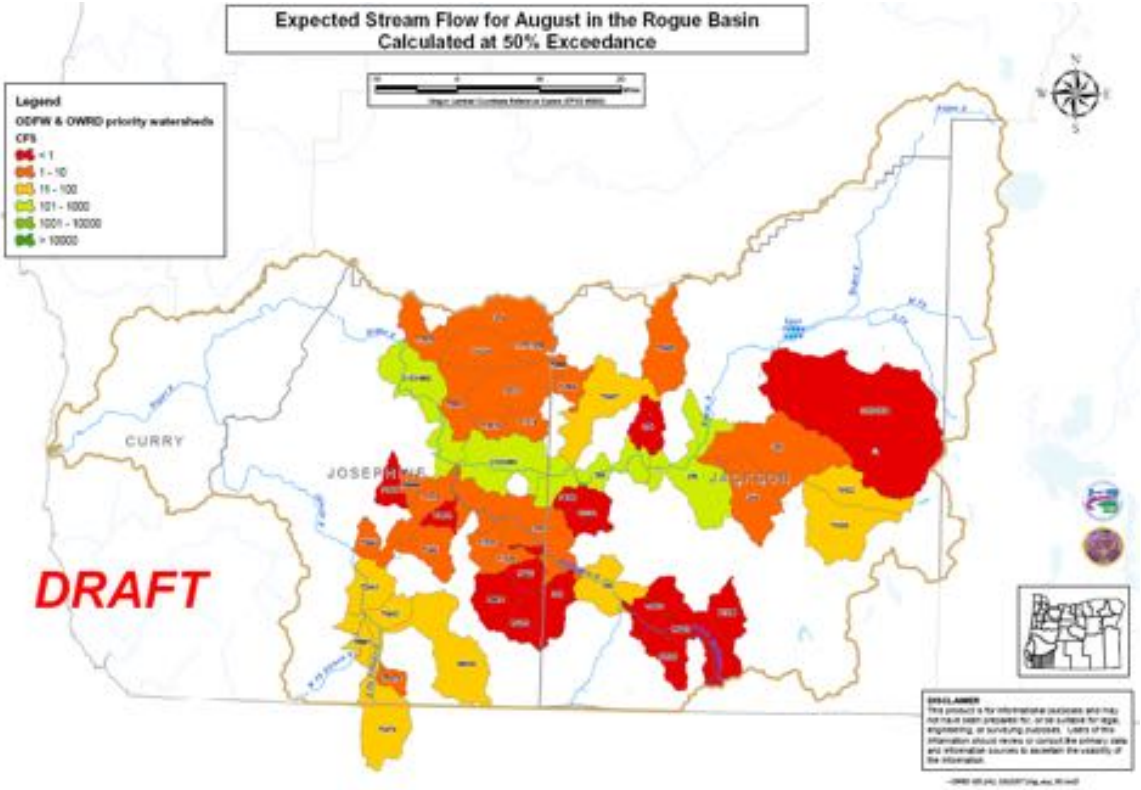
[395] Richard M. Cooper, PE. Determining Surface Water Availability in Oregon. State of Oregon Water Resources Department. Open File Report SW 02-002. Appendix E http://www1.wrd.state.or.us/pdfs/reports/SW02-002.pdf

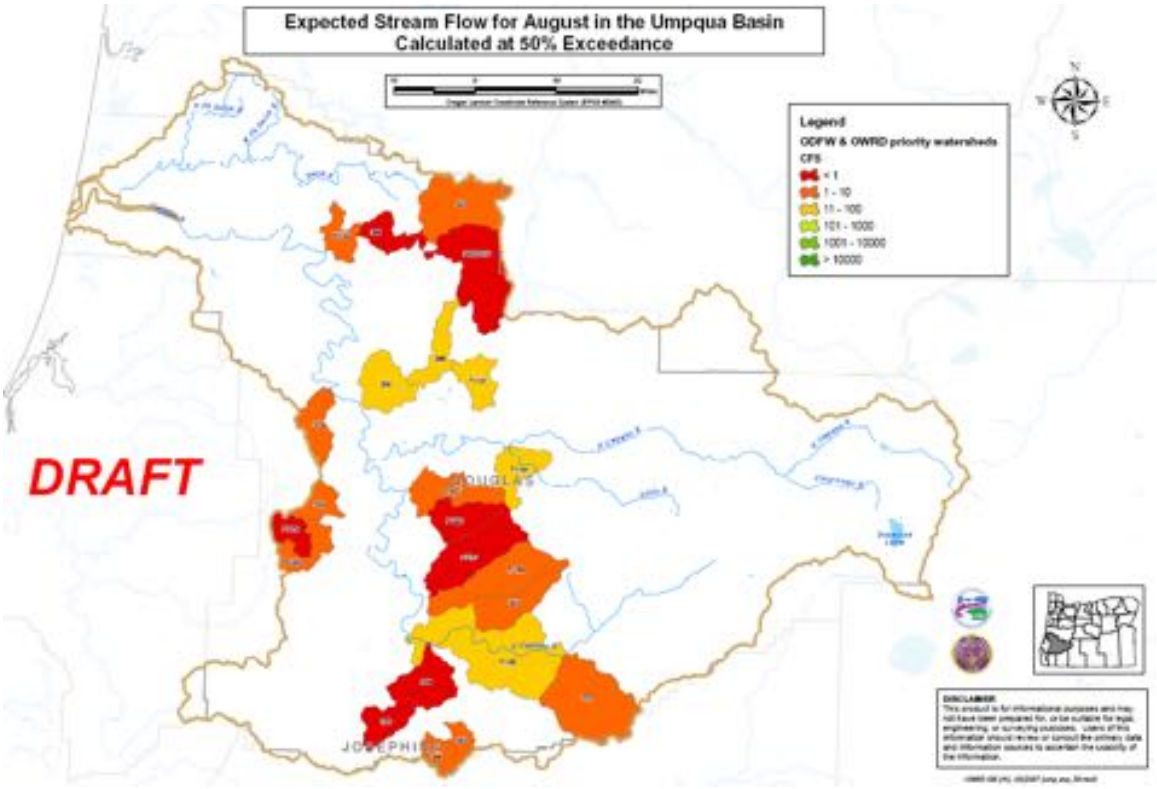
[396] Wolfram Schlenker, W. Michael Hanemann, and Anthony C. Fisher. 2005. Water Availability, Degree Days, and the Potential Impact of Climate Change on Irrigated Agriculture in California. April 2005. http://are.berkeley.edu/~fisher/ClimateChange.pdf

[397] Here are some tools that may be useful to conduct this analysis:

- Wolfram Schlenker, W. Michael Hanemann, and Anthony C. Fisher. 2005. Water Availability, Degree Days, and the Potential Impact of Climate Change on Irrigated Agriculture in California. April 2005. http://are.berkeley.edu/~fisher/ClimateChange.pdf,
- Guobin Fu 2005. Modeling Water Availability And Its Response To Climatic Change For The Spokane River Watershed. PhD Dissertation Washington State University. December 2005. https://research.wsulibs.wsu.edu:8443/dspace/bitstream/2376/413/1/g_fu_120605.pdf

[398] Oregon Water Resources Department. 2007. Strategic Measurement Plan Approved by Water Resources Commission 2000-2001. Information Provided by OWRD March 8, 2007 http://www1.wrd.state.or.us/pdfs/reports/Priority_WAB_Report03-2007.pdf


Expected Stream Flow for August in the Rogue Basin
Calculated at 50% Exceedance
Legend
ODFW & OWRD priority watersheds
CFS
< 1
1 - 10
11 - 100
101 - 1000
1001 - 10000
> 10000
CURRY
JOSEPHINE
JACKSON
DRAFT


Expected Stream Flow for August in the Umpqua Basin
Calculated at 50% Exceedance
Legend
ODFW & OWRD priority watersheds
CFS
< 1
1 - 10
11 - 100
101 - 1000
1001 - 10000
> 10000
DRAFT
DOUGLAS
JOSEPHINE

Maps showing "summer stream flow restoration priorities" established by the Oregon Water Resources Department for all watersheds in Oregon are available here: http://nrimp.dfw.state.or.us/nrimp/default.aspx?p=297. BLM must disclose that climate change that is exacerbated by continued logging of mature & old-growth forests will spread and intensify water shortages in these watersheds and destabilize communities and industries that rely on plentiful clean water.

The IPCC 4th Assessment Report Synthesis described a variety of highly relevant social and economic impacts from climate change. See IPCC Table SPM.3 below which shows just a sample of the relevant impacts. These impacts would clearly tend to destabilize local communities and industries in violation of the O&C Act and the EIS must disclose that continued loss of older forests on BLM lands will exacerbate climate change and contribute to causing these destabilizing impacts.

Table SPM.3. Examples of possible impacts of climate change due to changes in extreme weather and climate events, based on projections to the mid- to late 21st century. These do not take into account any changes or developments in adaptive capacity. The likelihood estimates in column two relate to the phenomena listed in column one. (Table 3.2)

Phenomenon[a] and direction of trend	Likelihood of future trends based on projections for 21st century using SRES scenarios	Examples of major projected impacts by sector			
		Agriculture, forestry and ecosystems	Water resources	Human health	Industry, settlement and society
Over most land areas, warmer and fewer cold days and nights, warmer and more frequent hot days and nights	*Virtually certain*[b]	Increased yields in colder environments; decreased yields in warmer environments; increased insect outbreaks	Effects on water resources relying on snowmelt; effects on some water supplies	Reduced human mortality from decreased cold exposure	Reduced energy demand for heating; increased demand for cooling; declining air quality in cities; reduced disruption to transport due to snow, ice; effects on winter tourism
Warm spells/heat waves. Frequency increases over most land areas	*Very likely*	Reduced yields in warmer regions due to heat stress; increased danger of wildfire	Increased water demand; water quality problems, e.g. algal blooms	Increased risk of heat-related mortality, especially for the elderly, chronically sick, very young and socially isolated	Reduction in quality of life for people in warm areas without appropriate housing; impacts on the elderly, very young and poor
Heavy precipitation events. Frequency increases over most areas	*Very likely*	Damage to crops; soil erosion, inability to cultivate land due to waterlogging of soils	Adverse effects on quality of surface and groundwater; contamination of water supply; water scarcity may be relieved	Increased risk of deaths, injuries and infectious, respiratory and skin diseases	Disruption of settlements, commerce, transport and societies due to flooding; pressures on urban and rural infrastructures; loss of property
Area affected by drought increases	*Likely*	Land degradation; lower yields/crop damage and failure; increased livestock deaths; increased risk of wildfire	More widespread water stress	Increased risk of food and water shortage; increased risk of malnutrition; increased risk of water-and food-borne diseases	Water shortage for settlements, industry and societies; reduced hydropower generation potentials; potential for population migration
Intense tropical cyclone activity increases	*Likely*	Damage to crops; windthrow (uprooting) of trees; damage to coral reefs	Power outages causing disruption of public water supply	Increased risk of deaths, injuries, water- and food-borne diseases; post-traumatic stress disorders	Disruption by flood and high winds; withdrawal of risk coverage in vulnerable areas by private insurers, potential for population migrations, loss of property
Increased incidence of extreme high sea level (excludes tsunamis)[c]	*Likely*[d]	Salinisation of irrigation water, estuaries and freshwater systems	Decreased freshwater availability due to saltwater intrusion	Increased risk of deaths and injuries by drowning in floods; migration-related health effects	Costs of coastal protection versus costs of land-use relocation; potential for movement of populations and infrastructure; also see tropical cyclones above

Notes:

a) See WGI Table 3.7 for further details regarding definitions.

b) Warming of the most extreme days and nights each year.

c) Extreme high sea level depends on average sea level and on regional weather systems. It is defined as the highest 1% of hourly values of observed sea level at a station for a given reference period.

d) In all scenarios, the projected global average sea level at 2100 is higher than in the reference period. The effect of changes in regional weather systems on sea level extremes has not been assessed.

Table SPM.3 IPCC 2007. 4th Assessment Report Synthesis. [399]

[399] http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf

The uncertain effects of climate change is not a valid excuse for inaction because: (a) uncertainty itself has a cost, making it more difficult and expensive to plan for the future and make rational investments. For instance, the cost of insurance will likely increase; and (b) change itself has adverse impacts; in many cases the likelihood of change is fairly certain. it is only the direction and/or magnitude of change that is uncertain.

VII. O&C ACT – BLM MUST HELP MITIGATE CLIMATE CHANGE TO ENSURE PERMANENT FOREST PRODUCTION AND SUSTAINED YIELD

Logging that exacerbates climate change will cause increases in insects, fire, possibly wind, and will make some marginal sites potentially incapable of maintaining permanent forest cover thereby violating the O&C Act's requirement to maintain permanent forest production.

The Northwest Forest Plan, 10-Year Monitoring Program Synthesis Report (Haynes 2006) says "[*C]limate change effects within the Plan area are most likely to be at lower elevations, in drier provinces at ecotones between forest and nonforest areas. Many of these effects would be manifest as increases in disturbance frequency and severity of fires, wind, disease, and insect outbreaks*."[400] Because BLM's western Oregon forest lands are relatively low-elevation and include eco-tones between forest and non-forest habitats, Haynes' summary descriptions of climate change impacts have direct relevance to BLM's legal obligations under the O&C Act. Even small changes in BLM's ability to maintain forest cover at the margins of ecotones, implicates BLM's obligation to maintain "permanent forest production."

BLM must take seriously the O&C Act mandate to maintain permanent forest production. Marginal sites that are currently on the biological edge between forest and other vegetation types are particularly vulnerable to climate change. Increased disturbance and increased drought stress will push some sites over the edge from forest to shrub or grassland.

Scientists predict that seedling establishment will become more difficult under a warmer climate. After fire (and logging) some sites will simply not be able to re-establish forest cover. To the extent that BLM continues to log mature and old-growth forests they will be exacerbating climate change and contributing to the root cause of the forest establishment problem thus violating the "permanent forest production" mandate of the O&C Act.

Well-established forests are generally more resilient to drought and disturbance than young forests. Clearcutting reduces fire resiliency, which sets the stage for forest establishment problems described above. BLM must not conduct activities that increase the risk that the site will be unable to re-establish forest cover in the future. In simple terms, clearcutting and climate change are incompatible because it is uncertain that forest can be re-established after any loss of forest cover. Existing forests have a much better chance of maintaining permanent forest production than non-forested sites.

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[400] Haynes, Richard W.; Bormann, Bernard T.; Lee, Danny C.; Martin, Jon R., tech. eds. 2006. Northwest Forest Plan—the first 10 years (1994-2003): synthesis of monitoring and research results. Gen. Tech. Rep. PNW-GTR-651. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 292 p. http://www.fs.fed.us/pnw/publications/gtr651/

After tracking 21,000 trees over 22 years USGS researchers found - "*Mortality rates increased in both of two dominant taxonomic groups (Abies and Pinus) and in different forest types (different elevational zones). The increase in overall mortality rate resulted from an increase in tree deaths attributed to stress and biotic causes, and coincided with a temperature-driven increase in an index of drought. Our findings suggest that these forests (and by implication, other water-limited forests) may be sensitive to temperature-driven drought stress, and may be poised for die-back if future climates continue to feature rising temperatures without compensating increases in precipitation.*"[401] Apparent climatically induced increase of mortality rates in a temperate forest.[402] "*This study is important because ... modeling studies suggest that, over a period of decades, even small changes in mortality rates can profoundly change a forest*," said USGS scientist Dr. Nate Stephenson, the study coauthor.[403] Even with no discernible trend in precipitation levels, increasing temperatures will increase evaporative demand and increase annual water deficit, which leads to stress, mortality, and reduced tree establishment. This study showed a very close correlation between average annual rate of tree mortality in undisturbed old forests and the three-year running average of the water deficit index.

VIII. O&C ACT – BLM MUST HELP MITIGATE CLIMATE CHANGE TO ACHIEVE "REASONABLE PRICES ON A NORMAL MARKET" FOR ITS TIMBER SALES

The O&C Act requires sale of timber at reasonable prices in a reasonable market. BLM cannot argue that O&C Act requires them to cut and sell trees in today's market because doing so would be adverse to the other goals of the O&C Act (permanent forest production, regulate water flow, protect watersheds, and community economic stability). The way the O&C Act is structured, BLM may only sell timber sales if they take steps to correct market failures by among other things internalizing market externalities. Unfortunately, the market has many imperfections that remain unaddressed.

Due to various economic externalities, prices are not reasonable and markets are not normal. A normal market requires that all costs and benefits involved in the transaction are internal to the buyer and seller. If costs of the transaction are externalized and born by someone other than the buyer and seller (such as CO_2 emissions and water pollution that are borne by the public), then the price will not reflect the full costs of production and consequently the price will be artificially low. Prices are supposed to reflect all costs and benefits because we rely on prices to send accurate signals to the market about rational investments in capacity and how much of any given product to produce or consume relative to substitutes.

Since the price of wood products derived from mature & old-growth forests is artificially low, then investors are receiving bad signals form the market and are maintaining excess capacity which produces an irrationally high level of wood products from mature & old-growth forests relative to market substitutes such as wood products from thinned young stands. In other words, externalities lead to market failure, unreasonably low prices, and abnormal markets. This is elementary college economics.

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[401] Van Mantgem, P.J., and N.L. Stephenson. 2007.
[402] Ecology Letters 10:909–916.
[403] http://www.usgs.gov/newsroom/article.asp?ID=1716

The UK's Stern Report said *"When people don't pay for the consequences of their actions we have market failure. [Climate change] is the greatest market failure the world has seen*."[404] The Stern Report states, "*human-induced climate change is at its most basic level an externality. Those who produce greenhouse-gas emissions are bringing about climate change, thereby imposing costs on the world and on future generations, but they do not face directly, neither via markets nor in other ways, the full consequences of the costs of their actions. ... [GHG] emitters do not have to compensate those who lose out because of climate change. In this sense, human-induced climate change is an externality, one that is not 'corrected' through any institution or market, unless policy intervenes*."[405] Stern warns that the externalities of climate change are unique because the consequences of climate change are long-term and potentially irreversible.

Other externalities that contribute to market failure and unreasonably low prices for large logs include: degraded water quality, loss of wildlife habitat, loss of ecosystem services like pollination, nutrient cycling, etc. The economic costs of addressing climate change due to the release of carbon caused by logging mature & old-growth forests are not reflected in the prices of BLM timber sales, and the costs of addressing the climate change caused by such logging are not born by the buyers and sellers of those logs but rather they are born by the public at large and by other industries that are harmed by climate change. *"[Climate change] is the greatest and widest-ranging market failure ever seen. ... policy must promote sound market signals, overcome market failures and have equity and risk mitigation at its core."*[406]

The ecosystem services provided by BLM's western Oregon forest lands are "public goods" that present another economic problem that leads to unreasonable prices and abnormal markets for BLM timber sales. Water quality, livable climate, and wildlife habitat are public goods which have undisputed value to people and communities, but because no one can be excluded from enjoying those resources when they fail to pay, the market fails to provide investors with incentives to produce rational and necessary quantities of those services. As a result the market provides too little of those ecosystem services.

The climate is a public good: those who fail to pay for it cannot be excluded from enjoying its benefits and one person's enjoyment of the climate does not diminish the capacity of others to enjoy it too. Markets do not automatically provide the right type and quantity of public goods, because in the absence of public policy there are limited or no returns to private investors for doing so: in this case, markets for relevant goods and services (energy, land use, innovation, etc) do not reflect the consequences of different consumption and investment choices for the climate. Thus, climate change is an example of market failure involving externalities and public goods.

> *... The impacts [of climate change] are likely to have a significant effect on the global economy if action is not taken to prevent climate change, so the analysis has to consider*

[404] http://www.hm-treasury.gov.uk/media/A/8/stern_speakingnotes.pdf
[405] Stern Report, Chapter 2. http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm
[406] Stern Report http://www.hm-treasury.gov.uk/media/4/3/Executive_Summary.pdf

potentially non-marginal changes to societies, not merely small changes amenable to ordinary project appraisal.[407]

The total social and economic return on carbon storage in mature & old-growth forests is higher than the total social and economic return on logging those forests, but the abnormal market does not reflect this reality. BLM's plans to increase logging of older forest represents rational behavior only from the perspective of the internal returns to BLM and the timber industry, but BLM is not behaving rationally when one considers total social welfare. In a normal market the interests of the timber industry, the public and the BLM would converge. The market failures described above (externalities and public goods) cause the interests of the public and the BLM to diverge. The O&C Act requires BLM to intervene to correct market failures and sell timber only when the market is normalized, when prices are reasonable, and when the market sends accurate price signals that further the public interest.

The IPCC 4th AR Synthesis finds that "A wide array of tools exist, or will soon be available, to adapt to climate change and reduce its potential effects. One is to put a price on carbon emissions." This is another means of internalizing externalities, normalizing markets, and making prices reasonable.

IX. ESA – BLM MUST HELP MITIGATE CLIMATE CHANGE TO CONSERVE LISTED SPECIES

Climate change is a threat to listed species because all the cascading effects of warming: drought, peak flows, low flows, fire, insects, disease, etc. will alter the quality and quantity of habitat, predator prey interactions, plant/pollinator relations, plant/herbivore interactions, etc. The stress of these cascading impacts is added to the existing stresses that lead each species to be listed. The cumulative impacts will be significant and must be fully disclosed and considered in the FEIS.

The Marbled Murrelet Recovery Plan recommends conserving stands over 80 years old because climate change may increase forest disturbance placing habitat at risk and because it may not be possible to replicate suitable habitat for the murrelet under the climate of the future.

Oregon Wild and others raised several issues during scoping related to the effect of climate change on spotted owls:

Spotted Owl new information includes the potential effect of climate change on regional vegetation patterns; **Implications**: Under a new climate regime, we may not be able to regrow new owl habitat in the reserves as assumed in the NW Forest Plan. Existing old forests are relatively resilient to climate change. It is risky to be conducting regeneration harvest and expect to be able grow new owl habitat in the reserves under an uncertain climate regime.

The FWS 5- Year Review of the Status of the Northern Spotted Owl says:

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[407] Stern Report, Chapter 2. http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm

The Northwest Forest Plan was adopted in 1994, and significantly altered management of Federal lands. The substantial increase in reserved areas and associated reduced harvest (approximately 1 percent per year to 0.24 percent per year) has substantially reduced this threat to northern spotted owls. However, the plan allows some loss of habitat and assumed some unspecified level of continued decline in northern spotted owls. The SEI panel noted that many, but not all of the scientific building-blocks of the Northwest Forest Plan have been confirmed or validated in the decade since adoption, though one major limitation appears to be the inability of a reserve strategy to deal with invasive species. Reserves provide no protection against viruses, fungi or invasive owls. ***Climate change is an additional threat to northern spotted owls that was not explicitly addressed in the Northwest Forest Plan*** *and, more generally, is not readily addressed by a reserve-based conservation strategy. Neither of these issues reduces the important contribution of the Northwest Forest Plan to northern spotted owl conservation"*[408]

Jerry Franklin's summarized the "findings" of the Northern Spotted Owl Status Review scientific review panel as follows:

... in view of current uncertainties, such as the eventual outcome of the Spotted Owl/Barred Owl competition, West Nile Virus, and Sudden Oak Death, and whatever else comes along -- such as global change and other kinds of introductions -- existing suitable habitat could be important to the persistence of the Northern Spotted Owl. [repeated with emphasis] Existing suitable habitat could be important to the persistence of the Northern Spotted Owl, i.e., risk to Northern Spotted Owl may increase if additional suitable habitat is removed. It is not clear where the Spotted Owl may find the refuge or refuges from new threats within existing suitable habitat. Barred Owl intrusions do not negate the need for structurally complex forest habitat to sustain Northern Spotted Owl based on existing knowledge.[409]

X. ESA – BLM MUST HELP MITIGATE CLIMATE CHANGE TO TAKE STEPS TO AVOID FUTURE LISTINGS

Scientists predict that a large fraction of species are potentially imperiled by climate change. BLM must consider not only the species within western Oregon, but those all over the world that could be adversely impacted by climate change. The IPCC's 4th Assessment Report synthesis says that "Climate change is likely to lead to some irreversible impacts. There is medium confidence that approximately 20- 30% of species assessed so far are likely to be at increased risk of extinction if increases in global average warming exceed 1.5-2.5oC (relative to 1980-1999). As global average temperature increase exceeds about 3.5oC, model projections suggest significant extinctions (40-70% of species assessed) around the globe. {3.4}"[410]

Climate change may even threaten the survival of many species. Detailed research into the possibility of species extinctions due to climate change, published in the respected American

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[408] FWS Status Review p 43 [http://pacific.fws.gov/ecoservices/endangered/recovery/pdf/NSO_5-yr_Summary.pdf].

[409] U.S. Fish & Wildlife Service Scientific Review Panel for the Northern Spotted Owl. June 22, 2004 Public Hearing. Washington State University, Vancouver campus. Transcript of proceedings at 121. http://www.sei.org/owl/meetings/minutes/june-meeting-transcripts.pdf

[410] IPCC 2007. 4th Assessment Report Synthesis. http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf

journal Nature in 2004, used climatic modelling to examine possible impacts on a total of 1,103 terrestrial plant and animal species found in many different regions of the world.

Precise predictions could not be made, since the climatic models contain many uncertain factors, but the resultant scenarios nevertheless indicated that global warming would have clear impacts on biodiversity. The more temperatures rise, the more species will be driven into extinction. Some species may become extinct due to the disappearance of their natural habitats, while others could vanish because they are unable to move rapidly enough into new regions where conditions would still meet their requirements.

The research results also indicated that 15– 21% of the species endangered by climate change could be saved if we are able to limit the extent and impacts of climate change through rapid reductions in greenhouse gas emissions combined with improvements in the sequestration of carbon.

The more average global temperatures rise, the more species will be threatened with extinction.[411]

[411] Thomas, C.D., et al. 2004

Rise in average global temperature by 2050	Proportion of the studied 1,103 species facing extinction	
	mean value	range values
0,8– 1,7°C	18%	9– 31%
1,8– 2,0°C	24%	15– 37%
>2,0°C	35%	21– 52%

[412]

XI. CLEAN AIR ACT — BLM MUST PREVENT AND CONTROL CO_2 AIR POLLUTION.

Logging mature and old-growth forests causes the emission of CO_2 pollution to the atmosphere. The Clean Air Act supersedes the O&C Act and requires BLM to control CO2 emissions through on-site carbon storage and management. Since this RMP Revision is a long-term plan, BLM should anticipate changes in water pollution regulations. DEQ is currently taking public comment on reporting requirements for GHG emissions. 42 USC § 7402(b) requires all federal agencies to use their authorities to further the goals of the Clean Air Act. Sections 7401(b)(1) and 7470(1) set forth clear goals to protect the public welfare by limiting air pollution such as CO_2.

XII. CLEAN WATER ACT — BLM MUST PREVENT AND CONTROL CO_2 WATER POLLUTION.

Logging mature and old-growth forests causes the emission of CO_2 pollution to the atmosphere with is ultimately absorbed by the ocean where it is converted to carbonic acid. Slight alterations of the pH of the ocean alters mineralization processes like calcification which can have serious adverse consequences on marine ecosystems. Since this RMP Revision is a long-term plan, BLM should anticipate changes in water pollution regulations.

[412] Finnish Environment Institute. 2005. The impacts of climate change on biodiversity. 9/21/2005 (Updated).

http://www.ymparisto.fi/default.asp?node=17418&lan=en#a3 *citing* Thomas, C.D. et al. 2004. Extinction risk from climate change. Nature 427, p.145-148. http://www.ymparisto.fi/download.asp?contentid=32647&lan=fi

In August 2007 the Center for Biological Diversity officially requested that the ocean waters off Oregon be declared impaired under the Clean Water Act due to ocean acidification caused by the absorption of human-produced carbon dioxide. Listing a water body as "impaired" allows states to limit the discharge of pollutants that are contributing to impairment.

The atmosphere and ocean freely exchange carbon dioxide, and as atmospheric levels of carbon dioxide increase, so does the absorption of carbon dioxide by the ocean. The ocean takes up about 22 million tons of carbon dioxide each day and has absorbed about half of the carbon dioxide released into the atmosphere by human activities. This excess carbon dioxide changes the chemistry of seawater, making it more acidic: Ocean acidity, measured in pH, has already changed 0.11 pH on average due to human-generated carbon dioxide since preindustrial times — a significant, approximately 30-percent rise in acidity. If current emissions trajectories continue, an additional change of 0.5 units is predicted by the end of the century. These changes will be irreversible on human timescales.

Already, ocean acidification is damaging surface waters and having an impact on marine ecosystems. It makes unavailable the compounds necessary for marine organisms to build shells and skeletons, thus impeding the growth of plankton, starfish, urchins, oysters and other shelled organisms as well as coral. Due to ocean acidification, coral reefs will begin to erode more quickly than they can rebuild. And these changes are occurring so quickly that marine life will have great difficulty adapting to changing seawater chemistry.[413]

XIII. LOGGING TO REDUCE FIRE-INDUCED GREENHOUSE GAS EMISSIONS WILL BACKFIRE

The DEIS claims that logging provides climate benefits but this is not supported (in fact refuted) by the best available science. DEIS (158-159) says

Many studies have found that active management, particularly in forests adversely affected by fire suppression, could reduce both carbon losses and increases in greenhouse gas emissions from wildfires. Results from various thinning and burning prescriptions indicate that the short-term reductions in carbon result in long-term benefits to carbon storage and greenhouse gas emissions by reducing fire-induced mortality, maintaining a higher fraction of carbon in live trees, increasing drought resistance, and reducing competition for water, nutrients, and light.[414]

This is an incomplete, erroneous, and misleading description of the carbon consequences of logging and the interaction of logging with fire. BLM needs to critically review the sources cited. Do these studies really support what BLM is suggesting? Are there distinguishing features? Are the study designs sound? Are the study conclusions really supported by the study results?

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[413] Center for Biological Diversity. "Seven Coastal States Petitioned to Address Ocean Acidification: Clean Water Act Requires Regulation of Carbon Dioxide That Could Drive Ocean Species Extinct." August 15, 2007 Press Release.

[414] Stephens et al. 2009, Hurteau and North 2010, North and Hurteau 2011, Stephens et al. 2012, Hurteau et al. 2014, Loudermilk et al. 2014, Volkova et al. 2014.

Some of the studies cited by the DEIS (158-159) directly contradict BLM's assertion that logging has climate benefits. Many of these studies are generally not applicable to western Oregon because they are from different biophysical settings, and they generally fail to properly account for the low probability that fuel reduction logging will interact with wildfire --

- Volkova et al (2014)[415] This study does not support BLM's assertion that logging provides climate benefits. This study looked at forest carbon after fire occurred, so it selected for areas where there was 100% overlap between treatments and fire. This fails to account for the real world (low) probability of fuel treatments interacting with fire, and all the GHG emissions caused by fuel treatments that did not subsequently burn. Also, this study was in a completely different (eucalyptus) forest type.
- Stephens et al (2009)[416] This study does not support BLM's assertion that logging provides climate benefits. This study appears to assume a 100% chance that fire will interact with treatments, which is not a real world probability that treatments will interact with wildfire. Drawing conclusions about the carbon benefits of fuel reduction logging requires consideration of the relative extent and probability of emissions from logging and wildfire. Also, the study cautions readers to limit conclusions to young stands in the Sierra Nevada that are recovering from past timber harvest.
- Hurteau & North (2010)[417] This study does not support BLM's assertion that logging provides climate benefits, saying -
  In the absence of wildfire or if wildfire emissions are lower than the carbon stock reduction necessary to mitigate high-severity fire risk, fuels treatments could have a net negative impact on carbon stocks and thus reduce the forest's potential to mitigate climate change (Mitchell et al., 2009). … . The higher intensity overstory thinning treatments will require longer periods of time before they sequester the carbon removed and emitted during treatment. By removing large overstory trees that often contain >65% of the aboveground carbon, these treatments incur a substantial immediate carbon stock reduction and require a much longer recovery period. While large tree percent changes in C were high in these treatments (Table 1), there are simply fewer large trees ha−1 to store C. In earlier research we also found overstory thinning did not substantially decrease the risk of high-severity fire compared to understory thinning treatments (North et al., 2009).

This study made no attempt to quantify the probability that fire would interact with fuel treatments. Other studies that have attempted to estimate these probabilities show that fuel reduction logging results in greater GHG emissions than doing nothing. See below. This study also failed to account for the climate consequences of the extra carbon in the atmosphere while the forest is recovering from logging related carbon loses. Even if the carbon is later recaptured by the forest as a result of regrowth after logging, that does not neutralize the adverse climate effects suffered during the lag time.

Loehman et al (2014) have criticized Hurteau and North (2008) (and others) saying:

Recent studies (Hurteau and North, 2008, 2010; Hurteau et al., 2008a; North et al., 2009; *Reinhardt and Holsinger, 2010) have focused on carbon responses to fire in individual forest*

[415] http://www.publish.csiro.au/nid/114/paper/WF14009.htm
[416] http://nature.berkeley.edu/stephenslab/wp-content/uploads/2015/04/Stephens-et-al.-FFS-Carbon-CJFR-8-09.pdf
[417] http://www.fs.fed.us/psw/publications/north/psw_2010_north(hurteau)002.pdf

stands as a basis for gaining insight into terrestrial-atmospheric carbon fluxes. Suggested management treatments to protect, maintain, or enhance forest carbon stocks forest carbon stores include mechanical fuels treatments, prescribed fire, and suppression of wildfires (Canadell and Raupach, 2008; Hurteau and North, 2008, 2010; Hurteau et al., 2008b; McKinley et al., 2011; Stephens et al., 2012). Results from these studies suggest that fuel treatments can reduce wildfire severity and protect forest carbon stocks from future loss from severe wildfires (Hurteau and North, 2008; Hurteau et al., 2008b; Stephens et al., 2009b), but management of carbon in fire-prone and fire-adapted forests is more complex than simply minimizing wildfire carbon emissions and maximizing stored carbon in individual stands. The stochastic and variable nature of fires, the relatively fine scale over which fuels treatments are implemented, and potentially high carbon costs to implement them suggest that fuel treatments are not an effective method for protecting carbon stocks at a stand level (Reinhardt et al., 2008; Reinhardt and Holsinger, 2010).

Rachel A. Loehman, Elizabeth Reinhardt, Karin L. Riley 2014. Wildland fire emissions, carbon, and climate: Seeing the forest and the trees – A cross-scale assessment of wildfire and carbon dynamics in fire-prone, forested ecosystems. Forest Ecology and Management 317 (2014) 9–19.[418]

- Hurteau et al (2014)[419] This study does not support BLM's assertions that logging provides climate benefits, saying –
  Fire effects on the forest can be managed by altering forest structure and fuel loads, thereby reducing the risk of carbon loss due to wildfire (Hurteau et al., 2009). However, this risk reduction measure carries a carbon stock reduction cost and the carbon balance of a specific treatment is dependent upon a wildfire burning in the treated area, the end-use of the trees harvested during treatment, among other factors … Generally, the probability of a fire event occurring at most forest locations in any given year is quite low."

This study speculated about how trees in the Sierra Nevada Mountains of California may become mal-adapted as a result of global warming, but this study found wide variation in the effects on forest carbon depending on various future climate scenarios for the Sierra Nevada. ("The large influence of GCM on carbon storage suggests that reducing uncertainty in modeling forest growth response to wildfire mitigation treatments will require further refinement of climate projections") Refinement of climate scenarios should of course be region-specific. BLM should not be using wild speculations from dry/open forests of California to set policy for moist/dense forests of western Oregon. ("our findings highlight the need to overcome the scale mismatch between GCMs and the typical forest management unit. Recent research suggests the substantial influence of local terrain on mediating climate (Dobrowski, 2011) making even downscaled climate projections too coarse to capture the fine scale climate variability that can influence tree growth.") Finally, this study highlights uncertainty. It does not make concrete recommendations to conduct logging to help store carbon or help forests adapt to climate change. ("[T]he current variability in downscaled global climate projections adds considerable uncertainty to projecting how management actions to alter forest structure and composition and climate will interact in the future.")

[418] http://www.fs.fed.us/rm/pubs_other/rmrs_2014_loehman_r001.pdf
[419] http://www.fs.fed.us/psw/partnerships/tahoescience/documents/p029_Hurteau2014Tahoe.pdf

- Loudermilk et al (2014)[420] This study does not support BLM's assertion that logging provides climate benefits. Figures 4 and 5 in this publication clearly show that not logging results in greater forest carbon storage than any of the fuel reduction scenarios.
  Over the near future, more forest C would be removed from the system than would be released without treatment (i.e., from ecosystem respiration); creating a net C 'cost' … . Eventually, reduced fire severity and enhanced forest re-growth would lead to a net gain in C storage at the management area and landscape level. … Our simulated fuel treatments … controlled wildfire C emissions, and in the long run resulted in a net C gain. These positive outcomes far outweigh the intermediary loss in forest C from biomass removal,…

However, this conclusion is not supported by the study results or any other evidence. While the carbon density of the treatment and no treatment scenarios appear to converge in the year 2100, the study fails to account of the climate consequences associated with the excess carbon in the atmosphere in the decades prior to 2100. This is sloppy accounting that does not meet NEPA standards. The near-term climate effects caused by logging-related carbon emissions are not neutralized by carbon uptake that occurs decades in the future. This study also recognized that carbon benefits depend on the probability of future fire but made no attempt to quantify that probability.

Achievement of a net C gain … depended on wildfire activity: Fuel treatments were more effective in a more active fire environment, where the interface between wildfires and treatment areas increased and caused net C gain earlier than as compared to our scenarios with less wildfire activity … regulation of C emissions may force forest managers to balance the use of fuel treatments for reducing wildfire risk against goals to maintain or increase C sequestration (Hurteau et al., 2008). This will require consideration of the net balance between the immediate loss of C from live and detrital matter during fuels management (e.g., mechanical thinning and prescribed burning) against the long-term C sequestration potential associated with reduced C emissions from lower intensity wildfires.

This study also assumed that wildfire activity would increase thus increasing the probability that treatments would interact with fire. This assumption may or may not hold on BLM lands where aggressive fire suppression remains the norm. Furthermore, this study looked at fuel reduction targeted close to homes and communities, not across the landscape as BLM proposes.

BLM should then conduct a much more thorough review of credible opposing viewpoints. In virtually all cases, commercial logging will increase GHG emissions relative to not logging, even after accounting for emissions related to wildfire. Numerous experts have carefully studied the issue and conclude that logging to reduce fire and reduce carbon emission will actually make matters worse, not better.

Law & Harmon conducted a thorough literature review and concluded …

Thinning forests to reduce potential carbon losses due to wildfire is in direct conflict with carbon sequestration goals, and, if implemented, would result in a net emission of CO2 to the atmosphere because the amount of carbon removed to change fire behavior is often far larger

[420] http://www.fs.fed.us/psw/partnerships/tahoescience/documents/p049_Loudermilk2014.pdf

than that saved by changing fire behavior, and more area has to be harvested than will ultimately burn over the period of effectiveness of the thinning treatment.[421]

XIV. BLM NEEDS TO ACCURATELY DESCRIBE THE PROBABILISTIC NATURE OF THIS ISSUE

- Premises:
  - Fire and logging both emit GHG;
  - No one can predict where or when fire will occur, therefore logging to modify fire behavior must be spatially extensive;
  - Fuels regrow after logging, so treatments will have to be repeated;
  - Fire is relatively infrequent, so fire will rarely interact with fuel reduction treatments during the period they are presumed effective. Many acres will be treated and few acres will actually interact with fire, so fuel treatments and associated GHG emissions will occur "unnecessarily" (i.e., without any fire benefits to offset the GHG emissions caused by logging);
  - Fire is mostly controlled by weather (e.g., temperature, humidity, wind), not by fuel conditions.
  - Logging has complex effects of fire behavior. Logging might make fire worse in some cases.
  - Logging will have only marginal effects on fire in most cases – slightly reducing fire intensity and fire size.
  - Logging will very rarely be perfectly timed, perfectly located, perfectly scaled, and perfectly implemented to result in meaningful fire control and significant GHG benefits.
- Conclusion: Logging to control fire does not provide climate benefits, because, the combined GHG emissions associated with logging plus emissions associated with wildfire are highly likely to be far greater than the GHG emissions associated with fire alone.
- Note: The limited exception to this conclusions involve cases where three conditions are met: (i) smallest fuels are removed (ii) from forests with the most frequent fire return interval, and (iii) where fire suppression is not being practiced. These conditions do not occur on BLM lands in western Oregon. "Smallest fuels" means non-commercial thinning, not removal commercial-sized logs that store a lot of carbon. BLM emphasizes commercial logging. Forests in western Oregon have an intermediate-to-long fire return interval, and BLM cooperates with the state to aggressively suppress every fire.

Logging proponents often claim that logging will increase carbon storage controlling carbon emissions caused by natural processes such as fire and insect-induced mortality. This is simply counter-factual. In most cases, managing forests in an effort to control natural processes that release carbon will only make things worse by releasing MORE carbon. This is mostly because no one can predict where fire or insects will occur, so the treatments must be applied to broad landscapes, yet the probability of fire or insects at any given location remains low, and only a

[421] Law, B. & M.E. Harmon 2011. Forest sector carbon management, measurement and verification, and discussion of policy related to mitigation and adaptation of forests to climate change. Carbon Management 2011 2(1). http://terraweb.forestry.oregonstate.edu/pubs/lawharmon2011.pdf.

small fraction of the treated areas will actually experience fire or insects. As a result, many acres will be treated "unnecessarily" and therefore the cumulative carbon emissions from logging to control fire and insects (plus the carbon emissions from fire and insects that occur in spite of control efforts) are greater than emissions from fire and insects alone.
Before attributing carbon benefits to fuel reduction logging please consider numerous credible opposing viewpoints, including:

- John L Campbell, Mark E Harmon, and Stephen R Mitchell. 2011. Can fuel-reduction treatments really increase forest carbon storage in the western US by reducing future fire emissions? Front Ecol Environ 2011; doi:10.1890/110057[422] (Results suggest that the protection of one unit of C from wildfire combustion comes at the cost of removing three units of C in fuel treatments.)
- Mitchell, Harmon, O'Connell. 2009. Forest fuel reduction alters fire severity and long-term carbon storage in three Pacific Northwest ecosystems. Ecological Applications. 19(3), 2009, pp. 643–655. [423]
- Reinhardt, Elizabeth, and Lisa Holsinger 2010. Effects of fuel treatments on carbon-disturbance relationships in forests of the northern Rocky Mountains. Forest Ecology and Management 259 (2010) 1427–1435.[424] ("Although wildfire emissions were reduced by fuel treatment, the fuel treatments themselves produced [carbon] emissions, and the untreated stands stored more carbon than the treated stands even after wildfire. … Our results show generally long recovery times …")
- Jim Cathcart, Alan A. Ager, Andrew McMahan, Mark Finney, and Brian Watt 2009. Carbon Benefits from Fuel Treatments. USDA Forest Service Proceedings RMRS-P-61. 2010.
- Law, B. & M.E. Harmon 2011. Forest sector carbon management, measurement and verification, and discussion of policy related to mitigation and adaptation of forests to climate change. Carbon Management 2011 2(1).
- Dina Fine Maron 2010. FORESTS: Researchers find carbon offsets aren't justified for removing understory (E&E Report 08/19/2010, reporting on the WESTCARB Project)[425]
- Restaino, Joseph C.; Peterson, David L. 2013. Wildfire and fuel treatment effects on forest carbon dynamics in the western United States. Forest Ecology and Management 303:46-60.[426] ("… C costs associated with fuel treatments have can exceed the magnitude of C reduction in wildfire emissions, because a large percentage of biomass stored in forests (i.e., stem wood, branches, coarse woody debris) remains unconsumed, even in high-severity fires (Campbell et al., 2007; Mitchell et al., 2009). … Wildfire occurrence in a given area is uncertain and may never interact with treated stands with reduced fire hazard, ostensibly negating expected C benefits from fuel treatments. Burn probabilities in treated stands in southern Oregon are less than 2%, so the probability that a treated stand encounters wildfire and creates C benefits is low (Ager et al., 2010).)"

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[422] http://nnrg.org/files/CampbellJohn-65945.pdf; http://scholarsarchive.library.oregonstate.edu/xmlui/bitstream/handle/1957/26174/CampbellJohn.Forestry.CanFuelReductionTreatments.pdf.
[423] http://www.fs.fed.us/pnw/pubs/journals/pnw_2009_mitchell001.pdf.
[424] http://www.fs.fed.us/rm/pubs_other/rmrs_2010_reinhardt_e002.pdf
[425] https://pacificforest.org/pft-in-the-media-2010-climatewire-8-19-10.html.

[426] http://www.fs.fed.us/pnw/pubs/journals/pnw_2013_restiano001.pdf

- Goslee, K., Pearson, T., Grimland, S., Petrova, S., Walls, J., Brown, S., 2010. Final Report on WESTCARB Fuels Management Pilot Activities in Lake County, Oregon. California Energy Commission, PIER. CEC-500-XXXX-XXX; AND Pearson, T.R.H., Goslee, K., Brown, S., 2010. Emissions and Potential Emission Reductions from Hazardous Fuel Treatments in the WESTCARB Region. California Energy Commission, PIER. CEC-500-XXXX-XXX. (Summarized by Restaino & Peterson (2013) as follows: "Pearson et al. (2010) and Goslee et al. (2010) developed methodologies to evaluate C dynamics associated with fuel treatment projects in low to mid-elevation forest in northern California and Oregon. The authors, with consultation from teams of scientists, quantify C storage and release within the context of a six-point conceptual framework: annual fire risk, treatment emissions, fire emissions, forest growth and re-growth, re-treatment, and the shadow effect (i.e., treatment effect outside the treated area). Results indicate that the mean annual probability of wildfire for the study region is less than 0.76%/year, and treatments reduce C stocks by an average of 19%. Where timber is removed, 30% of extracted biomass is stored in long-lasting wood products. Wildfire emissions in treated stands, quantified with the Fuel Characteristic Classification System, are reduced by 6% relative to untreated stands. Growth estimates for a 60-year simulation horizon, derived from FVS, indicate that in the absence of wildfire, untreated stands sequester 17% more C than treated stands. However, in simulations that include wildfire, treated stands sequester 63% more C than untreated stands. The shadow effect is unlikely to be large enough to affect net GHG emissions. In summary, initial reductions in C stocks (e.g., thinning), combined with low annual probability of wildfire, preclude C benefits associated with fuel treatments, even if harvest residues are used for biomass energy.")
- Chiono, Lindsay 2011. Balancing the Carbon Costs and Benefits of Fuels Management. Research Synthesis for Resource Managers. Joint Fire Science Program Knowledge Exchange.[427] ("[T]he net carbon impact of fuel treatments is further complicated by the probabilistic nature of wildfire occurrence and the impermanence of post-treatment stand conditions … [T]reatment activities produce an immediate carbon emission while future wildfire emissions are uncertain … Depending on the intensity of treatment, the quantity of carbon removed may be substantial enough to negate gains from avoided wildfire emissions. … cumulative emissions from fuels reduction activities repeated in order to maintain low hazard conditions over time can overwhelm avoided wildfire emissions, resulting in a net carbon loss.")

Mitchell, Harmon, O'Connell. 2009. Forest fuel reduction alters fire severity and long-term carbon storage in three Pacific Northwest ecosystems. Ecological Applications. 19(3), 2009, pp. 643–655 [428]

ABSTRACT:... *Our simulations indicate that fuel reduction treatments in these ecosystems consistently reduced fire severity. However, reducing the fraction by which C is lost in a wildfire requires the removal of a much greater amount of C, since most of the C stored in forest biomass (stem wood, branches, coarse woody debris) remains unconsumed even by high-severity wildfires. For this reason, all of the fuel reduction treatments simulated for the west Cascades*

[427] https://static.squarespace.com/static/50083efce4b0c6fedbca9def/t/51632bf8e4b00b25a8fa21d3/1365453816037/CFSC_Chiono_Carbon_and_Fuel_Mngmt.pdf
[428] http://www.fs.fed.us/pnw/pubs/journals/pnw_2009_mitchell001.pdf

and Coast Range ecosystems as well as most of the treatments simulated for the east Cascades resulted in a reduced mean stand C storage. One suggested method of compensating for such losses in C storage is to utilize C harvested in fuel reduction treatments as biofuels. Our analysis indicates that this will not be an effective strategy in the west Cascades and Coast Range over the next 100 years. We suggest that forest management plans aimed solely at ameliorating increases in atmospheric CO2 should forego fuel reduction treatments in these ecosystems, with the possible exception of some east Cascades Ponderosa pine stands with uncharacteristic levels of understory fuel accumulation. Balancing a demand for maximal landscape C storage with the demand for reduced wildfire severity will likely require treatments to be applied strategically throughout the landscape rather than indiscriminately treating all stands.

Notes on Mitchell & Harmon:

- The authors assumed that fire severity was determined exclusively by fuel variables but not weather. This may over-estimate the efficacy of fuel treatments on fire severity. The conclusion that fuel manipulation leads to reduced fire behavior may be an unavoidable result of the assumptions, rather than a reflection of reality.

- The only treatment that showed some promise was understory removal (not canopy removal) in fire-suppressed dry pine stands, but the carbon storage benefit from reduced fire severity in this best case scenario was minuscule, only about 0.6-1.2%. The modeled treatments on the eastside of the Cascades failed to include canopy removal which is a common practice in fuel reduction efforts and one that removes more carbon than understory treatments. Also, this analysis might give too much credit to fuel treatments because they excluded climatic variation from the analysis (meaning that in their analysis the treated stands never burned uncharacteristically <u>in spite</u> of the treatments.

Similar results were found at the stand scale by Reinhardt and Holsinger (2010):

> *We simulated effects of fuel treatments on 140 stands representing seven major habitat type groups of the northern Rocky Mountains using the Fire and Fuels Extension to the Forest Vegetation Simulator (FFE-FVS). Changes in forest carbon due to mechanical fuel treatment (thinning from below to reduce ladder fuels) and prescribed fire were explored, as well as changes in expected fire behavior and effects of subsequent wildfire. Results indicated that fuel treatments decreased fire severity and crown fire occurrence and reduced subsequent wildfire emissions, but did not increase post-wildfire carbon stored on-site. Conversely, untreated stands had greater wildfire emissions but stored more carbon. ... The results do not support the use of fuel treatments soley to protect carbon stocks or reduce emissions. Although wildfire emissions were reduced by fuel treatments, the fuel treatments themselves produced emissions, and the untreated stands stored more carbon than the untreated stands even after wildfire. [and even considering carbon stored in wood products derived from treated stands.]*[429]

And by Campbell, Harmon & Mitchell 2011:

[429] Reinhardt, Elizabeth, and Lisa Holsinger 2010. Effects of fuel treatments on carbon-disturbance relationships in forests of the northern Rocky Mountains. Forest Ecology and Management 259 (2010) 1427–1435.

Abstract: *It has been suggested that thinning trees and other fuel-reduction practices aimed at reducing the probability of high-severity forest fire are consistent with efforts to keep carbon (C) sequestered in terrestrial pools, and that such practices should therefore be rewarded rather than penalized in C-accounting schemes. By evaluating how fuel treatments, wildfire, and their interactions affect forest C stocks across a wide range of spatial and temporal scales, we conclude that this is extremely unlikely. Our review reveals high C losses associated with fuel treatment, only modest differences in the combustive losses associated with high-severity fire and the low-severity fire that fuel treatment is meant to encourage, and a low likelihood that treated forests will be exposed to fire. Although fuel-reduction treatments may be necessary to restore historical functionality to firesuppressed ecosystems, we found little credible evidence that such efforts have the added benefit of increasing terrestrial C stocks.*

Summary:

• Carbon (C) losses incurred with fuel removal generally exceed what is protected from combustion should the treated area burn

• Even among fire-prone forests, one must treat about ten locations to influence future fire behavior in a single location

• Over multiple fire cycles, forests that burn less often store more C than forests that burn more often

• Only when treatments change the equilibrium between growth and mortality can they alter long-term C storage

Conclusions

Across a range of treatment intensities, the amount of C removed in treatment was typically three times that saved by altering fire behavior.

the protection of one hectare of forest from wildfire required the treatment of 10 hectares, owing not to the low efficacy of treatment but rather to the rarity of severe wildfire event.

Long-term simulations of forest growth, decomposition, and combustion illustrate how, despite a negative feedback between fire frequency and fuel-driven severity, a regime of low-frequency, high-severity fire stores more C over time than a regime of high-frequency, low-severity fire.

John L Campbell, Mark E Harmon, and Stephen R Mitchell. 2011. Can fuel-reduction treatments really increase forest carbon storage in the western US by reducing future fire emissions? [430] It is important to recognize that "the equilibrium between growth and mortality" must consider all forms of mortality, not just that caused by fire, but also mortality caused by logging.

Restaino & Peterson (2013) conducted a literature review of this issue and reported:

[430] Front Ecol Environ 2011; doi:10.1890/110057
http://scholarsarchive.library.oregonstate.edu/xmlui/bitstream/handle/1957/26174/CampbellJohn.Forestry.CanFuelReductionTreatments.pdf

All studies agree unequivocally that untreated stands release more emissions to the atmosphere during wildfire than treated stands…. However, most studies in this review include assumptions of future wildfire frequency and probability that skew long-term trade-off analyses by overestimating the ability of fuel treatments to reduce wildfire emissions over long time scales. For example, fuel treatments have a finite life expectancy, and fire hazard increases over time as fuels accumulate in treated areas. Repetition and maintenance of fuel treatments are necessary in order to effectively maintain reduced fire hazard over time (Peterson et al., 2005; Johnson et al., 2007, 2011) and thus must be included in analyses of long-term C storage. Although Rhodes and Baker (2008) suggest that 2.0–4.2% of areas treated to reduce surface fuels are likely to encounter wildfires that would otherwise be high or moderate-high severity without treatment, most studies assume future wildfire probability of 100%, reporting inferences that essentially detail a ''best-case scenario'' for wildfire missions mitigation. Annual probability of wildfire in dry temperate forests for a given stand is approximately 1% (Ager et al., 2010; Pearson et al., 2010; Campbell et al., 2011). … To benefit total ecosystem C storage, the removal and release of C through fuel treatments must not exceed the expected reductions in wildfire emissions. Substantial treatment costs through timber harvest, prescribed fire, and milling waste exceed observed and simulated reductions in wildfire emissions. … The ability of fuel treatments to mitigate future fire behavior and move forest structure to a more fire-resistant condition is well documented. However, C costs associated with fuel treatments have can exceed the magnitude of C reduction in wildfire emissions, because a large percentage of biomass stored in forests (i.e., stem wood, branches, coarse woody debris) remains unconsumed, even in high-severity fires (Campbell et al., 2007; Mitchell et al., 2009). … Wildfire occurrence in a given area is uncertain and may never interact with treated stands with reduced fire hazard, ostensibly negating expected C benefits from fuel treatments. Burn probabilities in treated stands in southern Oregon are less than 2%, so the probability that a treated stand encounters wildfire and creates C benefits is low (Ager et al., 2010).)[431]

Lindsay Chiono (2011) of the Wildland Fire Science Laboratory at UC Berkeley prepared a synthesis of the research for resource managers and said:

[T]he net carbon impact of fuel treatments is further complicated by the probabilistic nature of wildfire occurrence and the impermanence of post-treatment stand conditions … [T]reatment activities produce an immediate carbon emission while future wildfire emissions are uncertain … Depending on the intensity of treatment, the quantity of carbon removed may be substantial enough to negate gains from avoided wildfire emissions. East of the Cascade crest in Oregon, a modeling study of carbon dynamics that included modeled wildfires found that while understory removal treatments slightly enhanced carbon storage over the long term, higher levels of biomass removal reduced mean ecosystem carbon (Mitchell et al., 2009)." … [W]hen treatments must be repeated in the interim between wildfires in order to maintain low hazard conditions. Similarly,

[431] Restaino, Joseph C.; Peterson, David L. 2013. Wildfire and fuel treatment effects on forest carbon dynamics in the western United States. Forest Ecology and Management 303:46-60. http://www.fs.fed.us/pnw/pubs/journals/pnw_2013_restiano001.pdf

> *when wildfire frequency is low, the quantity of carbon removed in treatments over time can overwhelm likely wildfire losses. Net emissions were most pronounced in the west Cascades where historical fire return intervals were very long… [I]n southern Oregon and northern California, Goslee and others (2010) took an approach that incorporates the stochastic nature of wildfire occurrence. Rather than scheduling a wildfire event soon after fuel treatment, a calculation that maximizes treatment benefits, they used an estimate of the local fire return interval for the period of 2001 to 2008 -- an annual burn probability of 0.6% -- to assess carbon emissions. Partly owing to this low wildfire risk, they found that fuel treatments, which included commercial timber harvest and pile burning of noncommercial biomass, produced an effective immediate net emission of 10-20.8 tons of carbon per acre. … [S]ome general principles have begun to emerge. Achieving a net carbon gain appears more likely when the quantity of carbon removed during treatment is minimized, when harvested biomass is converted to long-lived wood products, and where the risk of wildfire occurrence is high… Conversely, cumulative emissions from fuels reduction activities repeated in order to maintain low hazard conditions over time can overwhelm avoided wildfire emissions, resulting in a net carbon loss.*[432]

Even the Chief of the Forest Service recognizes these trade-offs. "[M]anagement practices, designed to restore ecosystem health, may in the near-term reduce total stored carbon below current levels."[433]

Hudiburg et al (2001 state:

> *Strategies for reducing carbon dioxide emissions include substitution of fossil fuel with bioenergy from forests, where carbon emitted is expected to be recaptured in the growth of new biomass to achieve zero net emissions, and forest thinning to reduce wildfire emissions3. Here, we use forest inventory data to show that fire prevention measures and large-scale bioenergy harvest in US West Coast forests*
>
> *Lead to 2–14% (46–405 Tg C) higher emissions compared with current management practices over the next 20 years.*
>
> *In our study region, we found that thinning reduced NBP under all three treatment scenarios for 13 of the 19 ecoregions, representing 90% of the region's forest area. The exceptions where NBP was not reduced were primarily due to high initial fire emissions*

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[432] Chiono, Lindsay 2011. Balancing the Carbon Costs and Benefits of Fuels Management. Research Synthesis for Resource Managers. Joint Fire Science Program Knowledge Exchange. https://static.squarespace.com/static/50083efce4b0c6fedbca9def/t/51632bf8e4b00b25a8fa21d3/1365453816037/CFSC_Chiono_Carbon_and_Fuel_Mngmt.pdf

[433] Gail Kimball, March 2009 Testimony before House Committee On Natural Resources, Subcommittee On National Parks, Forests, And Public Lands. http://www.fs.fed.us/congress/111thCongress/Documents/CY%202009%20Hearings/HNRC%202009-03-03%20Climate%20Change/2009-03-03A.Kimbell.pdf.

compared to NEP (for example, Northern Basin and North Cascades; Supplementary Fig. S2). The dominant trend at the ecoregion level was mirrored at the regional level, with the bioenergy production scenario (highest thinning level) resulting in the region becoming a net carbon source (Supplementary Table S2 and discussion of state-level estimates). Regionally, forest biomass removals exceeded the potential losses from forest fires, reducing the in situ forest carbon sink even after accounting for regrowth, as found in previous studies with different approaches or areas of inference8,18.

Because we have assumed high reductions in fire emissions for the areas treated in each scenario, it is unlikely we are underestimating the benefit of preventive thinning on NBP.[434]

North and Hurteau (2009) note that the carbon costs of fuel reduction may be mitigated by focusing on small fuels -

When evaluating carbon released by different fuels treatments, managers will need to weigh tradeoffs between immediate prescribed burn emissions, increased fuel reduction with thinning and an increase in milling waste, and potential future wildfire emissions. … Previous Teakettle studies (Innes et al. 2006, North et al. 2007, Hurteau and North 2009) coupled with this research suggest treatments could be modified to more effectively minimize carbon stock reductions while still significantly reducing fuels and promoting large tree development. Significant increases in wildfire resistance can be achieved by thinning only smaller ladder fuels and fire-sensitive intermediate trees without reducing the majority of the live-tree carbon pool in intermediate pines and large trees of all species. … Thinning and prescribed fire treatments that reduce small tree densities may influence stand development by redirecting growth resources and carbon storage into more stable stocks such as large, long-lived fire-resistant pines (Hurteau and North 2009). … Our research suggests most of the benefits of increased stand-level fire resistance can be achieved with small reductions in carbon pools.[435]

XV. THE DEIS UNDERESTIMATES THE SOCIAL COST OF CARBON

NEPA's requirement to take a "hard look" requires BLM to consider the effects of logging-related GHG emissions. This includes disclosing the social cost of carbon (SCC) as a proxy for the impacts of GHG emissions. GHG emissions from logging (and other land management activities) impose significant costs on society, such as the cost of damage caused by climate

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[434] Tara W. Hudiburg, Beverly E. Law, Christian Wirth, and Sebastiaan Luyssaert. 2011. Regional carbon dioxide implications of forest bioenergy production. Nature - Climate Change. Letters. 23 OCTOBER 2011 | DOI: 10.1038/NCLIMATE1264.
http://www.dnr.wa.gov/Publications/em_fp_biomass_regional_carbon_dioxide_implications_of_forest_bioenergy_production.pdf

[435] North, Hurteau, Innes. 2009. Fire suppression and fuels treatment effects on mixed-conifer carbon stocks and emissions. Ecological Applications, 19(6), 2009, pp. 1385–1396.
http://www.plantsciences.ucdavis.edu/affiliates/north/Publications/Eco%20Apps%20article%20North%20et%20al%20Fuel%20treatments%20forest%20carbon.pdf

change and ocean acidification, the costs of adapting to climate change, and the cost of sequestering carbon to mitigate emissions. CEQ's draft guidance on NEPA and Climate Change recognizes that the social cost of carbon ("SCC") is a "harmonized, interagency metric that can provide decision-makers and the public with some context for meaningful NEPA review." 79 Fed. Reg. 77802, 77827. "The SCC estimates the benefit to be achieved, expressed in monetary value, by avoiding the damage caused by each additional metric ton (tonne) of carbon dioxide (CO2) put into the atmosphere. Ruth Greenspan and Dianne Callan, World Resources Institute, More than Meets the Eye: The Social Cost of Carbon in U.S Climate Policy, in Plain English (July 2011) at 1. The EIS should carefully disclose these social costs. The express purpose of SCC analysis is to provide an apples-to-apples basis for comparing a project's economic benefits (e.g. timber receipts) with GHG pollution impacts (Social Cost of Carbon). Where SCC is not analyzed and disclosed, these impacts (costs) are hidden from the public and, in fact, often "paid for" by the broader environment and public in the form of degraded ecological resiliency, public health impacts, and more.

The DEIS (p 483) made two estimates of the Social Cost of Carbon Dioxide ($37/tonne and $109/tonne based on the expected *average* SCC and the *95th percentile* case) and concludes "Of the two estimates presented, the BLM considers the "average" scenario to be more likely." BLM needs to explain why they think the average case is more likely. There is a lot of evidence that the average case vastly under-estimates the true social cost of carbon pollution. The Interagency Working Group that developed these estimates admits that they did not include all the costs of greenhouse gases emissions in their estimates, (e.g. ocean acidification). Furthermore, the IPCC report-writing process tends to be conservative in estimating the effects of climate change. Extreme outcomes tend to be discounted until the evidence supporting them is highly compelling. Nevertheless, there is a real and significant possibility that extreme climate outcomes will occur and high social costs will manifest. Several sources support this:

- Glenn Scherer and DailyClimate.org 2012. Climate Science Predictions Prove Too Conservative - Checking 20 years worth of projections shows that the Intergovernmental Panel on Climate Change has consistently underestimated the pace and impacts of global warming. December 6, 2012. http://www.scientificamerican.com/article/climate-science-predictions-prove-too-conservative/ ("Across two decades and thousands of pages of reports, the world's most authoritative voice on climate science has consistently understated the rate and intensity of climate change and the danger those impacts represent, say a growing number of studies on the topic.").

- Chris Mooney 2014. The world's climate change watchdog may be underestimating global warming. October 30, 2014. http://www.washingtonpost.com/blogs/wonkblog/wp/2014/10/30/climate-scientists-arent-too-alarmist-theyre-too-conservative/ ("According to a number of scientific critics, the scientific consensus represented by the IPCC is a very conservative consensus. IPCC's reports, they say, often underestimate the severity of global warming, in a way that may actually confuse policymakers (or worse). The IPCC, one scientific group charged last year, has a tendency to "err on the side of least drama." And now, in a new study just out in the Bulletin of the American Meteorological Society, another group of researchers echoes that point. In scientific parlance, they charge that the IPCC is focused on avoiding what are called "type 1" errors -- claiming something is happening when it really is not (a "false positive") --

rather than on avoiding "type 2" errors -- not claiming something is happening when it really is (a "false negative"). The consequence is that we do not always hear directly from the IPCC about how bad things could be.”).

- SkepticalScience.com. How the IPCC is more likely to underestimate the climate response http://www.skepticalscience.com/ipcc-scientific-consensus.htm (“A recent study (Freudenburg 2010) investigated what it calls 'the Asymmetry of Scientific Challenge', the phenomenon in which reports on science fail to evaluate all outcomes, favoring certain probabilities while ignoring others. In the case of the IPCC, the researchers found that the media steadfastly challenge the predictions on the basis that they are exaggerated, worst-case scenarios. What they fail to speculate on is whether the opposite is true; that it may be equally correct to suggest that things might be far worse.

Niemi (2015) prepared a critique showing that BLM under-estimated the Social Cost of Carbon and explained how the analysis can be improved:

> **Summary**
> *Actions that reduce the amount of carbon stored in federal forests contribute to disruption of the global climate by increasing atmospheric concentrations of carbon dioxide. The climate disruption raises the risk of economic harm—locally, nationally, and globally—from extreme weather events, higher temperatures, changes in precipitation, rising sea levels, acidification of oceans, and changes in ecosystems. Laws and executive orders require managers of federal forests to account for these risks. This paper describes the recent failure of the Bureau of Land Management (BLM), to satisfy the requirements. It also describes the steps the BLM must take to meet its obligations, and illustrates the method the BLM and other federal forest management agencies should use to account for carbon-related risks in the future.*
>
> *The BLM failed to account for climate-related risks when it selected its Preferred Alternative for managing federal forests in western Oregon. If implemented, this alternative would yield more timber but less forest carbon than another alternative. Using old data and a conservative view of risk, the BLM provided information that indicates the additional climate-related costs may:*
> *• Outweigh the additional timber-related benefits by 2-to-1.*
> *• Equal $91,000 per additional timber-related job.*
> *• Equal $4 for every $1 of additional timber-related payments to local counties.*
> *Current data, plus a widely accepted view of risk indicates the additional climate-related costs may:*
> *• Outweigh the additional timber-related benefits by more than 30-to-1.*
> *• Equal $1.6 million per additional timber-related job.*
> *• Equal $68 for every $1 of additional timber-related payments to local counties.*
> *The BLM disregarded this information when choosing its Preferred Alternative. To satisfy its legal and administrative requirements, the BLM should fully and clearly describe the climate related risks that accompany the Preferred Alternative, and explain its justification for imposing these risks on the individuals, households, businesses, and communities that would bear them. This justification should address both the reduction in overall economic wellbeing that would result from implementing the Preferred*

Alternative and the moral issues that arise from imposing climate-related risk on those that would not enjoy the timber benefits.[436]

Niemi (2015) explained that, "Moore and Diaz (2015) found that accounting for the impacts of climate on economic growth increases the Interagency Working Group's estimates of the social cost of carbon by a factor of six." [437]

One way that economists deal with uncertain outcomes with high social costs is to account for uncertainty itself as a cost. The DEIS (p 502) says the analysis "addresses the value of carbon storage from a social perspective, where the value of carbon storage is derived from nonmarket valuation techniques such as avoided cost and avoided risk." However, the EIS does not fully account for uncertainty so it underestimates the value of conserving forests to avoid risk.

The agency must recognize that the federal estimate of SCC likely underestimates—perhaps significantly—the climate impacts of GHG pollution. As the U.S. Environmental Protection Agency has concluded:

> *Given current modeling and data limitations, [the federal SCC values] do[] not include all important damages. As noted by the IPCC Fourth Assessment Report, it is "very likely that [SCC] underestimates" the damages. The models used to develop SCC estimates, known as integrated assessment models, do not currently include all of the important physical, ecological, and economic impacts of climate change recognized in the climate change literature because of a lack of precise information on the nature of damages and because the science incorporated into these models naturally lags behind the most recent research.*[438]

Ackerman & Stanton (2010) do not support using the average or "central estimate":

> *Agencies seeking to incorporate climate change considerations in rules and regulations often rely on a cost-benefit analysis, weighing the cost of curbing emissions against the expected damages from every ton of carbon dioxide (CO2) that goes into the atmosphere*

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[436] Niemi, E. 2015. Accounting for Climate-Related Risks In Federal Forest-Management Decision, 10 May 2015 [draft]. Federal Forest Carbon Coalition Background Paper 2015–2. http://static1.1.sqspcdn.com/static/f/551504/26259333/1432605642583/SocialCostsOfCarbonOClandsNiemiMay2015.pdf?token=wDqoa5RkP8EoBLlsRWIPPRuahzg%3D

[437] c*iting* Moore, F.C., and D.B. Diaz. 2015. "Temperature Impacts on Economic Growth Warrant Stringent Mitigation Policy." Nature Climate Change. 12 January. http://www.eenews.net/assets/2015/01/13/document_cw_01.pdf ("Optimal climate policy in this model stabilizes global temperature change below 2 ◦C by eliminating emissions in the near future and implies a social cost of carbon several times larger than previous estimates. A sensitivity analysis shows that the magnitude of climate change impacts on economic growth, the rate of adaptation, and the dynamic interaction between damages and GDP are three critical uncertainties requiring further research. In particular, optimal mitigation rates are much lower if countries become less sensitive to climate change impacts as they develop, making this a major source of uncertainty and an important subject for future research.")

[438] EPA, The Social Cost of Carbon, http://www.epa.gov/climatechange/EPAactivities/economics/scc.html.

— a value known as the "social cost of carbon" (SCC). … While no definite SCC has been set so far, an interagency working group has endorsed a "central" estimate of $21 per ton of CO2 in 2010, or roughly 20 cents per gallon of gasoline — far too small a price incentive to prompt substantive mitigation measures.

In the United Kingdom, which started estimating prices for carbon emissions several years ago, the government's latest calculation is a range of $41 – $124 per ton of CO2, with a central case of $83. An expanded calculation of carbon prices for the United States should at least explore prices in this range …[439]

The 2006 "Stern Review" from the UK Treasury concluded that each ton of carbon dioxide emitted will cause $85 worth of damage to the world's economy.[440] According to the Congressional Research Service, capturing and storing most of the carbon from coal as it is combusted costs between $43-89/ton of CO_2, and this price will likely increase after the many safety, environmental, and efficiency problems with carbon capture and storage (CCS) are fully accounted for. [441] That's another good indication of the value of a storing a ton of carbon in forests.

ABSTRACT: The 2013 Interagency Working Group on the Social Cost of Carbon (IWG) updated the U.S. social cost of carbon (SCC) for 2015 from a central value of $24 to $37 using three integrated assessment models (IAMs): DICE-2010, FUND 3.8, and PAGE09. The SCC is the additional economic damage caused by one ton of carbon dioxide. While some have questioned the increase in the SCC as too high, a thorough examination of the latest scientific and economic research shows that $37 should be viewed as a lower bound. This is because the studies available to estimate the SCC omit many climate impacts—effectively valuing them at zero. Where estimates are available for a given type of impact, they tend to include only a portion of potential harms. This paper represents the first attempt to systematically examine and document these omissions for the latest versions of the three IAMs used by the IWG, as well as earlier versions when they are used in calibrating the updated models. … [H]ot spot damages include[e] increases in forced migration, social and political conflict, and violence; weather variability and extreme weather events; and declining growth rates. A better accounting of catastrophic damages is also needed, as well as many other impacts.[442]

We reestimate the values from the models (1) using a range of discount rates and methodologies considered more appropriate for the very long time horizons associated with climate change and (2) using a methodology that assigns "equity weights" to

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[439] Frank Ackerman, Elizabeth A. Stanton. 2010. The Social Cost of Carbon - A Report for the Economics for Equity and the Environment Network. April 1, 2010. http://www.e3network.org/papers/SocialCostOfCarbon_SEI_20100401.pdf.

[440] http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_index.cfm.

[441] Parker, Folger & Stine. 2008. Capturing CO2 from Coal-Fired Power Plants: Challenges for a Comprehensive Strategy. CRS Report for Congress. http://www.fas.org/sgp/crs/misc/RL34621.pdf *citing* S. Julio Friedmann, Carbon Capture and Sequestration As a Major Greenhouse Gas Abatement Option (November 2007), p. 11.

[442] Howard, P. 2014. OMITTED DAMAGES: What's Missing From the Social Cost of Carbon. http://costofcarbon.org/files/Omitted_Damages_Whats_Missing_From_the_Social_Cost_of_Carbon.pdf

damages based upon relative income levels between regions—i.e., a dollar's worth of damages occurring in a poor region is given more weight than one occurring in a wealthy region. Under our alternative discount rate specifications, we find an SCC [social cost of carbon] 2.6 to over 12 times larger than the Working Group's central estimate of $21"…[443] [444]*, If the agency chooses to disclose the economic and other benefits of logging, they must also disclose the social costs.* [445]

ENVIRONMENTAL JUSTICE

In spite of the DIES admission that the timber industry is inherently volatile and increased timber harvest may have an adverse effect on community stability, as well as the high social cost of carbon, the DEIS (p 472) still concludes that alternatives with more logging (e.g., alternatives B and C) will provide greater benefits in terms of "community capacity and resiliency" and environmental justice. BLM chose 13 metrics of community capacity and resiliency, but these were chosen among a larger set of metrics. We are concerned that the subset of metrics chosen failed to accurately reflect the community benefits of forest conservation. BLM's analysis of these issues need to better reflect the adverse effects of timber industry volatility and the fact that the cost of climate change will fall disproportionately on the poor and disadvantaged communities. BLM also limited it's analysis to communities in the planning area even though the adverse effects of climate change and ocean acidification will be felt far beyond that limited geographic scope.

University of California-Berkeley environmental health scientist Rachel Morello-Frosch studied low-income communities in the U.S. and found something she calls a "climate gap" -

> *The effects of climate change would likely hit hardest in places with the fewest resources to adapt. And we're not just talking about the developing world or tiny island nations. …*
>
> *… the climate gap describes a hidden pattern that we have found that indicates that communities of color and poor households within the United States are gonna be suffering more from the economic and health consequences of climate change than other Americans. In other words the climate gap is not only an international question, which has been the focus of a lot of climate change debates over the years, it's also very much an acute domestic problem within the United States.*[446]

Morello-Frosch's reports includes:

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[443] Laurie T. Johnson & Chris Hope, 2012. The social cost of carbon in U.S. regulatory impact analyses: an introduction and critique, J Environ Stud Sci. DOI 10.1007/s13412-012-0087-7. http://www.springerlink.com/content/863287021p06m441/fulltext.pdf?MUD=MP

[444] See *High Country Conservation Advocates v. U.S. Forest Service*, — F.Supp.3d —, 2014 WL 2922751 (D. Colo. June 27, 2014) (holding that BLM's NEPA analysis of climate change impacts was inadequate, and that the EIS must provide a justification for not using the social cost of carbon as a protocol to evaluate impacts).

[445] See *Sierra Club v. Sigler*, 695 F.2d 957, 979 (5th Cir. 1983), *Hughes River Watershed Conservancy v. Glickman*, 81 F.3d 437, 448 (4th Cir. 1996); *Columbia Basin Land Prot. Assn v. Schlesinger*, 643 F.2d 585, 594 (9th Cir. 1981).

[446] Climate Change and America's Poor. Living on Earth Radio Transcript. Air Date: Week of June 12, 2009.

http://loe.org/shows/segments.html?programID=09-P13-00024&segmentID=2.

Key Findings

> *There is a climate gap. The health consequences of climate change will harm all Americans—but the poor and people of color will be hit the worst.*
>
> ***What hasn't made headlines—yet—is the climate gap: the disproportionate and unequal impact the climate crisis has on people of color and the poor.*** *Unless something is done, the consequences of America's climate crisis will harm all Americans—especially those who are least able to anticipate, cope with, resist and recover from the worst consequences. This analysis is of California, which in many ways is a microcosm of the entire United States.*
>
> *Climate change is an issue of great importance for human rights, public health, and social fairness because of its profound consequences overall and the very real danger that poor neighborhoods and people of color will suffer even worse harms and hazards than the rest of Americans. This "climate gap" is of special concern for California, home to one of the most ethnically and economically diverse populations in the country.*
>
> ***The climate gap means that communities of color and the poor will suffer more during extreme heat waves.*** *For instance, African Americans in Los Angeles are nearly twice as likely to die from a heat wave than other Los Angeles residents, and families living below the poverty line are unlikely to have access to air conditioning or cars that allow them to escape the heat.*
>
> ***The climate gap means that communities of color and the poor will breathe even dirtier air.*** *For example, five of the smoggiest cities in California also have the highest densities of people of color and low-income residents. These communities are projected to suffer from the largest increase in smog associated with climate change.*
>
> ***The climate gap means that communities of color and the poor will pay more for basic necessities.*** *Low-income and minority families already spend as much as 25 percent of their entire income on just food, electricity and water—much more than most Americans.*
>
> ***The climate gap is likely to mean fewer job opportunities for communities of color and the poor.*** *The climate crisis may dramatically reduce or shift job opportunities in sectors such as agriculture and tourism, which predominantly employ low-income Americans and people of color.* [447]

California's Office of the Attorney General prepared a report on the "unequal impacts" of global climate change, saying -

> *Global warming will not affect everyone equally. As the Office of Environmental Health Hazard Assessment stated in its 2010 report, the adverse impacts of climate change are expected disproportionately to affect those who are socially and economically*

[447] Rachel Morello-Frosch, Ph.D., MPH | Manuel Pastor, Ph.D. | James Sadd, Ph.D. | Seth B. Shonkoff, MPH. The Climate Gap - Inequalities in How Climate Change Hurts Americans & How to Close the Gap. http://loe.org/images/content/090612/ClimateGapReport_full_report_web.pdf (emphasis in original).

disadvantaged, including the urban poor, the elderly, children, traditional societies, agricultural workers and rural populations. Disproportionate impacts can occur where certain groups lack the social and economic resources necessary to relocate to avoid impacts, or to purchase the technology necessary to adapt to our changing climate. According to a 2009 report by California's Climate Change Center, "[w]ithout proactive policies to address these equity concerns, climate change will likely reinforce and amplify current as well as future socioeconomic disparities, leaving low-income, minority, and politically marginalized groups with fewer economic opportunities and more environmental and health burdens."[448]

Lynn et al (2011) state:

The effects of climate change are expected to be more severe for some segments of society than others because of geographic location, the degree of association with climate-sensitive environments, and unique cultural, economic, or political characteristics of particular landscapes and human populations. Social vulnerability and equity in the context of climate change are important because some populations may have less capacity to prepare for, respond to, and recover from climate-related hazards and effects. Such populations may be disproportionately affected by climate change. … [C]onsiderations that pertain to the effects of climate change on socially vulnerable populations are identified.[449]

BLM's analysis of environmental justice must include the full geographic scope of the impacts of climate change. Many of the adverse social impacts of climate change will occur elsewhere in the U.S. and the world.

One important way to avoid unequal distribution of the costs of climate change is to avoid those costs in the first place. EPA just released a report on the impacts of climate change and the value of mitigation. They only looked at environmental justice in one section of the report dealing with coastal property impacts such as sea level rise, but they found that many disadvantaged communities along the west coast are especially vulnerable and would benefit from mitigation efforts (such as optimizing carbon storage in BLM forests). "Areas of higher social vulnerability are more likely to be abandoned than protected in response to unmitigated sea level rise and storm surge." The basic message is that taking action to store carbon today helps avoid imposition of high costs of adaptation on communities least able to afford those costs.[450] The example of coastal property damage is just a small part of the environmental justice implications of climate change. As another example, the cost of any adverse health impact associated with

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[448] State of California Department of Justice - Office of the Attorney General. https://oag.ca.gov/environment/climate-change/unequal-impacts *referencing* Linda Mazur, Carmen Milanes, Karen Randles, David Siegel, 2010. INDICATORS OF CLIMATE CHANGE IN CALIFORNIA: ENVIRONMENTAL JUSTICE IMPACTS December 2010. http://oehha.ca.gov/multimedia/epic/pdf/ClimateChangeEJ123110.pdf

[449] Kathy Lynn, Katharine MacKendrick, and Ellen M. Donoghue. 2011. Social Vulnerability and Climate Change: Synthesis of Literature. General Technical Report, PNW-GTR-838, August 2011. http://www.fs.fed.us/pnw/pubs/pnw_gtr838.pdf

[450] EPA 2015. Climate Change in the United States: Benefits of Global Action. http://www2.epa.gov/cira/downloads-cira-report; http://www2.epa.gov/sites/production/files/2015-06/documents/coastalproperty.pdf

climate change will fall disproportionally on poor people with limited access to health care. In fact, nearly all future adaptation costs caused by global climate change will fall unfairly on those least able to pay.

BLM should adopt an alternative that minimizes carbon emissions and timber harvest and maximizes forest carbon store and other non-consumptive ecosystem services.

I. BLM SHOULD OPTIMIZE FOREST CARBON STORAGE TO HELP MEET CLIMATE MITIGATION GOALS

The DEIS should disclose whether the cumulative effects of logging-related GHG emissions are consistent with emissions reduction goals established by state and federal government and international agreements.

In 2007, the Oregon legislature passed HB 3543 that codifies greenhouse gas reduction goals for the state: namely, by 2010 to begin to reduce greenhouse gas emissions, by 2020 to achieve greenhouse gas levels 10% less than 1990 levels and by 2050 to achieve greenhouse gas levels 75% below 1990 levels. ORS § 468A.205. Logging-related GHG emissions will conflict with attainment of these goals. Greater conservation of BLM forests will help meet these goals.

BLM should also strive to harmonize with State of Oregon statewide land-use planning goals (adopted in administrative rules) that prohibit land use activities that exceed the "carrying capacity" of air and water resources. OAR 660-015-0000(5) - (6). The Department of Land Conservation and Development (DLCD) defines "carrying capacity" as a "Level of use which can be accommodated and continued without irreversible impairment of natural resources productivity, the ecosystem and the quality of air, land, and water resources." There is a large body of science indicating that we are already beyond the level of CO2 in our atmosphere that can be described as safe or reversible.

> *In November 2014, in a historic joint announcement with China, President Obama laid out an ambitious but achievable target to reduce greenhouse gas emissions in the United States in the range of 26 to 28 percent below 2005 levels by 2025.* [451]

On June 25, 2013, President Obama released his Climate Action Plan, which includes forest conservation among the "first pillar"[452] of efforts to reduce emissions, saying:

> *Preserving the Role of Forests in Mitigating Climate Change: America's forests play a critical role in addressing carbon pollution, removing nearly 12 percent of total U.S. greenhouse gas emissions each year. … Conservation and sustainable management can help to ensure our forests continue to remove carbon from the atmosphere…* [453]

Advancing efforts to protect our forests" is also mentioned in the 6th U.S. Climate Action Report under the United Nations Framework Convention on Climate Change (UNFCCC). The agency should advance this national climate goal by conserving public forests. Carbon emissions from

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[451] https://www.whitehouse.gov/climate-change; https://www.whitehouse.gov/the-press-office/2014/11/11/fact-sheet-us-china-joint-announcement-climate-change-and-clean-energy-c

[452] U.S. Dept of State 2013. draft 6th Climate Action Report http://www.state.gov/e/oes/climate/ccreport2014/index.htm (page 12).

[453] http://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf

logging public lands directly conflict with this important national goal and indicate potential significant impacts requiring an EIS.

Logging related GHG emissions (and forgone opportunities for increased storage of carbon in forests) will conflict with these state, federal and international GHG reduction goals.

COMMUNITY STABILITY AND PROSPERITY

BLM appears to be emphasizing "sustained yield" for its own sake, while sacrificing opportunities to increase carbon storage and recreation, even though the DEIS clearly shows that the economic value of recreation and carbon storage on BLM lands greatly exceed the value of wood products. This makes no sense. BLM needs to consider alternatives that do more to optimize carbon storage, provide more low-impact recreation opportunities, and produce other ecosystem services and non-commodities. Sustained yield should not be a goal unto itself, but an outcome of sound forest conservation.

Goals related to timber production and carbon storage are in direct conflict with each other. Alternatives that increase logging and increase timber revenue, sacrifice economic benefits of carbon storage that vastly exceed the value of wood products. Furthermore, increased logging tends to be destabilizing to local communities, while emphasizing non-consumptive ecosystem services will tend to have a stabilizing economic influence. All these economic factors should play an important role in BLM's final choice among alternatives. BLM should maximize economic benefits for public lands management by minimizing logging and emphasizing non-consumptive values like clean water, carbon storage, biodiversity conservation, and low impact recreation.

The DEIS creates the appearance of a false dichotomy: timber jobs vs recreation jobs, e.g., Table 3-177 (DEIS p 536). The EIS needs to reflect the fact that "recreation" is far too narrow view of the economic alternative to logging, because forest conservation provides economic benefits across virtually every sector of the economy. It is more accurate to recognize that Oregon's greatest economic asset is our quality of life which offers a "second paycheck" to every Oregonian and attracts high quality workers and diverse new businesses that want to hire those people. The DEIS needs to accurately reflect the fact that conserving BLM forest contributes to Oregon's quality of life, while timber harvest degrades habitat, water quality, climate stability, scenic views, and harms Oregon's quality of life. The choice is not timber versus recreation, but rather, timber versus every other economic sector in the state that depends very much on the flow of these ecosystem services to support its diversified economy.

The DEIS (p 545) says "Changes in timber harvest are the primary influences on projected future BLM-based employment and earnings in local economies in the planning area. This is because changes by alternative for other resources are either unavailable or very small." There are several problems with this analysis:

- The conclusion that BLM can positively influence the local timber economy is brought into question by the fact that the timber industry is volatile, declining, and subject to a wide range of forces beyond BLM's control, e.g., "commodity-based industries are subject to the highs

and lows of business cycles not only in the United States, but also internationally." DEIS (p 568).

- BLM assumes inappropriately that recreation and other economic sectors are insensitive to logging on BLM lands. This ignores the fact that logging degrades not only the recreation experience, but also degrades a wide variety of ecosystem services and amenity values that must be carefully conserved in order to sustain and grow other sectors of the economy. BLM needs to disclose the fact that the overall economy is likely to thrive, not just "in spite" of reductions in federal log supply caused by increased emphasis on conservation, but "because" of greater conservation of public lands.[454]
- This conclusion also ignores the adverse effects of volatility in the wood products sectors, which diminishes the social value of jobs in those sectors and adds to a variety of social problems related to job insecurity. "If industries increase that exhibit historic instability, they may inject greater economic instability into their host communities." DEIS (p 568).

DEIS (p 569) says "Industrial specialization can be beneficial to an area, though it may, at the same time, subject the area to greater volatility. Growth and stability are both important though sometimes competing concepts in a portfolio of economic growth and development considerations." This seems to imply that BLM can stimulate increased rates of economic growth by increasing federal timber supply. The DEIS fails to recognize that this is highly unlikely given the fact that the timber industry is a mature industry that is stagnant and declining relative to other sectors that are growing much faster.

The DEIS failed to adequately consider trends. For instance, timber jobs are trending down; recreation (and other) jobs are trending up.

> *Between 1990 and 2000, employment grew by 29 percent in the 72 counties in the Plan area. During the same period, manufacturing grew by 3 percent, compared to 56 percent employment growth in the services sector. Most of the other major industries grew at rates varying between 23 and 32 percent (fig. 3-1). [p 37]*
>
> *Federal forests were becoming highly valued for recreation, visual quality, and the protection of water, wildlife, and fish. The regional economy was also maturing. Agriculture and industries based on the extraction of forest resources showed little growth. The percentage of people in the region whose livelihood was based on the extraction of goods and services from federal lands shrank. [p 38]*
>
> *The total decline of 30,000 jobs in the primary processing industries (SIC 24 and SIC 26) [during the 1990s] is contrasted to changes in total employment across all industries in the Plan area. During the 1990s, there was an increase in total employment of 1.4 million jobs. Primary wood-products processing accounted for 2 percent of all jobs in the Plan area in 1990 and dropped to 1 percent by 2000. [p 41]*[455]

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[454] See Neimi, Whitelaw, & Johnston 1999. The Sky Did NOT Fall. ECONorthwest. http://pages.uoregon.edu/whitelaw/432/articles/SkyDidNotFallFull.pdf

[455] USDA/USDI. 5-volume Northwest Forest Plan, 10-Year Socioeconomic Monitoring Report, http://www.fs.fed.us/pnw/publications/gtr649/pnw-gtr649_vol3_pt5.pdf.

Other notable economic trends include:

- Declining real wages in the timber industry, especially when compared to other industries. It does not makes sense to encourage growth in an industry that is systematically trying to break-up unions, reduce wages, reduce benefits, etc.
- Declining jobs per million board feet of timber harvest. If the goal is to create jobs, it does not make much sense to feed more public wood to an industry that uses more machines and computers and fewer people.
- Shrinking share of total employment in the timber industry relative to the economy as a whole. It is unwise economic policy to prop up declining/polluting industries like timber. It is better to focus limited public resources on clean, growing industries.
- Increasing consolidation in the industry. Jobs are becoming concentrated in areas near the I-5 corridor, where communities have more options for economic growth and diversification. BLM cannot stop this trend by increasing the wood supply.
- "Areas with high levels of natural amenities have enjoyed growing populations and income levels in the past decade. Much of this growth has come from the immigration of people with income from self-employment or investments. These new migrants are usually well-educated and often work as executives or professionals or in such industries as finance, insurance, and real estate or business services. Communities may find that policies that enhance the quality of life (better schools, environmental protection, etc) can attract more of these people who are in a financial position to act upon their residential preferences. This in turn can stimulate economic development." [456]

Many of the tables in the socio-economic section of the DEIS are labelled "total jobs" even though the DEIS really only looked at timber jobs and recreation jobs, and failed to disclose amenity-induced job creation. "Total jobs" should not be used to describe jobs in just two sectors of the economy.

The DEIS makes several statements about conservation alternatives causing "disproportionately negative economic effect" for certain counties, but these conclusions do not consider all of the economic factors or even all of the job creation factors.

The DIES implicitly recognizes that lands close to communities are disproportionately valuable for recreation. DEIS (p 489) says that BLM manages about 50% of the land located within 30-minute driving time of the 12 largest communities in western Oregon, and 34% within 60-minute driving time. However, the DEIS also implies that the economic value of recreation is similar across alternatives. DEIS (p 526) says that the economic value of $250 million for recreation is "consistent across all alternatives." This fails to recognize that logged over lands are far less desirable for recreation. Logged areas are unsightly and tend to have a lot of trip-hazards from brush and logging debris, plus a lot of thistles and blackberries which are barriers to recreation. The EIS should disclose how much of the BLM land within 30 and 60-minute driving time is in timber harvest land allocation versus reserve land allocations. The EIS must disclose the adverse

[456] Peter B. Nelson. 1999. Quality of Life, Nontraditional Income, and Economic Growth New Development Opportunities for the Rural West. Rural Development Perspectives, vol. 14, no. 2. http://www.ers.usda.gov/publications/rdp/rdpsept99/rdpsept99e.pdf

economic impact of increased timber harvest within a 60 minute drive of communities large and small.

The DEIS uses economic multipliers from OFRI which tend to inflate the economic importance of the timber industry.

To understand local communities, the ID Team interviewed elected officials. These people have a clear economic conflict of interest, so they are unlikely to provide unbiased information about the overall wants and needs of the county with respect to public lands.

The DEIS does not accurately represent the relationship between big cities/small cities. Money flows from big cities to small, so small cities will enjoy trickle down benefits if BLM emphasizes conservation and amenity-based economic growth, even if those effects are felt first in larger cities.

BLM's attempt to switch from thinning back toward regeneration might gain some economic efficiency in terms of sale preparation and logging implementation, but it also creates uncertainty in terms of social acceptability of clearcutting and risk of litigation. The DEIS did not account for this.

The analysis assumes that BLM is a "price taker." This means that BLM has such a minor effect on supply that the market does not notice if they supply more or less timber and prices do not change. This has a variety of implications in terms of "leakage" in the carbon storage analysis, etc.

I. DEIS ANALYSIS OF NON-MARKET ECONOMIC VALUES NEEDS IMPROVEMENT

DEIS Tables 3-159 and 3-173 provides some information on non-consumptive and non-market economic values but this analysis is inadequate:

- The DEIS failed to quantify many economic benefits of conservation even though there are tools available to do so, such as surveys inquiring about people's "willingness to pay" for endangered species recovery, old growth restoration, biodiversity, etc...
- The DEIS failed to recognize variation among alternatives, and thus failed to recognize the value of conservation. The DEIS (P 480) says "it is not possible to calculate how BLM actions could affect the values of these goods and services using market prices." For instance, Table 3-173 seems to indicate that all the alternatives have similar economic values for recreation, which ignores the fact that logged lands are far less desirable for recreation. (See recreation comments) BLM can provide quantitative estimate of these economic impacts or at least predict the relative economic values based on each alternative's relative emphasis on logging versus conservation. The EIS must clearly reflect that fact that alternatives with greater conservation will tend to provide greater non-market economic benefits.
- The DEIS failed to integrate the extensive analysis of timber economics with these non-consumptive and non-market economic values. It is critical that the EIS provide some way of comparing the economic value of conservation versus logging. If the EIS puts a dollar value on timber, but leaves non-market values unquantified, the unavoidable effect will be to artificially elevate the importance of timber and devalue non-market economic benefits of conservation.

- The value of water quality protection is likely underestimated. The DEIS focused on source water protection for drinking watersheds. High quality water is valuable for many purposes other than drinking water, including: swimming, fishing, supporting biodiversity, diluting downstream pollution, etc. The DEIS needs to disclose the value of providing water quality that goes beyond the bare minimum necessary to meet legal requirements. The law allows some pollution, and BLM timber sales often contribute sediment to streams, but BLM can provide social and economic benefits by preventing any degradation of water quality.
- The DEIS fails to quantify and underestimates the economic value of conserving biodiversity. Maintaining biodiversity is critical for climate change mitigation, maintaining the genetic resources for developing future crops sources of medicine, preserving genes and proteins that could be useful in future technology, conserving pollination services, hunting/fishing/wildlife-watching, etc. The DEIS needs to disclose the value of providing biodiversity that goes beyond the bare minimum necessary to meet legal requirements. Instead of just striving to conserve threatened and endangered species, BLM should strive to prevent other species from being listed, and should strive to maintain and restore healthy populations of native wildlife. The law may allow some degradation of wildlife resources, and BLM regeneration timber sales often degrade habitat, but BLM can provide social and economic benefits by preventing degradation of biodiversity.

Table 3-159. Summary of economic value of goods and services derived from BLM-administered lands in western Oregon, 2012.

Good or Service	Type of Valuation	Economic Value in 2012
Biodiversity and Sensitive Species	Qualitative	Not Monetized
Carbon Storage	Non-Market	$99 million
Cultural Meaning	Qualitative	Not Monetized
Energy Production	Market	$0.032 million
Grazing	Market	$0.022 million
Minerals	Market	$0.015 million
Recreation	Non-Market	$222.8 million
Scenic Amenities	Qualitative	Not Monetized
Source Water Protection	Qualitative	Not Monetized
Special Forest Products	Market	BLM Revenue: $0.2 million; Market Value Low $0.4 million, Market Value High $6.5 million
Timber	Market	$20.8 million (Harvest Value)

[DEIS p 508]

Table 3-173. Table summary of effects on economic value of goods and services derived from BLM-administered lands in Western Oregon.

Good/Service	Type of Valuation	Economic Value in 2012	Impact by Alternative				
			No Action	Alt. A	Alt. B	Alt. C	Alt. D
Biodiversity and Sensitive Species	Qualitative	Not Monetized	-	Lower valueless increase associated with less increase in structurally-complex forest.	Higher increase associated with more increase in structurally-complex forest.	Less increase associated with less increase in structurally-complex forest.	Higher increase associated with more increase in structurally-complex forest.
			-	Diminished economic well-being associated with less butterfly habitat. Economic values associated with species generally protected or enhanced in the long run.			
Carbon Storage	Non-Market ($ millions)	$99	$131.4	$179.3	$165.0	$54.6	$232.8
			Average per year 2013 - 2022				
Cultural Meaning	Qualitative	Not Monetized	Value of cultural sites and artifacts protected across all alternatives. Overall effect on cultural meaning impossible to assess at the present scale of analysis.				
Energy Production	Market	$0.032 million	Value of energy production across all alternatives limited by lack of demand. Supply of biomass would increase; Supply of land available for wind/ROW development would decrease.				
Grazing	Market	$0.022 million	No change in supply or value of grazing.				No grazing would reduce value to $0.
Minerals	Market	$0.015 million	Small change in acres available for quarry development would not likely be large enough to change quantity or value of minerals produced. No change in value of locatable or leasable minerals.				
Recreation	Non-Market ($ millions)	$222.8	$250.1 (Consistent under all alternatives)				
Scenic Amenities	Qualitative	Not Monetized	Potential 77% reduction in VRI Class II could reduce value of aesthetic resources	Potential 75% reduction in VRI Class II could reduce value of aesthetic resources	Potential 82% reduction in VRI Class II could reduce value of aesthetic resources	Potential 82% reduction in VRI Class II could reduce value of aesthetic resources	Potential 90% reduction in VRI Class II could reduce value of aesthetic resources
Source Water Protection	Qualitative	Not Monetized	No change under any alternative.				
Special Forest Products	Market	BLM Revenue: $0.2 million; Market Value Low $0.4 million, High $6.5 million	Changes in supply of lands suitable for the production of Category 1 and Category 2 species produce relatively small changes and would likely have a small effect on the overall supply, and thus the value, of each category of special forest product in the planning area.				
Timber	Market ($ millions)	$20.8	$93.0	$56.2	$72.9	$134.9	$37.4
			Average per year 2013 - 2022				

[DEIS p 526]

Several sources support our recommendation to take a broader view of the economic value of biodiversity, and the need for BLM to strive to do much more than just conserve species that are already listed:

> *Preserving biodiversity also means preserving a reservoir of as-yet-undiscovered medical treatments and cures. … Ecological policies that seek to preserve biodiversity and limit human influences on ecosystem organization may thus be in the best interest of public health, both because biodiversity can yield treatments for existing diseases and*

provide a buffer against exposure to emergent ones. … Conservation makes good sense in just the same way that preventive medicine does.[457]

[B]iodiversity is positively related to the ecological functions that underpin the provision of ecosystem services. … [E]cological restoration is likely to lead to large increases in biodiversity and provision of ecosystem services, offering the potential of a win-win solution in terms of combining biodiversity conservation with socio-economic development objectives.[458]

Recently, some scientists have expressed renewed interest in natural products research following the failure of alternative drug discovery methods to deliver lead compounds in key therapeutic areas such as immunosuppression, anti-infectives and metabolic diseases.

"Natural products research remains invaluable when it comes to providing that initial lead," Wani said. "Before we explored the Pacific Yew tree we had no idea that we could treat cancer and other diseases through microtubule overproduction."

Wani said such discoveries support his contention that "nature is the best chemist."

Another proponent of natural products research at RTI, Dr. David Kroll researches milk thistle compounds as a possible way to treat prostate cancer.

"The natural world has 10 times more chemical diversity than synthetic compounds," said Kroll, a senior research pharmacologist. "We just have to get to it in time." [459]

It is also important to conserve biodiversity because it could prove useful to humans in was that have not yet been investigated. Only a fraction of plant species have been tested for activity against cancer, AIDS, Alzheimer's, infectious bacteria, etc. For example, Research Triangle Institute International (RTI.org) is funded by a grant from the American Cancer Society, to test more than 10,000 mushroom extracts for the presence of chemicals that have potential as chemotherapy drugs. BLM forests harbor tremendous fungal diversity, much of which remains unsurveyed and unrecognized when logging projects are proposed.

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[457] American Council on Science and Health. Why Biodiversity Is a Public Health Issue. November 2, 2005. http://www.acsh.org/factsfears/newsID.658/news_detail.asp.

[458] José M. Rey Benayas, Adrian C. Newton, Anita Diaz, and James M. Bullock. 2009. Enhancement of Biodiversity and Ecosystem Services by Ecological Restoration: A Meta-Analysis. Science 28 August 2009: 1121-1124.

[459] Taxol Pioneer Calls for Greater Emphasis on Natural Products Research , Feb 18, 2005.

http://www.rti.org/newsroom/news.cfm?obj=9BB6E900-3E77-4CEC-9EB6321166A3E61C.

THE COQUILLE LANDS

Reading the DEIS, we do not see clearly what BLM is proposing to do with the lands surrounding the Coquille Tribal Forest, but we do know that the BLM has been trying to decouple tribal management from BLM management standards.

In 1995, Congress granted the Coquille Tribe approximately 5,400 BLM lands with explicit conditions on forest management. It is Congress's intent, as written in law, that management of the Coquille Tribal Forest shall be managed "subject to the standards and guidelines of Federal forest plans on adjacent or nearby Federal lands, now and in the future." [460] BLM says it's purpose is to coordinate with the Coquille Tribe on management of "adjacent and nearby" BLM lands. This purpose will undermine Congressional intent by weakening standards on adjacent federal lands, for the express purpose of ensuring the Tribal forest is managed different than the rest of BLM lands. Congress' intent was to manage lands *similarly*, but the purpose of BLM's effort here is to ensure that tribal trust lands are managed *different* than most of BLM lands in western Oregon.

DEIS at 582 expressly states that, "The Tribe specifically wants to decouple management of the Coquille Forest from BLM management practices." BLM must not accommodate this decoupling because it very clearly violates Congressional intent that management of the tribal forest be coupled to management of BLM lands. Congress explicitly said management of the tribal forest shall be managed "subject to the standards and guidelines of Federal forest plans on adjacent or nearby Federal lands, now and in the future."[461] The phrase "subject to" makes clear that BLM management standards lead, and tribal forest management must follow.

We encourage BLM to coordinate with the Coquille Tribe (and others), especially developing and considering alternatives that will lead to meaningful advances in conservation and community stability.

DEAD AND DOWN WOOD STANDARDS

Dead wood habitat is associated with the abundance or presence of approximately one quarter to one third of vertebrate wildlife in Northwest forests. At least 47 species deemed sensitive or special-status have associations with dead wood such as downed logs and snags, and at least 20% of birds in the western Oregon Doug-fir forests depend on snags for feeding or nesting.[462] Pileated woodpeckers play a crucial keystone species role in Oregon's forests, and are directly affected by snag habitat availability. Over two dozen bird species have been shown to use cavities that have been previously excavated by Pileated woodpeckers. Species which subsequently use pileated-created cavities to nest or roost include the flammulated owl, the bufflehead, and Vaux's swifts, which are on sensitive species lists or are considered priority species in Oregon or Washington. Other vertebrate species include the northern flying squirrel,

[460] 25 U.S.C. 715c(d).
[461] Id.
[462] Hagar 2007, Cline et al. 1980.

which is the primary prey of the northern spotted owl, as well as the common merganser, silver haired bat, and fisher, and American marten.[463]

Many BLM special status bat species are also dependent on standing dead trees. These bats are associated with decadent live trees and large snags with sloughing bark, which are used variously as solitary roosts, maternity roosts, and hibernacula by bat species associated with Douglas-fir forests.

Over the past 100 years, most of Oregon's native old-growth forests have been logged, taking with them their potential to grow large, die naturally and become snags that provide essential wildlife habitat, and many parts of the management area are currently in a deficit of large snags. To protect this essential wildlife habitat, the Northwest Forest Plan establishes mandatory minimum snag retention standards for timber sales on federal public lands, which has been incorporated in to the existing BLM District RMPs: Retain snags in a timber harvest unit at levels sufficient to support species of cavity nesting birds at 40% of potential population levels. This 40% requirement must be met throughout the Matrix with per acre requirements met on areas averaging no larger than forty acres. *See e.g., Salem BLM RMP at 21*

The BLM's draft RMP for Western Oregon does away with this biologically-driven snag retention standard, replacing it with draft standards that treat existing and newly created snags as interchangeable, and averages the snag density standards across the "scale of the harvest unit" which could be hundreds, if not thousands, of acres.

While each alternative offers a slightly different quantification for snags, both existing and created, the approach is essentially the same: no specific snag retention standards – just a vague direction to "retain existing snags and existing down woody material during silivicultural treatments except for safety or operational reasons." This is coupled with the direction to create new snags at the time of harvest. *See RMP EIS at 962, 974, 984*. The lack of quantified retention standards coupled with a reliance on human-created snags poses the threat of significant habitat loss for snag-dependent species.

As large snags are required for the habitat requirements of many species but are in short supply due to past and present management the Western Oregon RMP should exclude stands with high snag densities from harvest, or utilize buffers in order to protect snags, particularly legacy snags.[464]

Ease of human access, along with timber harvest, has a significant negative impact on snag density.[465] Forest stands which are thinned retain snag densities approximately three times lower than in stands with no history of logging, and snag densities in forest stands adjacent to roads are approximately three times lower than those not adjacent to roads. [466]

None of the draft RMP EIS alternatives take the necessary steps to protect or retain existing snags, and so will exacerbates the current deficit of legacy snags. Since all alternatives allow for

[463] Aubrey & Raley 2002.
[464] Cline et al. 1980, Windom and Bates 2008.
[465] Windom and Bates, 2008.
[466] Id.

snags to be cut as needed for "safety or operational reasons" and do not include any protective buffers for legacy snags, the alternatives do not ensure that essential snag habitat will be protected. Most snags could be considered a safety hazard if logging takes place nearby, or they could simply be knocked over during logging. This draft RMP fails does not explain how the BLM will maintain adequate snag density to provide for even minimum wildlife habitat needs. This is especially crucial because many of the management areas already exist in a state of insufficient snag density due to past management practices and numerous recent timber sales. A general statement of 'trying' to retain snags, which lacks any numeric standards or actual accountability, is insufficient to address the current snag deficiency crisis, or to ensure that existing snags are protected and retained.

I. CREATED SNAGS CANNOT BE RELIED ON TO PROVIDE QUALITY HABITAT

All the alternatives rely on the creation of new snags, rather than the specific retention of existing snags, to provide adequate wildlife habitat. There are two key problems with the approach that the draft RMP EIS did not adequately address. First, while snag density may be augmented by killing live trees, the range of diameters of the trees available in young stands from which to create snags may not be adequate for many cavity-using species. Snags < 50cm dbh are infrequently used as nest or roost sites by cavity-using wildlife in western Oregon (Mellen et al.: DecAID).

Second, there is a significant time lag between the creation of snags and their utility as habitat. A study that monitored 1,267 created snags in Willamette National Forest found trees killed within the last 10 years had little decay and had neither ant colonies nor adequate nesting roosting cavities. (Boleyn, et. al., 2002). Regarding the keystone snag species pileated woodpeckers, the study found foraging use in only 1.5% of created snags after 10 years. *Id.* A created snag is *not* interchangeable with an already existing snag as regards wildlife habitat needs and the RMP EIS should reflect this time lag and its impacts on species distribution after management actions that remove existing snags.

II. DEADWOOD RETENTION STANDARDS ARE NECESSARY IN RIPARIAN RESERVES

The draft RMP EIS does not seem to include snag and deadwood retention standards specific to Riparian Reserves. In fact, removing dead trees as needed for safety or operational reasons is explicitly allowed in Riparian Reserves, without any limitations on size of the tree or proximity to the waterbody.[467] A recently published peer-reviewed study by two research scientists from the National Oceanic and Atmospheric Administration (NOAA) directly addressed the need to retain large dead wood in Riparian Reserves, as it is the key driver of attaining riparian biodiversity.[468] The final management guidelines of the RMP should require a specific numeric standard for retention of large dead wood, both standing and downed, in Riparian Reserves.

[467] Draft RMP EIS at 917.
[468] Pollack & Beechie, 2014.

III. ADEQUATE SOURCES OF DEADWOOD ARE ESSENTIAL FOR SOIL PRODUCTIVITY

Retaining adequate sources of deadwood is also essential for long term soil health – an issue not addressed in the draft RMP's Management Direction for Soil, which focus primarily on limiting soil compaction and disturbance and does not include protecting the sources of long-term soil productivity.[469]

Soil and soil productivity are fundamental aspects of forested ecosystems that influence the composition and condition of vegetation, rates of vegetative recovery after disturbance, sediment flux, and the quantity, timing, and quality of water produced by watersheds, which, in turn, affect aquatic populations and habitats. [470]Large woody debris (LWD) provides important sources of organic matter and nutrients in soils, which are vital to the long-term maintenance and protection of soil productivity.[471]

Despite these the well-known importance of LWD to soil productivity the draft RMP EIS fails to disclose that scientific information has repeatedly noted that one of the most effective, efficient and important ways to restore degraded soil productivity is to retain all sources of LWD and organic matter and prevent additional soil disturbances in degraded areas. (Kattlemann, 1996; Beschta et al., 2004). The final RMP EIS should include specific numeric standards for retention of existing LWD in all management areas sufficient to provide for both habitat and long-term soil productivity.

LANDS WITH WILDERNESS CHARACTERISTICS

Pursuant to the Federal Land Policy and Management Act (FLPMA), "The Secretary shall prepare and maintain on a continuing basis an inventory of all public lands and their resource and other values (including, but not limited to, outdoor recreation and scenic values), giving priority to areas of critical environmental concern. This inventory shall be kept current so as to reflect changes in conditions and to identify new and emerging resource and other values." 43 U.S.C. §1711(a). Wilderness character is a resource for which BLM must keep a current inventory. As the U.S. Court of Appeals for the Ninth Circuit recently held: "wilderness characteristics are among the 'resource and other values' of the public lands to be inventoried under § 1711. BLM's land use plans, which provide for the management of these resources and values, are, again, to 'rely, to the extent it is available, on the inventory of the public lands, their resources, and other values.' 43 U.S.C. § 1712(c)(4)." *Oregon Natural Desert Ass'n v. Bureau of Land Management*, 531 F.3d 1114, 1119 (9th Cir. 2008). Therefore, BLM is required to consider "whether, and to what extent, wilderness values are now present in the planning area outside of existing WSAs and, if so, how the Plan should treat land with such values." *Id*. at 1143.

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[469] RMP EIS 929-30.
[470] Beschta et al., 2004.
[471] Beschta et al., 2004; Karr et al., 2004.

BLM now has current guidance requiring updating its inventory of lands with wilderness characteristics and considering protection of those values. Instruction Memorandum (IM) 2011-154 and Manuals 6310 and 6320 contain mandatory guidance on implementing that requirement. The IM directs BLM to "conduct and maintain inventories regarding the presence or absence of wilderness characteristics, and to consider identified lands with wilderness characteristics in land use plans and when analyzing projects under the National Environmental Policy Act (NEPA)." BLM must update its inventory of lands with wilderness characteristics as part of this land use planning process. Manual 6310 provides detailed guidance on conducting inventories of lands with wilderness characteristics. The manual identifies situations when BLM must update its inventory:

1. The public or the BLM identifies wilderness characteristics as an issue during the National Environmental Policy Act (NEPA) process.
2. The BLM is undertaking a land use planning process.
3. The BLM has new information concerning resource conditions, including wilderness characteristics information submitted by the public that meets the BLM's minimum standard described in the Wilderness Characteristics Inventory Process section of this policy.
4. A project that may impact wilderness characteristics is undergoing NEPA analysis.
5. The BLM acquires additional lands. (6310.06.A).

Many of these conditions apply to lands under consideration, which have not been actively re-inventoried by the BLM using the detailed standards and procedures set out in the current guidance. Once there is new information that meets the general submission standards, then "as soon as practicable, the BLM shall evaluate the information," including field checking as needed and comparing with existing data to see if previous conclusions remain valid. BLM is also required to document its rationale and *make it available to the public*. 6310.06.B.2 (emphasis added).

Further, BLM Manual 6310 also sets out detailed guidance on how to identify wilderness characteristics, including how to define "naturalness," "roads," "outstanding opportunities for solitude or primitive and unconfined recreation," and "supplemental values." The guidance explicitly cautions that, "undeveloped possessory interests (e.g., mineral leases) are not treated as impacts to wilderness characteristics because these rights may never be developed." 6310.06.C.3.d. Furthermore, the BLM is supposed to consider "existing conditions as opposed to potential future conditions" when evaluating lands for wilderness characteristics. 6310.06.B. Thus, BLM should not rule out lands as having wilderness characteristics (or for management to protect those characteristics) either because there are valid existing rights or the lands are in proximity to an area with other development or rights-of-way.

The current guidance was not available during BLM's previous evaluation of potential lands with wilderness characteristics and requires that the BLM update its inventory to comply with the agency's official interpretation of FLPMA.

BLM needs to identify wilderness areas being considered by congress, unroaded areas adjacent to forest service wilderness, and unroaded areas adjacent to forest service inventoried roadless areas.

The BLM cannot pre-empt the will of Congress by damaging areas currently being considered in wilderness legislation. Specifically the areas identified as "Wild Rogue Wilderness" and "Devils Staircase Wilderness" in Senator Wyden's O&C legislation must be reserved from timber harvest modeling and any management actions that would damage wilderness characteristics. These areas would also need to be identified for mineral withdrawal in the RMP. Additionally the BLM must conduct a geospatially explicit analysis to identify potential BLM wilderness adjacent to existing Forest Service wilderness and large inventoried roadless areas such as the South Kalmiopsis Roadless Area. For example, lands adjacent Forest Service lands in the Rough and Ready Creek drainage need to be evaluated for wilderness and mineral withdrawal. Other ultramafic lands on the west side of the Illinois Valley also need to be considered for eventual wilderness designation as a combined unit with Forest Service roadless areas.

BEST MANAGEMENT PRACTICES

Use of Best Management Practices traces its origins to the Clean Water Act as an approach to minimize impacts from nonpoint sources of water pollution. As defined by the CWA: Best Management Practices (BMPs), are methods, measures or practices selected by an agency to help minimize its nonpoint source control needs. BMPs include but are not limited to structural and nonstructural controls and operation and maintenance procedures. BMPs can be applied before, during and after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters. 40 CFR §130.2(m).

Environmental advocacy group Bark has surveyed many timber sales for compliance with Best Management Practices and found several violations. For example, in the Salem BLM's Missouri Ridge Timber Sale, the BMPs limit "ground based operations to relatively dry soil conditions". Based on what we saw on the ground we are confident in highlighting that soils were not dry while operations were taking place. The degree of soil damage on the roads, skid trails and landings, including deep ruts and compacted mud are good indicators that this BMP was not followed. A local resident also reported that logging and hauling occurred during rainy conditions when he visited the unit in fall 2013.

Similarly, when Bark staff and volunteers surveyed the Annie's Cabin Timber Sale after logging, they found that BMPs were not followed, specifically regarding erosion control measures were to be placed on the roads post-implementation. Bark found that the only such measures included shallow earthen waterbars, which were not effective in preventing channelization along the roads, carrying sediment down the roadbed (pictured at right). This road is obviously NOT fully stabilized.

These findings point to both the inability of the BLM timber sale administrators to ensure BMPs and timber contract specifications are fully complied with, and the insufficiencies of BMPs in preventing environmental harm. Thus, when the BLM asserts that resource extraction projects

will not have significant environmental impacts because of the BMPs, it can offer no assurance that these BMPs will be fully implemented, or will be effective at minimizing or mitigating the known environmental impacts.

Not only is the BLM unable to assure that the BMPs will, in fact, be followed and/or mitigate the adverse impacts, recent studies disclose that even if followed, BMPs do not consistently reduce adverse environmental effects. In the context of road construction BMPs, there is reliable data indicating that BMPs cannot always reduce the adverse impacts of road building on aquatic resources to ecologically negligible levels, especially within the context of currently pervasive watershed and aquatic degradation.[472] The nationwide assessment of BMP effectiveness commissioned by the USEPA performed by the Great Lakes Environmental Center (GLEC) specifically noted that BMPs aimed at reducing road impacts are not 100% effective, and, in particular, that efforts to prevent road drainage to streams have considerable potential for failure, especially in the Pacific Northwest. [473]

In its report, GLEC found that in the Pacific Northwest, "conventional BMPs for road construction may not be sufficient to prevent adverse effects on stream channels and fish habitat."[474] Activities implemented with somewhat effective BMPs still often contribute to negative cumulative effects on aquatic systems.[475] Espinosa et al. (1997) documented that aquatic habitats were severely damaged by roads and logging in several watersheds despite BMP application, and that blind reliance on BMPs in lieu of limiting or avoiding activities that cause aquatic damage serves to increase aquatic damage.

Not only is the effectiveness of the BMPs included unsupported by field data, the draft BLM RMP fails to include the most effective BMPs:

- avoidance of implementing damaging logging, landing, and road activities in high hazard, sensitive, or degraded areas, such as stream crossings, Riparian Reserves, and unstable terrain, such as earthflows; and
- full protection of an adequate width of riparian areas to prevent or reduce the transmission of upslope impacts to streams.

The management practice of avoiding high impact activities in sensitive terrain has long been recognized to be far more effective than attempting to reduce such impacts via other BMPs with limited effectiveness. Avoidance of sensitive areas is critical, because as GLEC (2008) noted with respect to road impacts, "in some cases, however, control of the problem may not be feasible: location 'trumps' management practice." It has long been recognized that full protection of the area of vegetation within 200 to >300 ft of the edge of all stream types is one of the most important and effective ways to limit the impacts from upslope logging-related disturbances, as numerous independent scientific assessments have repeatedly concluded.

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[472] Ziemer and Lisle, 1993; Espinosa et al., 1997; Beschta et al., 2004; GLEC, 2008
[473] GLEC, 2008.
[474] Id.
[475] Ziemer et al., 1993; Rhodes et al., 1994; Espinosa et al. 1997; Beschta et al., 2004; GLEC, 2008.

3P FALL BUCK AND SCALE

Page 39 of the DEIS indicates that the BLM intends to conduct pre-decisional falling of trees in proposed logging units as a timber cruising mechanism. The impacts of this proposed practice are not disclosed or analyzed in the document. Federal courts have already rejected pre-decisional falling as an irretrievable commitment of resources. No other state or federal land management agency finds it necessary to rely upon pre-decisional timber felling to achieve accurate timber cruise data. The proposal to revive 3P Fall Buck and Scale is arbitrary and capricious.

SUDDEN OAK DEATH

The DEIS analysis of the no action alternative is inaccurate because it assumes no treatment of SOD, even though it is routinely conducted under the no action alternative. This makes the effects analysis unrealistic and inaccurate.

BLM should consider the fact that SOD treatments have limited effectiveness because SOD continues to expand in spite of ongoing treatments. Does BLM know how much (if any) SOD treatments slow the spread of the disease? The pathogen has survived eradication treatments in many sites and 8 of the previously know sites expanded in spite of aggressive eradication efforts. The size of the Curry County quarantine area expanded from 9 to 11 square miles.[476]

DEIS at 746 indicates that BLM did not consider the effects of Sudden Oak Death (SOD) on spotted owls. ("The BLM analysis did not address these conservation needs because they are habitat-independent and would be unaffected by RMP decisions. ") This is inadequate. BLM specifically says they intend to adopt a RMP Revision that minimizes the spread of SOD (DEIS p 76). SOD treatment involves aggressive logging and burning of infected sites. This is a habitat effect that must be considered in the FEIS.

SOD eradication efforts pose their own threat to spotted owl habitat, because eradication means cutting all vegetation in infested sites (plus a buffer) and burning it in place. Thus eradication removes potential owl habitat and the burn intensity harms soils and retards the future growth of owl habitat. We are not suggesting that eradication should not be done, only that before the "SOD war" is over, lots of owl habitat may be lost to the cause.

Whether or not BLM adopts an alternative that does not aggressively treat SOD with logging, BLM should still consider the cumulative habitat effects of logging plus SOD-induced mortality among tree species that provide habitat for spotted owls and their prey. SOD adds to the cumulative uncertainty faced by the spotted owl and reinforces the need to conserve all suitable owl habitat. Jerry Franklin's summarized the "findings" of the Northern Spotted Owl Status Review scientific review panel as follows:

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[476] See ODF, Forest Log, Summer 2004. http://web.archive.org/web/20041109114540/http://www.odf.state.or.us/Portal/forestlogs04/ForestLogSum2004.pdf.pdf

The implications of the scientific findings with regards to conservation strategies. … … in view of current uncertainties, such as the eventual outcome of the Spotted Owl/Barred Owl competition, West Nile Virus, and Sudden Oak Death, and whatever else comes along -- such as global change and other kinds of introductions -- existing suitable habitat could be important to the persistence of the Northern Spotted Owl. [repeated with emphasis] Existing suitable habitat could be important to the persistence of the Northern Spotted Owl, i.e., risk to Northern Spotted Owl may increase if additional suitable habitat is removed. It is not clear where the Spotted Owl may find the refuge or refuges from new threats within existing suitable habitat. Barred Owl intrusions do not negate the need for structurally complex forest habitat to sustain Northern Spotted Owl based on existing knowledge.[477]

CONCLUSION

The proposal to abandon the unified cohesive forest, watershed and wildlife strategy of the NWFP is unwise and undermines many of the assumptions relied upon to facilitate recovery plans, habitat conservation plans, critical habitat designations, and ESA listing determinations throughout Oregon and the Northwest. A forest plan that increases riparian reserve logging, clearcutting, and the logging of known survey and manage habitat will create less certainty, not more, concerning timber harvest on BLM managed public forestlands.

[477] U.S. Fish & Wildlife Service Scientific Review Panel For The Northern Spotted Owl. June 22, 2004 Public Hearing. Washington State University, Vancouver Campus. Transcript Of Proceedings, page 121. http://www.sei.org/owl/meetings/minutes/june-meeting-transcripts.pdf.

Note: If any of web links in this document are broken, they may be resurrected using the Wayback Machine at Archive.org. http://wayback.archive.org/web/

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Attachments:

1. Anthony, R. G. 2013. Effects of Riparian Thinning on Marbled Murrelets and Northern Spotted Owls. Science Review Team.
2. Benda, Lee Use of Geospatial Data and Models in Natural Resource Management 20 July 2012.
3. BLM/FS/FWS/NOAA Fisheries-Memorandum dated June 6, 2013 concerning riparian reserve thinning.
4. Department of the Interior Fish and Wildlife Service 50 CFR Part 17 Endangered and Threatened Wildlife and Plants; Threatened Status for Oregon Spotted Frog; Proposed Rule
5. DEPARTMENT OF THE INTERIOR Fish and Wildlife Service 50 CFR Part 17 Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition To List a Distinct Population Segment of the Red Tree Vole as Endangered or Threatened.
6. Department of the Interior Fish and Wildlife Service 50 CFR Part 17 Endangered and Threatened Wildlife and Plants; Review of Native Species That Are Candidates for Listing as Endangered or Threatened; Annual Notice of Findings on Resubmitted Petitions; Annual Description of Progress on Listing Actions; Proposed Rule (fisher, red tree vole)
7. DEPARTMENT OF THE INTERIOR Fish and Wildlife Service50 CFR Part 17Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition to List Two Populations of Black-Backed Woodpecker as Endangered or Threatened
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10. Illinois Valley Salmon and Botanical Area Map
11. Illinois Valley Salmon and Botanical Area management recommendations
12. Illinois Valley Salmon strongholds map
13. Leinenbach et al. 2013. Effects of Riparian Management Strategies on Stream Temperature Science Review Team;
14. Appendix A – Synopsis of Literature Describing the Effects of Riparian Management on Stream Shade and Stream
15. Appendix B – Consolidated Summary of Literature Describing the Effects of Riparian Management on Stream Shade and Stream Temperature
16. Appendix C – Annotated Bibliography of Literature Describing the Effects of Riparian Management on Stream Shade and Stream Temperature
17. Nawa, R.K. Sixteen page letter dated December 20,2011 from R. Nawa (KS Wild) to K. Symons (BLM) concerning suction dredging and placer mining impacts to coho critical habitat on Sucker Creek, Medford District.

18. Nawa, R.K. Six page letter dated August 25,201 from R. Nawa (Siskiyou Project) to A. Jossie (BLM) concerning placer mining pit impacts to coho critical habitat on Sucker Creek, Medford District.
19. Nawa, R.K. Five page letter dated August 23,201 from R. Nawa (Siskiyou Project) to A. Jossie (BLM) concerning placer mining pit impacts to coho critical habitat on Sucker Creek, Medford District.
20. Pollock, M., M. Heim, and D. Werner. 2003 Hydrologic and Geomorphic Effects of Beaver Dams and Their Influence on Fishes. American Fisheries Society Symposium 37

Coos Chapter
Oregon Society of American Foresters (OSAF)
Chapter Comments on the BLM Draft Resource Management Plan (RMP/EIS) for Western Oregon

Draft EIS For Western Oregon
P.O. Box 2965
Portland, Oregon 97204

August 11, 2015

The Coos Chapter, Oregon Society of American Foresters is composed of 46 active members residing in Coos and Curry counties. We represent all sectors of forest management including family forests, private industry and Federal/State/Tribal government agencies. We also have an active and highly experienced contingent of retired foresters from these same organizations and interests. Our Chapter is closely associated with and coordinates our actions with the OSAF which is composed of nearly 1,000 foresters in Oregon. We offer here our comments and recommendations on the above draft plan/EIS. These are based on a review of this document by our policy and legislative committee whose draft was then reviewed by Chapter members. These Comments & Recommendations are intended to provide you with our perspective, as professional Foresters, on how the analysis and document can be improved. They do not represent formal positions of either the Coos Chapter or the OSAF.

- The draft planning documents show the decision area to be 2.5 million acres with growing stock volume conservatively estimated at around 73 billion board feet. Annual growth is projected at 1.2 billion board feet. In our opinion, the allowable sale quantity for even alternative C is too low considering the O&C Act mandate and the decision area's growth potential. The O&C Act reflects a visionary concept of using a productive, sustainable resource to strengthen and maintain local communities.

-We believe Table 1 page xxv, should include a summary of harvest volume and net income, including volume and value for any new alternatives.

- We feel it will improve understanding if a guiding rationale statement were developed and stated for each alternative.

- In our study of the Affective Environment and Environmental Consequences, we did not see a reference to the studies and results of the research done by the Oregon State University Watersheds Research Cooperative. They have conducted their research in three watersheds within the planning area which makes their results particularly applicable to your planning effort. These watersheds are: Hinkle Creek (NE of Roseburg), Alsea Watershed (W of Corvallis) and Trask Watershed (NW of Salem). Although the research on these studies is on-going, data about stream buffer widths has been compiled and inferences can be interpreted. Last year they conducted an all day technical symposium which was streamed on the internet describing their results and/or progress.

- The Oregon Department of Forestry is currently conducting an analysis of Riparian Management Areas (RMA) for private forest management activities under Oregon's Forest Practices Act to inform rule making by the Oregon Board of Forestry (BOF). At a meeting on July 23rd, the BOF decided to hold off on increasing stream buffer widths and continue to gather scientific data to justify any potential changes. When made, their decisions, which will focus on the watershed effects of contemporary timber harvest (active management) should be considered and where appropriate incorporated into the RMP/EIS for Western Oregon.

- Dr. Jerry Franklin and others authored a General Technical Report (GTR PNW 118) entitled "Ecological Characteristics of Old Growth Douglas-fir Forests" Feb. 1981. In it they stated that 175 to 250 years are required to develop Old Growth under natural conditions. We did not see references to scientific studies that document your inclusion of stands 80 to 160 years of age in Late Successional Reserves (LSR). If there is no such research then any decisions about ceiling age for stands should be made based on the consideration of the O&C mandate and the immediately following paragraph.

-There are three important values of forests to our society: ecological, social and economic. To develop a forest management plan that serves the best interests of our citizens and forest resources these values should be integrated and balanced. It is our opinion that not even Alternative C (486 MMBF /year) achieves this condition due to its dramatic reduction in timber sales from that of the '60's,'70's &'80's (Av. of 1 billion BF +/year)(Fig. 3-58 pg 238) and the serious social and economic consequences it has caused . Integrating and balancing these values should be a consideration when making decisions in this Resource Management Plan (RMP) particularly on O& C forest land which is most likely one of the reasons the Association of O&C Counties is opposed to your planning process and preferred alternative.

-Another concern we have is that even with these dramatic reductions in timber harvest there is no assurance that these levels can be achieved because of lawsuits and other legal actions by groups opposed to active and effective management of forest resources.

-You selected alternative B as the preferred. One of this alternative's weaknesses is that it mostly foregoes many of the silviculture practices that have evolved significantly over the past 50 years that lead to well stocked plantations following timber harvest and replanting. These practices include site preparation, then planting, monitoring of reforestation success, replanting and release if needed, and precommercial thinning. While the draft is not specific on what the moderate intensity of alternative B includes, and, federal land management should comply with the Oregon Forest Practices Act, it does specify that either natural regeneration or planting are acceptable methods of reforestation. Low intensity management will not use planting as a reforestation practice. Alternative B goes on to specify that it will maintain early seral habitat for several decades after harvest. From our professional experience working with westside (Oregon) vegetative conditions and the competition it presents to reforestation success, we believe that Alternative B risks serious reforestation failures on the 282,445 acres on which these low and moderate intensity practices will be applied. Another concern we have is that by not planting in low intensity harvest areas and portions of the moderate intensity, alternative B is foregoing the growth benefits from the millions of dollars the BLM has spent on their tree improvement programs within the decision area.

- In the description of alternative C, the draft RMP/EIS specifies that there will be no retention of snags or coarse woody debris and, presumptively, green trees. We regard this as a purposeful attempt to differentiate alternatives B & C. It has the effect of making alternative C less desirable than other alternatives in terms of wildlife and ecologic concerns. This "no retention" specification should be removed even if it reduces the ASQ. From our experience on federal forests, "clear cuts" prior to the NWFP always had "wild life trees" retained, along with snags and large woody debris on the ground. At times retained green trees had their tops removed to accelerate their conversion into snags or trees with decay to facilitate cavity nesting wildlife.

- Much work has gone into the AE&EC section which should be used in the final RMP/EIS. We recommend that whatever alternative is selected in the final plan that an interdisciplinary team be charged with reducing its negative AE&EC impacts while adhering to the constraint of integrating and balancing economic, social and ecologic values.

- In terms of generic national concerns rather than those of professional forestry we feel it is counter to our Nation's economic best interest to manage such productive forest lands in a manner which is much below their productive capacity. When we concentrate on integrating and balancing economic, social and ecologic values this does not mean we are sacrificing the latter for the former! It does mean we are attempting to address the situation where our forest lands are idle or managed below potential growth when we are importing large quantities of forest products thus exacerbating our Nation's high trade deficit.

-We recommend that at least two other alternatives be added to the final analysis. The first would be one that truly integrates and balances ecological, social and economic values. The second would be one that addresses the concerns of the Association of O&C counties. Congressman DeFazio has also asked the BLM to propose another more "robust" alternative with a target harvest volume closer to biological growth. This is vitally important because some counties such as Curry and Josephine are facing bankruptcy with others such as Coos not far behind. The loss of revenue from federal forests is the major reason for these potential adverse economic situations.

Sincerely,

William Delimont, Chair
Coos Chapter, OSAF
P.O. Box 1560
Coos Bay, OR 97420

cc:
Rep. DeFazio
Rep. Walden
Rep. Schroeder
Commissioner Bob Main
Paul Adams, OSAF

WILLIAM DELIMONT, CHAIR
COO CHAPTER, OSAF
COOS BAY, OR 97420

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12 AUG 2015 PM 1 T

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97208 2965

Jasmine Benjamin

From: m1allen@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Friday, August 21, 2015 12:44 PM
To: RMP-Comments@heg-inc.com
Subject: Fwd: Molalla River Watch Watershed Council Comments
Attachments: MRW BLM Draft Management Plan 2015.pdf

---------- Forwarded message ----------
From: **Taylor** <btaylor@molalla.net>
Date: Thu, Aug 20, 2015 at 10:01 PM
Subject: Molalla River Watch Watershed Council Comments
To: blm_or_rmpwo_comments@blm.gov

Attached are comments from Molalla River Watch Watershed Council on the Draft Resourace Management Plan/EIS.

Molalla River Watch Watershed Council
PO Box 867
Molalla, OR 97038
503-829-6793

This email has been checked for viruses by Avast antivirus software.
http://www.avast.com

Molalla River WATCH WATERSHED COUNCIL
P.O. Box 867 Molalla, Oregon 97038-0867 503-829-7858
riverwatch@molalla.net
www.molallariverwatch.org

August 20, 2015

Draft Resource Management Plan/EIS for Western Oregon
PO Box 2965
Portland, OR 97204

Dear Management Plan Staff:

Thank you for the opportunity to comment on the Western Oregon Management Plan.

Molalla River Watch Watershed Council supports increased recreational opportunities provided by Alternative D. We also support additional Areas of Critical Environmental Concern (ACEC). We would like to see the Aquila Vista Scientific Environmental Education and Research Area become an ACEC and also considered for designation as a Research Natural Area or Outstanding Natural Area.

Molalla River Watch cannot support any reduction to riparian reserves from the two site-potential tree heights currently called for under the Northwest Forest Plan. The Molalla River is listed on the ODEQ 303 (d) list of impaired streams for low summer flows and high summer temperatures. The riparian reserve changes proposed in all four alternatives would not provide adequate protection for ESA listed salmon and steelhead.

The Draft Resource Management Plan/EIS does not offer a full range of alternatives for riparian reserves. One alternative should be to keep the present two site potential tree height riparian reserves.

Molalla River Watch Watershed Council strongly urges that the BLM reconsider proposed changes to riparian reserves.

Sincerely,

Bill Taylor

Bill Taylor, Chair
Molalla River Watch Watershed Council

Jasmine Benjamin

From: m1allen@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Friday, August 21, 2015 12:45 PM
To: RMP-Comments@heg-inc.com
Subject: Fwd: RMP EIS Comments
Attachments: RMP Comments.pdf; FWCG ACEC Nomination.pdf

---------- Forwarded message ----------
From: **Forest Web of Cottage Grove** <forestweb.cg@gmail.com>
Date: Fri, Aug 21, 2015 at 12:15 AM
Subject: RMP EIS Comments
To: Mark Brown <m4brown@blm.gov>
Cc: Kathryn Stangl <kstangl@blm.gov>, blm_or_rmpwo_comments@blm.gov

Dear Mr. Brown:

Attached, you will find a copy of our comments regarding the status of BLM Tract T20S R3W Sec. 31 SW ¼ in the Draft Resource Management Plan (RMP)/Environmental Impact Statement (EIS) for Western Oregon. For your convenience, I have also attached a copy of our original ACEC nomination for this parcel. Please contact me if you have any questions.

Thank you for your time and consideration.

Sincerely,

Cristina Hubbard, Executive Director

Forest Web of Cottage Grove

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Forest Web of Cottage Grove
www.forestweb-cg.org

"Forests precede civilizations and deserts follow them."
Francois-Rene de Chateaubriand

If you would prefer not to receive these action alerts and updates, please notify us at forestweb.cg@gmail.com to remove yourself from this list.

Forest Web
of Cottage Grove

PO Box 853 Cottage Grove, Oregon 97424
Email: forestweb.cg@gmail.com Website: forestweb-cg.org

Mark Brown, Western Oregon RMP Project Manager
Bureau of Land Management
P.O. Box 2965
Portland, Oregon 97208

Cc: Kathryn Stangl, Eugene District Manager

Re: BLM Resource Management Plan EIS Comment
AECE & EEA Nominations for
BLM Tract T20S R3W Sec. 31 SW ¼

Dear Mr. Brown:

Volume 4, page 1279, Appendix N – Recreation lists all recreation management areas being considered, but does not include BLM Tract T20S R3W Sec. 31 SW ¼ outside of Cottage Grove in the Eugene District. The site was nominated in 1995 by Paul Boehner for an Environmental Education Area (EEA) in the previous RMP process, and this nomination was still standing during the current process. However, its omission from Appendix N shows that it was not analyzed as an EEA. Based on this oversight, we request that BLM Tract T20S R3W Sec. 31 SW ¼ be analyzed for an EEA.

Also, the BLM's interactive map for the RMP (see attached), under the Land Use Allocations for Alternative B, shows over half of Section 31 is designated as Late Successional Reserve with two areas designated as Riparian Reserve. Any potential logging of the remaining portion of this parcel, currently designated as Moderate Intensity Timber Area, would have a severe negative impact on both the old-growth and riparian ecosystems and conflicts with BLM sustainable harvest objectives. As this is an isolated 80-acre parcel, over half of which is designated as either late successional or riparian reserve, it makes no sense not to protect the entire site. We ask that the BLM reconsider identifying this entire parcel as Late Successional.

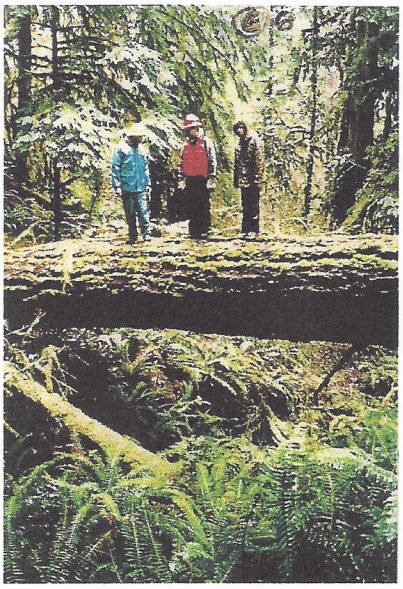
On April 12, 2013, Forest Web of Cottage Grove submitted an Area of Critical Environmental Concern (ACEC) nomination for this parcel and received notification from the BLM that the site met criteria and was being considered. Despite the fact this site contains plants classified as *Bureau Sensitive*, is within the U.S. Fish & Wildlife "North Umpqua-Southern Valley Regional Area of Concern" regarding the spotted owl, contains a diverse habitat with wetlands, riparian zones, complex understory, snags, and a variety of old-growth, including yew, cedar, and fir over 300 years old, the BLM denied it ACEC status.

This parcel is unique to the area and of great importance to Cottage Grove residents, neighbors, members of Forest Web of Cottage Grove, and other stakeholders who want to preserve this site for both its environmental significance and its educational potential. We strongly request the BLM complete an analysis of the site for designation as an EEA, reconsider our ACEC nomination, and grant both EEA and ACEC status to this site.

Thank you,

Cristina Hubbard

Cristina Hubbard, Executive Director
Forest Web of Cottage Grove



"Forests precede civilizations and deserts follow them."
Francois-Rene de Chateaubriand

Interactive Map

Bureau of Land Management

Search...

Map Legend

RMPWO_RecreationResources

- Alt B - RMA

RMPWO_OtherResources

Alt B - Land-Use Allocations

- Congressional Reserves
- District Defined Reserves
- Riparian Reserves
- Late-Successional Reserves
- Eastside Management Lands
- HLB - Uneven Aged Timber Area
- HLB - Low Intensity Timber Area
- HLB - Moderate Intensity Timber Area

RMPWO_PlaceNames

- Place Names

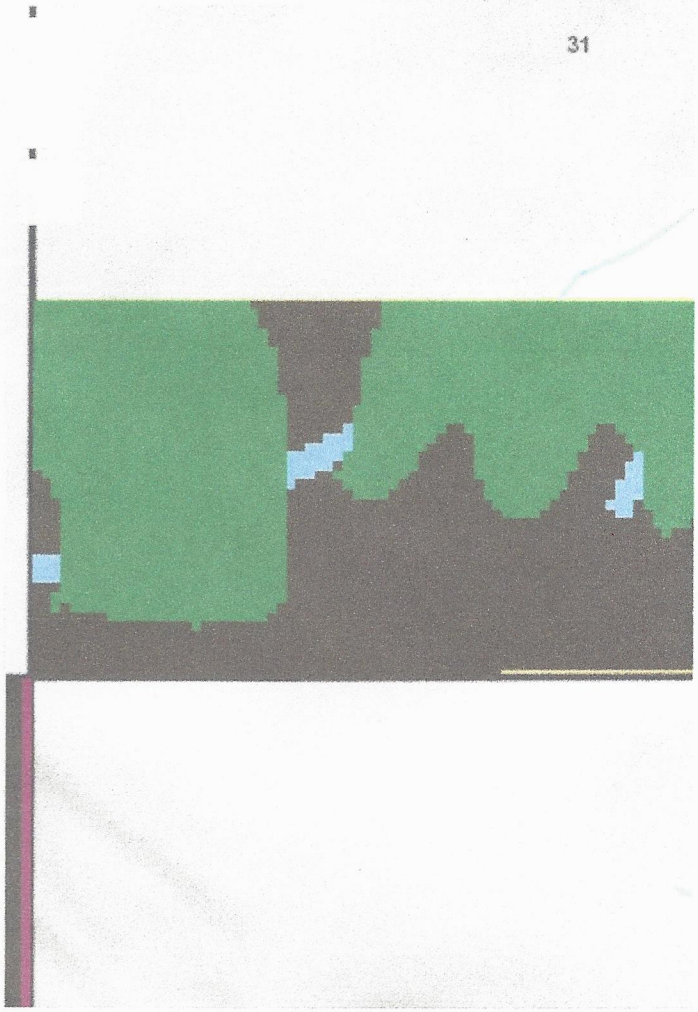
RMPWO Base Data

Plan Boundary

- Lands managed under separate RMPs
- Lands managed under the RMPWO
- Township and Range
- Sections
- County Boundary

Show Layer List

I want to...



0 300 600ft

Forest Web

of Cottage Grove

PO Box 853 Cottage Grove, Oregon 97424

Email: forestweb.cg@gmail.com Website: forestweb-cg.org

Mark Brown, Western Oregon RMP Project Manager
Bureau of Land Management
P.O. Box 2965
Portland, Oregon 97208

April 12, 2013

Re: AECE Nomination for BLM Tract T20S R3W Sec. 31 SW ¼

Dear Mr. Brown:

On behalf of our supporters and community residents, we nominate as an Area of Critical Environmental Concern (ACEC) the 78-80 acres containing old growth habitat located at T20S R3W Sec. 31 SW ¼, a few miles west of Cottage Grove. The site includes 48 acres of classic low elevation, north-slope old growth with trees as old as 300+ years and 30+ acres of 1962 logged blow down.

From a local public educational perspective, it is critical to save this tract of old growth forest since it is the only remaining old growth ecosystem of its kind near Cottage Grove. Besides its importance as an educational set-aside, it has many other values as well. Not only does this stand have the important criteria of being the only original forest still remaining in the area; this old growth stand has many other important values more regional and integrative in nature, beginning with the flora and fauna contained in this particular ecosystem.

This stand provides habitat for pileated woodpeckers, which use the snags in this forest as nesting sites. Recent sightings of bald eagles hunting and returning to this stand have been reported. Most importantly, this old growth forest is located in the northern-most portion of the Oregon "East-West Corridor" connecting the Cascade and the Coast Range spotted owl gene pools. U.S. Fish & Wildlife has confirmed the area at the Douglas-Lane I-5 juncture is considered part of the "North Umpqua-Southern Valley Regional Area of Concern" regarding the spotted owl.

There is a scarcity of BLM lands in this portion of the corridor with few old growth stands to serve as dispersal and nesting habitat. The 15 Year Report for the Northwest Forest Plan stated: *On federal lands, nesting/roosting habitat declined by 3.4 percent rangewide, with some physiographic provinces experiencing losses of 10 percent.*[1] As dispersal habitat is an essential component of spotted owl management, it is essential to preserve the few remaining old growth parcels in this corridor.

During an earlier process to have this site designated as an EEA, Christine M. Walsh, then South Valley Area Manager for the BLM stated the following in a May 22, 1997 letter to Paul Boehner, "*While the RMP identified the area as a potential EEA, it also identified several other issues in the area. The area is habitat for*

1. Davis, Raymond J.; Dugger, Katie M.; Mohoric, Shawne; Evers, Louisa; Aney, William C. 2011. Northwest Forest Plan-the first 15 years (1994-2008): status and trends of northern spotted owl populations and habitats. Gen. Tech. Rep. PNW-GTR-850. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 147 p.

Cimicifugu elata (tall bugbane), a plant that is 'Bureau Sensitive.' ***In addition, a northern spotted owl activity center and part of its 100-acre 'core area' (as required by the Northwest Forest Plan) is within the potential EEA. These core areas are managed as Late-Successional Reserves, emphasizing development and retention of old growth forest habitat.****"*

Nancy Wogen, former Special Areas Coordinator with the BLM Eugene District, also confirmed the "Bureau Sensitive" plant species, Cimicifuga elata (tall bugbane) within this acreage. And according to maps in the Eugene and Roseburg from earlier draft RMP/EIS's spotted owls sightings have been recorded in the general area of the Douglas-Lane I-5 juncture.

Saving old growth has merit in itself; it has special qualities that logged areas and second growth forests do not have, such as its unique bio-ecological diversity, and its ability to maintain high water quality and quantity. But, perhaps the most critical value of old growth in the long term is the innoculative effects of its micro- and macro-organisms to surrounding forests. It is worth noting that this may be the greatest value of this special old growth stand to the surrounding forests.

In the past there has been a Cooperative Management Agreement between the BLM Eugene District and the South Lane School District where the school district assisted the BLM in managing these public lands so their educational, scientific, ecological, and recreational values were protected and enhanced for the greatest public good.

This stand can continue to be a centerpiece for future research as a "comparative study area." The tract is surrounded by State and private land logged at various times since WWII that is now in varying ages and rates of second growth. Dr. Peter Teensma, one-time BLM Fire Ecologist at the BLM Portland office, supported the proposal to keep this area as a modified ACEC/EEA and as a comparative study area. He believed it is an excellent example of what he called "ecosystem disturbance," with a "disturbance history" of fire, wind-throw, and logging all in juxtaposition.

To reiterate, this 80-acre BLM tract contains an old growth forest unique to this area with trees between 200 and 300+ years of age. This stand is an important part of a Cascades-Coast Range connectivity corridor for wildlife, and most importantly, a dispersal habitat in the East-West Corridor for the spotted owl, and it contains at least one "Bureau Sensitive" plant species. It is also the nearest such forest to Cottage Grove and, hence, most feasible for field trips and other educational purposes for local students and community residents. And, it is the linchpin of an uncommon opportunity for future comparative research.

Thank you for considering our nomination.

Sincerely,

Cristina Hubbard

Cristina Hubbard, Project Director
Forest Web of Cottage Grove

cc: Virginia Grilley, BLM Eugene District Manager
cc: Pat Johnston, BLM Eugene District Botanist

Jasmine Benjamin

From: m1allen@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Friday, August 21, 2015 12:17 PM
To: RMP-Comments@heg-inc.com
Subject: Fwd: RMPs for Western Oregon

---------- Forwarded message ----------
From: <JPTMCitizens@aol.com>
Date: Thu, Aug 20, 2015 at 4:52 PM
Subject: RMPs for Western Oregon
To: blm_or_rmpwo_comments@blm.gov

RMPs for Western Oregon
Bureau of Land Management
P.O. Box 2965
Portland, Oregon 97208
Email: blm_or_rmpwo_comments@blm.gov

Comments:

Any designation for OHV use in the Timber Mountain area is not appropriate.

If the BLM were truly following the regulations set forth in executive orders 11644 and 11989, the BLM would recognize that "existing conditions" (i.e., 2015) make the area unsuitable for development of OHV use.

Those conditions include:

> The O&C lands were established with alternate one square mile tracts. Despite various sales and consolidations of tracts, the Timber Mountain O&C/BLM lands remain a checker board pattern of ownership, intermixing BLM and private lands. There are very few contiguous BLM tracts that would provide adequate buffering and isolation of OHV activity from private lands, especially residential properties.
>
> After decades of study and mis-steps, the BLM seems reluctant to acknowledge the intense negative impact of OHV activity on adjacent residential property. OHV trespass and damage to private property are the most obvious problems. The noise pollution of OHV activity is the most pervasive problem. OHV noise does not stop at the property line. The BLM has failed to acknowledge the upper range of OHV noise created by modified and out-of-spec equipment. The BLM also has failed to acknowledge the low level of ambient sounds in rural residential properties. Residents can hear OHV noise during an otherwise peaceful weekend afternoon, creating a dissonance that only makes the noise pollution even more intrusive. The sound of a bird fluttering in the bushes can be a pleasant experience. The pervasive sound of OHV noise becomes a grating intrusion.
>
> Reference: Title 43: Public Lands: Interior, Subpart 8342—Designation of Areas and Trails
> § 8342.1 Designation criteria:

(c) Areas and trails shall be located to minimize conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors.

The Timber Mountain area contains many "populated areas". OHV activity and populated areas are not compatible because of noise, incidence of trespass, and private property damage when riders, lost or otherwise, ride over private property.

The Timber Mountain area can be an ideal destination for hikers, equestrians, bird watchers, and other forms of passive recreation. BLM's efforts since 1995 to designate the area for OHV use has precluded any serious consideration of encouraging passive and environmentally sound recreation. Passive recreationists are driven away from OHV activity because of the noise and safety concerns of interfacing with OHV equipment and riders. The BLM has acknowledged the "unintended consequence" of excluding passive recreation from an OHV area by stating that the passive recreationists "will chose to go elsewhere". Any OHV area designation effectively excludes passive recreation. BLM's objective of designating 10,000 acres in the Timber Mountain area for OHV, effectively excludes passive recreation. The designation also ignores the negative conflicts with private property and residential areas created by the checkerboard pattern of land ownership and the lack of buffering and isolation of OHV impacts.

The BLM should create a set of prioritized criteria that would make an area appropriate for OHV activity. Among that criteria will be the ability to isolate and buffer the OHV activity from conflicts with adjacent land and existing uses. That one criteria should be high on the list of priorities. The BLM controls over 2.4 million acres of land in western Oregon. Surely there are many alternatives to choose from. The Timber Mountain will be low on the list of appropriate areas.

Johns Peak Timber Mountain Citizens
By Robert Kingsnorth
PO Box 783
Jacksonville, OR 97530
JPTMCitizens@aol.com

Jasmine Benjamin

From: m1allen@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Friday, August 21, 2015 12:17 PM
To: RMP-Comments@heg-inc.com
Subject: Fwd: Western Oregon Draft Resource Management Plan/EIS Comments
Attachments: AFRC Comments on BLM Draft RMP's 8-20-15.pdf

---------- Forwarded message ----------
From: **Cindi Kaneshige** <ckaneshige@amforest.org>
Date: Thu, Aug 20, 2015 at 5:03 PM
Subject: Western Oregon Draft Resource Management Plan/EIS Comments
To: "blm_or_rmpwo_comments@blm.gov" <blm_or_rmpwo_comments@blm.gov>

Please find attached the American Forest Resource Council's comments on the Western Oregon Draft Resource Management Plan /Environmental Impact Statement.

Cindi Kaneshige

American Forest Resource Council

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(503) 222-9505

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August 20, 2015

RMPs for Western Oregon
Bureau of Land Management
P.O. Box 2965
Portland, Oregon 97208
blm_or_rmpwo_comments@blm.gov

RE: Comments on the Western Oregon Draft Resource Management Plan / Environmental Impact Statement

American Forest Resource Council (AFRC) is a regional trade association whose purpose is to advocate for sustained yield timber harvests on public timberlands throughout the West to enhance forest health and resistance to fire, insects, and disease. We do this by promoting active management to attain productive public forests, protect adjoining private forests, and assure community stability. We work to improve federal and state laws, regulations, policies and decisions regarding access to and management of public forest lands and protection of all forest lands.

AFRC represents over 50 forest product businesses and forest landowners. Many of our members have their operations in communities adjacent to and intermingled with BLM administered lands in western Oregon and the management on these lands ultimately dictates not only the viability of their businesses but also the economic health of the communities themselves. The state of Oregon's forest sector employs approximately 76,000 Oregonians, with AFRC's membership directly and indirectly constituting a large percentage of those jobs. Rural communities, such as the ones affected by the proposed resource management plans, are particularly sensitive to the forest product sector in that more than 50% of all manufacturing jobs are in wood manufacturing.

AFRC believes that the range of alternatives and the alternatives themselves embodied in the Western Oregon Draft Resource Management Plan / Environmental Impact Statement (DRMP/EIS) fail to comply with the Oregon and California Railroad and Coos Bay Wagon Road Grant Lands Act, Pub. L. 405, Chapter 876, codified at 43 U.S.C. §§ 1181a *et seq.* (O&C Act) and the National Environmental Policy Act (NEPA). As a result of these fatal flaws, the only legal recourse is for the DRMP/EIS to be withdrawn; additional alternatives to be analyzed that comply with the O&C Act and represent the true range of alternatives; and a Revised DRMP/EIS be released for public review and comment.

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Noncompliance with the O&C Act is multifaceted. The most glaring error is the establishment of massive reserve networks that comprise between 68% to 86% of the 2.5 million acres within the planning area, leading to the proposed reductions in management intensities found within most of the alternatives. There are also numerous areas where the DEIS fails to meet NEPA requirements, the most apparent being the decisions made *prior to* the release of a DEIS that all alternatives must include "providing large, contiguous blocks of late-successional forest and maintaining more structurally-complex multi-layered conifer forests." DRMP/EIS p. 6. These decisions were made without any environmental analysis, public review or formal adoption process and severely limited the range of alternatives found within the DEIS. The justification of the need for these large reserve systems starts with one of the other purposes identified in the DEIS which is to contribute "… to the conservation and recovery of threatened and endangered species within the planning area." *Id.,* p.7. This purpose in and of itself is a misrepresentation of what is required of the BLM by the Endangered Species Act (ESA) by stating that the ESA requires the BLM to use their legal authorities "…to promote the conservation purposes of the act." In fact, the ESA actually states that federal agencies shall "…utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered species and threatened species." ESA § 7(a). While "carrying out programs for the conservation of listed species" promotes the conservation purposes of the Act, it is a far less burdensome responsibility than is implied by the DEIS' portrayal of the ESA requirement. It should also be noted that any "programs" adopted in an RMP must also comply with the O&C Act, which supersedes any requirement of the ESA.

The DRMP/EIS includes as one of its requirements having to "contribute[] to the conservation and recovery of listed species and help[] limit or avoid future listings" (DRMP/EIS p. 7) where no such requirement exists in the ESA. Using this erroneous portrayal of the ESA, the DEIS then erroneously portrays the legal authority for establishing massive reserve networks and prohibiting the harvest of older forests by stating:

> *Using its discretion and authority under the O&C Act and the FLPMA, the BLM can direct sustained-yield management of the O&C lands and public domain lands in western Oregon in a manner that contributes to the conservation and recovery of listed species and helps limit or avoid future listings, and thereby best ensures a permanency of timber production over the long-term, while, among other benefits of sustained yield, contributing to the economic stability of local communities.* Ibid.

The quoted paragraph summarizes many of the ways the DRMP/EIS misinterprets the O&C Act, ESA and the Federal Land Planning and Management Act (FLPMA). The O&C Act requires that all of the timber lands covered by the O&C Act be managed for "permanent forest production and the timber thereon shall be sold, cut and removed in conformity with the principles of sustained yield and this annual sustained yield capacity shall be sold every year." 43 U.S.C. § 1181a. In the above-quoted paragraph, the DRMP/EIS twists this requirement into one of ensuring "a permanency of timber production over the long-term" which forms the basis of the justification for deviating from the plain language of the O&C Act and would allow the

agency to manage only a portion of the O&C lands for permanent timber production, rather than all of the lands as the O&C Act requires.

To further exacerbate the error, the DRMP/EIS goes on to conclude, without any substantive analysis, that:

> *The purpose of contributing to the conservation and recovery of the northern spotted owl necessarily includes maintaining a network of large blocks of forest to be managed for late-successional forests and maintaining older and more structurally-complex multi-layered conifer forests…* DRMP/EIS p. 7.

To summarize the false logic that forms the entire justification for setting aside between 68%-86% of the land in reserves:

1. The O&C Act requires the use of sustained yield principles; (True)
2. The ESA requires managing the O&C lands in a manner that contributes to the conservation and recovery of listed species and helps limit or avoid future listings; (False)
3. To meet these two requirements, all of the alternatives must maintain "a network of large blocks of forest to be managed for late-successional forests and maintaining older and more structurally-complex multi-layered conifer forests." (False and unsupported)

The Need for Large, Contiguous Blocks of Late-Successional Forest is Not Justified

The DRMP/EIS justifies the need to maintain "large, contiguous blocks of late-successional forest" by citing three documents. The first is a 25-year-old document: Thomas, J. W., E. D. Forsman, J. B. Lint, E. C. Meslow, B. R. Noon, and J. Verner. 1990. A conservation strategy for the northern spotted owl. Interagency Scientific Committee to Address the Conservation of the Northern Spotted Owl. USDA FS, USDI BLM, USFWS, and USDI NPS, Portland, OR. The second is a 21-year old status review of the northern spotted owl that just supported the "premise" of the 25-year-old conservation strategy. The third is the 2011 Spotted Owl Recovery Plan which only *recommended* that land managers "continue to manage for large, continuous blocks of late-successional" in "moist forests" that were recommended in 1990.

The 1990 conservation strategy is the principle document supporting the use of large habitat block. The assumptions that form the basis of this recommendation have all been either proven false or have been superseded by future decisions. These assumptions were:

1. In the future, spotted owls would *only* be supported within a network of habitat blocks spread out across its current range situated close enough to each so that some dispersal between the blocks would occur to prevent the negative impacts of inbreeding from occurring.
2. There would be *no* suitable nesting/roosting habitat outside of these habitat blocks thus no spotted owls would reproduce or forage outside of these blocks.

3. Each large block would be of a size to support a self-sustaining population which was hypothesized to be 20 pairs. There was no empirical data to support this number which was arrived at using the "Delphi Approach" i.e. professional judgment.
4. Outside of the habitat blocks, the only habitat that would be maintained would be "dispersal habitat" with the requirement that 50% each Quarter Township of land between them be maintained in trees that were at least 10 inches in diameter and had a canopy cover of at least 40%.
5. In order to ensure that adequate dispersal would occur between the large blocks, these blocks should be no further than 12 miles apart. This was the distance that 68% of sampled owls flew and will result in far more owls dispersing between habitat block than is needed to meet the stated purpose of maintaining genetic integrity within each block.

This strategy for recovering the spotted owl was adopted by the USFS and BLM through incorporating the Northwest Forest Plan (NWFP) into their respective land management plans and was endorsed by the USFWS as the *de facto* "Recovery Plan" as no formal Recovery Plan had been developed by the USFWS. The designation of critical habitat that existed at the time was to be modified from the Habitat Conservation Areas delineated in the 1990 conservation plan to conform to the improved Late Successional Reserves developed in the NWFP, but this was never done.

Between 1990 and 2015, all of the assumptions that support the need for a network of "large, contiguous blocks of late-successional forest" have become invalid. This began as soon as the NWFP was implemented. The USFS and BLM immediately abandoned the premise that no spotted owl nesting/roosting habitat was expected outside of the LSR's and adopted a management strategy that focused on only thinning stands less than 80 years old, avoiding treatment of any NRF habitat anywhere. This has continued over the 20+ years that the plan has been in effect.

The 2011 Recovery Plan, while supporting the premise that managers continue to support large blocks, invalidated the above assumptions by recommending that all high quality habitat regardless of its location be maintained, that all spotted owl home ranges be protected and imposed further restrictions on land management outside of the LSR network. The 2011 Recovery Plan totally superseded the "large block network" approach to spotted owl recovery. The large block network approach was replaced by one that will maintain spotted owls across the landscape, not just within 20 pair refuges.

The adoption of the 2012 Critical Habitat rule completely abandoned the large block network approach to recovery by designating over 9 million acres of land in various habitat conditions as "critical" for the recovery of the species. This designation further confirmed that the USFWS had abandoned the large block approach to recovery in favor of an all lands, ecosystem approach. Almost 30% of the lands within the LSR network were not designated as "critical."

The basis for the BLM's premature decision made in June 2013 to require all alternatives within the DEIS to incorporate "large, contiguous blocks of late-successional forest" was the assumption these large blocks were to be the only areas where spotted owls would thrive and reproduce and that they were the key to the recovery of the species. This is no longer true and there is no justification for this becoming a given in each alternative.

The results of the spotted owl analysis in the DRMP/EIS are further proof that the establishment of large, contiguous blocks of late-successional forest is not providing any contribution to the conservation of the spotted owl. Due to the overwhelming influence of the barred owl, the contribution of habitat by any of the alternatives will not affect the overall population decline even under the no-harvest reference analysis.

> *In general, there is little differentiation in northern spotted owl population responses among the alternatives and the No Timber Harvest Reference Analysis using current barred owl encounter rates. This indicates that northern spotted owl populations would not respond substantively to the different amounts and distributions of habitat provided by each alternative (i.e. the habitat provided by each alternative would not limit the population response). Instead, the effect of barred owl encounter rates on northern spotted owl survival would dominate all population responses.*

The negative influence of the barred owl will be even more pronounced when the BLM updates their analysis in the Final EIS to incorporate the findings of the latest Spotted Owl Demographic Study Report which will show higher barred owl encounter rates. The BLM should also consider increasing the barred owl encounter rate over time in their analysis to reflect the true growth rate of this population and its effect on spotted owls.

Maintaining Older and More Structurally-Complex Multi-Layered Conifer Forests is Not Justified

The entire justification for "maintaining older and more structurally-complex multi-layered forests" (old growth) is based on its use by the northern spotted owl. As shown above, the spotted owl analysis of the alternatives clearly show that this protection is not effecting the steady downward trend in spotted owl population size. Since "the effect of barred owl encounter rates on northern spotted owl survival … dominate all population responses" the rate at which the spotted owl population is predicted to decline will not change even if all of the old growth on the 2.5 million acres of BLM land remains uncut.

The DRMP/EIS posits the following as the justification of why all alternatives must protect older and more structurally-complex multi-layered forests albeit using different definitions:

1. the existing science clearly establishes the importance of older and more structurally-complex multilayered conifer forests as northern spotted owl habitat;
2. the owl recovery plan recommends the maintenance of older and more structurally-complex multi-layered conifer forests;

3. and the results of previous analyses demonstrate that maintaining older and more structurally-complex multi-layered conifer forests would contribute to meeting conservation needs of the northern spotted owl;
4. therefore, maintaining older and more structurally-complex multi-layered conifer forest is a necessary part of the purpose of contributing to the conservation and recovery of the northern spotted owl.

While the first two statements are true, the third and fourth clearly are not. No amount of protection of spotted owl habitat will have any effect on spotted owl population numbers under the current size and growth of the barred owl population. Since the BLM is bound by law to not speculate on what might happen in the future regarding any barred owl control measure, the RMP's must be based on what the current situation is. That situation is that the barred owl is occupying all available spotted owl habitat, is out-competing it for available resources, is severely reducing the spotted owls survival and reproduction rates, and its population size continues to grow. Under these conditions, the protection of old growth forests on O&C Lands is not justified as it is not contributing to the conservation of the species.

Carbon Storage Analysis is Flawed

The BLM's approach to analyzing the effects of the various alternatives on long-term carbon storage is superficial and misrepresents what would likely occur. The true goal regarding carbon storage is to maximize the removal of today's atmospheric carbon dioxide (CO2) by minimizing the release of currently stored carbon and maximizing the long-term storage of atmospheric CO2. The amount of carbon that was taken out of the atmosphere in the past and stored in the existing forest is not contributing to the reduction of the atmospheric CO2 that exists today. The CO2 that is currently in the atmosphere is what is being cited as one of the reasons for global climate change not the amount that was stored in the past.

To truly display the effects of the different management options within the RMP, the "carbon storage" calculation must take into account:

- The current amount of carbon stored within the area, i.e. the standing forest and what is below ground.
- The natural risk of this carbon being released into the atmosphere which included things such as wildfire, insect and disease, mortality and decay.
- The transformation of this stored carbon into other forms of long-term storage.
- The emissions of producing substitute material such as steel and concrete if wood is not allowed to be harvested and these other materials must be used instead.
- The changing rates of CO2 uptake as a forest ages.

William Stewart and his colleagues utilized this approach to determine the relative benefits of managing forests in comparison to letting them grow.

> … *harvested and regenerated forests will provide approximately 30% more total carbon sequestration benefits than forests left to grow for an equal time. More than half of the total benefits relate to harvested wood substituting for fossil fuels and fossil fuel–intensive materials such as cement and steel. With relatively efficient management practices, harvesting a ton of wood provides more sequestration benefits than leaving that ton growing in the forest.* Stewart, William C. and Benktesh D. Sharma, 2015. Carbon calculator tracks the climate benefits of managed private forests. California Agriculture 69(1):21-26. January-March 2015. http://californiaagriculture.ucanr.edu/landingpage.cfm?article=ca.v069n01p21&fulltext=yes, accessed August 20, 2015.

Many of the components the BLM should consider were utilized in the following paper: Smyth, C. E., Stinson, G., Neilson, E., Lemprière, T. C., Hafer, M., Rampley, G. J., and Kurz, W. A.: Quantifying the biophysical climate change mitigation potential of Canada's forest sector, Biogeosciences, 11, 3515-3529, doi:10.5194/bg-11-3515-2014, 2014. http://www.biogeosciences.net/11/3515/2014/bg-11-3515-2014.html accessed August 20, 2015. This analysis of the potential contributions the Canadian forests could make to decreasing atmospheric CO2 states:

Global efforts to reduce the rate of increase in the atmospheric carbon dioxide (CO2) concentration require both a reduction of emissions and an increase of removals of CO2 from the atmosphere. Globally, forests not affected by land-use change are currently estimated to remove about 2.4 PgC yr−1 from the atmosphere (Pan et al., 2011) and together with carbon (C) sinks in oceans remove from the atmosphere about half of the annual anthropogenic emissions from the burning of fossil fuels and cement manufacturing (Le Quéré et al., 2012). Forest sector mitigation can be achieved through activities that increase forest area, increase stand- and landscape-level C density though forest management activities or conservation (Nabuurs et al., 2007) and through the use of harvested wood products to store C and displace other emissions-intensive materials such as concrete, steel, plastics and fossil fuels (Sathre et al., 2010; Werner et al., 2010). The increase of atmospheric CO2 from the conversion of stored carbon into atmospheric CO2 through wildfires can be significant. The potential of wildfires and thus the release of stored carbon is greatly affected by the level of management. There are major differences among the alternatives in stand-level fire resistance largely resulting from the type of management and associated management direction. The carbon storage analysis in the DRMP/EIS ignores these difference and held the effect of fire constant which is inconsistent with the Fire and Fuels analysis.

The goal of the analysis should be the disclosure of the total carbon benefits from forest storage, product storage, and fossil fuel substitution benefits. The analysis should consider the future risks to forest carbon from wildfires, insects, and disease; the amount of carbon stored in products or in landfills; the life cycle benefits of harvested wood products compared to non-

renewable products; the conversion of atmospheric CO2 into stored carbon via photosynthesis; and the energy produced from wood residues.

The carbon storage analysis also misuses the Carbon On Line Tool (COLE) developed by the National Council for Air and Stream Improvement (NCASI). Dr. Paul Van Deusen who helped develop COLE made the following observations regarding the BLM's use of COLE.

> *These comments refer to the discussion about use of COLE in VOLUME 3, APPENDIX G [of the DRMP/EIS]. COLE was originally developed with funding and cooperation from the USDA Forest Service. NCASI has continued to maintain COLE, as a public service, since funding ended in 2011.*
>
> *The BLM based their carbon analysis and projections on Table 1 in the standard COLE report. Table 1 shows smoothed values for forest carbon components at age classes 0-100 in 10 year increments. The smoothing is accomplished with a 2-parameter Von Bertalanffy growth equation. The a-parameter gives the asymptote and the b-parameter indicates the rate at which the asymptote is achieved. This is explained in the Introduction section just before Table 1.*
>
> *It is important to consider that Table 1 can include many forest stands that are uneven aged. Stand age is based on FIA estimates from cores taken from a few off-plot site trees. Therefore, the age class values are a good way to unify and simplify results, but are often very uncertain.*
>
> *<u>Understory component</u>*
>
> *BLM takes the smoothed understory component from Table 1 and projects it to 210 years in 10 year increments. Clearly, these projections are of limited value, since they are based on the constrained Von Bertalanffy projections. BLM does mention at the end of APPENDIX G that their projections could be off by 50%. It would be more accurate to say that the quality of the BLM projections is completely unknown and could be off by 100% or more.*
>
> *<u>Administratively reserved areas</u>*
>
> *BLM used the same spreadsheet methods for projecting the live tree carbon component for administratively reserved areas. The comments for the understory component apply here, as well.*
>
> *<u>Carbon storage in soil</u>*
>
> *BLM assumed no change in the soil carbon over time. We agree that this is the best assumption to make, given the limited amount of actual data for modeling soil carbon.*

Depiction of the "Average Historic Condition" is Incorrect

Issue 1 concerning "Bureau Sensitive, Bureau Strategic, Survey & Manage Species, and Landbird Focal Species" is:

> *What levels of habitat would be available under each alternative for Bureau Sensitive, Bureau Strategic, or Survey & Manage wildlife species and landbird focal species?* DRMP/DEIS p. 682.

Two of the matrices used to address this issue compare distribution of seral stages for the various alternatives to the "Average Historic Condition" (AHC). DRMP/EIS figures 3-161 and 3-162, pp.685 and 686. This AHC is derived from one paper published by Nonaka and Spies in 2005. Their analysis relies totally on the results of computer simulations developed to fulfill the requirements of Nonaka's Master's Degree thesis. Dr. Bob Zybach, who has done extensive research on the history of the same area used in Nonaka's computer simulations, reviewed this work and summarized it as follows:

> *The Nonaka and Spies paper is basically a graduate student exercise in computerized modeling, with the Coast Range forests of western Oregon serving as a geographic "landscape-scale" for theoretical mathematical simulations using a mostly untested and rudimentary in-house computerized wildfire simulation model named LADS…*

The computer model developed by then-graduate student Nanaka ignores scores of other research done on this subject that in essence disproves their finding through actual historic records. Dr. Zybach questions why there is such a lack.

> *There is an obvious bias in the literature reviewed for constructing this model. For a topic claiming to deal with prehistoric Oregon "landscape scale" forest history and fire history, there is a noticeable bias in the sources that are cited. Where are the historians, historical ecologists, cultural anthropologists and other actual experts in these topics of western Oregon forest and fire history? Where are Lewis and Clark, David Douglas, John Leiberg, Henry P. Hansen, Thornton Munger, Carl Johannessen, Stephen Pyne?*

The portrayal of the AHC in the DRMP/DEIS that 55% of the Decision Area Forested habitat was comprised of Structurally Complex Forest is not supported by any historic data. This 55% was again derived from Nonaka's computer model and is not rooted in reality. Dr. Zybach points out:

> *Here is an example of what estimated "historical" averages using rudimentary computerized simulation models for 200 claimed iterations actually yields (Nonaka and Spies 2005: 1743)* ***[emphasis mine]:***

> *Third, the oldest old-forest age class, 450-800 years and >800 years, which are largely absent from the Coast Range today,* ***probably occupied a significant portion of this landscape under the HRV.*** *Without a long-term commitment to growing old growth,* ***this structurally distinctive stage of old growth*** *(Spies and Franklin 1991) will not occur.*
>
> *Not only will this "structurally distinctive stage of old growth not occur" -- even with a "long-term commitment" – it does not even exist, has not existed during historical time (the last 250 years), nor did it likely ever exist on the Oregon Coast Range during the past 1,000 years (Zybach 1993: 10-33). These numbers aren't "estimated" at all – they are completely fabricated. And they are based entirely on arbitrary modeling formulas and not actual observation. As a result, there is no way to document, verify, or replicate these claims. They are simply false to begin with.*

In reality, no "Average Historic Condition" derived by whatever method rarely if ever existed. This is due to the nature of "averages." For example, the average age of employees in a company may be 43, yet no one in the company is actually 43. The average daily temperature for Portland during the summer may be 78 degrees and but there are very few hours during the summer where the temperature is actually 78 degrees. The average amount of older forests within a particular watershed over a 500 year period could be 25%, but the actual amount of older forests probably ranged from near zero (after a catastrophic fire event) to near 100% depending on the size and location of the watershed.

If depicting an Average Historic Condition is necessary to the analysis in the DRMP/EIS, research that includes actual historic data should be used, rather than relying on a computer model of questionable rigor and usefulness.

Specific Legal Comments

The O&C Act does not allow the BLM to establish no-harvest reserves on O&C timberlands that BLM has found capable of sustained-yield timber production, because the O&C Act mandates that "[O&C] lands ... classified as timberlands ... **shall be managed** . . . **for permanent forest production**, and the timber thereon **shall be sold, cut, and removed** in conformity with the principal [*sic*] of **sustained yield**." 43 U.S.C. § 1181a [emphasis supplied]. All the alternatives in the DRMP/DEIS unlawfully include between 64% and 80% reserves on O&C timberlands where no sustained yield timber harvest is permitted. The FEIS must have some alternatives that comply with the O&C Act, and the selected RMP must comply with the O&C Act.

Once BLM declares an allowable sale quantity for a District, the O&C Act requires the BLM to sell or offer to sell the full allowable sale quantity every year. The RMP cannot make the allowable sale quantity conditional or optional by inserting language in the RMP allowing a percentage below 100% of allowable sale quantity to be sold or offered for sale in a year because this violates the terms of the O&C Act.

The ESA does not amend the O&C Act, and cannot be given precedence over the O&C Act. The O&C Act requires that every acre of suitable timberland be managed for permanent forest production – not managed as a no-harvest reserve to recover a listed species. BLM has made the O&C Act subservient to the ESA, which is an improper interpretation of ESA and the O&C Act.

The DEIS' Purpose and Need Statement is too narrow. "[A]n agency cannot define its objectives in unreasonably narrow terms." *City of Carmel-By-The-Sea v. United States Dep't. of Transp.,* 123 F.3d 1142, 1155 (9th Cir. 1997). "An agency may not define the objectives of its action in terms so unreasonably narrow that only one alternative from among the environmentally benign ones in the agency's power would accomplish the goals of the agency's action, and the EIS would become a foreordained formality." *Friends of Southeast's Future v. Morrison,* 153 F.3d 1059, 1066 (9th Cir. 1998). An alternative is unreasonable if it does not fulfill the purpose of the project. *Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 195 (D.C. Cir.), *cert. denied*, 502 U.S. 994, 112 S.Ct. 616, 116 L.Ed.2d 638 (1991). The purpose of the Resource Management Plans is to manage the O&C lands in accordance with O&C Act. Where an action is taken pursuant to a specific statute, the statutory objectives of the action serve as a guide by which to determine the reasonableness of objectives outlined in an EIS. *City of New York v. United States Dep't of Transp.,* 715 F.2d 732, 743 (2d Cir. 1983).

The DRMP/EIS made the establishment of large contiguous blocks of late-successional forest part of the purpose and need of the revised plan. Therefore every alternative contains over one million acres of such large blocks of forest. Yet the DRMP/EIS reveals that the large blocks of forest make no discernible contribution to protecting the northern spotted owl because the harmful effects of barred owls are so great that habitat protection makes no difference to owl conservation. None of the alternatives accomplishes the goal of conserving the northern spotted owl, which is the stated purpose for the large contiguous blocks of late-successional forest.

The purpose and need statement identifies "conservation of the northern spotted owl" as the reason large blocks of old-growth spotted owl habitat are required. In the ESA, conservation means recovery. A recovery plan is, of course, aimed at achieving recovery of a listed species. Federal agencies have no duty to attempt to recover listed species. While ESA imposes a duty to avoid actions likely to jeopardize the continued existence of listed species, there is no parallel duty to avoid actions that may delay or impede recovery as long as jeopardy is not likely. The purpose and need statement improperly makes recovery of the northern spotted owl a required component of the RMP although there is no statutory requirement in the ESA or any other statute to pursue recovery. The large blocks of old-growth spotted owl habitat should not be a required component of the RMP.

The range of alternatives is too small as a result of the requirement for large contiguous blocks of late-successional forest. A new DEIS is required with additional alternatives that do not contain large contiguous blocks of late-successional forest, including at least one alternative that has no reserves where sustained-yield timber production is prohibited.

Sincerely,

Tom Partin
President

Jasmine Benjamin

From: m1allen@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Friday, August 21, 2015 1:11 PM
To: RMP-Comments@heg-inc.com
Subject: Fwd: American Bird Conservancy Comment - Attachment 2
Attachments: NWFP principles 2.pdf; Franklin_Comments.pdf; White-Castle-Decision.pdf

---------- Forwarded message ----------
From: **RMPs_WesternOregon, BLM_OR** <blm_or_rmps_westernoregon@blm.gov>
Date: Fri, Aug 21, 2015 at 8:32 AM
Subject: Fwd: American Bird Conservancy Comment - Attachment 2
To: BLM_OR RMPWO_Comments <blm_or_rmpwo_comments@blm.gov>

****
Resource Management Plans for Western Oregon
Bureau of Land Management
web: www.blm.gov/or/plans/rmpswesternoregon

FACEBOOK: www.facebook.com/blmoregon
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Before including address, phone number, email-address, or any other personal identifying information in your comments, be advised that your entire comment, including personal identifying information, may be made publicly available at any time. If you wish us to withhold your personal information you must state this prominently at the beginning of your comment. While individuals may request that the BLM withhold personal identifying information from public view, the BLM cannot guarantee it will be able to do so.

You have received this email because you have previously submitted a request to be on the mailing list, stakeholder list, submitted a comment, feedback or survey response and/or indicated interest in the RMPs for Western Oregon.

---------- Forwarded message ----------
From: **Steve Holmer** <sholmer@abcbirds.org>
Date: Fri, Aug 14, 2015 at 12:18 PM
Subject: American Bird Conservancy Comment - Attachment 2
To: "RMPs_WesternOregon, BLM_OR" <blm_or_rmps_westernoregon@blm.gov>

Northwest Forest Plan Revision Principles

The undersigned conservation organizations would like to follow up on a recent meeting with Forest Service regional foresters Randy Moore and Jim Peña and planning staff. Outlined below we express our concerns and offer a vision for the proposed revision to President Bill Clinton's Northwest Forest Plan (NWFP).

Our organizations are concerned by the proposed forest by forest revision process which lacks the overarching standards and guidelines of the NWFP, and past and current agency actions to weaken the NWFP, including the offering of projects inconsistent with conserving the Northwest's late-successional ecosystem and the birds, fish and other wildlife it sustains. We encourage the administration to consider a better course of action than the currently proposed NWFP revisions. We are confident one exists, and that it is consistent with the best available science and our collective efforts to combat climate change.

We urge the Obama Administration to keep the NWFP as a consistent, regional, interagency plan and continue the ecosystem management approach that accounts for the needs of multiple listed species which depend on the preservation and restoration of large blocks of mature and old-growth forests and intact watersheds that remain in short supply on the landscape. Recent science has reaffirmed the importance of the NWFP as a global model for ecosystem management and biodiversity conservation, particularly the reserve network[i]. We urge the administration to abide by the founding principles of the NWFP, particularly with respect to its emphasis on scientific credibility and legal defensibility as also outlined herein.

The NWFP is a success and an example of strong presidential leadership that provided the Northwest's old-growth forest ecosystem a needed breather from decades of intensive logging that all but eliminated a functional old forest ecosystem in the Pacific Northwest[ii] and the resulting national public controversy. Due to forest growth provided for by the NWFP, what was once a significant annual source of CO_2 due to logging of old forests is now a significant net carbon sink.[iii] Additionally, water quality has significantly improved due to the plan's watershed restoration emphasis and constraints on logging in riparian buffers[iv].

The NWFP as implemented (i.e., emphasizing commercial thinning in young plantations and de-emphasizing regeneration harvest (e.g. clearcutting) and preservation of mature and old growth forests) remains a solid foundation upon which to build and offers the best model to address numerous new stressors to this late-successional ecosystem. For example, radio-tracking studies demonstrate that Northern Spotted Owls have a higher likelihood of survival against Barred Owl invasion when larger blocks of late successional habitat are available[v].

Based upon the latest information about wildlife population declines, the influx of the Barred Owl, rising carbon dioxide levels in the atmosphere and the likely impacts of climate change, additional protective measures for wildlife habitat, preservation of high biomass forests, and increased protection of stream buffers should be implemented by this plan revision.

We recommend that plan revisions build on the protective standards and guidelines and reserve allocations of the NWFP by incorporating new policy recommendations such as ecological integrity (as specified in the 2012 planning rule), climate resilience, connectivity, and especially carbon storage (as specified by the Council on Climate Preparedness and Resilience Climate and Natural Resources Working Group). Below are the following principles we believe are consistent with these new policies and best science.

Strengthening and Expanding Reserves

- Expand the late successional reserve and riparian reserve systems to provide refugia for late-successional species and to ameliorate new stressors, including Barred Owls and climate change.

- Prohibit post-disturbance logging in reserves to protect carbon sequestration of post-fire landscapes, provide habitat for threatened species and prey, and to provide complex early seral forests that are as rich as old-growth forests[vi] and increasingly rare due to post-fire logging.

- Designate additional reserves and larger no-logging buffers within the range of the threatened Marbled Murrelet to reduce habitat fragmentation effects.

- Designate all mature and old-growth forest, all high-carbon forests, all reserves, all critical habitat, all key watersheds, and all roadless areas larger than 1,000 acres, as “not suitable for timber production” to ensure that timber production does not take priority over ecological and restoration goals.

- Withdraw reserves and all administratively protected classifications from mining.

Protecting Watersheds, Aquatic Species

- Retain existing Aquatic Conservation Strategy (ACS) objectives and riparian reserve boundaries, and the standards and guidelines that emphasize restoration, and avoid actions that would retard or prevent achievement of the ACS objectives for all watersheds, over time.

- Preserve requirements that projects maintain and restore the aquatic functions and processes of streams and watersheds by demonstrating consistency with the nine Aquatic Conservation Strategy Objectives at scales relevant to those functions and processes.

- Prohibit grazing in riparian reserves and key watersheds and provide for voluntary federal grazing permit vacation to reduce cumulative effects of grazing[vii].

Reducing Stressors by Addressing Roads

- Rationalize the road system by reducing road densities and road-related impacts to listed aquatic and terrestrial species, improving all standards for road decommissioning and removal, and restoring connections to inventoried roadless areas.

- Accelerate implementation of Travel Analysis Report recommendations and Watershed Restoration Action Plan projects to implement a minimum road system.

Advancing Forest Restoration

- Promote variable density thinning in plantations to accelerate development of late-seral conditions and reduce fire risks. Limit tree thinning to 20 inch dbh to restore older tree characteristics to dry and moist forests.

Protecting High Biomass Forest Carbon Stores and Reducing CO_2 Emissions

- Conduct baseline inventory of carbon stocks and fluxes to identify and protect all high biomass forests[viii] for their carbon storage value.

- Analyze and mitigate for carbon dioxide emissions resulting from regeneration logging, forest thinning, post-fire logging, and biomass utilization[ix].

Re-Establishing Connectivity

- Establish and protect redundant habitat linkages for wolves and other wildlife along elevation gradients and north-south gradients and microrefugia (mainly low elevation and north-facing mature forests) for species movements and persistence in a changing climate[x].

- Protect all native (unmanaged) forest in all land allocations from logging to add connectivity and increased functionality of late-seral ecosystem needed to arrest declines in listed salmon populations and late-seral species such as Northern Spotted Owl, Marbled Murrelet, Pacific Fisher, Humboldt marten, and Red-tree Vole.

Protecting Drinking Water Sources

- Protect drinking water source areas for municipal water supplies from degrading activities including commercial logging, grazing, mining and off-road vehicle use.

Recommending Wilderness, Wild and Scenic and other Protected Areas

- Recommend new Wilderness Areas and Wild and Scenic Rivers, including tributary additions to existing Wild and Scenic Rivers.

- Complete the Research Natural Area System, designate additional Special Interest Areas and designate and protect National Recreational Trails.

Allowing for Appropriate Wildland Fire Management

- When appropriate, allow fires to burn safely in the backcountry and provide for un-salvaged early seral habitat for fire-dependent species. Focus thinning on the home ignition zone and flammable tree plantations.

Conversely, conservation groups are opposed to dissolution of the regionally integrated NWFP with each National Forest and BLM District Office adopting inconsistent and weaker standards that do not take a comprehensive ecosystem protection and restoration approach. Judge William Dwyer concluded that the BLM and Forest Service had to do an ecosystem-wide plan as opposed to forest-by-forest plans and ruled that the agencies could not, given the current conditions of the forests, meet their obligations under NEPA and the ESA "without planning on an ecosystem basis." *Seattle Audubon Society v. Lyons,* 871 F. Supp. 1291, 1311 (W.D. Wash. 1994) (emphasis in original).

The best available science does not support eliminating or shrinking the late-successional or riparian reserves or weakening of other protective management standards. As noted above, scientific studies indicate that Northern Spotted Owls have a better chance of coexisting with Barred Owls when there are more large blocks of habitat available. Logging in suitable or high quality Critical Habitat of the Northern Spotted Owl is inconsistent with recommendations to preserve existing habitat, and should be avoided. Clearcuts, including modified clearcuts (ecoforestry) on federal forests will hasten owl decline[xi] and degrade water quality and should therefore be opposed.

Past and recent agency actions to weaken protections of the Northwest Forest Plan and to offer extensive post-fire timber sales and other projects in the NWFP region that are inconsistent with the best available science or current understandings of climate adaptation and resilience have eroded public and scientific trust. We are greatly concerned the land management agencies are leading NWFP revision process in what appears to be a piecemeal and uncoordinated fashion. Specifically, we are concerned by:

- The BLM's Western Oregon Plan Revision and the Okanogan/Wenatchee National Forest draft plan revision that propose to eliminate or reduce reserves and weaken management standards in the Northwest Forest Plan.

- Proposals to replace the NWFP Aquatic Conservation Strategy with a modified Aquatic Conservation and Restoration Strategy that has weaker protection standards[xii], and to eliminate Survey and Manage Requirements.

- Large-scale post-fire logging in mature and old-growth forests and Key watersheds such as the proposed Westside post-fire logging project on the Klamath National Forest in California despite extensive science that indicates this type of logging is not consistent with ecological integrity or climate resilience[xiii].

- Raising the age of logging in late-successional reserves in California from 80 years to 120.

- Allowing for logging that downgrades or degrades suitable Northern Spotted Owl habitat in designated critical habitat.

- Not re-designating late-successional stands in the matrix as reserves or updating the current 800 million board foot Probably Sale Quantity to reflect the additional protections required by the Northern Spotted Owl critical habitat designation and the need to conserve forest carbon.

- Continuing to propose damaging logging despite lack of up to date regional population numbers for Northern Spotted Owl, Marbled Murrelet, Red Tree Vole, and Pacific fisher and the impact of these projects on these imperiled species.

- Lack of analysis of impact of large-scale thinning effects in Northern Spotted Owl and Marbled Murrelet critical habitat and suitable nesting, roosting and foraging owl habitat.

In conclusion, we urge the land management and wildlife protection agencies under your purview to address these specific recommendations listed above as part of the upcoming planning process and build upon the protections of the historic NWFP. This will ensure that the plan continues to be a leading example of large-landscape conservation and ecosystem restoration. Thank you for your consideration.

We look forward to working with the administration and federal agencies on the NWFP, and are interested in meeting with you at your convenience to discuss these issues in more detail.

Sincerely,

Kristen Boyles
Staff Attorney
Earthjustice

Rhett Lawrence
Conservation Director
Oregon Chapter, Sierra Club

Randi Spivak
Director of Public Lands
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Steve Holmer
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Greg Dyson
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Joseph Vaile
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Tara Thornton
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Endangered Species Coalition

Francis Eatherington
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Cascadia Wildlands

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Barbara Ullian
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Kimberly Baker
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Thomas Wheeler
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Epic-Environmental Protection Information Center

Larry Glass
President of the Board
SAFE (Safe alternatives for our Forest Environment)

Laurele Fulkerson
Policy Director
Gifford Pinchot Task Force

For additional information please contact Steve Holmer, American Bird Conservancy, 202 888 7490, sholmer@abcbirds.org.

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Ms. Patricia A. Grantham, Forest Supervisor
Ms. Wendy Coats, Environmental Coordinator
Klamath National Forest Supervisor's Office
1711 S. Main Street
Yreka, CA. 96097

RECEIVED
KLAMATH N.F.

RE: Comments on the Draft Environmental Impact Statement for the Westside Fire Recovery Project

Dear Supervisor Grantham and Ms. Coats: April 6, 2015

I have reviewed the Westside Fire Recovery Project DEIS dated March 2015. I would like to offer the following comments based on my experience as a forester, scientist, and educator involved in the study and management of forest ecosystems in the Pacific Northwest. I rarely submit formal comments on projects but I feel I need to do so because extensive areas of Late Successional Reserves are proposed for treatment.

Summary

My comments are focused primarily on activities proposed for Late Successional Reserves (LSRs), a land use allocation that I helped to create and populate as a member of the Forest Ecosystem Management Assessment Team (1993). Excepting the proposed roadside salvage, approximately 72% of the proposed salvage logging in the preferred alternative (#2) is located within LSRs—roughly 4,900 acres out of 6,800 acres total. In part, the logging is justified in the DEIS on the basis that it is needed to assist in rapid re-establish late-successional forest conditions and Northern Spotted Owl habitat with the LSRs.[1] Given the important and well defined ecological role assigned the LSRs in the Northwest Forest Plan (NWFP) I have paid special attention to the scientific rationale offered for the extensive salvage logging that is proposed in LSRs.

The LSR network was designed as a robust system of ecological reserves, which could accommodate large intense natural disturbances and the natural recovery processes that were expected to follow them. The FEMAT team well understood that salvage operations would interfere with these recovery processes, which is why they recommended that salvage in LSRs should be very limited in the FEMAT report; this conservative direction with regards to salvage in LSRs was incorporated in the NWFP.

Salvage logging of large snags and down boles does not contribute to recovery of late-successional forest habitat; in fact, the only activity more antithetical to the recovery processes would be removal of surviving green trees from burned sites. Large snags and logs of decay resistant species, such as Douglas-fir and cedars, are particularly critical as early and late successional wildlife habitat as well as for sustaining key ecological processes associated with nutrient, hydrologic, and energy cycles.

[1] According to the DEIS, the purpose and need for post-fire treatments is: 1) worker and public safety and access; 2) safe conditions for firefighters performing fire suppression for community protection; 3) a project that is economically viable, meeting project objectives and benefiting our local communities; and 4) restored and fire-resilient forested ecosystems. DEIS, i.

Stand-replacement fires provide large pulses of coarse woody debris (CWD) including snags and logs, which lifeboat dependent species and processes until the regenerating forest begins to produce large and decay-resistant dead wood structures, which is typically not for a century or more. Since this pulse provides all of the large CWD that is going to be available to the ecosystem for at least the next 100 to 150 years, it is not appropriate to use the levels of CWD found in mature and old stands of a particular Plant Association Group (PAG) as a guide to levels of CWD that should be retained after salvage. Effectively none of the large snags and logs of decay-resistant species can be viewed as being in excess of what is needed to assist in natural recovery to late-successional forest conditions and, hence, appropriate for salvage on land allocations where ecological objectives are primary, such as LSRs. Retention of large snags and logs are specifically relevant to Northern Spotted Owl (NSO) since these structures provide the habitat that sustain most of the owl's forest-based prey species.

If large fuels are viewed as a critical fire control issue, this could be dealt by creating appropriate Fuel Management Zones or snag-free corridors. In summary, general salvage of large snags and logs is absolutely inconsistent with a goal of assisting recovery of late-successional forest conditions.

Extensive reforestation by planting is proposed within the LSRs in the Westside Project area. Slow re-establishment of forest cover can be expected after natural stand replacement disturbances in the Pacific Northwest if tree regeneration is allowed to develop naturally. Recent studies of the establishment of natural stands following wildfire has shown that it commonly took 40 to 60 years on average for tree establishment to be completed and closed forest canopies to develop (Freund et al. 2014 and Tepley et al. 2014). This slow natural tree regeneration process contributed positively to sustaining regional forest biodiversity because it allowed shrub-dominated habitat to persist for decades, which sustained a large array of early-successional species, many of which are early successional habitat specialists (Swanson et al. 2011). Many of these species require snags, logs, and diverse plant resources; some insect pollinators, for example, require CWD for their larval stages. I would also note that some of the early successional animals, such as wood rats, are important prey species for the Northern Spotted Owl. Naturally disturbed, early successional habitat undergoing slow natural reforestation (without salvage or planting) is currently the rarest of the natural forest developmental stages in the Pacific Northwest – even more so than old-growth forests. Yet, as research at Mount St. Helens has showed, these large, slowly reforesting disturbed areas are major hotspots of regional biodiversity.

Limited planting may be appropriate within the LSRs to establish tree seed sources for specific species and locations but this should not be done using traditional approaches, which are designed to create extensive areas of uniformly stocked forest stands. Uniform tree planting over large areas is inappropriate in LSRs even at low densities. Appropriate plantings in LSRs would be limited in area and spatially heterogeneous. The inappropriateness of creating dense uniform stands is apparent from the fact that since the origin of the NWFP we have undertaken major programs in variable density thinning in existing plantations in LSRs! Establishment of "fully stocked" plantations on sites characterized by Fire Regimes I and II is particularly inappropriate,

since it simply recreates the potential for the next uncharacteristic stand replacement fire. This last issue does not appear to have been addressed in the DEIS.

The DEIS does not appear to include some current and relevant information regarding habitat preferences of the NSO. Alan B. Franklin et al. (2000) report that in northwestern California, the highest habitat fitness for NSO is found in landscapes that are a mixture of mature and old forest with open vegetation types, such as brush fields and young forest, and not in landscapes dominated by old forests. The fact that an early successional species — the dusky-footed woodrat — is the primary prey for NSO in this region may be part of the reason that owls prefer a mixed landscape. In any case, the fact that habitat fitness for the owl is favored by a heterogeneous landscape mosaic should be factored into decisions regarding establishment of conifer plantations, both within and outside of LSRs.

Late Successional Reserves

A brief review of the conceptual basis for the Late Successional Reserve (LSR) system is appropriate before commenting specifically upon activities proposed for LSRs impacted by the 2014 fires on the Klamath National Forest. LSRs were established to provide for old-growth ecosystems and related natural processes and constituent species, of which the NSO is one. The LSR system was designed as a well-distributed geographic network using occurrences of high-quality late-successional forest as a primary criterion for locating boundaries of specific LSRs.

The team that designed the LSR system knew that large stand replacing disturbances would impact LSRs and, therefore, that the LSR network needed to be able to accommodate such disturbances. The team had had numerous experiences with such disturbances, including the 1980 Mount St. Helens eruption and the 1988 Yellowstone Fires. Hence, the team built sufficient redundancy into the LSR system so that it could accommodate large disturbances and still remain viable as a regional network. This redundancy would also allow for natural recovery processes within impacted LSRs. Building reserve systems that will accommodate natural disturbance regimes is, of course, a first principle in conservation biology (Lindenmayer and Franklin 2003).

Creating a resilient LSR network ultimately resulted in a higher density and greater total acreage of LSRs than a reserve system that would simply have accommodated current habitat needs for NSO. This point is illustrated by comparing the LSR system with the Habitat Conservation Area (HCA) system proposed (and, at that time, judged to be adequate) for NSO (Thomas et al. 1990). The HCA system proposed approximately 5.5 million acres of reserves in addition to areas already reserved from timber harvest by Congress and the management agencies. The LSR network incorporated 7.4 million acres (in addition to already reserved lands) with an additional estimated contribution of 2.6 million acres of Riparian Reserves. The ultimate adoption of the LSR network as the basis for the NWFP reserve system resulted in a network that provided for much larger numbers of NSO than the proposed HCA network (Noon and McKelvey 1996), because the LSRs were focused on incorporating the highest quality old-growth forests, has a greater total reserved acreage, and created some very large reserves.

I have documented the basis for my assertion that the LSR network was built to be resilient in the preceding paragraph; i.e. it was built to accommodate significant loss and continue to function as

an effective reserve system for old-growth related species. One could say that the LSR system was overbuilt in terms of immediate habitat needs. A major reason for doing this was the FEMAT planners belief that natural recovery processes could and should be accommodated following major disturbances to LSRs. Hence, guidelines for salvage included statements such as: "Management objectives [following natural disturbances in Late Successional Reserves] should focus on either simulating natural succession or allowing it to occur unimpeded," FEMAT 1993, p. IV-36, and "Because there is much to learn about the development of species associated with these [old-growth] forests and their habitat, it seems prudent to only allow removal of conservative quantities of salvage material from Late-Successional Reserves and retain management options until understanding of the process has improved." FEMAT 1993, p. III-36.

One might question the appropriateness of allowing natural recovery processes to proceed if stand-replacement fire behavior with the resulting high levels of fuels were not characteristic of the LSRs. However, approximately ¾ of the affected area in the LSRs are habitats that belong to PAGs on which either stand-replacement or mixed fire regimes are characteristic and, therefore, on which large fuel loads would have been experienced in past post-fire environments. Hence, it would appear to me that the fire effects experienced were characteristic of what would be expected in the majority of the LSR area proposed for salvage in the Westside Fire area.

One of the major motivating factors in conducting salvage logging in the Westside fire area – including the LSRs – seems to be economic and not ecologic (DEIS, 10-11), which is further indicated by the Chief's "Emergency Situation Determination" and the "Alternative Arrangements" secured from the Council on Environmental Quality. The NWFP specifically directs that, "Salvage will not be driven by economic or timber sale program factors" in LSRs (NFP SFEIS F-21). The teams that put together FEMAT and the NWFP specifically wanted the LSRs to be exempted from the pressures of programmed timber harvest, because the primary drivers in LSRs were ecological and not economic. Hence, it would seem that the salvage proposed within LSR segments as part of the Westside Salvage Project is inconsistent with the goals and principles of LSR management.

Snags, Logs, and Coarse Woody Debris (CWD)

The role of CWD in the development of late-successional forest habitat is an important factor to consider in evaluating the appropriateness of salvage activities in the Westside project area, particularly within the LSRs. Most of the salvage proposed in the LSRs is on PAGs where large volumes of snags and logs following wildfire are characteristic. Large snags and logs are the most important surviving structural elements or biological legacies of a forest disturbance(Franklin et al. 2002), excepting only surviving large live trees. Importance, in this case, refers to the roles of these structures in:

(1) Providing essential habitat for an immense array of species;
(2) Maintaining important ecosystem functions; and
(3) Structurally enriching the young forest stand, making it possible for mid- and late-successional species to re-colonize the stand much earlier in its chronological development than would otherwise be the case (Franklin et al. 1987).

The importance of large snags and down wood for a broad array of species is recognized in the EIS document. These structures provide habitat for early as well as late successional species and sustain many important ecosystem processes (e.g., Harmon et al. 1986). However, the long persistence and multiple roles played by the large pulse of snags, logs, and other CWD provided by the stand-replacement event (Harmon et al. 1986; Maser et al. 1988) do not appear to be adequately recognized in the analysis of how much of this wood should be retained. For example, large Douglas-fir logs continue to fulfill important ecological functions, such as habitat for small mammals and salamanders, for 200 to 250 years after their death. Cedar snags can persist for at least as long as 1 ½ centuries and as logs for over twice that long.

The massive input of large dead wood is characteristic and critical to stand development processes and the ultimate provision of habitat for late-successional species following stand replacement fires (Maser et al., 1988; Franklin et al. 2002). As noted these wood structures may persist and play functional roles for several centuries, particularly in the case of decay resistant species. Large pines may also persist as snags for several decades and additional periods as logs on the forest floor. In fact, the entire recovering forest ecosystem will depend upon this pulse of CWD until it reaches a point in its development where the new stand begins to generate snags and logs of comparable size and heartwood content—generally between 100 and 200 years (Maser et al. 1988; Franklin et al., 2002). Consequently, basing snag and CWD retention following salvage on levels of these structures found in existing mature and old forests is not appropriate; *all of this initial pulse of wood is needed to reach those levels one to two centuries from now!* Indeed, the use of mature forests as a standard for CWD is particularly inappropriate since this is the period when CWD levels are at their lowest level during the entire *natural* developmental sequence from stand-replacement fire to old growth (see diagram in paper by Spies in Maser et al. 1988). It certainly does not appear to me that the approach taken in the DEIS reflects an appreciation of the fact that this one-time input of large and decay resistant CWD is all that the recovering forest ecosystem is going to get for the next 100 to 200 years.

The importance of snags, logs, and other CWD is recognized in FEMAT's (1993) scientific analysis. For example (my underlining for emphasis):

> *Because of the important role of dead wood in late-successional and old-growth forest ecosystems, and because there is much to learn about the role of dead wood in the development of forests, only limited salvage is appropriate in Late-Successional Reserves . . . <u>The Final Draft Recovery Plan [for the NSO] would allow removal of small-diameter snags and logs, but would also require retention of snags and logs likely to persist until the new stand begins to contribute significant quantities of coarse woody debris.</u>"* FEMAT 1993, p. IV-37.

> *Snags provide a variety of habitat benefits for a variety of wildlife species associated with late-successional forests. <u>Accordingly, following stand-replacing disturbances, management should focus on retaining snags that are likely to persist until late-successional conditions have developed and the new stand is again producing large snags.</u>* FEMAT 1993, p. III-37.

Following a stand replacing disturbance, management should retain adequate coarse woody debris quantities in the new stand so that in the future it will contain amounts similar to natural regenerated stands. The analysis that determines the amount of coarse woody debris to leave must account for the full period of time before the new stand begins to contribute coarse woody debris.... FEMAT 1993, p. III-37.

In summary, general salvage of large snags and logs is clearly antithetical to the goal of rapid recovery of fully functional late-successional forest habitat and inappropriate within the Late Successional Reserves. If large fuels are viewed as a critical fire control issue, then this could be dealt with by creating appropriate Fuel Management Zones or snag-free corridors.

Northern Spotted Owls

The NSO is a species of special interest and one that almost certainly has been significantly negatively impacted by the 2014 fires. Restoration of suitable habitat for NSO has been used as a justification for intensive salvage and tree planting programs, such as in Alternative #2 of the DEIS. However, there is no scientific evidence to support the hypothesis that either activity will contribute either significantly or positively to a more rapid recovery of NSO habitat or NSO populations than allowing natural recovery processes. In fact, it is certain that salvage will not do so; the potential value of some tree planting could be argued.

Unfortunately, the DEIS also fails to acknowledge some important information with regards to the ecology of the NSO in the Klamath–Siskiyou region, either in the literature review or in analyzing effects of various alternatives. In a study of NSO habitat fitness in relation to landscape conditions, A. Franklin et al. (2000) show that a mosaic of older forest interspersed with early successional vegetation types had the highest fitness for NSO. Landscapes dominated either primarily or exclusively by older forest or primarily by early successional vegetation provided lower levels of fitness than the mosaic based on estimates of survival and fecundity. Hence, landscape mosaics of mature and old forest and early successional habitats, the latter including brush fields, would be appropriate recovery targets for restoration programs focused on NSO habitat.

I also noted that the DEIS does not appear to have fully considered recommendations of the 2011 Final Revised NSO Recovery Plan. Specifically, Recovery Plan Action 10 advises, "Conserve spotted owl sites and high value spotted owl habitat to provide additional demographic support to the spotted owl population", which includes protecting both historically and currently occupied NSO sites (NSO Recovery Plan III-42 – III-47. It appears that numerous sites will be eliminated by the proposed salvage logging (DEIS 148-149). Recovery Action 12 advises, "In lands where management is focused on development of spotted owl habitat, post-fire silvicultural activities should concentrate on conserving and restoring habitat elements that take a long time to develop (e.g., large trees, medium and large snags, downed wood)" (NSO Recovery Plan III-49). LSRs are certainly lands where "management is focused on development of NSO habitat"! As noted in the DEIS, the Westside proposal will remove many of the medium and large snags: "salvage activities will reduce snag densities of trees equal to or greater than 14 inches in diameter at breast height (dbh)" (DEIS 122).

This significant information regarding NSO, as well as impacts of the Barred Owl, needs to be acknowledged and considered in the final EIS. Specific consideration needs to be given to the impacts of: (1) salvage on development of the debris-rich late-successional conditions characteristic of forested NSO (and prey) habitat; and (2) establishment of conifer plantations on the amount and distribution of shrub-dominated early successional habitat in which the woodrat resides.

Reforestation

Extensive reforestation by planting is proposed within the LSRs. Slow natural re-establishment of tree cover is common following natural partial and complete stand replacement disturbances in the Pacific Northwest, however. Two recent studies of Douglas-fir forests in Oregon and Washington document that 40 to 60 years was the average time lapse before closed forest canopies developed following wildfire and sometimes it took as much as 100 years (Freund et al. 2014; Tepley et al. 2014). Therefore, fifty years (a number mentioned in the DEIS) is not a long time to wait for establishment of forest cover where timber production is not a consideration (such as LSRs) and, in fact, it is apparently the norm for nature.

The "delay" in re-establishment of closed forest provides essential habitat for early successional species, including many vertebrate and invertebrate habitat specialists. Species of interest include many lepidoptera (butterflies and moths) and neo-tropical migrant songbirds. One reason for the biological richness of the early successional habitat is the abundant and diverse food sources, including many varieties of nutrient-rich herbage, fruits, seeds, nuts, and pollen and nectar sources, which form the base of numerous complex food webs. A second reason is the abundant snags and logs, which provided shelter, sources of additional food (e.g.,fungi), and critical habitat for both vertebrate and invertebrate animals; for example, many invertebrate pollinators live their larval stages in wood. This is also the habitat favored by dusky-footed woodrats, that important prey of the NSO.

Naturally disturbed habitat undergoing natural reforestation is, in fact, the scarcest type of forest habitat in the Pacific Northwest. I am referring here to naturally disturbed areas that have not undergone salvage logging or artificial reforestation (Franklin et al. 2000). Intensively managed forest lands, which are subject to clearcutting, intensive site preparation, and dense tree planting, provide few of the conditions needed by early-successional organisms. Large, slowly reforesting disturbed areas appear to be very important to maintaining regional biodiversity, as demonstrated by the Mount St. Helens National Volcanic Monument. The monument is the most important hotspot for biological diversity in the Washington Cascade Range, with extraordinary representation of almost all categories of animals, including birds, amphibians, small mammals, and medium-sized predators (Dale, Swanson, and Crisafulli 2005).

Planting may be appropriate within LSRs to establish tree seed sources for specific species and locations. However, planting should not be done following traditional approaches, which are directed to establishing uniformly stocked forest stands over large areas. Extensive, uniform plantings — even at the relatively low density proposed for some areas (200 trees/acre) — will not simulate the spatially heterogeneous pattern of natural seedling establishment.

Establishment of dense, uniform stands is completely inappropriate in LSRs as well as any PAG identified as fire regime types I and II. We are currently engaged in major programs of variable density thinning in dense plantations in existing LSRs in order to accelerate the development of late-successional structure in these overly dense stands; so, why would we set about creating more acreage of these dense uniform plantations within LSRs? Similarly, establishing uniform stands — even at a relatively low density of 200 trees per acre — on sites characterized by frequent fire is obviously inappropriate; this simply recreates the potential for the next "uncharacteristic" stand replacement fires on these sites!

Conclusion

A summary is provided at the beginning of these comments. I would conclude that the salvage activities proposed within LSRs as part of the Westside Fire Recovery Plan are inconsistent with NWFP intent and direction for management of LSRs, including their treatment following a major disturbance. Salvage will make no positive contribution to the reestablishment of late-successional forest habitat or to the early successional ecosystems that provide habitat for NSO prey species, among many others. Retention of large snags and logs are critical parts of the natural recovery processes and none of this wood legacy can be demonstrated as being in excess to ecological needs on moist forest sites; indeed, all of the scientific evidence is to the contrary. Removal of medium and fine fuels, but not large snags and logs, may be ecologically justifiable on sites characterized by PAGs with Fire Regimes I and II. Issues associated with fire suppression could be addressed by creating snag-free corridors or narrow FMZs. Some limited tree planting may be justified to provide seed sources for tree species otherwise likely to be absent or under-represented but the plantings should be carried out in low numbers and at variable density. Establishment of large areas of plantations, even at low density, is inappropriate within the LSRs or on sites characterized by Fire Regimes I and II. Finally, current knowledge regarding the ecology and recovery of the NSO should be considered during revision of the DEIS.

Sincerely,

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IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF OREGON

OREGON WILD, an Oregon non-profit corporation; and CASCADIA WILDLANDS, an Oregon non-profit corporation,

Plaintiffs,

v.

BUREAU OF LAND MANAGEMENT, an administrative agency of the United States Department of Interior,

Defendant,

v.

SCOTT TIMBER Co., an Oregon corporation; and CARPENTERS INDUSTRIAL COUNCIL, an Oregon non-profit corporation,

Defendant-Intervenors.

Case No. 6:14-CV-0110-AA
OPINION AND ORDER

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AIKEN, Chief Judge:

Plaintiffs Oregon Wild and Cascadia Wildlands move for summary judgment pursuant to Fed. R. Civ. P. 56. They allege that defendant, the U.S. Bureau of Land Management ("BLM"), violated the National Environmental Policy Act ("NEPA"), the Federal Land Policy and Management Act ("FLPMA"), the Administrative Procedure Act ("APA"), and those statutes' implementing regulations. Defendant BLM and defendant-intervenors, Scott Timber Co. ("Scott Timber") and Carpenters Industrial Council ("CIC"), oppose plaintiffs' motion and filed cross-motions for summary judgment. For the reasons set forth below, the Court partially grants plaintiffs' motion for summary judgement and denies the defense cross-motions. The Court need not reach plaintiffs' FLPMA claims, because it finds BLM violated NEPA and APA.

BACKGROUND

Plaintiffs challenge BLM's authorization of the White Castle Project ("project") located in BLM's Roseburg District near the community of Myrtle Creek in Douglas County. Administrative Record

("AR") 739, 770. In December 2010, the U.S. Secretary of the Interior directed Roseburg and other BLM districts in southwest Oregon to develop demonstration pilot projects to apply the principles of "ecological restoration" developed by Drs. Jerry F. Franklin and K. Norman Johnson ("Franklin and Johnson"). AR 6410; see AR 18332-40. The White Castle Project is one of two timber harvests that comprise the Roseburg District Secretarial Demonstration Pilot Project ("pilot project"). AR 739. Plaintiffs do not challenge the pilot project's other timber harvest, the Buck Rising Timber Sale, because it would affect younger trees that do not provide nesting, roosting, and foraging habitat for the threatened northern spotted owl. Compl. 11.

The federal government listed the northern spotted owl as a threatened species under the Endangered Species Act in 1990, and its population has continued to decline since then, due, in part, to habitat loss from timber harvest. Determination of Threatened Status for the Northern Spotted Owl, 55 Fed. Reg. 26, 114 (June 26, 1990) (codified at 15 C.F.R. § 17.11(h)); AR 1366, 1382. The White Castle Project falls within the purview of the Northwest Forest Plan ("NWFP"), which coordinates federal efforts to balance environmental concerns with the need for sustainable forest products in the range of the northern spotted owl. AR 1381. The project also falls under the Revised Recovery Plan for the Northern Spotted Owl published by the U.S. Fish and Wildlife Service ("FWS") to provide recommendations for the conservation of the species and its habitat. AR 1382, 2307. In February 2012, during the

project's planning stages, FWS proposed designating almost all of the pilot project area as "critical habitat . . . essential to the conservation of the spotted owl." AR 1011, 16403-506.[1] In December 2012, after BLM had already approved the project, FWS finalized a critical habitat designation that included an even greater portion of the pilot project area. AR 475, 478; Designation of Revised Critical Habitat for the Northern Spotted Owl, 77 Fed. Reg. 71876 (Dec. 4 2012).

The White Castle Project implements variable retention harvesting methods,[2] a shift for the Roseburg District, which has relied almost exclusively on less intensive thinning and density management strategies for timber production since 2000. AR 513. The project would apply variable retention harvesting techniques to 265 acres, retaining 78 acres and logging 187 acres of forest. AR 740, 537, 544. The project would harvest the 187 acres in nine separate units clustered within a few miles of one another. AR 739, 770, 726. The forest stands to be harvested range in age from 60 to 110 years old, and "most of the stands to be treated are

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[1] The pilot project's Finding of No Significant Impact noted, "The Roseburg District Secretarial Demonstration Pilot Project is located in an area almost entirely proposed for designation as critical habitat for the northern spotted owl on February 28 2012." AR 1011.

[2] Distinguishable from traditional clear-cutting, the variable retention harvesting method logs some trees and retains others in a predetermined ratio. Pls.' Mem. Mot. Summ. J. vii; Def.'s Resp. Mot. Summ. J. 22-23; AR 6594. Trees may be retained in patches (aggregated retention) or dispersed throughout a harvested area(dispersed retention). AR 6594, 2277. The project would use both methods to retain trees. AR 6421, 544.

between 100 and 110 years of age." AR 539.[3] The project would effectively remove 160 acres of "mature forest," defined as stands over 80 years old.[4] AR 503 (BLM response to project protest). Defendant-Intervenor Scott Timber purchased the project's timber sale and would harvest an estimated 6,395 thousand board feet of timber. AR 739; Scott Mot. Intervene 4.

After the White Castle Project's authorization, FWS designated all or almost all 187 acres slated for harvest as critical habitat for the northern spotted owl. AR 1028-29, 1359, 748.[5] The project would remove habitat within the home ranges[6] of several spotted owls, although no nests would be located in the harvest area. AR 6468, 748, 1403. BLM consulted with FWS at all stages of project planning and requested a Biological Opinion ("BiOp") which FWS issued June 4, 2012 and updated and confirmed on January 11, 2013 after FWS approved final critical habitat designations. AR 1351-

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[3] BLM made this statement in its response to an administrative appeal of the White Castle Project. AR 539. More precisely, a review of data from the Environmental Assessment in combination with data from the White Castle Project decision document indicates that forest stands over 98 years old would represent 120 of the 187 acres to be harvested. AR 740, 6445.

[4] Federal land management documents explain, "In Douglas fir west of the Cascades, [the mature forest] stage typically begins between 80 and 130 years depending on site conditions and stand history." AR 10016 (NWFP amendment document).

[5] BLM has not specified precisely how many acres of critical habitat the White Castle Project would eliminate. For further discussion, see infra note 14.

[6] A home range is a 1.2 mile radius circle (2,955 acres total) that surrounds a northern spotted owl nesting site and provides food, cover, and other necessities for the owls and their offspring. AR 6471.

1442 (BiOp), 1027-30 (errata), 475-80 (update). The BiOp determined the project would "adversely affect" northern spotted owls, their critical habitat, and their prey such as red tree voles but would not jeopardize the continued existence of the northern spotted owl as a species. AR 1351, 1412-13, 1421-23, 478-80.

The project area contains habitat for the red tree vole, an arboreal rodent that inhabits older conifer forests and serves as a key food source for spotted owls. AR 6479. The NWFP sets Survey and Manage requirements for red tree voles. AR 6479, 9876, 9878. During the development of the project, volunteers with the organization Northwest Ecosystems Survey Team ("NEST") surveyed project units for voles and submitted evidence of nest sites to BLM. AR 4008-11, 3006. BLM acknowledged NEST's submissions but rejected the findings and declined to analyze them in the project's Environmental Assessment ("EA") or to manage the alleged sites in accordance with the NWFP. AR 3006, 6480.

In April 2012, BLM issued the EA for the pilot project as a whole, analyzing the White Castle and Buck Rising project areas together. AR 6402-6652. The EA set forth the pilot project's three-fold purpose: (1) to demonstrate a variable retention harvesting model to create complex, early-successional habitat; (2) to design the pilot project with participation from FWS in order to apply Recovery Actions from the Northern Spotted Owl Recovery Plan; and (3) to design and offer timber sales that benefit local and regional employment and manufacturing. AR 6411. The EA assessed two alternatives: a no-action alternative and the project as

proposed, breaking the analysis of the proposed action into two variations, one with and one without riparian treatments in the Buck Rising Project area. AR 6419-22. In June 2012, after public comment and the FWS BiOp, BLM opted for the proposed project with riparian treatments and issued a Finding of No Significant Impact ("FONSI"). AR 1006-15. In August 2012, BLM authorized both the Buck Rising and White Castle projects. AR 739-87.

On January 22, 2014, plaintiffs filed the present complaint, claiming BLM's analysis and authorization of the White Castle Project violated NEPA, FLPMA, APA, and accompanying regulations. Compl. 19. On May 12, 2014, the Court permitted Scott Timber, the contract holder for the White Castle timber sale, and CIC, a union representing affected lumber mill workers, to intervene. On June 20, 2014, plaintiffs moved for summary judgment, and defendant and defendant-intervenors responded and made cross-motions seeking summary judgment in their favor.[7] Plaintiffs allege BLM violated NEPA by failing to analyze an adequate range of project alternatives; not preparing an Environmental Impact Statement ("EIS"); and failing to take the required "hard look" at the project's potential environmental consequences. Compl. 16-18. Plaintiffs also claim BLM violated FLPMA and NEPA by failing to adhere to NWFP requirements for surveying and managing red tree vole sites. Compl. 19. Plaintiffs ask the Court to find that BLM

[7] Defendant-intervenors' pleadings are largely duplicative of BLM's arguments. As such, the Court's discussion of BLM's claims subsumes those of defendant-intervenors, except where otherwise indicated.

violated NEPA, FLPMA, and APA; to vacate the White Castle decision; and to enjoin BLM from proceeding with the project and compel them to correct the alleged violations. Pls.' Mot. Summ. J. 2-3. Plaintiffs also seek attorney fees and costs. Id. at 3.

STANDARD OF REVIEW

Courts must review federal agencies' compliance with NEPA or FLPMA under the APA. 5 U.S.C. § 706. In an APA case, a court will award summary judgment for the plaintiff if, after reviewing the administrative record, it determines that the agency's action was "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." Natural Res. Def. Council v. Nat'l Marine Fisheries Serv., 421 F.3d 872, 877 (9th Cir. 2005) (quoting 5 U.S.C. § 706(2)(A)). Under this standard of review, the court must "engage in a substantial inquiry," which entails "a thorough, probing, in-depth review," Native Ecosys. Council v. U.S. Forest Serv., 418 F.3d 953, 960 (9th Cir. 2005). However, the court may not substitute its own judgment for that of the agency. Lands Council v. McNair, 537 F.3d 981, 987 (9th Cir. 2008) (en banc), overruled on other grounds by Am. Trucking Ass'ns Inc. v. City of Los Angeles, 559 F.3d 1046 (9th Cir. 2009).

The Court need only defer to an agency's decision if it is "fully informed and well-considered" and must reject an agency decision that amounts to "a clear error of judgment." Sierra Club v. Bosworth, 510 F.3d 1016, 1023 (9th Cir. 2007) (citations and internal quotations omitted). Specifically, the court will reverse an agency's decision as arbitrary or capricious

> if the agency relied on factors Congress did not intend it to consider, entirely failed to consider an important aspect of the problem, offered an explanation that ran counter to the evidence before the agency, or offered one that is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.

Id. (quoting W. Radio Servs. Co. v. Espy, 79 F.3d 896, 900 (9th Cir. 1996)). As such, in order to withstand summary judgment, the "agency must articulate a rational connection between the facts found and the conclusions reached." Sierra Club, 510 F.3d at 1023. Independent of these concerns, the court will set aside an agency's action if it acted without observing procedures required by law. Sierra Club, 510 F.3d at 1023; Idaho Sporting Cong., Inc. v. Alexander, 222 F.3d 562, 567-68 (9th Cir. 2000).

DISCUSSION

I. NEPA Claims

NEPA is a procedural statute that does not mandate particular results but rather sets forth a review process to "ensure that federal agencies take a hard look at the environmental consequences" of a proposed action. Sierra Club, 510 F.3d 1016, 1018 (9th Cir. 2007); Conservation Cong. v. Finley, 774 F.3d 611, 616 (9th Cir. 2014). Critically, NEPA requires agencies considering "major Federal actions significantly affecting the quality of the human environment" to prepare an EIS. 42 U.S.C. § 4332(c); Conservation Cong., 774 F.3d at 616. In order to determine if an EIS is required, an agency may first prepare a less extensive EA. Sierra Club, 510 F.3d at 1018; 40 C.F.R. § 1508.9. If the EA finds the proposed action will significantly affect the environment, the agency must prepare an EIS. W. Watersheds Project

v. Abbey, 719 F.3d 1035, 1050 (9th Cir. 2013). However, if the EA finds no significant environment impact, the agency may issue a Finding Of No Significant Impact ("FONSI"), "accompanied by a convincing statement of reasons to explain why a project's impacts are insignificant," and then proceed without further study. Sierra Club, 510 F.3d at 1018.

Plaintiffs argue that the BLM violated NEPA by: (1) failing to adequately analyze alternative approaches to the project in the EA; (2) not preparing an EIS; and (3) failing to take a "hard look" at the project's direct and indirect environmental impacts.[8] Compl. 16-19. For the reasons set forth below, the Court finds that the BLM acted arbitrarily and capriciously, violating the requirements of NEPA.

A. Adequacy of EA Alternatives Analysis

NEPA requires a federal agency to "study, develop, and describe appropriate alternatives" to a proposed project independent of whether the agency is preparing an EA or an EIS. 42 U.S.C. § 4332(2)(E); Bob Marshall Alliance v. Hodel, 852 F.2d 1223, 1229 (9th Cir. 1988); see 40 C.F.R. § 1508.9. "Informed and meaningful consideration of alternatives" is "critical to the goals of NEPA," ensuring that agency decision-makers assess a project's costs, benefits, and environmental impacts in the correct context. Bob Marshall Alliance, 852 F.2d at 1228-29. Although BLM is

[8] Plaintiffs also claim BLM violated NEPA by failing to consider red tree vole sites. Because this NEPA claim is closely linked to plaintiffs' FLPMA claim, this opinion more fully addresses it in the next section.

correct in asserting it bears a lesser burden to discuss alternatives in an EA than in an EIS, an EA must still "give full and meaningful consideration to all reasonable alternatives." Abbey, 719 F.3d 1035, 1050 (9th Cir. 2013); N. Idaho Cmty. Action Network v. U.S. Dep't of Transp., 545 F.3d 1147, 1153 (9th Cir. 2008). The Ninth Circuit made clear in Western Watersheds v. Abbey, "The existence of a viable but unexamined alternative renders an EA inadequate." 719 F.3d at 1050.

Plaintiffs argue the EA was inadequate, because it failed to analyze viable alternatives to the proposed project, in particular, the alternative of limiting the project's variable retention harvest to younger trees. Pls.' Mem. Mot. Summ. J. 33. In response, BLM does not dispute the reasonableness of this alternative but instead argues the agency was not "obligated to analyze an alternative that Plaintiffs did not even suggest at the time of the Project decision." Def.'s Reply 21; see Def.'s Mot. Summ. J. 30-31. BLM further argues that it fulfilled its NEPA obligation by "developing and analyzing several alternatives that encompassed varying levels of environmental impact." Def.'s Reply 21.

The pilot project EA analyzed two alternatives: a no-action alternative and the project as proposed. AR 6404.[9] The EA also

[9] BLM divided its analysis of the proposed project into two "sub-alternatives": one with variable thinning treatments in riparian reserves and one without such treatments. AR 6404. The analyzed sub-alternatives presented identical plans for White Castle Project area. AR 1006, 6431, 739.

provided "reference analyses," briefly discussing and rejecting two different alternative harvest methods: commercial and variable density thinning only; and traditional regeneration harvesting. AR 6433-42. The EA did not analyze the possibility of conducting variable retention harvesting in younger stands of trees.

In arguing that its analysis was sufficient, BLM misconstrues its obligations under NEPA. BLM argues the holding in Western Watersheds established only "the limited proposition" that an EA's analysis of alternatives is adequate unless the agency has "failed to analyze any alternatives that would result in varying levels of environmental impact." Def.'s Reply 20. On this basis, BLM concludes that an EA may satisfy NEPA by merely considering some alternative with less environmental impact than the proposed project. Id. BLM's interpretation contradicts Ninth Circuit precedent and the plain language of Western Watersheds which hold agencies to the stricter standard of examining *all* viable and reasonable alternatives. See W. Watersheds v. Abbey, 719 F.3d. at 1050 ("The existence of a viable but unexamined alternative renders an EA inadequate"); Native Ecosys. Council V. U.S. Forest Serv., 428 F.3d 1233, 1246 (9th Cir. 2005)("So long as *all* reasonable alternatives have been considered and an appropriate explanation is provided as to why an alternative was eliminated, the regulatory requirement [for an EA or EIS] is satisfied")(emphasis added); N. Idaho Cmty. Action Network, 545 F.3d at 1153(both EA and EIS must consider all reasonable alternatives, but EIS must provide more detail and analysis of those alternatives); Native Fish Soc. v.

Nat'l Marine Fisheries Servs., 992 F. Supp. 2d 1095, 1110 (D. Or. 2014)(holding that a fish hatchery EA was inadequate, because "[w]here a feasible alternative would meet the project's purpose and need, it should be considered").

BLM also improperly places the burden of determining reasonable project alternatives entirely on plaintiffs. Indeed, courts have held that agencies need only consider alternatives that are "ascertainable and reasonably within reach." City of Angoon v. Hodel, 803 F.2d 1016, 1021-22 (9th Cir. 1986). Generally, this means that if plaintiffs fail to raise a viable alternative in their comments, the plaintiffs cannot later object that the subsequent EA failed to consider the alternative. Dep't of Transp. v. Pub. Citizen, 541 U.S. 752, 764-65 (2004). However, the U.S. Supreme Court and the Ninth Circuit recognize an exception to this rule. When the agency clearly has independent knowledge of specific issues or concerns, "there is no need for a commenter to point them out specifically in order to preserve its ability to challenge a proposed action." Id. at 765; 'Ilio'ulaokalani Coal. v. Rumsfeld, 464 F.3d 1083, 1093 (9th Cir. 2006); see Friends of the Clearwater v. Dombeck, 222 F.3d 552, 559 (9th Cir. 2000)("Compliance with NEPA is a primary duty of every federal agency; fulfillment of this vital responsibility should not depend on the vigilance and limited resources of environmental plaintiffs").

Although plaintiffs provided extensive public comment on the need to preserve trees over 80 years old, BLM argues they did not

suggest the precise alternative they now raise: proceeding with the planned variable retention harvest but on younger trees. See, e.g., AR 2057, 2037-38, 4731-39, 4699-4702. However, this is not dispositive, because BLM was aware, well before the EA, of that alternative. In fact, in a February 2012 report describing the Roseburg Pilot Project, Franklin and Johnson said they "initially planned to use previously harvested stands between 60 and 80 years of age, given our intent of using stands that were less controversial." AR 2314. They explained they later chose to harvest older trees, because there was a limited selection of the younger trees and "some stakeholders" wanted to harvest only trees older than 80 years old. AR 2314. Thus, not only did BLM know of the alternative of limiting variable retention harvesting to trees under 80 years old, it was BLM's original plan for the project. Moreover, the alternative appears reasonable in light of the project's purpose and need, and BLM does not argue otherwise. In this context, BLM failed to take a "hard look." Moreover, BLM should have at least acknowledged the alternative in the EA and explained its reasons for rejecting it. BLM's failure to consider this known alternative was arbitrary and capricious in violation of NEPA and APA.

B. EIS Requirement

Plaintiffs also challenge BLM's decision not prepare an EIS. Under NEPA, a government agency must prepare an EIS if a proposed federal action could "significantly affect the quality of the human environment." 42 U.S.C. § 4332(2)(c). Importantly, the significant

effect need not actually occur; it is sufficient to trigger the preparation of an EIS if a substantial question is raised "whether a project may have a significant effect on the environment." Blue Mountains Biodiversity Project v. Blackwood, 161 F.3d 1208, 1212 (9th Cir. 1998). If an agency moves forward without issuing an EIS, the agency must provide a "convincing statement of reasons" to support why the proposed project is not significant; this explanation is critical in demonstrating that the agency took the requisite "hard look" at the potential effects of a project. Id. at 1212.

In determining whether potential effects are significant, agencies and courts should evaluate their "context" and their "intensity." 40 C.F.R. § 1508.27. In assessing the intensity, or the "severity of the impact," courts and agencies should consider up to ten factors. 40 C.F.R. § 1508.27(b).[10] A court may find

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[10] The Court only discusses relevant factors in this opinion, but the full list of "intensity" factors is as follows:

(1) Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.
(2) The degree to which the proposed action affects public health or safety.
(3) Unique characteristics . . . such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.
(4) The degree to which the effects . . . are likely to be highly controversial.
(5) The degree to which the possible effects . . . are highly uncertain or involve unique or unknown risks.
(6) The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.
(7) Whether the action is related to other actions with individually insignificant but cumulatively significant

substantial risk of a significant effect based on just one of these factors. Ocean Advocates v. U.S. Army Core of Eng'rs, 402 F. 3d 846, 865 (9th Cir. 2004).

Plaintiffs argue that five factors support the preparation of an EIS for the project: (1) the project's highly controversial and (2) highly uncertain effects, (3) the project's precedential effect on future projects, (4) its adverse effects on spotted owls, and (5) potential violations of FLPMA and the NWFP. Pls.' Mem. Mot. Summ. J. i-ii. The Court agrees that an EIS is required.

1. Controversiality of the Project

Plaintiffs claim BLM did not properly assess, among other significance factors, the degree to which the project's potential effects are "likely to be highly controversial." 40 C.F.R. § 1508.27(b)(4). A project qualifies as likely to be highly controversial if a "substantial dispute exists as to [its] size, nature, or effect." Nw. Envtl. Def. Ctr. v. Bonneville Power

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impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.
(8) The degree to which the action may adversely affect [sites/structures] listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.
(9) The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.
(10) Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment. 40 C.F.R. § 1508.27(b).

Admin., 117 F.3d 1520, 1536 (9th Cir. 1997). Mere public opposition to a proposal does not render it highly controversial. Id. Rather, "a substantial dispute exists when evidence, raised prior to the preparation of an EIS or FONSI casts serious doubt upon the reasonableness of an agency's conclusions." Nat'l Parks & Conservation Ass'n v. Babbitt, 241 F.3d 722, 736 (9th Cir. 2001), abrogated on other grounds by Monsanto Co. v. Geertson Seed Farms, 561 U.S. 139, 157 (2010) (internal citations omitted).

Here, the record provides ample evidence of controversy, including observations from the project's own guiding scientists, Franklin and Johnson. BLM acknowledged the White Castle Project would effectively remove more than 160 acres of forest stands ranging in age from about 80-110 years old. AR 503. Yet, in project planning documents and emails, Franklin and Johnson repeatedly described the harvesting of trees older than 80 years as "controversial." AR 2310, 2314, 2296-97; see 18335 (describing "societal interest" and "continuing legal battles" to preserve older trees), 6368-71.[11] In fact, they reported in pilot project documents, that they deliberately chose a controversial strategy to stimulate discussion:

> Initially, we intended to do early successional harvests in the less controversial previously harvested stands (60-80 years of age). Ultimately we also applied it in a natural older stand (90-110 years of age) that had experienced no past timber harvest, in part to stimulate the dialogue regarding harvests in such forests.

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[11] Other project planning documents also describe the practice as "controversial" and "highly controversial." AR 4014, 5636, 6368-71.

AR 2310.

BLM argues that the project designers used the term "controversy" to refer to mere social and political opposition and not to "substantial dispute" or legitimate "scientific controversy." Def.'s Resp. Mot. Summ. J. 9-13. However, scientific controversy appears to have accompanied the project from its inception. The 2011 Northern Spotted Owl Recovery Plan recommended applying Franklin and Johnson's techniques but also described them as "controversial." AR 17676. The plan noted differing views among scientists regarding the techniques' impact on the spotted owl. AR 17676. Morever, the Recovery Plan outlined as a primary goal "to conserve older stands that are either occupied or contain high-value spotted owl habitat." AR 17682, 17684. To that end, it suggested applying Franklin and Johnson and their cohort's "active management" strategies to younger and less diverse forest stands. AR 17683-84. Even BLM's own planning documents noted ecological concerns about harvesting trees older than 80 years. AR 18335; 2290. Franklin and Johnson noted that "most BLM stands over 80 years old have not been subjected to timber harvesting," because "such stands have special significance in conservation strategies for species associated with mature and old forests, such as the [northern spotted owl] and the [red tree vole]." AR 2290. Furthermore, during the formulation of the project, FWS proposed and later approved designating project land as critical habitat for the northern spotted owl which nests, roosts, and forages in trees over 80 years old. AR 6468, 6472.

Acknowledging, in part, the ecological need to retain dwindling stocks of older trees and spotted owl habitat, Franklin and Johnson initially planned to only harvest forest under 80 years old. AR 2310, 2314.

Members of the public and scientists also raised ecological concerns about BLM's choice to harvest trees over 80 years old. AR 4884-99 (public comment), 1615. BLM considered in its decision-making process a scientific article from the "Journal of Forestry" that criticized Franklin and Johnson's pilot project strategies and, in particular, their failure to adequately protect trees over 80 years old. AR 16230-39; Def.'s Resp. Mot. Summ. J. 11.

Clearly, BLM recognized the highly controversial nature of the project well before issuing the FONSI. The Recovery Plan, the critical habitat proposal, comments from the public and scientists, and Franklin and Johnson's own reports demonstrated the existence of "a substantial dispute" casting "serious doubt upon the reasonableness" of BLM's decision to harvest forest stands over 80 years old. Nat'l Parks & Conservation Ass'n, 241 F.3d at 736. In the FONSI, BLM carried the burden of showing there was no legitimate controversy but failed to do so in its terse one-paragraph acknowledgement of public comment and concerns. AR 1009; see Nat'l Parks & Conservation Ass'n, 241 F.3d at 736 (agency has burden to convincingly refute evidence of controversy). The Court does not express an opinion about the merits of the BLM's decision to harvest designated critical habitat and trees older than 80 years. However, the Court finds that BLM's failure to acknowledge

the "highly controversial" nature of that decision was arbitrary and capricious in light of the evidence in the record. This significance factor weighs in favor of an EIS.

2. Uncertain Effects

Plaintiffs also argue BLM failed to properly consider "the degree to which the possible effects . . . are highly uncertain or involve unique or unknown risks." 40 C.F.R. § 1508.27(b)(5). The Ninth Circuit explains, "The purpose of an EIS is to obviate the need for speculation by insuring that available data are gathered and analyzed prior to the implementation of the proposed action . . . . the 'hard look' must be taken before, not after, the environmentally-threatening actions are put into effect." Nat'l Parks & Conservation Ass'n, 241 F.3d at 732-33.

Here, a key uncertainty is whether the project will benefit spotted owls and their habitat in the long term, as BLM and defendant-intervenors repeatedly assert. Def.'s Resp. Mot. Summ. J. 27; Def.'s Reply 13-14; Def.-Ints.' Reply 4-6; AR 746-47, 6410. The 2011 Revised Northern Spotted Owl Recovery Plan suggested testing out Franklin and Johnson's "ecological forestry and restoration" techniques as a way "to address . . . uncertainty" about their effects on spotted owls as well as on shifting disturbance patterns and climate change issues. AR 17676. By its very nature as part of a pilot, the White Castle Project tests something new and uncertain.[12] Moreover, the project's experimental

[12] Along these lines, defendant-intervenors define a "pilot project" as "something 'done as an experiment or test before

use of Franklin and Johnson's techniques on older trees that provide critical spotted owl habitat only increases uncertainty. In its brief, BLM quotes almost an entire paragraph from the Recovery Plan to argue that the plan supports projects such as White Castle in forest stands over 80 years old and even in specially designated late successional forest reserves (LSRs). Def.'s Reply 14 (quoting AR 17683-84). However, BLM omits sentences that stress the need for more research about the effects of applying Franklin and Johnson's methods to older forests. Notably absent is the paragraph's last sentence which states, "Research and monitoring on the specific effects of such treatments on spotted owls and their prey is needed and should evaluate effects on both spotted owl recovery as well as broader forest management goals." AR 17684. Additionally, in a February 2012 report on pilot projects in Southwest Oregon, Franklin and Johnson noted the need for further research, stating that "scientific reviews can help . . . undertake analysis of the potential for some new alternatives, such as . . . ecologically-based timber harvests within Critical Habitat for the Northern Spotted Owl"-- precisely what is proposed for the White Castle Project. AR 2274.

BLM's conclusion in the FONSI that "there is little uncertainty regarding [the] effects" of the pilot project runs counter to the evidence in the record. The outcome of this experimental pilot project is highly uncertain, and thus, this

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introducing something more widely.'" Def.-Ints.' Resp. Mot. Summ. J. 14 (quoting Oxford English Dictionary).

significance factor favors preparation of an EIS.

3. Precedential Effect

Plaintiffs argue that another factor weighs in favor of an EIS: "the degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration." 40 C.F.R. § 1508.27(b)(6). Generally, this factor is "insufficient on its own to demonstrate a significant environmental impact" unless the approval of the project is binding on future decisions regarding other actions. Anderson v. Evans, 371 F.3d 475, 493 (9th Cir. 2004). However, the factor may still support a need for an EIS. Id.

BLM correctly points out that the project will not bind any other future BLM actions; they would still be subject to NEPA analysis. Def.'s Resp. Mot. SUmm. J. 28. However, BLM also emphasizes repeatedly the project's role as part of a larger series of "pilot projects" aimed at "inform[ing] long-term planning" for management of BLM lands in Oregon and California. AR 6410 (EA), 4947 (press release). Franklin and Johnson described the Roseburg pilot project and its counterpart in the Medford district as important in shaping the development and implementation of the Revised Recovery Plan for the Northern Spotted Owl. AR 18336. "The insights learned [in the two projects] could assist in shaping the role for active management and ecological restoration that has been recognized in the [Northern Spotted Owl] Recovery Plan." AR

18336. Project materials describe the pilot projects as test of new harvest methods and "new policies" that could supplant BLM's current "risk-adverse strategy" of avoiding regeneration harvesting and other "active management" methods. AR 644. Approval of the White Castle Project will not have binding impact on future projects, but it will, by design, shape BLM forestry methods and strategies moving forward. Although, in this case, the precedential factor alone is not dispositive, it supports the conclusion that an EIS is necessary.

4. Effect on the Northern Spotted Owl

Another significance factor is "[t]he degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973." 40 C.F.R. § 1508.27(b)(9). Here, the FWS BiOp concluded that the project would "adversely affect" the northern spotted owl, its critical habitat, and its prey, but it would not likely jeopardize the continued existence of the species. AR 1351, 1412-13, 1421-23, 1029. Plaintiffs argue the adverse effects are sufficient to merit an EIS, while BLM contends that the effects are not significant given that the project would not endanger the species' survival. Def.'s Resp. Mot. Summ. J. 24 (citing AR 1423).

Courts have held that "a project need not jeopardize the continued existence of a threatened or endangered species to have a 'significant' effect" for the purposes of NEPA. Cascadia

Wildlands v. U.S. Forest Serv., 937 F. Supp. 2d 1271, 1282 (D. Or. 2013), appeal dismissed (Feb. 27, 2014); Klamath-Siskiyou Wildlands Ctr. v. U.S. Forest Serv., 373 F. Supp. 2d 1069, 1080 (E.D. Cal. 2004).[13] In EPIC, the Ninth Circuit recognized that species viability is the relevant standard for assessing a project under the Endangered Species Act, but the standard is adverse effect under NEPA. Envtl. Prot. Info. Ctr. v. U.S. Forest Serv., 451 F.3d 1005, 1012 (9th Cir. 2006)("EPIC"); see Forest Serv. Employees for Envtl. Ethics v. U.S. Forest Serv., 726 F. Supp. 2d 1195, 1213 (D. Mont. 2010).

Here, although the White Castle Project may not drive the northern spotted owl to the verge of extinction, it would nonetheless have an adverse effect on the species. The project would remove 187 acres of forest, all or almost all of it designated critical habitat for the northern spotted owl and 153 acres of it suitable nesting, roosting and foraging habitat. AR

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[13] Defendant-intervenors attempt to distinguish those cases, claiming the courts found a significant effect only because those projects would have resulted in the taking of spotted owl pairs, unlike in this case where there is no projected taking. Def.-Ints.' Resp. Mot. Summ. J. 9 n.3. Yet, defendant-intervenors then undermine this point by arguing that the Court must consider "the degree of adverse effect on a species, not the impact on individuals of that species." Id. at 8. (quoting Envtl. Prot. Info. Ctr. v. U.S. Forest Serv., 451 F.3d 1005, 1010 (9th Cir. 2006) ("EPIC")). EPIC found that the logging of 14 acres of suitable nesting roosting, and foraging habitat and the projected taking of three owl nests did not amount a significant effect for NEPA purposes. 451 F.3d at 1010-11. By contrast, this project involves no projected taking of owls but would log 153 acres of suitable nesting, roosting, and foraging habitat.

1028-29, 1359, 365-66, 748.[14] The harvest is contained within three overlapping spotted owl home ranges. AR 748, 512. It includes portions of one core area[15] but no nests or projected taking of spotted owls. AR 748, 6468-70. In the BiOp, FWS concluded that the loss of home range habitat, in particular reductions in the core area, would "adversely affect" northern spotted owls, as would the loss of habitat for owl prey such as red tree voles and northern flying squirrels. AR 1412-13, 1421, 478-79.

BLM emphasizes the small size of the project, arguing that "the minimal amounts of [spotted owl habitat] that will be impacted by the White Castle Project simply cannot be viewed as significant

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[14] Notably, BLM has failed to provide clear information on this point. At oral arguments, the Court asked BLM to specify the precise number of acres of critical habitat it would harvest in the White Castle Project, but BLM failed to do so. Instead, BLM stated that 82% of the project area would be critical habitat. A subsequent review of record showed the 82% figure was not accurate since it combined data from the White Castle Project and the non-controversial Buck Rising Project. AR 479. Thus, the information BLM supplied the Court did not reflect the true impact of the White Castle Project alone. BLM also did not supply a project-specific figure in its briefs, nor in the project's FONSI, EA, or decision document. Environmental groups have repeatedly commented that the project would remove 187 acres of critical habitat, but BLM has neither confirmed nor denied the number in written responses, instead referring groups to the EA and decision document which do not provide the information. AR 76-77, 359, 365-66, 748. At oral argument, it was established that the White Castle Project would harvest 153 acres of suitable nesting, roosting, and foraging habitat, one type of critical habitat. However, it remains unclear how many acres of critical habitat suitable for dispersal activities would be logged. See supra note 5.

[15] The BiOp explains that "spotted owls are 'central place' animals with the core use area (the area closest to the nest) being the focal area." AR 1412.

for the purposes of NEPA in the context of the overall amount of habitat on federal lands." Def.'s Resp. Mot. Summ. J. 25. The Court recognizes that the degree of impact to the spotted owl might not be great enough, on its own, to require more study. However, this factor, combined with the others, requires an EIS.

5. Violation of Laws or Other Requirements

An additional factor is "[w]hether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment." 40 C.F.R. § 1508.27(b)(10). As discussed in the next section, the Court does not reach the issue of BLM compliance with FLPMA with regard to red tree vole sites. Moreover, the Court need not address this particular factor given that the other significance factors suffice to establish a need for an EIS.

The Court recognizes the deference afforded to an agency, and when considered individually, several of the factors might not require an EIS. However, when considered together, they do. The project may be relatively small in size but it will adversely affect the northern spotted owl. Moreover, it represents a pilot test with effects that are likely to be highly controversial, highly uncertain, and influential on future project planning.

C. Hard Look Requirement

Under NEPA, an agency must take a "hard look" at a project's

environmental consequences.[16] In assessing whether the requirement is met, a court must make "a pragmatic judgment" of whether an EA or EIS's "form, content and preparation foster both informed decision-making and informed public participation." 'Ilio'ulaokalani Coal., 464 F.3d at 1094. "The 'hard look' must be taken objectively and in good faith, not as an exercise in form over substance, and not as a subterfuge designed to rationalize a decision already made." W. Watersheds Project v. Kraayenbrink, 632 F.3d 472, 491 (9th Cir. 2011). The agency must discuss adverse impacts and not minimize a project's negative effects. Id.; Earth Island Inst. v. U.S. Forest Serv., 442 F.3d 1147, 1159 (9th Cir. 2006), abrogated on other grounds by Winter v. Natural Res. Def. Council, Inc., 555 U.S. 7 (2008).

Crucial to determining whether an agency took a "hard look" is whether the agency supplied "a 'convincing statement of reasons' to explain why" it concluded the project's impacts were insignificant

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[16] Courts frequently treat the requirement that agencies take a "hard look" at a proposed project's consequences as simply another formulation of the "arbitrary and capricious" standard of review in NEPA cases. See, e.g., Neighbors of Cuddy Mountain v. U.S. Forest Serv., 137 F.3d 1372, 1376 (9th Cir. 1998)(hard look analysis, also called "rule of reason," essentially the same as the "arbitrary and capricious" standard); In Def. of Animals, Dreamcatcher Wild Horse & Burro Sanctuary v. U.S. Dep't of Interior, 751 F.3d 1054, 1068 (9th Cir. 2014). Others address it separately as a measure of the overall adequacy of an EA or EIS. See, e.g., Klamath-Siskiyou Wildlands Ctr. v. Bureau of Land Mgmt., 387 F.3d 989, 992-93 (9th Cir. 2004); Churchill Cnty. v. Norton, 276 F.3d 1060, 1071 (9th Cir. 2001). Here, the Court need not determine the standard's place in the NEPA framework to find that BLM failed to take the requisite "hard look" at the White Castle Project.

and did not prepare an EIS. Blue Mountains Biodiversity, 161 F.3d 1208 at 1212. Here, BLM's FONSI recited each significance factor, but failed to adequate explain its conclusion that none of them were significant. For example, the FONSI addressed the controversy significance factor in three short paragraphs, two of them summarizing the project's background. BLM then stated broadly and without further explanation that none of the project's public comments "established scientific controversy." AR 1009. As for the uncertainty significance factor, BLM only specifically addressed the issue of climate change, and did not mention public concerns about removal of spotted owl habitat. AR 1009-10. Although BLM listed out reasons in the project's FONSI, they were largely conclusory and did not demonstrate that BLM took a "hard look" at the project's potential effects.

Furthermore, as discussed in the next section, BLM failed to take a "hard look" at evidence of red tree vole nest sites in the project area. "NEPA's purpose is to ensure that the agency will not act on incomplete information, only to regret its decision after it is too late to correct." Friends of the Clearwater, 222 F.3d 552, 557 (9th Cir. 2000). BLM received detailed data about a protected species six months before the EA was issued. Nonetheless, BLM failed to take a hard look at the data or the credibility of its source.

The Court finds BLM violated NEPA by not issuing an EIS, failing to consider a reasonable range of alternatives in the EA,

and by failing, in multiple respects, to take a hard look at the project's environmental effects.

II. Red Tree Vole NEPA and FLPMA Claims

Plaintiffs argue that BLM violated NEPA and FLPMA by failing to comply with NWFP requirements for the survey and management of red tree vole sites in the project area.[17] FLPMA governs BLM's planning and management of public lands and requires BLM to "develop, maintain, and when appropriate, revise land use plans" and, once they are in place, to act in accordance with them. Oregon Natural Res. Council Fund v. Brong, 492 F.3d 1120, 1125 (9th Cir. 2007); 43 U.S.C. §§ 1732(a); 43 C.F.R. § 1610.5-3. Here, the governing land use plan is the NWFP and the Roseburg District Resource Management Plan ("RMP") which incorporates the requirements of the NWFP. The plans designate the red tree vole as a Category C "uncommon" species. AR 9948, 9987. As such, BLM is required to "manage all known sites" until high-priority and non-high-priority red tree vole sites are determined. AR 9948, 10014-

[17] In support of their FLPMA claims, plaintiffs cite to declarations from Nicholas Sobb of Northwest Ecosystems Survey Team ("NEST"). Pls.' Reply 32. BLM moves to strike the declarations as extra-record evidence. Def.'s Reply 24. Plaintiffs do not address BLM's argument and, as such, have not shown that Sobb's declarations satisfy any exception to record review rule under the APA. See Lands Council v. Powell, 395 F.3d 1019, 1029-30 (9th Cir. 2005). However, the Court does not rely on the evidence to reach its conclusions. Moreover, the Court is capable of independently resolving conflicts in the record and questions of admissibility, and therefore declines to strike the evidence at issue. See Oregon Natural Desert Ass'n v. Sabo, 854 F.Supp.2d 889, 925 (D.Or. 2012) (denying as moot defendants' motion to strike where the "court has not considered the extra-record evidence offered by plaintiffs").

16.[18] The amended NWFP defines a "known site" as the "historic and current location of a species reported by a credible source, available to field offices, and that does not require additional species verification or survey by the Agency to locate the species." AR 10014. The plan adds that a "credible source" may include "amateurs" and "private individuals" provided they have sufficient "academic training and/or demonstrated expertise" in identifying the species. AR 10014.

At issue here are the findings of amateur citizen surveyors who reported active red tree vole nest sites in one of the project's nine units, unit 31A. Volunteers with the organization Northwest Ecosystem Survey Team ("NEST") climbed trees, conducted pre-decisional surveys, and submitted to BLM, on Oct. 11, 2011, evidence of four active red tree vole nest sites in Unit 31A. AR 4008-11, 3006. Their submissions included GPS coordinates and samples of resin ducts, fecal pellets, and cuttings. AR 4008. An accompanying letter described NEST volunteers as receiving 40 hours each of training from biologists and professionals, among other qualifications. AR 4008. It also described NEST's chain of custody procedures; provided contact information for further inquiry; listed previous submissions of data to Coos Bay BLM, Willamette National Forest, and Umpqua National Forest; and named

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[18] No such determination occurred here. The EA proposed designating project unit 25A as a non-high-priority site but did propose such a designation for the area in dispute, unit 31A. AR 6598-6609.

individual references, including an Oregon State University professor and a wildlife biologist with the Willamette National Forest. AR 4008, 4011. Plaintiffs argue that the nesting sites identified by NEST qualified as "known sites," and BLM failed to manage them in violation of the NWFP, FLPMA, and NEPA. Pls.' Mem. Mot. Summ. J. 38-40. BLM acknowledges the amended NWFP required it to manage known vole sites in Unit 31A, but argues that NEST was not a "credible source" of known site information. Def.'s Reply 22-23; Def.'s Resp. Mot. Summ. J. 33-34.

BLM's argument before the Court echoes its rationale in project documents for not considering NEST data. AR 3006, 6480. The EA stated: "NEST members' training, their credentials, and the chain of custody of the samples are self-reported and have not been verified. For these reasons, their reported site locations . . . are not considered to be protocol survey data." AR 6480, 3006. BLM became aware of NEST's survey plans in June 2011 due to NEST's participation in a different BLM project in Coos Bay. AR 4729. In August 2011, BLM surveyors and biologists interacted with NEST volunteers on various occasions at the project site and notified BLM project leaders of their presence. AR 4309, 4314-20. Finally, BLM received the NEST data and letter in October 2011-- six months before BLM issued the EA. AR 2613-16; 4309. In that time, it does not appear from the record or pleadings that BLM asked NEST for more information or otherwise sought to verify NEST's qualifications or the sites even though the coordinates were

provided and the sites marked. AR 3006, 6480. In March 2012, a NEST leader emailed the BLM field manager in charge of the project, inquired how the agency was using the NEST data, and offered to submit more information or personally lead BLM surveyors to the sites. AR 2615-16. The BLM Field Manager declined to respond to the inquiry about the use of NEST data or to receive any additional information until after release of the EA. AR 2615.

It is debatable whether BLM's rejection of NEST's surveys constitutes a violation of the NWFP requirement to survey and manage "known sites." Regardless, NEPA mandates that an agency take a "hard look" at a proposed project's environmental consequences, adequately considering every significant aspect, and informing the public of its reasoning and conclusions. Earth Island Inst. v. U.S. Forest Serv., 351 F.3d 1291, 1300-01 (9th Cir. 2003); Baltimore Gas & Elec. Co. v. Natural Res. Def. Council, Inc., 462 U.S. 87, 97 (1983). NEPA "emphasizes the importance of coherent and comprehensive up-front environmental analysis to ensure informed decision making to the end that the agency will not act on incomplete information." Ctr. for Biological Diversity v. U.S. Forest Serv., 349 F.3d 1157, 1166 (9th Cir. 2003). Here, NEPA did not necessarily require BLM to accept the NEST data or even to independently verify it, but it required appropriate consideration of the data and a coherent explanation for rejecting it. Instead, BLM relied on circular reasoning to reject NEST data, arguing the data was "self-reported" and unverified but rejecting efforts by

NEST to provide such verification. BLM declined, without adequate explanation, to consider possible impacts to a species protected under the NWFP. In doing so, BLM made a decision that was not "fully informed and well-considered," and BLM failed to "articulate a rational connection between the facts found and the conclusions reached." Sierra Club, 510 F.3d at 1023. The Court finds that BLM did not take a "hard look" at environmental impacts, and its rejection of NEST data without sufficient consideration or explanation was arbitrary and capricious in violation of NEPA.

III. Remedies

The APA states that a reviewing court shall "hold unlawful and set aside agency action, findings, and conclusions found to be . . . arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 5 U.S.C. § 706(2)(A); see Sierra Forest Legacy v. Sherman, 646 F.3d 1161, 1184-85 (9th Cir. 2011). On this basis, this Court holds unlawful and vacates BLM's analysis and approval of the White Castle Project.[19]

Plaintiffs also ask the Court to grant injunctive relief halting the White Castle Project until BLM complies with NEPA. Pls.' Mot. Summ. J. 2-3. However, even when a court finds a NEPA violation, "an injunction should issue only if the traditional

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[19] Despite the mandatory language of the APA, the Ninth Circuit has held that in limited circumstances, the court may leave in place an action that violates the APA but only if "equity demands" it. Idaho Farm Bureau Federation v. Babbitt, 58 F.3d 1392, 1405 (9th Cir. 1995). The Court has analyzed the equities and finds no such circumstances here.

four-factor test [for an injunction] is satisfied." Sierra Forest Legacy, 646 F.3d at 1184 (quoting Monsanto, 561 U.S. at 157) (internal quotation marks omitted).[20] Moreover, the Supreme Court recently held that recourse to the "additional and extraordinary relief of an injunction" was not warranted if a less drastic remedy, such as vacatur of the offending action, was sufficient to redress the plaintiff's injury. Monsanto, 561 U.S. at 165-66; Ctr. for Food Safety v. Vilsack, 734 F. Supp. 2d 948, 954 (N.D. Cal. 2010). Here, the vacatur of BLM's inadequate EA and authorization of the White Castle project will provide sufficient relief, since, by law, BLM cannot proceed with the project until it complies with NEPA. Plaintiffs have not provided evidence to the contrary. As such, the Court declines to issue an injunction.

Plaintiffs also move for an award of costs and attorneys' fees under the Equal Access to Justice Act. 28 U.S.C. § 2412. A decision concerning attorney fees and costs will issue at a later date, following a proper motion. See 28 U.S.C. § 2412(d)(1)(B).

CONCLUSION

For above reasons the Court GRANTS Plaintiffs' Motion for Summary Judgment (Doc. 23) as to the NEPA claims and DENIES

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[20] Under the four-factor test, the moving party must show "(1) that it has suffered an irreparable injury; (2) that remedies available at law, such as monetary damages, are inadequate to compensate for that injury; (3) that, considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) that the public interest would not be disserved by a permanent injunction." Monsanto, 561 U.S. at 156-57; Abbey, 719 F.3d at 1054.

Defendant and Defendant-Intervenors' Cross-Motions for Summary Judgment (Docs. 28, 27). The Court SETS ASIDE the White Castle Project's authorization, holding that BLM violated NEPA and APA.

IT IS SO ORDERED.

Dated this 14th of ~~February~~ March 2015.

Ann Aiken
United States District Judge

Jasmine Benjamin

From: m1allen@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Friday, August 21, 2015 12:37 PM
To: RMP-Comments@heg-inc.com
Subject: Fwd: Conservation Coalition Comments
Attachments: RMP Coalition Comments Final.pdf

---------- Forwarded message ----------
From: **Steve Holmer** <sholmer@abcbirds.org>
Date: Thu, Aug 20, 2015 at 7:49 PM
Subject: Conservation Coalition Comments
To: "blm_or_rmpwo_comments@blm.gov" <blm_or_rmpwo_comments@blm.gov>

American Bird Conservancy agrees with and endorses these comments.
>

August 20, 2015

Jerome E. Perez
State Director
Washington/Oregon
Bureau of Land Management
P.O. Box 2965
Portland, Oregon 97208

ATTN: Mark Brown
Submitted via Email: <blm_or_rmpwo_comments@blm.gov>

RE: Resource Management Plans for Western Oregon Draft Environmental Impact Statement

Dear Director Perez:

On behalf of our thousands of members and supporters throughout Oregon and the nation, our conservation organizations submit these comments concerning the Draft Environmental Impact Statement (DEIS) for the Resource Management Plans (RMP) for BLM forests and watersheds in Western Oregon.

Western Oregon's BLM lands support salmon, steelhead, and wildlife while delivering outstanding watershed and recreational values to the public. These forests are source-drinking watersheds for hundreds of thousands of Oregonians; they sequester large amounts of carbon; and they provide crucial ecological functions. The natural amenities found on these public lands are highly valued and sought after, from local residents to tourists from around the world.

We are pleased that the RMP recognizes that recreation is the means by which most Americans experience these lands, and that recreation provides the greatest economic benefits to local communities. Our members and supporters want the important natural amenities and environmental services to exist for future generations on BLM lands in western Oregon. However, we are concerned that the Draft RMP promotes plans that would resume clearcut logging, reduce streamside buffers, increase road construction, and reward damaging motorized off-road recreation on BLM forests.

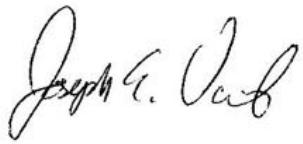
We are particularly concerned that BLM is proposing to disengage from the coordinated interagency federal land management plan embodied in the Northwest Forest Plan. Specifically, we are alarmed by the BLM's proposals to reduce riparian forest protections, eliminate the Aquatic Conservation Strategy, abandon protections for Key Watersheds, minimize green tree and down wood retention standards, abandon the Applegate Adaptive Management Area, and drop the Survey and Manage program for rare plants and animals. This profound shift away from a unified federal management strategy for lands within the range of the Northern spotted owl threatens to unravel the certainty and legal assurances relied upon by BLM and Forest Service

project planners across 25 million acres of federal land as well as assurances provided to adjacent private and state land managers throughout the Pacific Northwest.

As stated on page 21 of the DEIS, the purpose and need for the NWFP was guided by a presidential directive to the BLM and Forest Service to adopt a "comprehensive …common management approach to the [federal] lands administered throughout the entire region." The BLM has not provided a compelling reason for rejecting the comprehensive and unified approach to federal forest management that is abandoned in all of the action alternatives developed and considered in the DEIS.

We look forward to discussing these comments with your planning staff prior to the development of a Final Environmental Impact Statement and Record of Decision.

Sincerely,



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THE PURPOSE AND NEED

During the late 1980s and early 1990s, a series of lawsuits uncovered "*a remarkable series of violations of the environmental laws*," and "*a deliberate and systematic refusal … to comply with the laws protecting wildlife.*" [1] To end the gridlock, President Clinton directed the Forest Service and BLM to craft a comprehensive, long-term management strategy that is "*scientifically sound, ecologically credible, and legally responsible*." [2] The agencies assembled a team of leading scientists, called the Forest Ecosystem Management Assessment Team ("FEMAT"), to develop ecosystem management strategies that would meet this goal.[3] The final result was the Northwest Forest Plan, an ecosystem management plan that contained standards and guidelines for managing Forest Service and BLM public lands, created old-growth and riparian reserves, and provided for continued timber harvest. The Northwest Forest Plan has been upheld by the federal courts in challenges both from the timber industry and from conservation groups. The Ninth Circuit Court of Appeals also rejected the BLM's prior attempt to revise its RMPs to achieve the same objectives as earlier flawed attempts to revise the Northwest Forest Plan.[4] This DEIS marks the fourth major attack on the Northwest Forest Plan.

The range of reasonable alternatives to be considered in an environmental impact statement depends on the purpose of the project.[5] However, an agency's discretion to determine the purpose and need of a project is not unfettered. Courts require an agency's definition of purpose to be reasonable.[6]

Courts impose this standard to ensure that agencies do not avoid NEPA's requirements by defining a project's purpose so narrowly as to preclude consideration of reasonable alternatives.[7] Consideration of alternatives is "the heart of the environmental impact statement."[8]

For the Resource Management Plan for Western Oregon, BLM describes the purpose and need of the proposed action in the following way:

> *The BLM conducted plan evaluations in accordance with its planning regulations, which require that RMPs "shall be revised as necessary based on monitoring and evaluation*

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[1] *Seattle Audubon Soc'y v. Evans*, 771 F. Supp. 1081, 1089-90 (W.D. Wash.), *aff'd*, 952 F.2d 297 (9th Cir. 1991).
[2] Northwest Forest Plan Record of Decision at 3.
[3] . *Seattle Audubon Soc'y v. Lyons*, 871 F. Supp. 1291, 1303 (W.D. Wash. 1994), *aff'd*, 80 F.3d 1401 (9th Cir. 1996); FEMAT Report at I-1, II-36 to-37, ch. V.
[4] *Pac. Rivers Council v. Shepard*, No. 03:11-CV-00442-HU, 2011 WL 7562961 (D. Or. Sept. 29, 2011), *report and recommendation adopted as modified*, No. 03:11-CV-442-HU, 2012 WL 950032 (D. Or. Mar. 20, 2012); *Pac. Rivers Council v. Shepard*, No. 12-35570 (9th Cir. March 1, 2013) (opinion and order dismissing appeal by timber Intervenors for lack of jurisdiction and upholding district court decision in its entirety).
[5] *Methow Valley Citizens Council v. Regional Forester*, 833 F.2d 810, 815-16 (9th Cir. 1987) (impact statements must consider all reasonable alternatives that accomplish project purpose, but need not consider alternatives not reasonably related to the purpose).
[6] *City of Carmel-by-the-Sea v. United States Dep't of Transp.*, 123 F.3d 1142, 1155 (9th Cir. 1997); *Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 195-96 (D.C. Cir. 1991).

[7] *Simmons v. United States Army Corps of Eng'rs*, 120 F.3d 664, 666 (7th Cir. 1997); *City of New York v. United States Dep't of Transp.*, 715 F.2d 732, 743 (2d Cir. 1983); *Citizens Against Burlington*, 938 F.2d at 196.
[8] *Simmons v. United States Army Corps of Eng'rs*, 120 F.3d 664, 666 (7th Cir. 1997); *City of New York v. United States Dep't of Transp.*, 715 F.2d 732, 743 (2d Cir. 1983); *Citizens Against Burlington*, 938 F.2d at 196.

findings, new data, new or revised policy and changes in circumstances affecting the entire plan or major portions of the plan" (43 CFR 1610.5-6). These evaluations concluded that "[a] plan revision is needed to address the changed circumstances and new information that has led to a substantial, long-term departure from the timber management outcomes predicted under the 1995 RMPs*"* [9] *These evaluations also concluded that the management direction for most of the other resource management programs need to be modified or updated because of changed circumstances and new information. These evaluations concluded that changes are particularly indicated for the fisheries, aquatics, recreation, off-highway vehicle, and fire and fuels programs.*

Moreover, the BLM needs to revise existing plans to replace the 1995 RMPs' land use allocations and management direction because of new scientific information and policies related to the northern spotted owl. Since the 1995 RMPs were approved, there have been analyses on the effects of land management on northern spotted owl habitat, demographic studies, and analyses of the effects of barred owls on northern spotted owls. In addition, since that time, new policies for northern spotted owls have been put in place, including a revised recovery plan and a new designation of critical habitat.[10]

The DEIS goes on to note that this purpose and need includes providing a sustained yield of timber, conservation and recovery of listed species, providing clean water, restoring fire-adapted ecosystems, providing for recreational opportunities, and coordinating management of lands surrounding the Coquille Forest.[11]

While these goals are laudable, the resulting alternatives do not comport with these objectives because each alternative includes components that would threaten wildlife, watershed, and recreational values in an attempt to increase timber production. BLM has steadfastly maintained that the Northwest Forest Plan has failed to produce "enough" timber from O&C lands, but in fact, timber production has produced a relatively constant – if lower than historic highs – harvest level. *See infra*. Moreover, all of the "new information" BLM references demonstrates that the Northwest Forest Plan is working to achieve the remaining stated "needs" for action. Monitoring of implementation of the NFP has demonstrated that more species are better protected under the NFP than without it; watersheds are in better condition than they were prior to the implementation of the NFP; water is cleaner and cooler with the ACS, riparian reserves, and a program of watershed restoration than without the NFP; more people recreate on BLM lands than use them for timber harvest; and recreationalists contribute more money to local economies than does timber harvest. While "restoring fire-adapted ecosystems" is part of the stated purpose and need, BLM acknowledges that it has little ability to do so on its lands due to the checkerboard pattern of federal and nonfederal ownership on the O&C lands.[12] BLM has also not demonstrated that the status quo has precluded coordination with the Coquille Tribe regarding management of their lands adjacent to federal lands.[13]

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[9] (USDI BLM 2012a, p. 12).
[10] DEIS at 5.

[11] DEIS at 6-10.
[12] DEIS at 181, 212.
[13] *See generally*, Regional Ecosystem Office, *20 Year Reports for the Northwest Forest Plan* (July 8, 2015),http://www.reo.gov/monitoring/reports/20yr-report/.

Given that available information indicates that the Northwest Forest Plan is working, the stated purpose and need for action are impermissibly flawed, leading to alternatives that are trying to solve imaginary problems with the status quo.

I. THE SUSTAINED YIELD PURPOSE AND NEED SHOULD BE SECONDARY, NOT PRIMARY.

BLM cites as its first purpose of the RMP revision to "Provide a sustained yield of timber." (DEIS at 6). The DEIS shows that regeneration is not needed to restore early seral-habitat, because early seral habitat is already over-abundant and likely to increase in the future as a result of climate change.

Regeneration harvest is not needed for "community stability" because the DEIS admits that the timber industry is inherently volatile and has been for decades. Increasing regeneration harvest will actually reduce not increase community stability. And, regeneration harvest is not needed for fire hazard reduction, because the DEIS shows that young forests resulting from such logging are more hazardous than mature forests.

What is the real purpose of sustained yield? The O&C Act says that sustained yield is sought *"for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities"* [14]

BLM should structure the analysis so that these enumerated purposes are primary, and sustained yield is sought to the extent it fulfills these purposes. The analysis shows that pursuing a higher and more certain sustained yield will degrade watersheds and destabilize communities. This makes no sense. Is BLM seeking sustained yield for its own sake? Such a tautological approach is deeply flawed.

The DEIS at 6 concludes:

> *FLPMA specifically provides that if there is any conflict between its provisions and the O&C Act related to management of timber resources or the disposition of revenues from the O&C lands and resources, the O&C Act prevails (i.e., takes precedence) (43 U.S.C. 1701 note (b)). Thus, the multiple-use management direction of the FLPMA does not apply to the O&C lands that are suitable for timber production.*

BLM has jumped to a conclusion that there is a conflict between multiple use and lands suitable for timber production. BLM has not shown any such a conflict exists. In fact, the DEIS shows that forest conservation is highly compatible with the O&C Act purposes, including watershed protection and community stability.

BLM cannot rely on an interpretation of sustained yield that conflicts with its obligation to protect watersheds, regulate water flow, conserve endangered species, or maintain and restore water quality. BLM must use a rational definition of sustained yield that is qualified by conservation values. A consensus definition of the term is: "The sustainable yield of natural capital is the ecological yield that can be extracted without reducing the base of capital itself, i.e.

[14] 43 U.S.C. 1181a.

the surplus required to maintain nature's services at the same or increasing level over time. This yield usually varies over time with the needs of the ecosystem to maintain itself, e.g. a forest that has recently suffered a blight or flooding or fire will require more of its own ecological yield to sustain and re-establish a mature forest. While doing so, the sustainable yield may be much less."[15]

BLM should also interpret sustained yield in light of current scientific understandings of non-linearity of ecological process that sustain forests.

SUSTAINED YIELD FORESTRY IN BRITISH COLUMBIA by Lois Dellert is the definitive academic study of Sustained Yield in B.C. The report describes the evolution of Sustained Yield from 1900 to 1990 emphasizing the fear of scarcity and the hoped for improvement of timber production by scientific reordering of forests. From MacMillan through Sloan and Pearse to the present her central purpose is to examine the development of forest policy and,

> *...explore why it has been so difficult for forestry to achieve conservation in British Columbia.*
>
> *Forestry was motivated by scarcity and its goal was to support a forest-based economy by maximizing production and regulating the forest to provide a continuous supply of wood. Its policy of sustained yield was influenced by the scientific movement which believed the world operated according to universal rules and could be efficiently and rationally managed to capture its full potential and re-structured to achieve stability through order. The core ideas were efficiency and stability.*

The simple Newtonian universe of linear cause and effect and equilibrium dominant when Sustained Yield was developed no longer exists. Developments in non-equilibrium thermodynamics, in complexity and chaos theory, and in systems thinking about ecology and uncertainty have awoken science from Newton's sleep[16].

Recognizing that sustained yield must be achieved within some social and environmental constraints, the real goal is better conceived as sustainable forest management.

The Forest Service explored the definitions of sustainable forestry in a 2004 report called "National Report on Sustainable Forests—2003" (FS-766): The *Dictionary of Forestry* (Helms 1998) offers this description of forest sustainability:

> *....the capacity of forests, ranging from stands to ecoregions, to maintain their health, productivity, diversity, and overall integrity, in the long run, in the context of human activity and use.*

The *Dictionary of Forestry* also states that sustainable forest management is an evolving concept:

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[15] http://en.wikipedia.org/wiki/Sustainable_yield.

[16] http://www.pacificfringe.net/sustainedyield/ See also, Dellert, Lois. 1998. "Sustained Yield: Why Has It Failed to Achieve Sustainability?" in The Wealth of Forests: Markets, Regulation and Sustainable Forestry. Chris Tollefson, ed., UBC Press, Vancouver, B.C.

> *The stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality, and potential to fulfill, now and in the future, relevant ecological, economic, and social functions at local, national, and global levels, and that does not cause damage to other ecosystems–note criteria for sustainable forestry include (a) conservation of biological diversity, (b) maintenance of productive capacity of forest ecosystems, (c) maintenance of forest ecosystem health and vitality, (d) conservation and maintenance of soil and water resources, (e) maintenance of forest contribution to global carbon cycles, (f) maintenance and enhancement of long-term multiple socioeconomic benefits to meet the needs of societies, and (g) legal, institutional, and economic framework for forest conservation and sustainable management.*

Other definitions particularly stress the importance of recognizing environmental limits. One example is the following statement[17] from the book *Defining Sustainable Forestry*:

> *Since sustainable forest management is only possible within the ultimate constraints and limits imposed by the ecosystem, sustainability should be viewed as the degree of overlap between ecological possibilities and socially desired benefits of forests.*
>
> *The concept of sustainable forest management is related to but different in significant ways from an earlier concept of sustained yield—the amount of wood that a forest can produce on a continual basis. The concept of sustained yield, dating back to the Middle Ages in Europe, was brought to the United States in the late 1800s by early forestry leaders such as Bernhard Fernow and Gifford Pinchot. It was expanded over time to include the perpetual production of other forest outputs in addition to timber supply, including water, recreation, fish and wildlife, and livestock forage—the expanded concept is often referred to as the "multiple-use sustained-yield" principle. This principle was enshrined in law in 1960 for national forests. The concept of sustainable forest management, however, includes managing the forest for more than outputs; it focuses on maintaining processes and seeking to sustain communities, economies, and all the elements of a forest (Floyd 2002).*

When one views the multiple objectives of the O&C Act as modified by the Federal Land Policy and Management Act, Endangered Species Act, and Clean Water Act, there is clearly no significant difference between sustained yield, multiple-use sustained-yield, and sustainable forest management.

II. BLM FAILED TO HARMONIZE ITS LEGAL MANDATES.

The DEIS states that FLPMA's multiple use mandate does not apply to lands suitable for timber production because there is a conflict between the mandates of FLMPA and the O&C Act. This is an unsupported assumption. Before finding a conflict, BLM must first try to harmonize the objectives of these Acts, which is what the Northwest Forest Plan did, and there is no reason to conclude that this was an error.

[17] Noss 1993.

In the 1944 Sustained Yield Act, Congress articulated a vision of sustained yield that encompassed, *"... maintenance of water supply, regulation of stream flow, prevention of soil erosion, amelioration of climate, and preservation of wildlife.*"[18] Congress clearly does not see a conflict between sustained yield timber production and water quality or wildlife habitat. The Gang of Four also cautioned that there is "no free lunch." To reconcile these, one must conclude that as long as the timber yield is low enough, other resources can also be sustained.

BLM has the cart before the horse. Any acre that is suitable for timber production is accorded a special status that causes BLM to reject other potential uses of those lands. The DEIS fails to recognize that timber production conflicts with other public benefits that flow from BLM lands.

Before designating lands suitable for timber production, BLM should first determine whether those lands are more suited for other public purposes including, but not limited to: water quality, hydrologic function, slope stability, soil conservation, species recovery, keeping species off of the ESA list, carbon storage/climate stability, recreation, community stability, and quality of life.

In responding to public comments on the Northwest Forest Plan EIS, the agencies concluded that the Northwest Forest Plan, including the reserve system was consistent with the O&C Act.

> ***Comment****: The SEIS fails to acknowledge the Oregon and California (O&C) Lands Act (43 USC Sec. 1181a) as a constraint on the management of O&C lands. Alternative 9 violates the dominant use of O&C lands, and fails to acknowledge that these lands are the subject of special legislation that dedicates them primarily to timber production rather than ecologic (including wildlife) uses. The Endangered Species Act does not require the enormous land set-asides for wildlife which are being proposed, and the magnitude of the exclusion of the timber use must be submitted for congressional review under Section 202(e) of FLPMA.*
>
> ***Response****: The management of the O&C lands is governed by a variety of statutes, including the O&C Lands Act, FLPMA, the Endangered Species Act, and the Clean Water Act. The O&C Lands Act requires the Secretary of the Interior to manage O&C lands for permanent forest production; however, such management must also be in accord with sustained-yield principles. Further, that Act requires that management of O&C lands protect watersheds, regulate streamflow, provide for recreational facilities, and contribute to the economic stability of local communities and industries. The Act does not require the Secretary to harvest all old-growth timber or all commercial timber as rapidly as possible or according to any particular schedule. The Secretary has discretion to determine how to manage the forest on a sustained-yield basis that provides for permanency of timber production over a long-term period. The Secretary must necessarily make judgments, informed by as much information as possible, about what kind of management will lead to permanent forest production that satisfies the principle of sustained yield.*
>
> O&C lands must also be managed in accordance with other environmental laws such as the Endangered Species Act and the Clean Water Act. Some provisions of these laws take predominance over the O&C Lands Act. For instance, the Endangered Species Act (ESA)

[18] 16 U.S.C. § 583.

> requires the Secretary to insure that management of O&C lands will not likely result in jeopardy to listed species or destruction or adverse modification of critical habitat. The ESA directs the Secretary and all federal agencies to utilize their authorities to carry out programs for the conservation and recovery of listed species. Although several owl recovery plans have been proposed, the Secretary has not yet adopted final recovery plans for either the northern spotted owl or the marbled murrelet. Alternative 9's Late-Successional and Riparian Reserve concepts are important building blocks in the development of recovery plans to achieve the conservation and recovery of those species.
>
> One of the purposes of the Endangered Species Act is the preservation of ecosystems upon which endangered and threatened species depend. Certainly, a forward-looking land management policy would require that federal lands be managed in a way to minimize the need to list species under the ESA. Additional species listings could have the effect of further limiting the O&C Lands Act's goals of achieving permanent forest production, which would contribute to the economic stability of local communities and industries. The O&C Lands Act ought not be interpreted in such a manner that limits the Secretary's ability to take steps now that would avoid future listings, and additional disruptions, in the future.
>
> Moreover, the concept of creating a set of reserves in which timber harvest is substantially circumscribed across a portion of the landscape, such as the proposed Late Successional Reserves, is consistent with the O&C Lands Act. The Secretary has discretion under the O&C Lands Act to determine the length of harvest rotations on O&C lands or whether any particular tract should be subject to harvest, as well as the intensity of harvest activities, which should occur. From a practical point of view, there is little or no on-the-ground difference between a management strategy that provides for a deferred harvest for 80 years on Old-Growth Emphasis Areas as proposed in BLM's Draft Resource Management Plans, and one that sets aside reserves in order to restore and maintain a healthy old-growth forest ecosystem, over the time of the deferred harvest. Regardless of approach, FLPMA requires the Secretary to monitor and revise Resource Management Plans in light of changed circumstances or new information generated through the adaptive management process.
>
> The lands included in the reserves under the preferred alternative greatly constrain, but do not exclude timber use. Silvicultural treatments, such as thinnings, consistent with the objectives for the reserves will be allowed. Since this use is not totally eliminated, this management decision will not be subject to the reporting requirement in Sec. 202(e) of FLPMA.[19]

The BLM must recognize the timber production is embedded within and dependent upon a complex ecological system. Timber production is based on the growth of trees, which is based on the existence of a complex soil food web, a wide variety of nitrogen fixing species, nutrient cycling, fungal abundance and diversity, etc. The USDA Committee of Scientists (COS) recognized that "*without ecologically sustainable systems, other uses of the land and its*

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[19] 1994 NWFP SEIS pp F-114-115 (emphasis added).

resources could be impaired." [20] The BLM must strive to achieve ecologically sustainable forests, not just sustained production of timber based on simple agricultural models. "Ecological sustainability" means maintaining the composition, structure and processes of an ecological system within certain acceptable bounds typically described as the natural of historic range of variability. A modern and scientifically credible approach to sustained yield will require BLM to consider[21]:

- the dynamic nature of ecological systems,
- the role of natural functions and processes,
- uncertainty and variability of ecological systems,
- an integrated assessment of feedbacks and cumulative effects,
- how to preserve options, and
- the historic range of variability.

In the O&C Act, Congress did not require BLM to apply a one-dimensional view of sustained yield equating maximum tree growth rates with sustained yield. Congress explicitly required BLM to account for water resources, recreation, community stability, and later passed superseding legislation requiring conservation of water quality and imperiled fish and wildlife. The BLM must adopt a modern view of sustained yield.

Landscape ecology has lead to a new appreciation of the importance of disturbance agents such as fire and disease and insect outbreaks in maintaining forest health at the landscape level. Unfortunately, the sustained yield forestry approach still regards forests as timber supply areas where fire and pathogens destroy (waste) valuable timber.

Fire suppression in particular has had a very detrimental impact on habitat for biodiversity. Furthermore, the legacy of problems caused by fire suppression including the increased potential for devastating large scale forest fire will bedevil forest managers far into the future.

A particular revealing criticism of Sustained Yield management is that we are creating forests that need humans to take care of them. Fire and disease suppression as well as changed age class and species distribution has altered the dynamics of forest evolution that have been developing over millennia, creating conditions potentially overwhelming to established natural defense dynamics. Global warming and other anthropogenic changes will probably further exacerbate these problems.[22]

BLM must provide room for the entire suite of structures, functions, and processes that integrate to create and maintain healthy forest ecosystems. Disturbance agents such as fire, insects, and disease must be allowed to operate. The full suite of biodiversity must be preserved, including non-vertebrates that play such crucial roles in soil ecology and nutrient cycling.

Some observers warn, "*Distrust claims of sustainability. Because past resource exploitation has seldom been sustainable, any new plan that involves claims of sustainability should be suspect. One should inquire how the difficulties that have been encountered in past resource exploitation*

[20] COS p xvi.
[21] See Committee of Scientists pp 19-40. http://web.archive.org/web/20030212110159/www.fs.fed.us/news/science/
[22] http://www.pacificfringe.net/sustainedyield/index.htm

are to be overcome." [23] One of the main authors of the Northwest Forest Plan reinforced this same point.

Jack Ward Thomas, one of the main authors of the NWFP, also cautions against an outdated view of sustained yield timber production:

> *The vision that I was taught in school of the "regulated forest" and the resultant predictable outputs of commodities has turned out to have been a dream. And a dream that could only be realized in a time of seemingly boundless virgin forests. This vision held only so long as, no matter what the circumstances, there was more timber available over the next ridge. And, that timber was relatively cheap--easy to access and long--and environmental risks were either less appreciated or more palatable than at present. Further, it was assumed that good forestry was--as a matter of course--good wildlife management, good watershed and management, etc.*
>
> *By now it is becoming obvious that this dream was built on the pillars of the seemingly boundless virgin forest and an ethic of manifest destiny coupled with hubris of being able to predict the response of nature and humans. This was coupled with an inflated sense of understanding of forested ecosystems and of human control. Perhaps it is time to recognize that such stability is not attainable in any western region except for relatively short periods of years or decades.*
>
> *Why? Consider the variables that interact to affect long-term stability of the supply of timber. Each variable is subject, more or less independently, to considerable variation over the longer term. Taken together, in terms of their interactions, these variables are guaranteed to produce varying levels of uncertainty and makes attainment of stability unlikely.*
>
> *Oscillations in timber supply can be moderated by taking a conservative view of "annual sale quantity" projections as opposed to the tendency to make overly optimistic projections such as those that resulted in the first forest planning efforts of a decade or so ago.*
>
> *Insanity has been defined as doing the same things over and over and expecting a different result. Decidedly, optimistic outcomes were the trademark of the first generation of forest plans. With decided regularity, this optimism has not been justified and only reluctantly recognized and abandoned. This caused the agency(s) performance, in terms of commodity production, to consistently come in at below anticipated levels--i.e., the predictions were not valid and belated recognition of that fact, in turn, caused additional instability because of accumulated effects. More conservative approaches are more apt to produce predictable results. And, if results exceed those anticipated, it is easier to adjust commodity yields upward than to deal with the social and political consequences of short fall.*

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[23] Donald Ludwig, Ray Hilborn, Carl Walters. 1993. Uncertainty, Resource Exploitation, and Conservation: Lessons from History. Science 260(2):17, April 2, 1993. http://www.envsci.nau.edu/sisk/courses/env555/Readings/ludwig1.pdf

While the search for new understanding through science may produce short-term instability [sic] in commodities such as timber supply as managers react to new information, such efforts are essential to long-term stability if renewable natural resources are to be managed in a sustainable fashion. In the end, there can be no turning back from science--no matter now politically [sic] expedient that may seem in the short run.

In summary, the timber supply from federal lands is one drought, one insect and disease outbreak, one severe fire season, one election, one budget, one successful appeal, one loss in court, one listing of a threatened or endangered species, one new piece of pertinent scientific information, one change in technology, one shift in public opinion, one new law, one loss of a currently available technological tool, one change in market, one shift in interest rates, et al, away from "stability" at all times. And, these changes do not come one at a time, they come in bunches like banannas and the bunches are always changing. So, stability in timber supply from the public lands is simply a myth, a dream that was never founded in reality. It is time to stop pretending.[24]

BLM must respond to opposing viewpoints by taking a hard look at the core issue of sustained yield as the primary purpose of the RMP revision.

THE O&C ACT

I. MULTIPLE USE MANDATE OF THE O&C ACT

Given that the only apparent "problem" with the NFP is that it hasn't produced "enough" timber off O&C lands, it is clear that the real objective of the RMP revisions is to increase timber harvest. However, the O&C Act does not require maximum timber production from every acre all the time; the *Headwaters* case upon which BLM relies itself involved a land management plan with no-cut reserves; and the courts have already ruled that the Northwest Forest Plan does not violate the O&C Act. BLM is choosing to re-do its management plans, and that choice reflects only one true purpose – BLM's desire to increase logging on federal public lands in Oregon.[25]

The Oregon and California Lands Act ("O&C Act") governs railroad grant lands that revested in the federal government due to the railroad company's breach of its statutory duties. In the O&C Act, Congress sought to put an end to wasteful and destructive logging practices that clearcut large forest areas for short-term gains without safeguarding the forests and other resources. The

[24] Jack Ward Thomas, *The Instability of Stability*. Pacific Northwest Regional Economic Conference. Regions in Transition. Spokane. April 1997 http://www.pnrec.org/pnrec97/thomas2.htm

[25] It is not even clear that the O&C Act applies to BLM lands currently governed by the Northwest Forest Plan. The language of the Act states that it applies to "*such portions*...which have heretofore or may hereafter be classified as timberlands...." 43 U.S.C. § 1181a (italics added). Under this plain language, only portions of the O&C lands classified as timberlands are covered by the O&C Act. When BLM jointly promulgated the Northwest Forest Plan with the U.S. Forest Service, BLM changed the classification of the O&C lands previously defined as timberlands to the status of late-successional reserves and riparian reserves. BLM has the authority to reclassify its land under FLPMA § 202(d), where the lands are better suited to a different purpose.

Act instituted a conservation ethic, marking the first federal statute to impose sustain-yield constraints on timber cutting.

The O&C Act provides that O&C lands:

> *shall be managed . . . for permanent forest production, and the timber thereon shall be sold, cut and removed in conformity with the principal [sic] of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities.*

Numerous statutes other than the O&C Act establish duties that BLM must meet in managing the O&C lands.[26] The timber industry has contended that BLM must manage the O&C lands under a timber-first mandate, drawing from the permanent forest production goal set out in the O&C Act. BLM has long recognized, however, that it must manage the O&C lands for multiple purposes both to comply with the O&C Act and its duties under other laws. Indeed, under the Northwest Forest Plan, BLM has been managing these lands to comply with all applicable laws, including the O&C Act.

II. SAFEGUARDS DRAWN FROM THE O&C ACT

Under the Act, O&C lands "shall be managed . . . for permanent forest production," but subject to other constraints.[27] First, permanent forest production is not synonymous with commercial logging. A 1979 Interior Solicitor memorandum clarified the forest production need not be for commercial use. That is but one of the uses. The forest production could be to protect watersheds, stream flows, or recreation.[28]

Second, the goal of the timber production is to promote economic stability of local communities. In the O&C Act, Congress sought to curtail the type of boom and bust logging frenzies that had generated economic instability. Congress decidedly did not support maximizing timber production for short-term economic gain. Instead, it sought to institute long-term sustainability. To achieve these goals, BLM must consider alternatives that promote community stability, even if they favor thinning over clearcutting and even if they shift some areas of the forest to other activities that would achieve that goal.

Indeed, the DEIS indicates that an alternative that increase timber harvest will be inconsistent with the O&C Act, which requires timber harvest "...contribut[e] to the economic stability of local communities and industries."[29] The DEIS states that "Because the timber industry has a long, national history of high volatility, alternatives with harvest volumes that exceed current levels are likely to introduce greater instability to local economies, based on past business

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[26] These comments address only management of the O&C lands, but the RMP revisions pertain to all BLM lands, including vast tracts of public domain lands that are fully subject to all land management and environmental laws.
[27] 43 U.S.C. § 1181a.
[28] Interior Solicitor Mem. (Aug. 27, 1979).

[29] 43 U.S.C. 1181a.

cycles." [30] Introducing greater instability to local economies is an inappropriate outcome for BLM land management, and is inconsistent with the O&C Act.

Third, the Act does not seek to promote other resource extraction activities, such as grazing. Such activities should not occur where they conflict with any of the Act's other goals or BLM's duties under other laws.

Fourth, the O&C Act explicitly lays out other goals for management of the O&C lands. Specifically, the lands must be managed for the purpose of "protecting watersheds, regulating stream flow, . . . and providing recreational facilities."[31] The mandate to protect watersheds and stream flow supports establishing safeguards like those embodied in the Aquatic Conservation Strategy of the Northwest Forest Plan.

Similarly, BLM must manage the O&C lands to protect high-quality recreational opportunities. The Interior Solicitor has advised that this mandate "is broad enough to include such things as scenic highways or scenic rivers which are identified as such through the Bureau's planning process." [32] With respect to a wild and scenic river partially on O&C lands, the Interior Solicitor counseled that logging that would be noticeable from the river would be prohibited along scenic stretches of the river and that logging could occur in areas important for recreation only if it would not impair recreational or aesthetic qualities. [33]

SAFEGUARDS DRAWN FROM OTHER LAWS

BLM must comply with other laws unless they expressly carve out an exception for the O&C Act. The courts strive to reconcile overlapping statutory duties so that all applicable statutes retain their vitality. A statutory obligation is overridden only in the event of a direct conflict that makes it impossible to comply with competing mandates or explicit legislative language indicating an intent for one to be preeminent over another.

Initially, BLM and the courts focused on the role of the Federal Land Policy and Management Act ("FLPMA"), enacted decades after the O&C Act. In *Headwaters v. BLM*,[34] the Ninth Circuit held that BLM did not err in construing the O&C Act to make timber production a dominant or primary use of the lands. Headwaters had challenged a particular timber sale and argued that BLM erroneously emphasized timber production over conservation of wildlife habitat and old-growth forests. Before rejecting this construction of the O&C Act, the majority held that BLM appropriately tiered its environmental assessment for the timber sale to a programmatic environmental impact statement addressing wildlife and old-growth habitat, and it rejected Headwaters' challenge to BLM's multiple use determination, which emphasized timber production for the lands at issue. As later cases confirm, the result is often far different where BLM is subject to other statutory duties that lead it to protect O&C lands in order to protect wildlife or old-growth forests.

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[30] DEIS at 568.
[31] 43 U.S.C. § 1181a.
[32] Interior Solicitor Mem. at 10. (May 14, 1981).
[33] Interior Solicitor Mem. at 1-2 (Oct. 4, 1978).
[34] 914 F.2d 1174, 1183-84 (9th Cir. 1990),

FLPMA has also been construed to impact BLM's wilderness review obligations for O&C lands. Under FLPMA, BLM has an obligation to conduct a wilderness study review of roadless areas that have 5000 acres or more and wilderness characteristics.[35] The review should have occurred within 15 years of FLPMA's passage, i.e., by the end of 1991. During a wilderness study review, BLM must manage the lands in a manner that does not impair their suitability for preservation as wilderness.[36] This has been construed to prohibit roadbuilding and logging in most instances.

FLPMA has a savings clause, which provides that the O&C Act prevails "*in the event of conflict with or inconsistency between [FLPMA and the O&C Act] insofar as they relate to management of timber resources, and disposition of revenues from lands and resources . . .*"[37] An Interior Department Solicitor's memorandum indicates that there is scant legislative history pertaining to the savings clause, but there was some indication that the Department sought to assuage concerns raised by the Oregon delegation that the funding formula and management of O&C lands would be affected by FLPMA.[38] The Solicitor's memorandum reconciles the O & C Act with FLPMA's wilderness study provision as follows: O&C lands that are suitable for timber production are ineligible for wilderness study, while O&C lands that are unsuitable for timber production can be considered for wilderness. In practice, however, O&C lands have been included in some wilderness study areas and designated wilderness areas, such as the Wild Rogue Wilderness and Table Rock Wilderness. Moreover, BLM could properly determine that designating O&C lands that are suitable for timber production as wilderness would be the most effective way to meet its legal obligations to protect species and ecological functions.[39]

After *Headwaters*, the courts have retreated from a timber-centric vision for O&C lands. Instead, the operating principle has become one of dual responsibilities. BLM must meet all of its statutory obligations, many of which call for environmental safeguards even where such safeguards result in less intensive or pervasive logging.

In *Portland Audubon Society v. Lujan* [40], the Ninth Circuit found no unavoidable conflict between an injunction stopping old-growth logging pending compliance with the National Environmental Policy Act, and the O&C Act, even though the Act's timber targets (stated as a minimums) could not be met under the injunction. BLM and the O&C counties had argued that "the district court erred in issuing an injunction which prevents the BLM from selling a minimum of 500 million board feet of timber per year as directed by the" O&C Act.[41] The court rejected this argument, stating:

> *We find that the plain language of the Act supports the district court's conclusion that the Act has not deprived the BLM of all discretion with regard to either the volume requirements of the Act or the management of the lands entrusted to its care. Because there does not appear to be a clear and unavoidable conflict between statutory directives,*

[35] 43 U.S.C. § 1782(a).
[36] *Id*. § 1782(c).
[37] 43 U.S.C. § 1701 note.
[38] Interior Solicitor Mem. at 9 (Sept. 5, 1978).
[39] Since the O&C Act supersedes FLPMA only where the two conflict, BLM still has an obligation to designate Areas of Critical Environmental Concern particularly where special management is needed to protect ecological values that are consistent with the O&C Act's goals. *See* 43 U.C.S. § 1702.
[40] 998 F.2d 705 (9th Cir. 1993).
[41] *Id*. at 709.

we cannot allow the Secretary to 'utilize an excessively narrow construction of its existing statutory authorizations to avoid compliance [with NEPA].'" [42]

Under this ruling, BLM must comply with NEPA, the ESA, and other environmental laws in its management of O&C lands.

More recent court rulings have held that in fact, the BLM must comply with many other laws, in addition to the O&C Act, which may have the effect of reducing the amount of timber that can be produced on O&C lands.[43] Similarly, the *Swanson* court also held that timber industry Plaintiffs did not have standing to bring a claim against BLM for failing to offer 500 MMbf of timber per year.[44] Consequently, it is plain that BLM has the legal authority to reduce timber harvests where necessary to comply with the provisions of other laws, as well as the multiple use mandate of the O&C Act.

I. THE NORTHWEST FOREST PLAN COMPLIES WITH THE O&C ACT AND ENVIRONMENTAL LAWS

In the Northwest Forest Plan, the agencies understood that other environmental laws take precedence over the O&C Act in the absence of a conflict between laws, and that prudent management to avoid future conflicts with such other laws is within the BLM's discretion, as it could promote economic stability in the long-run. For example, "*That Act does not limit the Secretary's ability to take steps now that would avoid future listings and additional disruptions.*"[45] The Secretaries made the finding that the adopted plan "will provide the highest sustainable timber levels from Forest Service and BLM lands of all action alternatives that are likely to satisfy the requirements of existing statutes and policies." [46]

In *Seattle Audubon Society v. Lyons*,[47] Judge Dwyer rejected the contention that the Northwest Forest Plan violated the O&C Act, stating that BLM must fulfill its conservation duties under other environmental statutes in managing the O&C lands. He also rejected the contention that the agency need not comply with the NEPA or the ESA because it has no power under its enabling statute to modify its management activities based on the other environmental statutes. BLM "*for many years has exercised broad authority to manage the O&CLA lands: the BLM is steward of these lands, not merely regulator. Management under the O&CLA must look not only to annual timber production but also to protecting watersheds, contributing to economic stability, and providing recreational facilities.*"[48]

Judge Dwyer noted that the court in *Headwaters* approved a BLM management plan that allocated over 50% of the area at issue to non-timber uses and that the decision dealt with the O&C Act alone, not BLM's duty to comply with other statutes. He also pointed to *Portland Audubon* as confirming that BLM must fulfill conservation duties imposed by other statutes. As in *Portland Audubon*, NEPA compelled BLM to consider the environmental impacts of its

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[42] *Id*. at 709.
[43] *Swanson Grp. Mfg. LLC v. Jewell*, No. 13-5268, 2015 WL 3634645 (D.C. Cir. June 12, 2015).
[44] *Id.*
[45] NWFP ROD at 50.
[46] NWFP ROD 61.
[47] 871 F. Supp. 1291 (W.D. Wash. 1994) (appeal history omitted),
[48] *Id*. at 1314.

actions.[49] Moreover, Section 7(a)(1) of the Endangered Species Act requires BLM to utilize its authorities and carry out programs to conserve threatened and endangered species.[50] BLM appropriately construed this mandate to take action to minimize the need to list species in the future.[51] Moreover, Judge Dwyer concluded that the agencies could not, given the current conditions of the forests, meet their obligations under NEPA and § 7(a)(1) of the ESA "*without* planning on an ecosystem basis.*"*[52]

While NEPA and the ESA are two statutes that impose mandates on BLM's management of O&C lands, the Interior Solicitor has recognized that numerous statutes similarly constrain BLM's management of O&C lands. The Wild and Scenic Rivers Act is one such statute, and in fact several designated wild and scenic rivers include O&C lands. BLM must also manage the lands to safeguard species listed under state endangered species acts, to provide sufficient habitat to conserve and rehabilitate fish, wildlife, and game populations, to meet water quality standards established under the Clean Water Act, and to impose measures to protect wetlands, including by prohibiting logging in wetlands areas, where necessary. *See* Interior Solicitor Mem. (May 14, 1981).

In short, there is no need to emphasize timber production over other statutory mandates because BLM has been acting in concert with those mandates under the Northwest Forest Plan for 20 years. BLM should be up-front about its one true purpose in proposing this action – increasing the cut from BLM lands in Oregon.

II. THE DEIS FAILS TO DISCLOSE THE EFFECTS TO THE NORTHWEST FOREST PLAN AS A WHOLE.

The 1994 Northwest Forest Plan amended the planning documents of 19 national forests and seven BLM districts, and it set standards and guidelines for these lands. The timber industry challenged the agencies' authority to adopt an ecosystem plan that covered lands administered by both the Forest Service and BLM. As stated above, the district court noted that both agencies' planning statutes required an integrated, scientific approach; both agencies had to comply with NEPA's mandate to consider ecosystem effects; and both agencies had to comply with the Endangered Species Act, among other laws such as NEPA. The court held that "[g]iven the current condition of the forests, there is no way the agencies could comply with the environmental laws *without* planning on an ecosystem basis."[53]

The effectiveness and legality of the Northwest Forest Plan depends on its application to both Forest Service and BLM lands; the Northwest Forest Plan is a "coordinated management direction for the lands administered by the Forest Service and BLM within the range of the spotted owl [that will also] protect and enhance late successional and old-growth forest ecosystems."[54] Two key assumptions behind the biological analysis of the Northwest Forest Plan were that (1) "[r]iparian and Late-Successional Reserves (LSRs) will retain reserve status and

[49] 871 F. Supp. at 1311.
[50] *Id*. at 1311, 1314.
[51] *Id*. at 1314.
[52] *Id*. at 1311 (emphasis in original).
[53] *Seattle Audubon Soc'y v. Lyons*, 871 F. Supp. 1291, 1311 (W.D. Wash. 1994).
[54] FWS Northwest Forest Plan Biological Opinion at 2 (Feb. 10, 1994).

will not be available for timber production other than as provided in Alternative 9" and (2) "[a]lternative 9 applies to Forest Service and BLM lands; all future actions on these lands would be consistent with Alternative 9, as adopted in the Record-of-Decision (ROD)."[55] BLM's alternatives in this DEIS, however, violate both of these assumptions.

A similar conclusion was reached with respect to aquatic protection. "The effectiveness of the [Aquatic Conservation Strategy] is still subject to debate among scientists. If the plan as implemented is to remain lawful, the monitoring, watershed analysis, and mitigating steps called for by the ROD will have to be faithfully carried out, and adjustments made if necessary."[56]

Under NEPA, federal agencies are required to examine in an EIS the cumulative impacts of proposed actions – that is, those impacts that result from the incremental impact of the action when added to the past, present, and reasonably foreseeable future actions.[57] By considering action alternatives that would change BLM's land management, the agency is essentially considering pulling out of the multi-agency Northwest Forest Plan. BLM cannot do this without causing the entire Northwest Forest Plan to crumble; that is, although the action agency here is BLM, its decisions will by necessity change the validity of the Forest Service's actions and land management assumptions. The DEIS fails to address or analyze the environmental and cumulative impacts of these alternatives on the continuing validity of the Northwest Forest Plan as a whole.

Similarly, pursuant to the consultation provisions of the Endangered Species Act, BLM, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service must address the full effects of this action, which includes the dismantling of the regional Northwest Forest Plan.[58]

Because the unraveling of the Northwest Forest Plan and its protections is a foreseeable future action and effect of the proposed actions, the environmental and cumulative impacts of losing or changing the Northwest Forest Plan should have been analyzed by BLM in the DEIS. As they were not, the DEIS violates the National Environmental Policy Act. By attempting to back out of the Northwest Forest Plan, BLM is violating its affirmative conservation duties under ESA § 7(a)(1). Finally, consultation under ESA § 7(a)(2) must look at the entire agency action, which is the dismantling of the Northwest Forest Plan.

III. BLM CANNOT MAKE RADICAL DEPARTURES FROM THE NWFP WITHOUT EXPLANATION

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[55] *Id.* at 4.
[56] *Seattle Audubon Soc'y v. Lyons*, 871 F. Supp. at 1322.
[57] 40 C.F.R. § 1508.7.
[58] *See Connor v. Burford*, 848 F.2d 1441, 1453 (9th Cir. 1998) (agency must "analyze the effect of the of the *entire* agency action" and render a "comprehensive biological opinion") (emphasis in original); *Greenpeace v. National Marine Fisheries Serv*., 80 F. Supp. 2d 1137, 1147-50 (W.D. Wash. 2000) (finding biological opinion invalid for failing to assess full scope of individual and cumulative fishing allowed under fishery management plan); *see also PCFFA v. NMFS*, No. 04-1299-RSM, Report and Recommendation, slip op. at 22 (W.D. Wash. 2006) (later site-specific consultations that do not address entire Northwest Forest Plan cannot adequately address cumulative effects).

Recent *en banc* case law from the 9th Circuit affirms the principle that BLM cannot radially depart from the NWFP without adequate explanation. *Organized Village of Kake v. USDA*. (9th Circ, July 29, 2015) http://cdn.ca9.uscourts.gov/datastore/opinions/2015/07/29/11-35517.pdf

BLM proposes some significant changes from the Northwest Forest Plan, including

- eliminating the Northwest Forest Plan's survey and manage program,
- dramatic narrowing of the purpose of and the width of riparian reserves,
- increasing active management in the reserves, and
- reducing the retention requirements in the timber management areas.

The NWFP was adopted with the most compelling scientific rationale of any RMP anywhere.

The purposes of the survey and manage program were justified based on "additional species analysis" contained in the 1994 FSEIS for the Northwest Forest Plan and further explained in Appendix J2 of that document. Based on the encouragement of Judge Dwyer, the NWFP adopted an ecosystem management approach that attempted to protect species before they become threatened or endangered. BLM is now trying to narrow the purpose and need for this RMP revision by asserting that it does not have a wildlife conservation mandate. This is incorrect. Wildlife conservation is mandated by the ESA, FLMPMA, as well as the mandates of the O&C Act (e.g., "permanent forest production" and "recreation facilities"). BLM has tried three times (unsuccessfully) to eliminate the survey and manage program (2004 EIS/ROD, 2007 EIS/ROD and 2008 WOPR). Twice the courts have rejected the agencies' efforts because the survey and manage program was considered integral to the overall conservation scheme of the Northwest Forest Plan.

The broad purposes of the riparian reserves were explained in the 1994 FSEIS. These purposes include both terrestrial and aquatic conservation objectives, providing extra assurance that at-risk fish would be conserved, mitigating for cumulative impacts, maintaining microclimate and wood input for amphibians and other wildlife that live near but not in streams. The agencies wrote an EIS to amend the ACS in 2008 but withdrew it in the face of litigation. Now BLM proposes an even more radical revision of the riparian reserves and its objectives and standards & guidelines. BLM DEIS does not address all the reasons that riparian reserves were established.[59]

BLM proposes to allow significant logging in reserves with an assumption that logging is compatible with late successional habitat and other objectives. This assumption was rejected in the Northwest Forest Plan and BLM has not explained how they arrived at a contradictory conclusion.[60]

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[59] See Heiken, D. 2013. Riparian Reserves Provide Both Aquatic & Terrestrial Benefits - A Critical Review of Reeves, Pickard & Johnson (2013). https://dl.dropboxusercontent.com/u/47741/Heiken%202013.%20Review%20of%20Reeves%20et%20al%20Riparian%20Proposal.pdf

[60] See Heiken, Doug. 2009. The Case for Protecting Both Old Growth and Mature Forests, Version 1.8. Oregon Wild. http://dl.dropbox.com/u/47741/Mature%20Forests%2C%20Heiken%2C%20v%201.8.pdf (See especially the following sections that explain why the authors of the NWFP adopted a mostly hand-offs approach in reserves, except for dense young stands:

- Logging mature forests will impair development of important features of old-growth forests, especially snags and dead wood. p 29

Heiken (2009) explained:

> The Northwest Forest Plan prohibits logging of stands 80 years or older in the Late Successional Reserves for several reasons: (a) such stands are beginning to acquire late successional characteristics and provide valuable habitat for spotted owls and other wildlife; (b) there is a lack of evidence to support the hypothesis that logging in stands >80 years old is beneficial to habitat development; and (c) logging will likely do more harm than good.
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> This reasoning is articulated in several scientific reports, including the 1990 Interagency Scientific Committee (ISC) Report, the 1993 SAT Report, and various reports to Congress where the scientists were being asked to explain to a skeptical committee in Congress why logging old forests could not be compatible with conserving late-successional forest ecosystems. The ISC report said "no consensus exists about whether any silvicultural systems would produce the desired results. The ability to harvest timber in currently suitable owl habitat and have that habitat remain suitable has not been clearly demonstrated."[61]
>
> The SAT noted that "considerable additional research is likely required" before we will know whether silviculture can be compatible with spotted owls, and while the spotted owl is relatively well studied, the risks and uncertainty are even more pronounced for the hundreds of other species associated with old-growth.[62] It should also be recognized that President Clinton's Mission Statement directed the FEMAT team to ensure that "tests of silviculture should be judged in an ecosystem context and not solely on the basis of single species or several species response."[63]
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> The 1993 Report of the Scientific Analysis Team (SAT) specifically highlighted the risks associated with logging in suitable owl habitat, saying "intentions to selectively cut forest stands to create conditions favorable for spotted owls, represents increased risks to the viability of the spotted owl."[64] The Scientific Analysis Team said there are several factors that support this conclusion and affirm the Interagency Scientific Committee's decision to exclude logging in old growth reserves and rely on natural processes to maintain and restore habitat:

- In all forest types, recognize that logging has trade-offs. p 34
- In moist provinces, mature forests just need time, not logging. p 35
- In dry provinces, fire hazard is over-stated. Logging mature trees will just make things worse. p 39")

[61] Thomas, J.W., E.D. Forsman, J.B. Lint, E.C. Meslow, B.R. Noon, and J. Verner. 1990. A Conservation Strategy for the Northern Spotted Owl. A report by the Interagency Scientific Committee to address the conservation of the northern spotted owl. USDA, Forest Service, and U. S. Department of the Interior, Fish and Wildlife Service, Bureau of Land Management, and National Park Service. Portland, OR (*herein* ISC Report), 1990, p 104.

[62] Thomas, JW, Raphael, MG, Anthony, RG, Forsman ED, Gunderson, AG, Holthausen, RS, Marcot, BG, Reeves, GH, Sedell, JR, and DM Solis. 1993. Viability Assessments and Management Considerations for Species Associated with Late-Successional Old-Growth Forests of the Pacific Northwest. The Report of the Scientific Analysis Team (*herein* SAT Report), 1993, p 147.

[63] FEMAT Report, p iii.

[64] SAT Report p 145.

a. "Lacking experience with selective cutting designed to create spotted owl habitat, such practices must be considered as untested hypotheses requiring testing to determine their likelihood of success. ... Given the uncertainty of achieving such expectations, it is likely that some silvicultural treatments, which have been characterized as largely experimental, may well have an opposite effect from that expected. Consequently, such treatments may hinder the development of suitable habitat or they may only partially succeed, resulting in development of marginal habitat that may not fully provide for the needs of spotted owls. Results which fall short of the expected conditions could occur because of delay or failure to regenerate stands that have been cut, increased levels of windthrow of remaining trees, mechanical damage during logging to trees remaining in the logging unit, the spread of root rot and other diseases. Increased risk of wildfires associated with logging operations that increase fuels and usually employ broadcast burning to reduce the fuels also increase the risk of not attaining expected results. Such events may spread to areas adjacent to stands that are logged, thereby affecting even more acreage than those acres directly treated." [SAT p 147-148] The SAT indicates that these comments apply equally to density management and patch cutting, both of which are being promoted as tools to enhance owl habitat. The SAT also cited concerns about the effect of logging on snags and down woody debris which are essential features of owl habitat.

b. "Planning produces a description of desired future conditions [and] culminates in a final plan for a project which, for timber sales, involves legal contracts obligating the purchaser and the seller to specific provisions. … Our experience is that commonly not all provisions of the plan are thoroughly incorporated into such contracts, nor are all contract provisions thoroughly administered to ensure compliance." [SAT p 148-149].

c. "There are also probabilities associated with how well monitoring will identify 'trigger points' that indicate a management plan may need modification. The more complex the plan (i.e., the more variables there are to monitor) the less likely the monitoring plan will successfully detect problems. Manipulation of forest stands to accelerate development of spotted owl habitat on a landscape scale, as prescribed in the Bureau of Land Management Preferred Alternative, is an extremely complex issue involving a myriad of variables over a very long timeframe. Development of a monitoring plan intensive enough to isolate the causes of observed variations for wide-scale implementation of the Bureau of Land Management Preferred Alternative seems unlikely to us. … [I]nadequate monitoring will increase, perhaps dramatically, the risk of failure of a plan that relies heavily on adaptive management." [SAT p 149].

d. "A basic requirement for a viable adaptive management strategy is the existence of resources necessary to make the required adjustments. Adaptive management can only be expected to reduce risk if options to adjust management to fit new circumstances are not eliminated. Adaptive management, therefore, can be considered a means to reduce risk associated with a Resource Management Plan commensurate with the options for adjustment which remain during the time the plan is in effect." [SAT p 149-150] In other words, silvicultural manipulation of mature forests has long-term consequences and is likely to foreclose some future options in

those stands, thus reducing the utility of adaptive management. A prime example is the fact that logging "captures mortality," yet mortality is an essential feature of old-growth habitat used by both spotted owls and their prey.

e. SAT then noted the cumulative effects of all these uncertainties: "The combined risks associated with treatment of spotted owl habitat or stands expected to develop into suitable habitat for spotted owls, as discussed above, will likely result in situations where either habitat development is inhibited or only marginal habitat for spotted owls is developed. The exact frequency of these partial successes or failures is unknown. Given the likely cumulative relationship among the risks for each factor, it appears to us that the overall risk of not meeting habitat objectives is high. … Members of the Interagency Scientific Committee indicated that, because a plan (the Interagency Scientific Committee's Strategy) was put forth which proposes to reduce the population of a threatened species by as much as 50 percent, providing the survivors with only marginal habitat would be extremely risky and certainly in their minds not 'scientifically credible' [65]

f. The SAT concluded, "The transition period (1-50 years) between implementation of the Interagency Scientific Committee's Strategy and achievement of an equilibrium of habitat and spotted owls is a critical consideration. … Given the existing risks that face owl populations and the sensitivity of the transition period, the short-term effect of these actions on habitat loss may be much more significant than the long-term predicted habitat gains. We further conclude that, although research and monitoring studies are presently being initiated, no significant new data exist which suggest that the degree of certainty that is expressed in the Bureau of Land Management Draft Resource Management Plans for developing owl habitat silvicultural treatments is justified. Therefore, it is our opinion that the course prescribed in the Interagency Scientific Committee's Strategy, pertaining to timber harvest in Habitat Conservation Areas, remains the most likely course to result in superior habitat conditions within reserves (i.e., Old-Growth Emphasis Areas). The approach prescribed by the Interagency Scientific Committee's Strategy preserves options for adjustments in the course of management under a philosophy of adaptive management." [66]

The authors of the Northwest Forest Plan took all this into account and determined that 80 years is a useful place to draw the line between younger forests that are likely to benefit from careful thinning and older forests that are likely to experience net negative consequences.[67] There is no new science to change that conclusion. In fact, new information developed since 1994 shows that dead wood is probably more

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[65] USDA 1991:45., SAT p 151. file://localhost/mailbox/::C%257C:Documents%20and%20Settings:netcorps:Application%20Data:Thunderbird:Profiles:0a0zzrc0.default:Mail:pop.efn.org:Inbox.sbd:DC%3Fnumber=100232524 - _ftn3

[66] SAT p 151-152.

[67] See 1993 SAT Report pp 146-152. AND February 1991 Questions and Answers on A Conservation Strategy for the Northern Spotted Owl (prepared in response to written questions from the Senate Energy and Natural Resources Committee to the Interagency Scientific Committee on the May 1990 ISC Report. AND Jerry Franklin, David Perry, Reed Noss, David Montgomery, Christopher Frissell. Simplified Forest Management To Achieve Watershed And Forest Health: A Critique. National Wildlife Federation. http://www.coastrange.org/documents/forestreport.pdf

valuable than previously thought. It is important for a wide variety of ecological functions, not least of which is providing complex habitat to support owl prey species. Thinning stands over 80 years will remove many large trees and prevent them from ever becoming snags and dead wood. The long-term loss of recruitment of dead wood habitat in older stands is a very strong argument against logging in stands over 80 years old.[68]

Structure-based management (SBM) is often suggested as a way to produce logs and habitat from the same forests, but this is not a well-supported approach to managing older forests. There are well-founded critiques which point out that structure-based management is untested, uncertain, high risk, and unlikely to result in desired outcomes. Consider the well-developed critique of structure based management set forth by the Scientific Panel on Ecosystem Based Forest Management:

> The concept that all forests must be silviculturally manipulated (logged) and eventually replaced in order to provide desired goods and services, including the continued health of forest landscapes, is an old and honored tradition. … The proposition that forest values are protected with more, rather than less logging, and that forest reserves are not only unnecessary, but undesirable, has great appeal to many with a vested interest in maximizing timber harvest. … Our interpretation of the scientific literature, combined with our professional experience, leads us to some very different conclusions about appropriate approaches. Scientifically based strategies for the conservation of forest ecosystems, with a sound theoretical basis in conservation biology—including biodiversity and critical ecological services—have inevitably incorporated reserves along with ecologically sensitive management of unreserved areas (e.g., FEMAT 1993). … In our view, the assumptions underpinning simplified structure-based management (SSBM) are not supported by the published scientific literature on structural development of natural forests, disturbance ecology, landscape ecology and conservation biology, or by the relationships between ecosystem structures and processes. … We do not believe, however, that scientific literature or forestry experience supports the notions that intensively managed forests can duplicate the role of natural forests, or that sufficient knowledge and ability exist to create even an approximation of a natural old-growth forest stand.[69]
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> …

[in dry forests]

Hanson et al (*in press*) reviewed 2 decades of fire records in conifer forests in dry provinces of the Northwest Forest Plan and found that the proportion of area burned and the severity of

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[68] USDA Forest Service. 2007. Curran Junetta Thin Environmental Assessment. Cottage Grove Ranger District, Umpqua National Forest. June 2007. http://www.fs.fed.us/r6/umpqua/projects/projectdocs/curran-junetta-thin/index.shtml This EA revealed that heavy thinning in young stands would delay attainment of objectives for recruitment of dead wood for 6 decades or more.

[69] Jerry Franklin, David Perry, Reed Noss, David Montgomery, Christopher Frissell. Simplified Forest Management To Achieve Watershed And Forest Health: A Critique. National Wildlife Federation. http://www.coastrange.org/documents/forestreport.pdf

fire has not changed significantly.[70] These findings, along with the evidence that logging has unavoidable adverse impacts, indicates that caution is warranted. We should not encourage excessive and unwarranted logging in mature forests. PNW Research Station recently reported that profit-driven fuel reduction logging can conflict with both habitat objectives and fire risk reduction objectives.[71]

If there is a new push for timber volume from mature forests and trees, it will cause fire hazard to increase. Commercial logging can increase fire hazard by making forest stands hotter and windier, and fuels dryer. "Thinning opens stands to greater solar radiation and wind movement, resulting in warmer temperatures and drier fuels throughout the fire season. [T]his openness can encourage a surface fire to spread. …"[72] Opening the canopy also stimulates the growth of new surface and ladder fuels, and logging moves fine fuels from the canopy to the ground where they are more available for combustion.

BLM's Western Oregon Plan Revision EIS confirms that fire hazard will increase in areas managed for timber production, and that retaining more canopy cover would help reduce fire hazard. "The more canopy that would remain, the less effect wind would have on drying fuels and surface fires. This reduction in mid-flame wind speed would reduce flame length, which can lead to a reduction in tree mortality. … A lower probability of mortality equates to greater fire resiliency."[73]

The current DEIS does not provide adequate discussion or explanation for the radical departures from these important Northwest Forest Plan requirements.

RANGE OF ALTERNATIVES

In preparing an EIS, NEPA requires the agency to "study, develop and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources."[74] The regulations implementing NEPA explain that alternatives to the agency's proposed action are "the heart of the environmental impact statement."[75] The "touchstone" of the alternatives analysis is "whether [the] selection and discussion of alternatives fosters informed decision-making and informed

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[70] Hanson, C.T., Odion, D.C., DellaSala, D.A., and W.L. Baker. *in press.* Overestimation of fire risk in Northern Spotted Owl Recovery Plan. Conservation Biology.

[71] PNW Research Station. 2006. Seeing The Bigger Picture: Landscape Silviculture May Offer Compatible Solutions To Conflicting Objectives. Science Findings. July 2006. Http://Www.Fs.Fed.Us/Pnw/Sciencef/Scifi85.Pdf

[72] USDA Forest Service; Influence of Forest Structure on Wildfire Behavior and the Severity of Its Effects, November 2003. http://www.fs.fed.us/projects/hfi/2003/november/documents/forest-structure-wildfire.pdf

[73] BLM. 2008. Western Oregon Plan Revision FEIS, pp 810-811.

[74] 42 U.S.C. § 102(2)(E).

[75] 40 C.F.R. § 1502.14; *see also* 42 U.S.C. § 4332(2)(E); 40 C.F.R. 1507.2(d), 1508.9(b).

public participation."[76] "The existence of a viable but unexamined alternative renders an environmental impact statement inadequate." [77]

The BLM failed to consider a reasonable range of alternatives in the DEIS. First, BLM explains that it did not consider an alternative that would examine the status quo, which is implementation of the Northwest Forest Plan *as amended and currently implemented*.[78] BLM's rationale for not analyzing effects of the NFP as implemented is that:

> *It is not possible to analyze continuation of the current practices within the decision area as the No Action alternative for two reasons. First, implementation of the timber management program has departed substantially from the outcomes predicted in the 1995 RMPs, and the manner and intensity of this departure has varied substantially over time and among districts (USDI BLM 2012, pp. 6-12). There is no apparent basis on which the BLM might select and project into the future continuation of the practices from a specific year (or set of years) since 1995. Second, continuing to harvest timber at the declared annual productive capacity level for multiple decades into the future would not be possible using the current practices (USDI BLM 2012, pp. 6-12). The No Action alternative provides a benchmark to compare outputs and effects, even though this alternative does not meet the purpose and need of the project. Because of the inherent unsustainability of current practices, the BLM cannot project their implementation into the future; thus, continuation of the current practices would not serve the essential function of the No Action alternative of providing a baseline for comparison of outputs and effects.*[79]

This rationale is arbitrary and capricious. While it may be true that the BLM's timber program has departed from timber harvest *estimates* in existing RMPs or even the NFP, this does not mean that BLM cannot model or predict how existing RMPs will affect the environment. BLM could simply forecast timber outputs based on continued application of the RMPs as amended by court order or other change; and BLM provides no evidence that this approach is inappropriate. Indeed, in order for the agency to conclude that the existing RMPs are not "sustainable over time," it must have completed some sort of calculations; but this evidence is not in the DEIS or appendices.

Similarly, BLM claims that "continuing to harvest timber at the declared annual productive capacity level for multiple decades into the future would not be possible using the current practices," and cites its 2012 *Resource Management Plan Evaluation Report: Western Oregon* for support. However, that report simply lists reasons why BLM has not met the timber targets in existing RMPs, not that it is impossible to continue to implement existing RMPs as amended by the NFP and to project those environmental consequences into the future.[80]

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[76] *Westlands Water Dist. v. U.S. Dep't of Interior*, 376 F.3d 853, 872 (9th Cir. 2004) (*quoting California v. Block*, 690 F.2d 753, 767 (9th Cir. 1982)).
[77] *Morongo Band of Mission Indians v. FAA*, 161 F.3d 569, 575 (9th Cir. 1998); *Alaska Wilderness Recreation & Tourism v. Morrison*, 67 F.3d 723, 729 (9th Cir. 1995).
[78] DEIS at 77-79.
[79] DEIS at 77.
[80] 5 U.S.C. § 706(2)(A).

I. ARTICULATION OF ENVIRONMENTAL CONSEQUENCES FROM ALTERNATIVES

The DEIS is clear that the BLM does not intend to select one of the alternatives analyzed in the DEIS, but instead will select aspects of the various alternatives for implementation. DEIS at 76. For that reason, each alternative contains different mixes of uses that seek to offset any environmental "benefit" (i.e., protection) with a commensurate amount of environmental "harm" (i.e., extraction). While this is an attempt to develop alternatives that are "balanced," in practice it means that the public cannot assess the individual components of each alternative. Instead, the public is left with the impression that more timber harvest means less environmental protection, which, while likely true, does not allow for the public to have a true understanding of the actual differences among the alternatives, or what combination of particular aspects of particular alternatives have what particular environmental effects. For example, an alternative that allocates more land to the timber harvest base, but also decreases riparian buffers and increases ACEC designations over the status quo may have the "same" effects on fisheries as an alternative that reduces lands in the harvest base but also increases riparian buffers and does not designate any additional ACECs. This alternatives approach does not allow the public to clearly understand the differences among alternatives and to make a reasoned choice among them.[81]

II. INCREASED DISCRETION HAS ADVERSE ENVIRONMENTAL CONSEQUENCES.

BLM's internal agency reward system leads to unintended consequences. Unreasonably high timber targets combined with highly discretionary standards and guidelines will lead to abuse of discretion and failure to attain environmental objectives.

The EIS needs to take a hard look at the adverse effects from increased discretion, especially increased flexibility for logging in reserves. Rules for riparian reserves and LSRs provide too much discretion, allowing BLM to log inside the riparian areas for reasons other than restoring aquatic resources. Logging often causes a mix of positive and negative effects. In an effort to meet timber targets, BLM will focus on the benefits and ignore the adverse trade-offs, and therefore likely lead to logging in reserves with net negative effects on ecological objectives for the reserves.[82]

The action alternatives leave very little of the BLM landscape off-limits to logging. Subtracting structurally complex LSR, inner riparian zones, and congressionally reserves lands, leaves 63% of BLM lands open to logging under the preferred alternative.

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[81] *California v. Block*, 690 F.2d at 767.

[82] See Heiken, Doug. 2009. The Case for Protecting Both Old Growth and Mature Forests, Version 1.8. Oregon Wild. http://dl.dropbox.com/u/47741/Mature%20Forests%2C%20Heiken%2C%20v%201.8.pdf

2015 BLM RMP Analysis of what's open to logging				
Open to logging	**Acres**	**Not open to logging**	**Acres**	
LSR	636,635	LSR that is structurally complex*	463,910	
outer riparian zone**	167,729	inner riparian zone	232,083	
HLB Low	77,384	cong reserved	40,537	
HLB mod	224,582	district reserves - not including road footprint*	187,926	
HLB uneven	274,199			
East Side Mgt Lands	151,885			
District Reserve Road Footprint**'	33,701			
Totals	1,566,115		924,456	2,490,571
Percentages	**63**		**37**	

3. The DEIS Fails To Distinguish Differences Among Alternatives.

The DEIS seems to focus too much on the similarity among alternatives instead of highlighting differences. The purpose to NEPA is to help the decision-maker choose among alternatives, so the analysis must be redone to better highlight differences that are relevant to the decision-maker's choice among alternatives.

For instance, the DEIS at 225 says "All of the alternatives would increase the potential large wood and small functional wood contribution to streams from the current conditions. There is no meaningful difference discernible at this scale of analysis among the alternatives in their effect on potential wood contribution." This fails to recognize that there are significant differences in wood recruitment among the alternatives. In particular, those that allow commercial logging within the riparian reserves will capture mortality and reduce recruitment of functional wood to both the stream and the adjacent stream-side habitat. Another example is on page 233 of the DEIS which says "there would be no identifiable difference among the alternatives in the effects on fish from peak flow increases …" This does not mean that differences will not occur but rather, BLM reached this conclusion because the analysis was done at a scale that was not designed to identify differences.

As another example, DEIS at 315 states "Although the absolute values for increased potential fine sediment delivery through 2023 vary by alternative, these differences do not represent a substantial difference in the effects of the alternatives, because the increases in sediment delivery and the differences among the alternatives in future increases in sediment delivery are so small in comparison to the existing sediment delivery." This is misleading. Instead of highlighting the small additional level of sediment produced at a regional scale compared to the sediment from existing roads, BLM should disclose that some of the new sediment would be produced in areas that are not currently exposed to high levels of sediment form existing roads. There are local effects that will be significant and differ significantly among alternatives that allow more or less logging and road building near streams.

DEIS at 430 says "there is no basis for predicting a difference in effects between the No Action alternative and Alternatives A, B, and C" with respect to conservation of rare plants and fungi. This is high misleading, especially given the fact that the no action alternative requires pre-disturbance surveys and protection buffers for rare and uncommon species, while the action alternatives do not require surveys and will result in the loss of countless populations of rare and uncommon wildlife. The action alternatives won't even protect existing known sites of rare and

uncommon species on O&C lands "when protection measures … conflict with sustained-yield timber production…" There are many bases for BLM to distinguish alternatives but BLM offers a misleading analysis that highlights similarities. This is arbitrary and capricious.

BLM is basically asking the wrong questions and failing to highlight the choice faced by decision-makers. The EIS needs to clearly show that more logging allowed near streams, more regeneration logging with less retention, more logging of older forests, and more logging without survey for rare and uncommon species, will result in greater the adverse effects to fish, water, wildlife, carbon, and recreation. It is important for the decision-maker to understand this and to be able to see and understand these differences among alternatives.

One example where BLM does find a substantial difference is on DEIS at 255 which says "There is a substantial difference in the structural complexity of most future forests when comparing the even-aged management (which includes clear-cutting) practices in the HITA in Alternatives A and C to the two-aged practices (which include variable retention-regeneration harvest) in the No Action alternative, and the LITA and MITA in Alternatives B and Sub-alternative B, and the MITA in Alternative D." This is an important disclosure that should lead the decision-maker to choose an alternative that retains more structure in regeneration harvest areas. It also shows why BLM finds a difference – because it looked at stand-scale effects, instead of regional effects. BLM needs to do more of this and ask further questions such as. What are the local stand-scale and reach-scale effects of more logging near streams or near populations of rare and uncommon wildlife.

Once these local effects are more clearly understood and disclosed, BLM can then add up those effects to provide a clearer picture of cumulative impacts.

AQUATIC CONSERVATION STRATEGY

The Northwest Forest Plan included the Aquatic Conservation Strategy ("ACS") developed by FEMAT. The ACS has four basic components: (1) a system of key watersheds or refugia comprising watersheds with the best aquatic habitat or the greatest potential for recovering at-risk fish stocks; (2) riparian reserves along streams where certain activities are constrained; (3) watershed analysis to be used to tailor activities to specific watersheds needs; and (4) a comprehensive, long-term watershed restoration program.[83]

The ACS imposed constraints on habitat-degrading activities in two ways. First, binding standards and guidelines restrict certain activities within riparian reserves and key watersheds.[84] Second, FEMAT recognized the need to constrain: (1) activities outside riparian reserves in, e.g., unstable areas; and (2) the cumulative impacts of activities throughout a watershed.[85] Instead of imposing explicit constraints on such activities, the ACS has nine objectives that require aquatic habitat to be maintained and restored to properly functioning conditions.[86] The Northwest Forest Plan Record of Decision gave the ACS objectives binding force as standards and guidelines and

[83] Northwest Forest Plan Record of Decision at B-12; FEMAT at V-32.
[84] See Northwest Forest Plan Record of Decision at C-7, C-30 to C- 38.
[85] FEMAT at V-29.
[86] Northwest Forest Plan Record of Decision at B-11; FEMAT at V-30 to-31.

explicitly required that federal lands shall be managed to attain the ACS objectives. "Both FEMAT and the [Northwest Forest Plan] contemplate that projects must be consistent with ACS objectives."[87]

When Judge Dwyer upheld the validity of the Northwest Forest Plan, he cautioned with respect to the ACS that, "[I]f the plan as implemented is to remain lawful, the monitoring, watershed analysis, and mitigating steps called for in the ROD will have to be faithfully carried out, and adjustments made if necessary." *Seattle Audubon Soc'y*, 871 F. Supp. at 1322. More recently, courts have found that FEMAT embodies the best available scientific information pertaining to the impacts of forestry activities on salmon and their habitat.[88]

The BLM offers no compelling rationale for why all of the proposed action alternatives eliminate the Aquatic Conservation Strategy Objectives and the Key Watershed designations of the NWFP. As confirmed in the 20-year NWFP Monitoring Report, the Aquatic Conservation Strategy Objectives and the Key Watershed designations have proven effective at improving water quality. The BLM's refusal to develop or consider an action alternative that retains these bedrock conservation elements of the NWFP is arbitrary and capricious.

As acknowledged by the BLM on pages 9-10 of the DEIS, FLPMA (43 USC 1701[a][8]) directs the agency to protect water resources and the O&C Act (43 USC 1181a) requires the BLM to manage forests for the purpose of protecting watersheds. At no point in the DEIS does the BLM identify how abandoning the ACS of the NWFP will achieve those objectives or contribute to attaining the purpose and need of the plan revisions process.

I. RIPARIAN RESERVES ARE AN INTEGRAL PART OF THE ACS.

The FEMAT scientists first convened in April 1993 and assessed the likelihood of having the continued persistence of the species, well-distributed throughout its historical range on federal lands over the next 100 years.[89] They were instructed to assume that the Aquatic Conservation Strategy would be fully implemented. For the salmon species considered, the likelihood of their continued survival on these lands over the next 100 years was only 65%.[90] Only when the riparian reserves and other mitigation measures were added into the protections of the ACS did the Northwest Forest Plan result in an 80 percent or greater likelihood of continued existence of salmon and steelhead.[91]

Recognizing that the ACS represented the best available science on the intersection between forest management and salmonid protection, NMFS has relied on ACS consistency in order to

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[87] PCFFA v. NMFS, No. 04-1299RSM, Order on Report and Recommendation, slip op. at 4 (W.D. Wash. March 30, 2007).
[88] *PCFFA v. NMFS*, 71 F. Supp.2d 1063, 1069 (W.D. Wash. 1999); see also *PCFFA v. NMFS*, No. 04-1299RSM, Order on Report and Recommendation, slip op. at 6 (W.D. Wash. March 30, 2007) ("The FEMAT scientists are respected scientists and their views relevant.").
[89] FEMAT at IV-40.
[90] FEMAT Table V-11, at V-69.
[91] FSEIS at 3&4-196; App. J2- 47-48.

judge jeopardy. "[B]ecause NMFS is allowed to equate ACS consistency with a no jeopardy finding, NMFS chooses to inquire into ACS consistency."[92]

Riparian forests are distinctly different from upland forests because they are located adjacent to stream channels where dynamic processes of stream flow and sediment transport interact with vegetation. Riparian forests have a dual role of providing water quality and habitat for freshwater species as well as late-successional habitat for a variety of birds, mammals and other species. Plants along streams and aquatic animals have distinct management needs quite different from upland areas. A large body of scientific literature describes interactions between riparian forests and stream channels as well as larger scale watershed processes.

II. THE BLM SHOULD WORK TOWARD SALMON RECOVERY

The recovery of threatened salmonids (e.g. the Southern Oregon Northern California Coast (SONCC) coho salmon Evolutionary Significant Unit and the Oregon Coast coho salmon ESU) must be a high priority for the RMP planning process. Development of the 1995 Medford District RMP and other RMPs anticipated federal ESA fish listings by adopting the Aquatic Conservation Strategy (ACS) of the Northwest Forest Plan into RMPs. Subsequently, the SONNC coho salmon ESU was federally listed as threatened in 1997 and the listing reaffirmed in 2006. The NOAA Fisheries has determined that the Northwest Forest Plan ACS is adequate for protection and recovery of listed fish ESUs, including the SONCC. We recommend that the ACS be used in all alternatives. Incorporation of the ACS would assure approval by NOAA fisheries and avoid questions of legality as occurred in the WOPR. We are concerned that the RMP process is emphasizing forestry classifications (e.g. moist/dry) that are designed to be compatible with spotted owl recovery while largely ignoring the need for protection of riparian forests to recover coho salmon.

Habitat monitoring has found that streams have generally improved with the ACS (Lanigan et al. 2011). Unfortunately, SONCC coho salmon populations have recently declined despite modest improvements in habitat. The SONCC coho recovery plan states that the SONCC coho salmon ESU is at high risk of extinction and is not viable." The parallel to spotted owl declines is striking but not surprising since both species are strongly dependent on watersheds with mature and old growth forest cover.

Riparian Forests are best managed with treatments that enhance structure through decadence creation, underplanting and prescribed fire (see Franklin et al. 2009:32). We believe these silivicultural treatments are appropriate in riparian forests because they do not remove structure (i.e. coarse wood) needed for the dual purpose of providing habitat for animals and integrity for stream channels. Commercial thinning in riparian forests is often not appropriate because it removes the very component (coarse wood) needed to achieve desired conditions and creates numerous adverse impacts antithetical to stream integrity.

[92] PCFFA v. NMFS, 265 F.3d 1028, 1034-35 (9th Cir. 2001) (further noting that presumably other methods of reaching a jeopardy determination are available, but discussing none).

III. PROTECT KEY WATERSHEDS

The RMP fails to identify a hierarchical system of 5th, 6th, and 7th field coho "key" spawning and coho "key" rearing watersheds with requirements to substantially reduce road density and grazing in 6th and 7th field watersheds. Summer steelhead would also be high priority for key watershed designations. Key watersheds were identified in the Northwest Forest Plan prior to the listing of coho salmon. Federal listings of coho salmon, SONCC coho recovery plan, and recent research findings[93] indicate a need to build on key watershed component of the ACS to direct effective recovery actions at appropriate watershed scales. Although not federally listed, summer steelhead in the Rogue Basin are at a high risk for loss of viability over the next decades. Generally coho and summer steelhead spawn in the same tributaries, thus these watersheds or sub-watersheds would be high priority for key watershed designation (e.g. Cheney Creek, Foots Creek, Evans Creek etc.).

IV. BASIS FOR KEY WATERSHED RMP STANDARDS AND GUIDELINES

Refugia are a cornerstone of most species conservation strategies. Williams et al. (2011b) identified four critical elements for watershed scale conservation: (1) maintain processes that create habitat complexity, diversity and connectivity;(2) nurture all of the life history stages of the fishes being protected; (3) include a large enough watershed to provide long-term persistence of native fish populations and (4) provide management that is sustainable over time. A system of Coho Key Watersheds that serve as refugia is crucial for maintaining and recovering habitat for threatened coho salmon within core areas identified in SONCC recovery plan. Coho Key Watersheds would include areas of high quality habitat as well as areas of degraded habitat. Coho Key Watersheds with high quality conditions would serve as anchors for the potential recovery of depressed populations segments within core population areas. Those areas of lower quality habitat with a high potential or capacity for restoration and will become future sources of high quality habitat with the implementation of a comprehensive restoration program.

As stated in our scoping comments, we recommend that 5th field watersheds with relatively high amounts of high intrinsic potential coho habitat and relatively high spawner counts be identified in RMPs as Key Coho Watersheds. For example, in the Illinois Basin, Sucker Creek, Deer Creek, upper East Fork Illinois River, Elk Creek and possibly Althouse Creek would be identified as Coho Key Watersheds to support core area designation in the SONCC Coho Recovery Plan (p. 30-6). Within Coho Key Watersheds we recommend that sufficient 6th or 7th field sub-watersheds be identified as Coho Key Spawning Watersheds. Likely candidates as Key Coho Spawning Watershed would be smaller watersheds of "key" streams (e.g., Bear Creek and Grayback tribs to Sucker Creek). Mainstem areas of 5th field watersheds are often too unstable for successful spawning by coho because of instability of gravel beds during winter peak flows.[94] Thus, it is common to find high concentrations of coho spawning in only a few tributaries of 5th field watersheds or in spring fed side channels buffered from bedload movement (e.g., Sucker Creek). A portion of juvenile coho migrate to mainstem 5th field stream areas suitable for rearing

[93] Firman et al. 2011
[94] Nawa and Frissell 1997.

or seek out other tributary reaches. The relatively small 6th and 7th field sub- watersheds would be high priority areas for intensive road decommissioning and grazing reduction.

A review by Carnefix and Frissell (2009) found that it is more effective to reduce road densities to very low densities in selected high priority watersheds than to reduce high road densities to only moderate levels. A road density effect on adult coho salmon was corroborated by Firman et al. (2011) who found that "[p]redictor variables indicative of land management, cattle density, and road density were negatively associated with peak spawner densities in many of our models."

The coho populations studied were spawning in 7th field watersheds. This is important because reducing road densities is extremely costly. Reducing roads to very low densities in 6th and 7th field Coho Key Spawning Watersheds would be far more practical and effective than attempting to reduce road densities in Coho Recovery Plan "population" areas that are many times larger. The recommended restoration strategy is to concentrate road density reductions in small watersheds where they will be most effective to benefit known coho spawning populations.

V. RECOMMENDED STANDARDS AND GUIDELINES FOR KEY WATERSHEDS

- Coho Key Watersheds are highest priority for watershed restoration;
- No new roads would be built in Coho Key Watersheds;
- Road Densities in Coho Key Spawning Watersheds would be reduced to 0-0.5/mi^2 during first ten years of plan;
- Grazing would be reduced or eliminated in Coho Key Spawning Watershed; and
- Watershed analysis is required prior to major ground disturbing management activities such as timber harvest in Coho Key Watersheds.

VI. THE BLM SHOULD MAINTAIN RIPARIAN RESERVES

> *The No Action alternative has wider Riparian Reserve widths on fish-bearing streams than all action alternatives." –DEIS at 228.*
>
> *[T]he Riparian Reserves in the No Action alternative were designed to meet an array of objectives, including broad ecological objectives and riparian and terrestrial species habitat. In contrast, the Riparian Reserves in the action alternatives are designed to meet narrower objectives: conservation and recovery or listed fish and protection of clean water, consistent with the purpose and need for action. -DEIS at 80.*

The BLM offers no compelling rationale or reason for its refusal to develop and consider action alternatives that meet the "broad ecological objectives" for Riparian Reserve management that underlie the NWFP. Indeed, federal courts have ruled that the NWFP conservation plan (including the terrestrial habitat connectivity function of Riparian Reserves) is the absolute minimum allowed by federal law. The DEIS contains no proposal to replace the habitat connectivity function provided by NWFP Riparian Reserves and contains no analysis or disclosure of the impacts of reduced riparian widths on terrestrial wildlife connectivity. Thus the

BLM is stepping away from minimum level science based broad ecological objectives that provide a comprehensive management approach to federal lands throughout the entire region, which is what the purpose and need of this DEIS calls for.

As illustrated in Table 3-89 of the DEIS, several BLM action alternatives would allow logging impacting 275-372 miles of fish-bearing and perennial streams "susceptible to shade reductions that could affect stream temperatures." Raising stream temperatures directly inhibits BLM watershed management goals and may result in violations of the Clean Water Act associated with TMDL listed-waterbodies.

Page 317 of the DEIS indicates that increase in riparian reserve logging proposed in every BLM action alternative would necessitate additional road construction within the "sediment delivery distance" (200 feet) near streams.

> *Within the sediment delivery distance (200' feet), newly constructed roads would primarily be constructed to provide access for forest thinning [logging] within the riparian reserve. In the action alternatives, this thinning [logging] would be limited to the outer zone of the riparian reserve." DEIS at 317.*

The BLM fails to quantify the amount of road to be constructed in Riparian Reserves or the amount of sediment that will be added to streams. The BLM neglects to disclose which streams in the planning area are currently TMDL listed for sediment and how the agency intends to meet its Clean Water Act obligations.

Please note that pages 332-335 of the DEIS indicate that the shade reductions and soil disturbance associated with Riparian Reserve logging will make "riparian habitats more susceptible to the introduction and spread of invasive plants" undermining BLM policy objectives for the management of invasive species and riparian habitats.

VII. BLM SHOULD RETAIN NWFP RIPARIAN RESERVES AND STANDARDS & GUIDELINES

We have two primary concerns with alternatives that modify streams buffers. First, the spatial extent of the buffers is reduced without any compelling justification. Second, the standards & guidelines governing activities in the buffers are weakened which will allow many activities to degrade the conditions that need careful conservation. We find no compelling rationale for either of these changes.

BLM claims that the riparian requirements under the no action alternative have conflicting objectives and that the action alternatives will increase certainty. This is inaccurate and misleading. The Northwest Forest Plan clearly prohibits timber harvest in riparian reserves. While it is true that the agencies have exploited some loopholes in that prohibition, that problem could be easily fixed with direction from BLM's state office. Contrary to BLM's assertions, the action alternatives actually increase uncertainty because most of the alternatives allow regeneration harvest in areas that are currently reserves, and they allow commercial logging in the outer portion of narrower stream buffers to achieve questionable purposes that will likely lead to conflict and controversy.

The DEIS fails to consider an adequate range of alternatives for riparian reserves. BLM should consider adopting wider stream buffers to meet several important policy objectives, including, but not limited to:

- Maintain and improve water quality;
- Maintain natural rates of wood recruitment both instream and adjacent areas that support terrestrial wildlife that live near streams;
- Provide high value habitat for spotted owls, marbled murrelets, and Pacific fishers that spend disproportionate time in lower slopes near streams;
- Increase old forest habitat to provide connectivity and support wildlife dispersal across the managed landscape;
- Provide habitat (including moderated microclimate and natural rates of wood recruitment) for numerous species that are not threatened & endangered;
- Provide greater assurance that salmon populations and water quality will be conserved;
- Provide carbon storage in highly productive streamside forests;
- Provide a buffer for increased climate extremes expected under climate change;
- Mitigate for amplified hydrologic cycle caused by climate change;
- Reduce landslide risk by encompassing a greater amount of potentially unstable lands;
- Protect of recreation and scenic values in areas where those values are high;
- Allow near stream forests to serve their natural functions including capture/store/release water, energy, sediment, carbon, nutrients, as well as provide unimpeded movement of wood, gravel, and organisms.

BLM should consider an alternative that retains the existing NWFP buffer widths with clarified standards & guidelines that limit active management to situations that provide clear net benefit to aquatic AND terrestrial wildlife, and do not retard attainment of ACS objectives.

BLM needs to compile and synthesize all the adverse impacts that are caused by reducing streamside buffers and increasing logging near streams, such as those listed above. Where effects are disclosed, the DEIS spreads these effect disclosures across numerous different sections of the DEIS, so the public and the decision-maker cannot see clearly all the public benefits that result from the simple requirement to maintain or increase stream buffers.

The DEIS does not address the original reasons for adopting wider buffers, nor provide a compelling alternative rationale for the proposed radical reduction of stream buffers. The Northwest Forest Plan adopted wider riparian reserves to meet a specific set of objectives that encompassed both aquatic and terrestrial wildlife and to mitigate cumulative effects. When an agency proposes to change course after making an important policy decision, the courts have consistently held that NEPA analysis must clearly explain the rationale for the change. This requires addressing the reasons for the original decision. The DEIS appears to lack any clear disclosure of the multi-faceted purposes of the riparian reserves and the diverse aquatic and terrestrial values that were intended to benefit from the adoption of wider stream buffers. The EIS needs to present the decision-maker with a clear picture of all the adverse impacts that will be caused by the choice whether to maintain or reduce stream buffers and whether to maintain or weaken rules protecting those buffers.

The Northwest Forest Plan explicitly adopted wider stream buffers for a variety of reasons that remain compelling to this day. BLM must not reverse the policy decision to protect wide stream

buffers absent a clear disclosure of a competing rationale and disclosure of the adverse effects of reduced protection for streamside forests. Oregon Wild has carefully reviewed and documented the original reasons for adopting wide stream buffers and Oregon Wild convincingly refutes all the rationales for reduced stream protection offered to-date. BLM must carefully review and respond to this analysis.[95] BLM is proposing to dramatically change the purposes of the riparian reserves in the Northwest Forest Plan from terrestrial AND aquatic purposes, to exclusively aquatic purposes. In making this change, BLM must carefully evaluate the original broad purposes of the riparian reserves, and provide a clear and compelling rationale for narrowing those purposes.

Most of the purposes of the wide riparian reserves adopted in the NWFP cannot be met by protecting forests elsewhere on the landscape. Simply put, meeting Recovery Action 32 is not a substitute for wide riparian buffers. Many of the purposes of the reserves are directly or indirectly connected to the unique slope positions and proximity to streams. For example, any amphibians are associated with streams but use habitat much farther than ½ to 1 site-potential tree distance from the stream. Narrow riparian buffers will have direct adverse effects on these amphibian species.

VIII. OTHER SPECIES RELY ON RIPARIAN AREAS

One of the key purposes of wide riparian buffers was to provide for dispersal of terrestrial organisms. This rationale has only increased in importance in the years since the Northwest Forest Plan was adopted.[96]

Spotted owls disproportionately use lower slopes near streams. Evidence indicates that spotted owls and barred owls are more likely to tolerate each other's presence in mixed hardwood-conifer forests near streams. These conditions often extent more than ½ to 1 site-potential tree distance from streams. Marbled murrelets disproportionately rely on nesting habitat near streams. Reducing stream buffers to ½ to 1 site-potential tree will shrink potential marbled murrelet nesting opportunities and expose marbled murrelet nest patches to next predation. Even wildlife that live within ½ to 1 site-potential tree still rely on protection of forests beyond that narrow buffer. Reducing stream buffers will expose their habitat to edge effects such as increase wind, increased temperature, reduced humidity, and reduced input of down wood which is in short supply as a result of past practices and which so many wildlife species rely on. This is why the authors of the NWFP saw a need for a buffer-on-the-buffer.

The DEIS does not disclose all of these significant adverse effects from reduced stream buffers. The DEIS analysis of riparian reserves does not address all the values provide by riparian reserves. The analysis focused exclusively on listed fish and water quality, but riparian reserves also provide value to non-aquatic species such as spotted owls and marbled murrelets and Pacific fisher, which spend disproportionate time on lower slopes near streams. Wide riparian buffers

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[95] See Heiken, D. 2013. Riparian Reserves Provide Both Aquatic & Terrestrial Benefits - A Critical Review of Reeves, Pickard & Johnson (2013). https://dl.dropboxusercontent.com/u/47741/Heiken%202013.%20Review%20of%20Reeves%20et%20al%20Riparian%20Proposal.pdf.

[96] See Alexander K. Fremier. Leona K. Svancara, Michael Kiparsky, Dale D. Goble, Stephan Gmur, Barbara Cosens, Jocelyn Aycrigg, Frank W. Davis, Robin Kundis Craig, J. Michael Scott (2015) A riparian conservation network for ecological resilience. Biological Conservation 191 (2015) 29–37.

also meet the purpose and need to reduce fire hazard by maintaining more mature forest and less regeneration harvest that leads to hazardous fuel conditions. Wide riparian buffers also contribute to community stability by protecting important public values near streams and by constraining timber harvest that makes communities boom and bust. The DEIS analysis of the alternatives therefore fails to recognize all the important effects of the wide buffers in the no action alternative.

The DEIS fails to address the unique values of lands near streams. BLM treats all lands outside of their new narrow buffers as if they were interchangeable in providing habitat functions for spotted owls, marbled murrelets, and other wildlife. BLM is assuming that protecting old forest far from streams is equivalent to protecting habitat near streams. This is wrong. The no action alternative protects wider riparian buffers. These forests may appear to resemble upland habitat, but their proximity to streams makes them function differently, and the EIS needs to recognize this.

Reeves et al. admit that riparian reserves were established to provide "dispersal corridors for a variety of terrestrial organisms" and "[t]he boundaries of the Riparian Reserve were extended to a full site-potential tree height on all non-fish bearing streams … to provide additional support for non-fish organisms that use the area near streams as habitat or migratory corridors"[97] but their analysis never fully acknowledges the scope of the terrestrial wildlife objectives expected from riparian reserves, nor does their analysis show whether terrestrial objectives will be met if riparian reserves are systematically reduced as they propose.

Application of riparian reserves Scenario 1 throughout the range of the northern spotted owl was one of the key mitigations adopted to assure long-term viability of, not just fish, but a wide range of aquatic and terrestrial species. The EIS supporting the NWFP states: *[General Mitigation Measures] Application of Riparian Reserve Scenario 1 in the intermittent streams would benefit a wide variety of terrestrial and aquatic species by providing additional habitat. These species include the northern spotted owl, coho salmon, amphibians, small mammals, and some vascular plants. Connectivity of the ecosystem would also be improved.*[98]

The NWFP Record of Decision adopted Riparian Reserve Scenario 1 with the explicit intention to benefit: spotted owls, marbled murrelets, marten, red tree vole,[99] vascular plants, bryophytes, amphibians[100] (especially tailed frog, Van Dyke's salamander, clouded salamander, Del Norte salamander, black salamander, Cope's giant salamander, Cascade torrent salamander, southern torrent salamander[101]), bats,[102] birds, mammals, mosses, arthropods,[103] goshawk, fisher, bufflehead, harlequin duck,[104] 19 mollusks,[105] 12 species of lichen, 23 species of fungi,[106] and

[97] Reeves et al. pp 8 and 9.

[98] 1994 FSEIS p 3&4 – 49.

[99] 1994 FSEIS, Appendix B-11, p B-143 -145.

[100] 1994 ROD p B-13.

[101] 1994 FSEIS p 3&4 – 176; 1994 FSEIS, Appendix J2, p 45.

[102] 1994 FSEIS pp 3&4 – 186-187.

[103] 1994 FSEIS, pp 3&4 – 61, 81.

[104] 1993 SAT Report, Ch 5, pp 296-298, 304, 308—309, 310.

130 species that were subject to "additional species analysis" because of viability concerns and received mitigation in the form of wider riparian buffers).[107] Two of these benefited species - the spotted owl and marbled murrelet - were already listed as "threatened" under the ESA when the NWFP was approved. Since the NWFP was adopted, three additional benefited species are warranted (or likely warranted) for ESA listing (the Pacific fisher, the Humboldt marten, and the North Coast DPS of the red tree vole).

In upholding the Northwest Forest Plan Judge Dwyer said "*The federal defendants were bound by law, and by the obvious fact of species interdependence, to consider the survival prospects of species other than vertebrates.*"[108] There is no new information available suggesting that the current buffers are not needed. In fact, there is some evidence suggesting that buffers should be extended to accommodate dispersal of wide-ranging amphibians over ridgetops.[109]

Reeves et al. devote a section of their paper (at pages 46-48) to address the terrestrial wildlife impacts of their proposal, giving five justifications for adopting smaller riparian reserves and why it will have "minimal" effects on terrestrial wildlife. All of their justifications are flawed.

Those flaws are described in detail in the following documents: Heiken, D. 2013. Riparian Reserves Provide Both Aquatic & Terrestrial Benefits - A Critical Review of Reeves, Pickard & Johnson (2013).[110] The DEIS does not address the voluminous evidence that riparian reserves like those in the no action alternative are irreplaceably important for spotted owls, marbled murrelets, and a variety of amphibians, as reported in Heiken (2013).

IX. RIPARIAN RESERVES CONTRIBUTE TO SPOTTED OWL CONSERVATION

The NWFP represents the "federal contribution to recovery" of the threatened northern spotted owl.[111] The NWFP relies on riparian reserves to provide benefits to spotted owls, including dispersal, connectivity, and demographic support. Reeves et al. dismiss the need to maintain riparian buffers for spotted owls because FWS' final critical habitat rule did not specifically incorporate riparian reserves. A more thorough review of the evidence shows that riparian

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[105] 1994 ROD p 38.

[106] 1994 FSEIS, Appendix J2, pp 20 – 23.

[107] 1994 FSEIS, Appendix J2; 1994 FSEIS, Appendix B11, pp B-143 – B-145. Martin Raphael. 2012. The Function of Riparian Reserves for Terrestrial Species – What Was the Intent? http://ecoshare.info/wp-content/uploads/2013/01/Raphael-buffers.pptx

[108] *Seattle Audubon Society v Lyons*, 871 F. Supp. 1291 (W.D. Wash. 1994).

[109] Science Findings, Issue 120 (February 2010) Linked in: Connecting riparian areas to support forest biodiversity, based on science by Kelly Burnett and Deanna Olson. http://www.fs.fed.us/pnw/sciencef/scifi120.pdf; and Olson, D.H., Anderson, P.D., Frissell, C.A., Welsh, H.H., Jr., and D.F. Bradford. 2007. Biodiversity management approaches for stream–riparian areas: Perspectives for Pacific Northwest headwater forests, microclimates, and amphibians. Forest Ecology and Management 246 (2007) 81–107.

[110] https://dl.dropboxusercontent.com/u/47741/Heiken%202013.%20Review%20of%20Reeves%20et%20al%20Riparian%20Proposal.pdf

[111] 1994 ROD p 15.

reserves are critically important for spotted owls, and increasingly so in light of new threats like the barred owl and climate change.

The 1994 Record of Decision for the NWFP explained the role of riparian reserves in conservation of spotted owls:

> ***Mitigation Measures Adopted*** *… The standards and guidelines of the selected alternative mitigate the impacts to plant and animal species and their interrelated ecosystems. The standards and guidelines for the land allocations of this decision will improve current conditions and alter certain past practices detrimental to late-successional species by protecting large blocks of remaining late-successional and old-growth forests, and by providing for the regrowth and replacement of previously harvested late-successional forest stands. …*
>
> *… riparian reserves in particular mitigate timber harvest effects by providing for well distributed patches of late-successional forest that serve for dispersal of mobile species such as the northern spotted owl, and serve as refugia for species that disperse only short distances.*
>
> *… Another possible mitigation is that the rate of timber harvest in the matrix could be controlled (such as with the 50-11-40 rule) to provide additional dispersal habitat for spotted owls. This measure was not adopted, in part, due to the acreage of late-successional and other reserves well-distributed in the matrix … this will protect larger amounts of nesting, roosting, and foraging owl habitat, which will be higher quality than what the 50-11-40 rule would have done (see Appendix G, part 3 of the Final SEIS).*[112]

A careful review of the available evidence shows that riparian reserves provide disproportionate value to spotted owls and they represent an integral part of the spotted owl conservation strategy adopted in 1994. New evidence reinforces the importance of riparian reserves.

Contrary to Reeves et al.'s assertions, the critical habitat rule and the recovery plan explicitly recognize the role of riparian reserves in owl conservation. FWS's 2012 proposed rule for revised critical habitat said "Riparian Reserves, Adaptive Management Areas and Administratively Withdrawn Areas can provide both demographic support and connectivity/dispersal between the larger blocks, but are not necessarily designed for that purpose."[113] And FWS's 2011 Revised Recovery Plan states:

> Riparian Reserves, Adaptive Management Areas and Administratively Withdrawn Areas can provide both demographic support and connectivity/dispersal between the larger blocks, but are not necessarily designed for that purpose. … Apparently in response to barred owls, some marked spotted owl site centers have moved higher up slopes (Gremel 2005). According to one study, "the trade-off for living in high elevation forests could be reduced survival or fecundity in years with severe winters (Hamer et al. 2007:764).[114]

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[112] 1994 NWFP ROD p 29-31.

[113] USFWS 2012. Proposed rule- Revised Critical Habitat for the Northern Spotted Owl. Federal Register Jun 1, 2012. http://www.gpo.gov/fdsys/pkg/FR-2012-06-01/html/2012-13305.htm

[114] USFWS 2011. Final Revised Recovery Plan for the Northern Spotted Owl. pp A-14, B-11.

Spotted owls spend disproportionate time in riparian areas and on the lower third of slopes. Robert Anthony recently provided input to an interagency process regarding thinning in riparian reserves and noted that spotted owls are associated with riparian areas, and that logging has negative effects on spotted owls and their prey:

> *Northern spotted owls are also associated with riparian areas, which is relevant to thinning of young forests in these areas (McDonald et al. 2006, Glenn et al. 2004). The association with riparian areas has been determined with the use of radiotelemetry studies of their movements and habitat use, which have shown that owls use riparian areas more than their proportional availability across the landscape. There have been at least three hypotheses proposed for the disproportionate use of riparian areas: (1) riparian areas provide more favorable thermoregulatory conditions (Barrows 1981); (2) prey species are more abundant in riparian areas (Carey et al. 1992 1999); and (3) fire severity has been lower in riparian areas resulting in the retention of structural complexity (Reeves et al. 2006). There is some support for all three of these hypotheses so they all likely have some influence over the use of riparian areas by northern spotted owls.*
>
> *… [M]any of the forest management practices (i.e., clearcuts, shelterwood cuts, heavy commercial thinning) used in the Pacific Northwest have had negative effects on spotted owls*[115]
>
> *… [I]t is safe to say that commercial thinning within the range of the northern spotted owl will have a negative effect on abundance of northern flying squirrels. Northern flying squirrels are the owl's primary prey by number and biomass throughout most of their range; consequently, there is little doubt that commercial thinning will have a negative effect on abundance of flying squirrels as prey for spotted owls. In addition, commercial thinning has negative effects on the abundance of red-backed voles (Suzuki and Hayes 2003, Manning unpublished data), which is also an important prey species for the owl.*[116]

The contractor's report supporting FWS' 2004 status review of the spotted owls found "owl locations were positively associated with proximity to riparian habitat..."[117] The SEI Report also said, "In the Klamath Province, more nests than random sites were on the lower third of slopes … "[118] Blakesly et al. (1992) found similar results in California: "Spotted owls also selected the lower third of slopes, used the middle third of slopes in proportion to their availability, and used the upper third of slopes less than expected …"[119]

Riparian stands may be particularly important to spotted owls in areas where old forests are uncommon, such as the BLM checkerboard of western Oregon. Glenn et al. (2004) said:

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[115] Forsman et al. 1984, Zabel et al. 1995, Buchanan et al. 1995, Hicks et al. 1999, Meimann et al. 2003.

[116] Anthony, R.G. 2013. Effects of Riparian Thinning on Marbled Murrelets and Northern Spotted Owls. Part III of the Science Review Team for the identification and interpretation of the best available scientific information to determine effects of riparian forest management. 28 January 2013.

[117] SEI Scientific Evaluation Of The Status Of The Northern Spotted Owl, Chapter 5: Habitat Associations, p 5-6. http://www.sei.org/owl/finalreport/Chapter5HabitatAssociations.pdf *citing* Irwin et al. (in press).

[118] SEI p 5-19, *citing* Hershey et al. (1998).

[119] Blakesly, Franklin & Gutierrez 1992. Spotted Owl Roost And Nest Site Selection In Northwestern California. J. Wildl. Manage. 56(2):388-392. http://www.fs.fed.us/psw/publications/blakesley/blakesley1.PDF

> *[N]est sites for owls at NCR [Northern Coast Range] and ESF [Elliot State Forest] generally were located within mature/old conifer forest or along conifer–broadleaf edges associated with riparian areas. … In areas of western Oregon where spotted owls occupy sites with little or no old conifer forest, we recommend that managers retain existing old and mature conifer forest, broadleaf forest, broadleaf forest edges, and forested riparian areas as owl habitat.*[120]

The NWFP expected riparian reserves to serve two main purposes for spotted owls – First, owls use high quality habitat in riparian reserves for movement of adults within and between territories, and for dispersal of juveniles between reserves. Second, riparian reserves provide "demographic support" for owls in the matrix, that is, the additional suitable owl habitat occurring in riparian reserves supports a larger owl population that is less vulnerable to extinction.

The riparian reserves were adopted in part as a replacement for the spotted owl dispersal standard known as the "50-11-40 rule" that pre-dated the NWFP. Riparian reserves were expected to maintain and develop late-successional habitat, and provide superior dispersal habitat (i.e., better than 11" dbh and 40% canopy closure).[121] Higher quality dispersal habitat means that owls can not only move safely through the landscape with protective cover from predators, but they can also find roosting sites that are protected from weather extremes, hunting perches, a prey base offering foraging opportunities, as well as nesting/breeding sites.

An addendum to the Biological Assessment for the NWFP states:

> *Owl dispersal requirements are believed to be met in Alternative 9 due to the cumulative benefits from a variety of land allocations and standards and guidelines which are not specifically earmarked as owl dispersal standards. The following are two [sic] the benefits which are expected to be the most important to assuring owl dispersal … .*
>
> *Riparian Reserve Scenario 1 results in an increase in the total acreage and the amount of owl habitat and murrelet habitat which would be retained along intermittent streams. This will have a greater effect in the provinces which have higher stream densities, as illustrated in the calculations below and the Aquatic Conservation Strategy discussion in Chapter 3&4. The larger acreage of protected habitat will increase the amount of dispersal and nesting habitat which will be retained throughout the owl and murrelet range.*
>
> *Riparian Reserve Scenario 1 will apply to Alternative 9 throughout the range of the northern spotted owl. This modification increases the acreage of Riparian Reserve along intermittent streams from one-half to the full height of a site potential tree. … The decision to implement Riparian Reserve Scenario 1 results in 3,233,100 acres of Riparian Reserves, which is an additional 638,000 acres (25 percent increase) over the Draft SEIS Alternative 9. … These Riparian Reserves will improve travel and dispersal corridors for*

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[120] Glenn, Hansen, & Anthony 2004. Spotted Owl Home-Range And Habitat Use In Young Forests Of Western Oregon. Journal Of Wildlife Management 68(1):33–50. http://www.eddylsrproject.com/deis/B1/703-47%20Glenn%202004.pdf

[121] 1994 ROD p 29-31.

many terrestrial animals and plants, and serve as connectivity corridors between the Late-Successional Reserves. …

The standards and guidelines state that Riparian Reserve widths may be modified after completion of watershed analysis. That analysis will take into account northern spotted owl dispersal needs as well as other species that were intended to be benefited by this mitigation measure. There are two specific values in the application of Riparian Reserve Scenario 1 for spotted owl dispersal. First is the fact that the acreage reserved will be fairly evenly arranged across the landscape. This is important because of the documentation of juvenile spotted owl dispersal occurring in random directions. An even distribution of dispersal habitat is important, and this was one factor which lead to the development of the 50-11-40 rule. The second important feature is that the acreage reserved will have the potential both in the short term and in the long term to provide higher quality habitat than "11-40" conditions. The Riparian Reserves will have more complex forest structure and more dead and down, which will provide better roosting and foraging conditions than a strictly 11 inch dbh and 40 percent canopy closure stand would provide. This will increase its effectiveness in providing for owl survival during dispersal.[122]

David Wiens conducted intensive research on spotted owls in the Oregon Coast Range west of Eugene and found that:

Spotted owls and barred owls in my study selected foraging sites that were closer to streams than random locations, and the relative probability of selection decreased linearly with increasing distance to a stream for both species … . In my study area, small low-order streams were common in lower elevation riparian-hardwood zones and steep, narrow ravines in patches of mature and old conifer trees. Strong selection for habitats near riparian zones has at least 3 explanations. First, cool microclimates associated with stream drainages may be favorable for thermoregulatory purposes during hot, dry summers (Forsman 1976, Barrows 1981). Second, and perhaps more importantly, productive vegetation conditions near streams are likely to support a rich diversity of prey used by both owl species, including woodrats (Carey et al. 1999, Anthony et al. 2003), flying squirrels (Meyer et al. 2005, Wilson 2008), deer mice, and shrews (Verts and Carroway 1998). … A third reason that riparian areas were selected may be due to their complex canopy structures that resulted from past fires that burned less intensively along stream corridors than in upslope areas (Reeves et al. 1989, Kauffman et al. 2001). Such structures may provide good perching opportunities for hunting terrestrial or arboreal prey. … [123]

The 1993 SAT Report, which provided the genesis of the ACS, also offered evidence that riparian areas serve as source areas for small mammals which may serve as a prey base for spotted owls and other predators, stating:

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[122] 1994 FSEIS, Appendix G – Part 3 – Addendum to Biological Assessment. pp G-23 – G-24.

[123] Wiens, J. David. 2012. Competitive Interactions and Resource Partitioning Between Northern Spotted Owls and Barred Owls in Western Oregon. PhD dissertation. OSU. http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/28475/WiensJohnD2012.pdf

Many mammal populations are also dependent on riparian areas. Doyle (1986 and 1990) found that riparian areas in old-growth forests in the Cascades of Oregon were source areas for upland small mammal populations. Abundance of small mammals in coastal forests of Oregon were greatest within 300 feet of the stream, even though individuals were found up to 600 feet away (Gomez 1992). Chapter 5 of this document and USDI (1992) identify several mammal species that use or are dependent on riparian zones. Riparian corridors may also be important as dispersal, travel, and migratory routes for mammals (Gregory et al. 1991).[124]

X. RIPARIAN RESERVES HELP REDUCE COMPETITION BETWEEN SPOTTED OWLS AND BARRED OWLS.

Barred owls, native to eastern North American, have moved west and invaded the entire range of the northern spotted owl. When the NWFP was adopted in 1994, the barred owl was barely mentioned in the analysis. It was assumed that all suitable spotted owl habitat would be available to spotted owls and contribute to their conservation and recovery. Now barred owls occupy and defend tens of thousands (if not hundreds of thousands) of acres of suitable owl habitat that was assumed to be available for the recovery of the spotted owl. Barred owls and spotted owls use similar habitat, and there is significant dietary overlap between the two owls, though barred owls appear to be more generalists in both habitat and food sources.

The barred owl population appears to be growing, and there is no evidence that its population growth is slowing. To mitigate for this, suitable owl habitat needs to be conserved now more than ever. Protecting existing habitat in riparian reserves (and growing more habitat inside and outside reserves) helps increase the chances that spotted owls and barred owl can co-exist. Reducing stream buffers and increasing logging will just increase adverse competitive pressures and magnify the existential perils faced by the spotted owl.

There are two approaches being considered to address the new and significant threat posed by the barred owl: (1) grow more habitat, and (2) kill barred owls. These are not mutually exclusive. The first approach is to protect and grow more suitable owl habitat based on a well-known axiom of the "species-area relationship" from island biogeography which holds that as habitat area increases, the number of cohabiting species also increases.[125] Simply put, spotted owls are more likely to *co-exist* with barred owls if there is more suitable habitat, while local or regional *extirpation* is more likely if there is less suitable habitat available. The existing riparian reserves help protect and restore more suitable habitat and increase the chances of co-existence. Reeves et al. proposal for more logging in riparian reserves will mean reduced area of suitable habitat and greater likelihood of competitive exclusion.

Corroborating these ecological principles, Dr. David Wiens recent telemetry work shows that barred owls have a survival advantage relative to spotted owls in fragmented landscapes.

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[124] 1993 SAT Report, Chapter 5, pp 461-462.

[125] Oscar E. Gaggiotti and Ilkka Hanski. 2004. Chapter 14 - Mechanisms of Population Extinction. *In* Ecology, Genetics, and Evolution of Metapopulations. Elsevier. 2004. http://web.archive.org/web/20070612211945/http://www.eeb.cornell.edu/sdv2/Readings/Gaggiotti&Hanski.pdf. See also Martina Carrete, José A. Sánchez-Zapata, José F. Calvo and Russell Lande. Demography and habitat availability in territorial occupancy of two competing species. OIKOS 108: 125-136, 2005 http://www.ebd.csic.es/carnivoros/personal/carrete/martina/recursos/13.%20carrete%20et%20al%20%282005%29%20oikos%20108-125.pdf.

However, that survival advantage diminishes in landscapes with a higher proportion of older forest (as show in the figure below).[126]

This provides strong support for the continued conservation of mature & old-growth forest inside and outside riparian reserves because spotted owls are able to compete nearly equally with barred owls in landscapes with a high proportion of old forest. According to Wiens:

> *Survival of both species was positively associated with an increasing proportion of old (>120 yrs old) conifer forest within the home range, which suggested that availability of old forest was a potential limiting factor in the competitive relationship between the 2 species. When viewed collectively, my results support the hypothesis that interference competition with a high density of barred owls for territorial space can act to constrain the availability of critical resources required for successful recruitment and reproduction of spotted owls.*[127]

To address the need for additional suitable habitat and to reduce the adverse competitive interactions between spotted owls and barred owls, the FWS adopted Recovery Action 32 that recommends conservation of a *subset* of high quality suitable owl habitat in all federal land allocations. This is a step toward mitigating the effects of the barred owl, but we are not ware of any analysis showing that protecting just a subset of the highest quality habitat is adequate mitigation for all the suitable habitat occupied and defended by barred owls. An impressive groups of spotted owl experts are already calling for conservation of a more inclusive subset of high quality owl habitat.[128]

Even if the highest quality owl habitat in the matrix is likely to be protected under Recovery Actions 10 and 32, riparian reserves still serve an important role in owl conservation. Reeves et al.'s suggestion otherwise is unsupported for several reasons. First, FWS made the recommendation for conservation of high quality habitat knowing that riparian reserves were important for spotted owls and riparian reserves were already protected. Spotted owl conservation likely requires conservation of *both* high quality owl habitat <u>and</u> riparian reserves, not one or the other. Second, riparian reserves are disproportionately important to owl conservation in general, and barred owl mitigation in particular, as described below. Protection

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[126] Wiens, J. David. 2012. Competitive Interactions and Resource Partitioning Between Northern Spotted Owls and Barred Owls in Western Oregon. PhD dissertation. OSU. http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/28475/WiensJohnD2012.pdf. Wiens, D. 2012. Presentation to The Wildlife Society. http://tws.sclivelearningcenter.com/index.aspx?PID=6893&SID=163551 (at 1:12).

[127] Id.

[128] Eric D. Forsman, Robert G. Anthony, Katie M. Dugger, Elizabeth M. Glenn, Alan B. Franklin, Gary C. White, Carl J. Schwarz, Kenneth P. Burnham, David R. Anderson, James D. Nichols, James E. Hines, Joseph B. Lint, Raymond J. Davis, Steven H. Ackers, Lawrence S. Andrews, Brian L. Biswell, Peter C. Carlson, Lowell V. Diller, Scott A. Gremel, Dale R. Herter, J. Mark Higley, Robert B. Horn, Janice A. Reid, Jeremy Rockweit, Jim Schaberl, Thomas J. Snetsinger, and Stan G. Sovern. "Population Demography of Northern Spotted Owls." DRAFT COPY 17 December 2010. This draft manuscript is in press at the University of California Press with a projected publication date of July 2011. It will be No. 40 in Studies In Avian Biology, which is published by the Cooper Ornithological Society. http://www.reo.gov/monitoring/reports/nso/FORSMANetal_draft_17_Dec_2010.pdf

of high quality owl habitat outside of riparian reserves is not a replacement for conservation of riparian reserves.

David Wiens' recent PhD dissertation based on field research in the Oregon Coast Range provides strong evidence that riparian reserves are disproportionately valuable for reducing competition between spotted owls and barred owls.

> *Spotted owls' habitat selection shows a preference for riparian hardwoods (more than 4x greater than the non-forest reference), only slightly less than the owls' preference for old conifer forest (>5x). Furthermore, there is evidence that riparian forests may provide hope as an area where resource partitioning and niche segregation exists between the two owl species. That is, the diverse mix of food sources and habitat structures in riparian reserves appears to meet important needs of both species with less direct competition for resources. Finally, Wiens' telemetry work provides evidence that when spotted owls venture close to barred owls, their selection for riparian forests intensifies.*
>
> *Under the base [resource selection function] RSF for spotted owls, old conifer was >5 times as likely to be selected for foraging as the nonforest reference category (selection ratio [exp(ˆ)] = 5.3, 95% CI = 4.4–6.4), followed by riparian hardwood (4.3, 95% CI = 3.5–5.4), mature conifer (3.4, 95% CI = 2.8–4.1), and young conifer forest (1.9, 95% CI = 1.6–2.4). … As proximity to a barred owl's core-use area increased, a spotted owl's affinity for old, mature, and young conifer forest types was gradually replaced by selection for riparian hardwood forest (Fig. 3.7). … [S]potted owls spent a disproportionate amount of time foraging in steep ravines within patches of old conifer forest. Spotted owls in my study also showed strong selection for riparian-hardwood forest along low-order streams. … My results also parallel those of Glenn et al. (2004), who reported that resource selection by spotted owls in younger forests of western Oregon was associated with hardwood (broadleaf) trees and riparian areas. … Spotted owls and barred owls in my study selected foraging sites that were closer to streams than random locations, and the relative probability of selection decreased linearly with increasing distance to a stream for both species. … The best model of resource selection indicated that spotted owls responded to an increased likelihood of encountering core-use areas of barred owls by decreasing the time spent in mature and old forest and intensifying use of riparian-hardwood forests. Additionally, I found that when spotted owls did enter a core-use area of barred owls they were located more frequently within riparian-hardwood forest than other forest types. … Data on habitat selection and dietary composition suggested that riparian hardwood forests may be an important aspect of resource partitioning between the Species … My results emphasize the value of older conifer forests, large hardwood trees, and moist bottomland riparian areas to resource partitioning between spotted owls and barred owls in the central Oregon Coast Ranges. … My finding that older riparian-hardwood forests played an important role in niche segregation between the 2 species emphasizes the need to consider these forest*

conditions within a management context, as these forests are likely to promote a wide diversity of prey for both species …"[129]

XI. RIPARIAN RESERVES ARE IMPORTANT FOR MARBLED MURRELETS

Marbled murrelets are a threatened seabird that nest on large mossy limbs of mature and old-growth trees located within about 50 miles of the coast. Like spotted owls, marbled murrelets also depend disproportionately on lower slopes and riparian forests. FWS' 1997 Recovery Plan for the Marbled murrelet says "With respect to slope, eighty percent of nests in the Pacific Northwest were located on the lower one-third or middle one-third of the slope."[130] Hamer and Nelson (1995) show that the mean distance to streams from marbled murrelet nests in the Pacific Northwest is 159 meters.[131]

In California, Baker et al. (2006) found that marbled murrelet nest sites "were located closer to streams, had a greater basal area of trees >120 cm dbh, and were located lower on slopes than random sites based on analysis of variance models." Baker (2006) states:

> *We found that nest sites were much closer to streams than would be expected based on randomly available sites within old-growth forests. Nest sites may have been located near streams because these sites afforded murrelets better access from at-sea flyways. Studies have found proximity to streams or other openings to be important for murrelet nesting in other regions as well (Hamer and Nelson 1995, Meyer et al. 2004, Zharikov et al. 2006).*[132]

In British Columbia Burger & Chatwin (2002) found that "[f]orests bordering major stream channels provided high quality nest habitat for murrelets, with large trees, high epiphyte cover and many potential nest platforms. Detections of murrelets were also highest along stream beds …."[133]

Increased clearcutting within riparian reserves is in direct conflict with FWS' 1997 Recovery Plan for the Marbled Murrelet which recommends that mature forests within "secured areas" (such as riparian reserves) be protected so they can serve as future nesting habitat for the marbled

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[129] Wiens, J. David. 2012. Competitive Interactions and Resource Partitioning Between Northern Spotted Owls and Barred Owls in Western Oregon. PhD dissertation. OSU. http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/28475/WiensJohnD2012.pdf

[130] USFWS 1997. Marbled Murrelet Recovery Plan, p 32. http://ecos.fws.gov/docs/recovery_plans/1997/970924.pdf

[131] Thomas E. Hamer & S. Kim Nelson. 1995. Chapter 6: Characteristics of Marbled Murrelet Nest Trees and Nesting Stands. USDA Forest Service Gen. Tech. Rep. PSW-152. 1995. http://www.fs.fed.us/psw/publications/documents/gtr-152/chap6.pdf.

[132] Baker, L.M., Peery, M.Z., Burkett, E.E., Singer, S.W., Suddjian, D.L., And S.R. Beissinger. 2006. Nesting Habitat Characteristics of the Marbled Murrelet in Central California Redwood Forests. The Journal of Wildlife Management (70(4) 939-946. https://www.cnr.berkeley.edu/beislab/BeissingerLab/Steve'%20Publications/Baker_et_al_2006.pdf

[133] Burger, A.E., and T.A. Chatwin. 2002. Multi-scale studies of populations, distribution and habitat associations of Marbled Murrelets in Clayoquot Sound, British Columbia. Ministry of Water, Land and Air Protection Victoria, BC. March 2002. http://env.gov.bc.ca/wld/documents/techpub/mamuwebs.pdf

murrelet.[134] This recovery plan recommendation is not about *existing* high quality habitat, but about mature forests that can serve as future recruitment habitat. These 80-120 year-old maturing forests are precisely those targeted for logging in many recent policy proposals, such as the BLM Secretarial Pilots,[135] and the federal legislation proposed by Representatives DeFazio, Walden, and Schrader.[136]

XII. MAINTAIN BUFFER PROTECTIONS FOR WILDLIFE THAT LIVE NEAR STREAMS

Reeves et al. claim that new information shows that narrow buffers will adequately protect the microclimate needed to meet ACS objectives, stating:

A number of research efforts have examined the effects of forest management on microclimate in riparian areas since the ACS and the associated ecological function curves were originally formulated. … it has been suggested that a one tree-height buffer on fish streams should reduce potential impacts of harvesting in areas on the edge of the buffer on riparian microclimate and water temperature (Brosofske et al. 1997, Moore et al. 2005) (Figure 9b).

… With buffers of 49 ft or greater width, daily maximum air temperature above stream center was less than 1°C greater, and daily minimum relative humidity was less than 5 percent lower than for unthinned stands.[137]

Reeves et al. err by focusing on conditions at the *center of the stream* instead of conditions *throughout the buffers*. This is one of the most significant errors in Reeves et al.'s analysis. Riparian reserves are intended to protect numerous species that do not live *in* the stream, rather, they live in the stream-side forest extending hundreds of feet from the stream, but they still require a relatively cool-moist microclimate, complex forest structure, and abundant wood, and these species will be adversely affected by logging adjacent to narrower riparian reserves. This is part of the reason the NWFP adopted a *buffer-on-the-buffer*, that is, an outer buffer of shade and cover to maintain suitable microclimate conditions for wildlife that live in the inner buffer.

The EIS supporting the NWFP states:

> *Riparian areas are widely considered to be important wildlife habitat. Cool air temperatures due to the presence of cool and turbulent surface waters, typically dense vegetative canopy cover, and their location in the lowest portions of watersheds combine to maintain a distinct microclimate along stream channels and in the adjacent riparian*

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[134] USFWS 1997. Recovery Plan for the Marbled Murrelet. http://ecos.fws.gov/docs/recovery_plans/1997/970924.pdf

[135] Oregon Wild 2011. Scoping Comments on the Wagon Road and Roseburg BLM Secretarial Pilots. http://www.oregonwild.org/oregon_forests/forest-management/in-your-forests/files-for-eyes-on-the-agencies/Wagon_Road_and_Roseburg_Pilots_scoping_6-29-2011_BLM.pdf

[136] Oregon Wild 212. Problems and Pitfalls Associated with the Proposed "O&C Trust, Conservation, and Jobs Act" Version 1.3, June 5, 2012. http://www.oregonwild.org/oregon_forests/old_growth_protection/westside-forests/western-oregon-s-patchwork-public-lands/O-C_Trust_Act_White_Paper_FINAL_6-5-2012_w_DeFazio_response.pdf

[137] Reeves et al. pp 25, 26.

> *area. Maintaining the integrity of the vegetation in these areas is particularly important for riparian-dependent species of amphibians, arthropods, mammals, birds, and bats. Many species of amphibians, birds, and mammals use late-successional and old-growth riparian areas, including associated streams, ponds and wetlands, for reproducing, foraging, roosting, and as travel corridors (Table 3&4-11). The many wildlife species, along with lichens, mosses, vascular plants and mollusks, listed in Table 3&4-11 depend on diverse and complex riparian and aquatic habitats.*
>
> *The principal factor influencing the outcomes for amphibians related to the width of Riparian Reserves.*[138]

The NWFP anticipated regeneration harvest (modified clearcutting) on lands in the matrix outside of riparian reserves. The ongoing threat of regeneration logging is highlighted by recent efforts to increase regeneration harvest. The NWFP recognized that forest openings adjacent to a riparian buffer would create "edge effects" that change the microclimate in the buffer and reduce the recruitment of wood to the buffer. The NWFP addressed this problem by adopting a *buffer-on-the-buffer* so that at least the inner portion of the riparian reserves would have near-natural microclimate and wood recruitment processes.

Reducing the width of riparian reserves and increasing logging adjacent to the narrower buffer will expose sensitive wildlife such as amphibians, lichen, mollusks, red tree vole, and spotted owls, to unfavorable microclimate conditions and reduced levels of dead wood recruitment. This undermines the viability of numerous species that were specifically intended to benefit from the absence of edge effects in the inner buffer.

Reeves et al. recognize a "primary purpose for the extension of the boundary of the Riparian Reserve from one site-potential tree height to two on fish-bearing streams was to protect and enhance the microclimate of the riparian ecosystem within the first tree height …"[139] but they dismiss concerns about microclimate throughout the inner buffer by shifting the focus to microclimate conditions at the *stream center,* or at most 20 meters from the stream. This ignores the fact that many riparian species that were intended to benefit from the riparian reserves use habitat much further from the stream. The outer buffers were established in part to protect microclimate within an inner buffer extending up to 1 site-potential tree height from the stream, which notably protects only a portion of the habitat used by riparian associated species.

Reeves et al. rely on Olson et al. (2007)[140] to support the idea that narrower buffers may be adequate, stating:

> *Olson et al. (2007) reviewed studies of the effects of timber harvest activities, inside and outside of riparian buffers, on microclimatic conditions and amphibians. They concluded that relatively narrow buffers (compared to those of the Northwest Forest Plan) can be effective in maintaining microclimates 33-66 ft (10-20 m) from the stream center. Potential concerns about microclimate that could arise from reducing the size of riparian*

[138] 1994 FSEIS pp 3&4 - 61, 3&4 - 81.

[139] Reeves et al. p 24.

[140] Olson, D.H., Anderson, P.D., Frissell, C.A., Welsh, H.H., Jr., and D.F. Bradford. 2007. Biodiversity management approaches for stream–riparian areas: Perspectives for Pacific Northwest headwater forests, microclimates, and amphibians. Forest Ecology and Management 246 (2007) 81–107.

buffers can be reduced further by minimizing clearcutting along the outer boundary (Moore et al. 2005, Anderson et al. 2007, Kluber et al. 2008). As mentioned previously, clearcutting is not part of the silvicultural strategy under ecological forestry—strategically placing aggregated retention patches during harvest should help ameliorate concerns here.[141]

Reeves et al. make several errors here:

- First, Olson et al. (2007) actually refer to buffers that maintain conditions "at stream center" and the microclimate that "*may* extend 10-20 meters." Reeves tries to make an uncertain statement seem more certain.
- Second, Reeves et al. ignore a very important caveat in Olson et al. (2007) which actually expresses a specific concern about the microclimate effects upslope beyond 10-20 meters from the stream center. Olson et al. state: "However, we have few data for predicting the countervailing spatial extent of upslope harvest influences on microclimates within buffers."[142]

- Third, riparian reserves are intended to protect many species that rely on moderated microclimate conditions extending more than 10-20 meters from the stream. The reduced riparian buffers advanced by Reeves et al. might maintain the microclimate at the *stream center,* or at most 20 meters from the stream, but the NWFP sought to protect the microclimate out to a distance equal to the height of a *site-potential tree*, often 60 meters.[143]
- Fourth, the variable retention harvest (VRH) advocated by Reeves et al. and Franklin & Johnson (2012)[144] is in fact a form of clearcutting (with small reserves). At the site scale, VRH likely creates "edge effects" that are indistinguishable from clearcutting.

A key issue is whether narrow buffers are adequate to protect wildlife, such as amphibians, that may be associated with streams, but also venture away from the water. The NWFP adopted wider buffers in part because many amphibians live up to 900 feet from water. The 1993 SAT

Report explained:

The abundance of amphibians in Pacific Northwest forest and riparian zones is influenced by habitat conditions in riparian areas (Bury et al. 1991, Gomez 1992). Amphibians populations are generally found less than 900 feet from water sources (Nussbaum et al. 1983). Gomez (1992) found that rough-skinned newts, tailed frogs, and western redbacked salamanders were the most abundant species of herptafauna in upland and riparian areas along the Oregon Coast Range. These organisms were found up to 600 feet from streams but were most abundant within 300 feet. Many species have

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[141] Reeves et al. p 27.

[142] Olson et al. (2007) at p 98.

[143] 1993 SAT Report, Chapter 5, pp 461-462. See also Olson, D.H., Anderson, P.D., Frissell, C.A., Welsh, H.H., Jr., and D.F. Bradford. 2007. Biodiversity management approaches for stream–riparian areas: Perspectives for Pacific Northwest headwater forests, microclimates, and amphibians. Forest Ecology and Management 246 (2007) 81–107.

[144] Franklin, J. F. And K. N. Johnson. 2012. A Restoration framework for federal forests in the Pacific Northwest. J. For. 110(8): 429-439.

Table 3
Maximum distances away streams into upland forests at which Pacific Northwest amphibians have been found

Species	Distance (m)	Comments	Reference
RHKE/RHVA, ANFE, PLDU, PLVE, ENES, TAGR [ASTR, DITE]	30–40 m [20–30 m]	Time-constrained searches in quadrats 0–10, 10–20, 20–30, and 30–40 m from streams; 5–100+ year old conifer stands, 0 to 40+ m buffers, 1st–3rd order streams, Oregon; DITE, RHKE/RHVA, PLDU and ASTR found primarily at 0–10 m from stream, PLVE found primarily at 0–20 m from stream	Vesely (1996)
AMGR, TAGR, ENES, PLVE	55	Pitfall traps and cover boards spanning 5, 30 and 55 m from stream; 70-year-old conifer stands; British Columbia; more AMGR were captured at 30 m from stream than 5 and 55 m from stream; AMGR and TAGR moved more along streams than up or down slopes	Maxcy and Richardson (2000)
ASTR	65	Pitfall traps at 5, 25, 45, 65 m from stream; <5 and 80+ year old conifer stands; non-fish-bearing streams <3 m wide; British Columbia; no difference in capture frequency across distance from stream	Matsuda and Richardson (2005)
DITE	66, 22, 19	Radiotracking; forested, clearcut with buffer (20–30 m), and clearcut conifer stands; small streams 1–6 m wide; British Columbia; maximum distance from stream was 66 m in intact forested habitat, 22 m in clearcut, 19 m in buffered clearcut	Johnston and Frid (2002)
ASTR	100	Pitfall traps 5, 25, 50 and100 m from stream; 5- and 250-year-old conifer stands; headwater streams 1–3 m wide and fishless; British Columbia; mean distances from stream reported (adults: 28 m; juveniles: 17 m; males 23 m; females 17 m); frogs captured farther from streams in old growth than in clearcuts	Wahbe et al. (2004)
DITE, TAGR, PLVE, ENES, AMGR, ASTR, RAAU	~135	Pitfall traps, 10 × 10 grid across 135 m × 135 m; 40–50-year-old red alder stands; 2nd order streams, Oregon	McComb et al. (1993a)
ASTR, DITE, BAWR, PLDU, PLVE, RAAU, RHsp, TAGR	200	Pitfall traps at stream and 200 m upslope, 2 trans-riparian pitfall arrays with traps every 25 m; 5–200+ year old conifer stands, deciduous stands; 3rd–4th order streams, Oregon	Gomez and Anthony (1996)
DITE, TAGR, PLDU, PLVE, ENES, ANFE, ASTR, RAAU	400	Pitfall traps <10 and 400 m from streams, 2 trans-riparian arrays with traps every 50 m; 12–140 year conifer stands; 2nd–3rd order streams, Oregon	McComb et al. (1993b)

Species acronyms follow Table 2.

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> *specific tolerance thresholds (e.g., temperature and moisture) microhabitat requirements (e.g., headwater seeps or talus slopes). Many also require downed wood, but may differ in types of wood (e.g., snag, bark on a log, or bark on the ground) or particular decay class of wood (refer to Chapter 5 more specific requirements of specific species). Alteration of microhabitat climate may influence the suitability of riparian conditions for riparian-dependent organisms.*[145]

Narrow buffers that maintain microclimate at the stream center are unlikely to protect temperature-sensitive species that live hundreds of feet from streams.

Reeves et al. offer an incomplete and misleading account of amphibian habitat use, saying "*Recent research by D. Olson of the USFS Pacific Northwest Research Station, found that most amphibians moved along the stream within 45 ft (13.6 m) of the channel.*"[146] In reality there is abundant evidence from Olson and others showing that amphibian use habitat much farther than 45 feet from streams.

The results presented in Olson et al. (2007) do not justify any systematic reduction of stream buffers on federal lands. In fact, their findings strongly reaffirm the importance of the existing buffers, or even an expansion of buffers to promote connectivity between watersheds.

Recent recognition that **stream-breeding amphibians can disperse hundreds of meters into uplands** implies that connectivity among neighboring drainages may be important to their population structures and dynamics.

> *Microclimate studies substantiate a ''stream effect'' of cool moist conditions permeating upslope into warmer, drier forests. … Riparian areas may function as habitat for resident*

[145] 1993 SAT Report, Chapter 5, p 461.

[146] Reeves et al. p 28.

> *species and as corridors for transient species … [Amphibians] may be abundant upslope, and loss or degradation of upland forest habitat could disrupt population dynamics or affect persistence. … Questions persist about whether narrow buffers provide sufficient moderation of microclimate, habitat diversity, and transfers of energy and matter to support non-fish aquatic and riparian biota, particularly sensitive frogs and salamanders, whose abundance is often greatest upstream of fish-bearing waters and whose adult stages sometimes forage hundreds of meters upland from the immediate stream margin. … Many studies reveal pronounced decreases in the ability of amphibians to disperse as human alteration of landscapes increases, and survival of juveniles in such fragmented landscapes is often substantially reduced (see Cushman, 2006)*. These findings imply dramatic effects on immigration because dispersal in amphibians is thought to be primarily effected by juveniles rather than adults (e.g., Funk et al., 2005; Cushman, 2006). … [*L]ess intensive thinning harvests that retain a substantial proportion of the pre-harvest stand density and canopy cover have less impact on stream and riparian microclimates than do more intensive regeneration harvests. … Relatively narrow buffers … can be effective in maintaining stream center microclimate conditions and therefore the steep near-stream microclimate gradients that may extend 10–20 m from streams in intact stands (Anderson et al., 2007; see above microclimate discussion). However, we have few data for predicting the countervailing spatial extent of upslope harvest influences on microclimates within buffers. In general, our understanding of trans-buffer microclimate gradients must be improved by sampling at a higher spatial resolution with spacing among sensors sufficient to quantify non-linear trends across ecotones associated with both stream-buffer and buffer-upslope edges.*[147]

Evidence continues to show adverse effects on microclimate from logging near streams.

Reeves et al. recognize that "large wood is an important element of stream and river ecosystems"[148], however, Reeves et al. mislead when they assert that "[a]llowing ecological forestry in the outer half of the riparian buffers along non-fish-bearing streams is also unlikely to affect wood recruitment."[149] Reeves et al. fail to recognize that recruitment of wood is not just important for streams but also for terrestrial/upland ecosystems that were also intended to benefit from riparian reserves. Reeves et al.'s focus on clearcutting adjacent to narrow buffers and tree tipping into streams fails to recognize likely adverse affects on wood recruitment to terrestrial portions of the riparian reserves.

Many riparian species rely on unimpeded successional processes that accumulate abundant dead wood *near* streams, but not necessarily *in* streams. Logging within and adjacent to riparian reserves will capture mortality, truncate wood recruitment processes, and deprive wildlife of the abundant dead wood they need. Likewise, reducing stream buffers and allowing clearcut edges directly abutting inner riparian buffers will eliminate one source of down wood that would

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[147] Olson, D.H., Anderson, P.D., Frissell, C.A., Welsh, H.H., Jr., and D.F. Bradford. 2007. Biodiversity management approaches for stream–riparian areas: Perspectives for Pacific Northwest headwater forests, microclimates, and amphibians. Forest Ecology and Management 246 (2007) 81–107 (emphasis added).

[148] Reeves et al. p 14.

[149] Reeves et al. p 28.

otherwise fall into the buffer. Protecting an outer *buffer-on-the-buffer* helps maintain natural levels of wood recruitment at least within the inner buffer, though the outer buffer itself would still suffer from depleted dead wood levels due to edge effects.

The NWFP explicitly recognized the problem of reduced wood recruitment in narrow riparian buffers adjacent to logged sites. The 1993 FEMAT Report, an appendix to the EIS supporting the NWFP explained:

> *Large wood on the ground is an important habitat component in riparian areas. Maintaining the integrity of the vegetation is particularly important for riparian-dependent organisms including amphibians, arthropods, mammals, birds, and bats (see appendix V-E for greater detail).*

XIII. RIPARIAN PROCESSES AS A FUNCTION OF DISTANCE FROM STREAM CHANNELS - LARGE WOOD DELIVERY TO RIPARIAN areas

Large downed logs are recruited into riparian areas from the riparian forests and from upslope forests. Similar to large wood delivery from riparian areas into streams, the effectiveness of upland forests to deliver large wood to the riparian area is naturally expected to decline at distances greater than approximately one tree height from the stand edge (Thomas et al.., 1993). Timber harvest adjacent to the riparian area creates an edge that eliminates one source of large wood. Thus, long-term levels of large wood may diminish in the riparian zone.[150]

Additionally, any proposal to protect buffers narrower than one site-potential tree will trigger concerns about wood recruitment to streams, and (depending on slope and aspect) could also degrade the riparian microclimate. Wood is recruited from the full site-potential tree buffer, plus unstable areas. Logging in those areas will capture mortality and reduce in-stream wood recruitment. Also, riparian reserves serve to mitigate for logging outside the buffers. Retaining untreated "skips" (such as riparian reserves) helps mitigate for the loss of snags and dead wood in logged uplands.[151]

OREGON DRINKING WATER PROTECTION PROGRAMS

The Oregon Department of Environmental Quality has spatially mapped drinking water surface source areas for Oregon.[152] We are specifically requesting that BLM analyze a higher protection standard for BLM lands within these drinking water source areas. For example, we recommend that Cave Junction and the Kerby Water District receive a higher degree of watershed protections and higher priority for restoration. A Cave Junction "Drinking Water Special Management Unit" would include the entire East Fork Illinois River watershed upstream of the highway 199 bridge where the City of Cave Junction water intake is located. The federal government invested more than $10 million to construct the City of Cave Junction water and sewage treatment systems in

[150] 1993 FEMAT Report, pp V-25 - V-26.

[151] Heiken, D. 2013. Riparian Reserves Provide Both Aquatic & Terrestrial Benefits - A Critical Review of Reeves, Pickard & Johnson (2013). https://dl.dropboxusercontent.com/u/47741/Heiken%202013.%20Review%20of%20Reeves%20et%20al%20Riparian%20Proposal.pdf

[152] http://www.deq.state.or.us/wq/dwp/swcountymap.html

the 1990s. That investment and the City water rights should be a high priority for protection. In addition the City of Cave Junction has complied with the US Environmental Protection Agency source water protection planning requirements. The City of Cave Junction holds two water rights to divert water from the East Fork Illinois River and serve domestic water to many businesses and 2,350 citizens who live in Cave Junction and Kerby. The Oregon DEQ has mapped the drinking water source area for Kerby and Cave Junction. BLM needs to make spatially explicit analysis of this and all Oregon DEQ drinking water source area maps.

Improved drinking water protection would entail the retention of NW Forest Plan Riparian Reserves with added emphasis on actions to filter out excessive nutrients caused by logging (e.g. phosphorus, nitrogen), filter out roadside use of herbicides, reducing pollutants from road runoff by decommissioning roads or disconnecting roads from stream channels., eliminating rampant off- road- vehicle use that often travel in and across stream channels, eliminating herbicides for roadside weed control, eliminating grazing and horse trails, reducing public road access to stream channels where motorized user dump trash and toxic materials (e.g. Logan Cut), halting mineral withdrawal to prevent the creation of additional toxic mine waste (e.g. Queen of Bronze mine in Takilma Area) and increasing law enforcement to prevent illegal marijuana gardens that use toxic materials (rodenticides) and excessive fertilizers.

We will not be satisfied with the all too often repeated rhetoric that "logging will meet all drinking water requirements." Management of BLM lands and streams must be designed to buffer the effect of ongoing private land pollution and not contribute towards cumulative non-point water pollution effects.

RECOVERY ACTIONS FOR SALMON AND OTHER FISHES

The Southern Oregon Northern California Coastal Coho Cecovery Plan provides recovery actions relevant for analysis in this DEIS. Modeling analysis must delineate critical coho habitat and the network of stream channels upstream of critical habitat that would affect critical habitat.

Circumstances have changed since the ACS was adopted in 1995 BLM RMPS. Coho salmon have been listed and critical habitat identified on BLM lands. The NMFS has deemed the existing ACS (no action alt.) as adequate to maintain and recover listed coho salmon. A recovery plan is final for Southern Oregon Northern California Coastal coho salmon, and a final plan is expected soon.

A huge body of monitoring and research demonstrate that the current ACS has been effective at protecting and improving both water quality and habitat for coho salmon. Any analysis for reduced riparian reserves need to factor in climate change that is likely to be first evident with exacerbated hot dry summers in the Medford District.[153] We provide the following recovery actions and analysis for coho salmon and other fishes that could become biologically threatened and need to be listed and protected.

[153] See Climate Change Report for Rogue Basin http://www.geosinstitute.org/climatewiseservices/completed-climatewise-projects.html

- The National Marine Fisheries Service has identified critical habitat for Oregon Coastal Coho salmon and Southern Oregon Northern California Coastal coho salmon. Spatially explicit identification of these critical habitats need to be integrated into analysis with a higher Riparian Reserve protection standard than non-critical habitat or unoccupied critical habitat. Analysis would need a watershed approach since all stream channels upstream of occupied critical habitat would also need a higher protection standard (e.g. Riparian Reserve land allocations, protections from logging, habitat enhancement, passage improvement, and sediment reductions from non-point sources such as roads, gullies, landslides, OHV use).
- Timber yield projections (p. 58) must be reduced due to landslide prone lands that are unsuitable for harvest due to sediment pollution risk to coho salmon or are uneconomical due to access costs and risks. This is especially relevant for the Medford District because of low productivity on steep lands and need for relatively high road miles to access the low volumes of timber (See Table 28 p. 127). The Medford District needs over a mile of new road for every 1.5 million board ft thinned.
- We recommend that one or more alternatives analyze retaining the existing ACS with more flexibility when implementing project level "buffers" within Riparian Reserve that contain occupied critical habitat of listed species such as coho salmon.
- Analysis of at least one action alternative must include the identification of "inner gorges" and "landslide prone areas" for inclusion within protective riparian reserves based on site-specific project analysis.
- Where feasible, large trees >20' dbh in the outer fish riparian reserve (150-300ft) would be cut or tipped and cabled yarded into the stream with logging equipment. The Medford District has been successful with this technique on Cheney Creek, a high quality coho stream in the Applegate River basin. Obviously, if these large trees in the existing fish riparian reserves (15-300ft) are logged (Alts A, B, C, D) they will never be available for enhancing fish habitat.
- Fire killed trees within Riparian Reserves would not be removed from the riparian reserve. Fire killed trees would be retained to provide shade and dead wood. Burned hazard trees in the riparian reserve would felled into the stream. These management techniques were successfully implemented with the Biscuit Fire decisions.
- Occupied critical stream habitat shall be withdrawn from mineral entry to expedite installation of wood/boulders, ensure retention of large wood placement and ensure protection of spawning gravel and riparian forests.
- Coho salmon migration barriers within project areas or along haul routes shall be removed through collaboration with other agencies, watershed councils, and private land owners.
- A list of coho barriers shall be developed with ODFW and the top barriers shall be removed each year beginning with the year after the ROD. The BLM shall enter into cooperative agreements (i.e. funding, technical expertise) to improve passage on private lands that affect BLM lands upstream.
- Pacific lamprey are declining on the west coast and have been petitioned for federal listing. The principal issue for them is passage of adults to spawning areas. Spatially explicit analysis is needed to identify priorities for retrofitting culverts to provide Pacific lamprey passage on larger streams.

- Sediment from roads within a project area shall be reduced through disconnecting the road runoff from the stream network, decommissioning roads, and preventing off road vehicle use.
- Illegal water withdrawals on coho or summer steelhead streams shall be investigated and returned to instream flow.
- Watersheds with coho spawning shall be reviewed for logging deferral due to cumulative impacts. For example, portions of the Evans Creek watershed on the Medford District were deferred from logging in the 1995 Medford RMP. Conditions remain severely degraded in portions of this watershed (West Fork Evans Creek) and the logging deferral needs to be reinstated.
- Identify a network of 5th or 6th field watersheds as key coho salmon/summer steelhead watersheds for priority restoration.
- Identify a network of 6th and 7th field coho salmon/summer steelhead spawning key watersheds for intensive sediment reduction. Roads would be storm proofed or decommissioned. Roads would be disconnected from the stream network. Grazing would be eliminated. Firman et al. 2012 found that coho salmon spawner abundance was correlated with lower road densities and lower grazing.
- Beaver dams create the highest quality coho salmon habitat. Existing and former beaver dams need to be identified and management directed to enhancing conditions for beaver and protecting beaver from persecution (Pollock et al. 2003).

1. The DEIS Does Not Provide Relevant Choices For The Decision Maker To Ameliorate Sediment Delivery To Critical Coho Habitat.

It is vital that the BLM prevent sediment delivery to coho critical habitat and identify one or more mandatory techniques that would substantially reduce chronic and episodic sediment delivery to streams. We recommend:

- Retain 2 tree height riparian reserves for occupied critical coho habitat. This would greatly reduce sediment from landslides and timber harvest, reduce road building adjacent coho critical habitat, and prioritize road removal/sediment abatement.
- Identify roads within 6th or 7th field coho spawning watersheds for sediment reduction by disconnecting the road from the stream network or decommissioning/obliterating roads.
- Prohibit OHV use in 5th field coho watersheds. Designate them as "closed" and prioritize law enforcement, physical barriers, signs, monitoring and outreach in these watersheds.
- Eliminate grazing along occupied coho critical habitat.
- Identify headwalls and unchanelled valleys as potential sediment delivery sources (i.e. landslide prone areas). Retain mature or older forests on these sites and prohibit road building across potentially unstable areas.
- Reduce or identify a relatively low ASQ for dry forests because due to low productivity it takes twice the number of road miles to obtain the same volume of timber as other districts.

2. Nutrient Loading

The BLM failed to address nutrient loading of streams due to logging. Modeling analysis with reduced (60 ft.) no cut buffers must disclose increased risk of nutrient loading of nitrogen and

phosphorus into streams that are released with logging activities. Many streams in the planning area exceed Oregon DEQ standards for nutrients.

Generally forest buffers of 100 ft or more are needed to retain mobilized nutrients. Adequate no cut buffers are particularly important in headwater streams because of their extensive linear network. There is no science to support narrower buffers in headwater channels subject to nutrient loading. Many streams in the planning area exceed DEQ standards for phosphorus (e.g. Sucker Creek on the Medford District). The issue is how best to keep nutrients retained in soils and not leached out to streams.

3. Medford District Riparian Reserves

Analysis is needed to address the special needs of streams and cold water fish in the Medford BLM District where the dry forest classification dominates. The Riparian Reserve analysis needs to reflect conditions (i.e., context as per NEPA) that warrant a high standard of protection to achieve desired outcomes.

- The Rogue Basin experiences naturally very high stream temperatures, low stream flows exacerbated by droughts, and frequent fires. These hostile factors for fish and water quality are best ameliorated in the long term with the existing Riparian Reserve widths.
- Climate change modeling indicates more heat and drought related stresses on Rogue River cold water salmonids, requiring the maximum protection (i.e. NW Forest plan ACS).
- The federally listed Southern Oregon/ Northern California Coastal Coho salmon Evolutionary Significant Unit in the Medford District is listed separately from the Oregon Coastal Coho ESU. This is important because the SONCC ESU Coho in the Medford District are at a much greater risk of extinction than the Oregon Coastal Coho ESU. Coho populations are much below desired levels and have been decreasing, resulting in the need for retaining a high standard for protection and restoration for at least the next ten years.
- Small cold water refuges created by groundwater make the 2 tree default riparian reserve advisable for occupied coho salmon and summer steelhead habitat.
- Retaining the existing Riparian Reserve standards for the Medford District would greatly simplify timber sale implementation across all forest designations. The Medford District has done a good job of implementing Riparian Reserve thinning and this would continue across all designations as determined by local conditions.
- The Medford District rarely needs to consult with National Marine Fisheries Service because the existing Riparian Reserve widths are known to be adequate to protect federally listed SONCC Coho salmon. Retaining the existing Riparian Reserve standards in the Medford District would ensure speedy timber sale implementation because no consultation with NMFS would be needed.

For the reasons stated above, we think it best for the “dry forest” Medford District to continue managing Riparian Reserves as they have in the past, which includes the judicious commercial thinning of second growth within the reserves based on extremely variable site specific

conditions that defy modeling. Bringing existing Riparian Reserve management forward into the DEIS as a preferred option would ensure a smooth and less controversial transition for changes with upland (dry) forest management (i.e. improved "certainty").

BUREAU SENSITIVE SPECIES AND SURVEY AND MANAGE

The BLM analysis relies upon the development of hypothetical future structurally complex older forests to offset the very real and **immediate** impacts associated with abandoning the Aquatic Conservation Strategy and the Survey and Manage program of the NWFP.

As indicated on page 683 of the DEIS, currently 28% of BLM forests are young stands that lack the wildlife habitat and hydrological values associated with older structurally complex stands. "Young forest habitat is the most prevalent type of habitat" actually present on BLM lands today. Page 684 of the DEIS goes on to acknowledge that when the private lands portion of the O&C checkerboard is considered, 45% of Western Oregon forests consist of young stands. Hence "the prevalence of young and stand establishment stands is greater in the decision area than average historical conditions."

Every BLM action alternative calls for an increase in clearcutting and plantation establishment in a landscape in which young stands already dominate the "timbershed."

Page 225 of the DEIS indicates that alternatives B and C would reduce the amount of structurally complex forests within one site potential tree of streams. *See also* Figure 3-52 and page 233.

Page 680 of the DEIS indicates that the BLM intends to rely upon projected increases in hypothetical habitat for Bureau Sensitive Species (BSS) and (former) Survey and Manage species rather than protecting the actual known sites where these species occur. Trading occupied actual habitat for hypothetical future habitat is arbitrary and capricious.

I. BLM HAS NOT PROVIDED A RATIONALE FOR ABANDONING SURVEY AND MANAGE MITIGATION.

The Northwest Forest Plan adopted survey and manage as mitigation for past and ongoing loss of habitat that are associated with old forests and adversely affected by logging and fragmentation. BLM appears to have adopted a very narrow purpose and need focused on recovery of ESA-listed species, to the exclusion of the NWFP goal of keeping wildlife off of the list. BLM must address the original purposes of the Northwest Forest Plan and must provide a compelling rationale for changing the core purposes of land management. BLM cannot avoid their duty to protect wildlife and avoid analyzing the effects of failing to protect wildlife.

BLM should not abandon core elements of the Northwest Forest Plan, including the survey and manage program, which courts have repeatedly said is important to meeting the goals of the Plan. One of the purposes of the Northwest Forest Plan was to restore a functional interconnected old growth ecosystem. Another purpose was to not only recover species currently listed under the Endangered Species Act, but also prevent new species from being listed. This involved an ecosystem approach to forest management.

Past management of BLM lands has caused severe fragmentation of habitat and substantial emissions of greenhouse gases. Fragmentation of habitat results in increased extinction risk for wildlife populations and these effects tend to be time-lagged. Global warming will compound these effects. It takes a long time to recover from this "extinction debt." BLM lands remain highly fragmented, and the atmosphere remains polluted with excessive greenhouse gases, so BLM has a duty to focus on species that may become endangered during the lag period, rather than just focus on the species that are currently listed under the Endangered Species Act. *See* Jens Kolk, Tobias Naaf. Herb layer extinction debt in highly fragmented temperate forests - Completely paid after 160 years?[154]

In the 1994 Northwest Forest Plan, protecting species diversity was considered an integral part of maintaining functional old growth forest ecosystems. To meet the underlying need for "*a healthy forest ecosystem with habitat that will support populations of native species (particularly those associated with late-successional and old-growth forests),*" the 1994 EIS considered various combinations of reserves and standards and guidelines that mitigate the effects of continued logging and other management activities.[155] In the framework of the 1994 FSEIS, the twin goals of viable populations and functional ecosystems are mutually reinforcing. "In many respects the test of providing a functional, interacting late-successional and old-growth forest ecosystem subsumes the test of viability for the system's component species and groups of organisms."[156] This is merely an expression of the well-recognized interdependence of species.

The structure and function of the historic landscape condition in this region was created by relatively high-productivity forests visited by infrequent large stand-replacing fires which created a landscape dominated by large blocks of old forest. This is the condition that more than 1,000 species evolved with, but this condition was highly fragmented and functionally destroyed by decades of industrial clearcutting. The NWFP sought to recreate something much closer to the conditions that species evolved with.

The authors of the Northwest Forest Plan recognized that establishing large reserves on a highly fragmented landscape is not enough to meet the goal of preventing new species listings. Until the historic pattern of large blocks of old forest can be restored, the survey and manage program is needed to avoid loss of rare and uncommon species during logging.

For decades prior to 1992, logging proceeded on federal forests in the Pacific Northwest without adequate consideration of the needs of species that are dependent upon late-successional and old-growth forest (LSOG). Logging plans were typically designed to disperse cutting units across the landscape in order to avoid acute effects in any one area, but the resulting habitat fragmentation caused widespread harm to virtually the entire forest ecosystem. In the 1993 FEMAT report and the 1994 FSEIS for federal forests within the range of the spotted owl, federal forest managers for the first time attempted to craft a plan that would maintain and restore a functional interconnected late-successional old-growth forest ecosystem that would provide for the needs of

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[154] *Biological Conservation* 182 (2015) 164-172 http://www.sciencedirect.com/science/article/pii/S0006320714004777; and Mark Urban. Accelerating extinction risk from climate change. SCIENCE 1 MAY 2015. https://www.sciencemag.org/content/348/6234/571.full.pdf

[155] 1994 FSEIS vol I p 1-4.

[156] FEMAT, p. II-36.

the spotted owl, marbled murrelet, Pacific salmon, and hundreds of other species associated with LSOG and aquatic ecosystems.

BLM's assertion that "*the distribution of structural stages in the decision area in 50 years would be within the range of the average historic conditions*" (DEIS p 680) is highly questionable. BLM needs to better explain why this conclusion differs from the NWFP. BLM also needs to consider the landscape perspective. Late successional forests are in such short supply on non-federal lands that BLM may need to provide greater than historic average levels of old forest on BLM lands in order to compensate for degraded conditions across the federal/non-federal landscape so that wildlife associated with old forests remain viable.

Conservation of BLM lands represents a rare opportunity to restore low elevation forests. Restoration of a functional interconnected old forest ecosystem, as intended by the NWFP, requires that forests are allowed to express their full range of development and such forests are represented across a wide range of different biophysical settings, such as high elevation and low elevation, valley bottoms and ridge-tops, northern latitudes and southern, moist western aspects and dryer eastern aspects. The NWFP recognized this by including a wide range of biophysical settings in a network of reserves. "*Lower elevation forests have been subject to more intensive forest management than higher elevation forests because a large portion of lands at low elevations are privately owned. Small fragments of old growth are the only remaining representatives of low elevation forests in some areas.*" [157] BLM lands in western Oregon represent a large amount of low elevation forests that have relatively high productivity and high biodiversity. More BLM lands should be allocated to reserves to conserve their high ecological values.

In 1993-94, the authors of the FEMAT and the NWFP FSEIS considered a range of alternatives and concluded that none of the alternatives would ensure attainment of a functional interconnected late-successional old-growth ecosystem within 100 years, because the reserves were so damaged by past management that they likely needed 200 or more years to regrow and recover.

> *During the next 100 years, none of the alternatives provides for a higher than 60 percent likelihood of reaching an outcome in which the quality and quantity of the overall late-successional ecosystem (as defined by the three attributes: abundance and ecological diversity, processes and function, and connectivity) would be at least as high as the hypothesized long-term average condition."*[158]
>
> *In general, high rates of logging, forest plantations, fire suppression, ownership patterns, and human population and environmental influences have altered the regional ecosystem on federal lands to the extent that none of the alternatives can provide for a return to conditions that closely match those of previous centuries. ... [N]one of the alternatives achieved a likelihood of 80 percent or greater for Outcome 1 for any of the individual attributes (see the FEMAT Report, Chapter IV, Terrestrial Forest Ecosystem Assessment). ... The results indicate that none of the alternatives had a 60 percent or greater likelihood of producing a late-successional and old-growth ecosystem with*

[157] 1994 NWFP SEIS, p 3&4-31.
[158] 1994 FSEIS p 3&4 – 43

attributes that approximate at least long-term average conditions (Outcome 1) over a timeframe of 100 years. This occurs primarily because 100 years is not long enough for cutover landscapes to return to late-successional conditions that approximate prelogging conditions. Many late-successional attributes require 200 to 500 years to develop."[159]

The ecosystem assessment shows that the likelihood of attaining a functional and interconnected late-successional and old-growth forest ecosystem in the next 100 years is reduced because some characteristics of terrestrial ecosystems will not be obtained for at least 200 years. Similarly, the Assessment Team expected that degraded aquatic ecosystems will not be fully functional in 100 years. [160]

In recognition of the current deficit of functional late successional forest and the continued risks faced by many late-successional species, the agencies added several mitigation measures, including survey and manage, to the preferred alternative in the Final EIS. The Survey and Manage program requires that the agencies search for and protect certain rare and uncommon species, resulting in the creation of many relatively small, but biologically valuable, protection buffers.

The 1994 FSEIS relied primarily on a network of large reserves to maintain a functional interconnected late-successional old-growth ecosystem.[161] "The reserve system is designed to be comprehensive, adequate, representative, and replicated." [162] However, there are two problems with reliance on reserves. First, there are "significant unanswered questions about the degree to which a reserve system designed spatially to accommodate vertebrate dispersal meets the needs of small organisms," [163]

The second problem with excessive reliance on the reserves is that "old growth forests tend to be distributed in a highly fragmented mosaic." [164] Before the reserves were established in 1994, they were significantly impacted by past logging and road building so the reserves are not currently capable of ensuring the persistence of all late-successional old-growth species.

As much as 40 percent of the Late Successional Reserves currently in young plantations were established for timber production. Typically, the plantations are densely stocked with young Douglas-fir trees, and are unlikely to follow natural stand development pathways toward late successional conditions. Consequently, late-successional forest development in these plantations may be retarded or may not occur at all. In addition, young plantations often increase the occurrence of human caused wildfires, as well as increase the rate of spread and extent of fire and other disturbances across landscapes. The presence of young plantations in Late-Successional Reserves, thus, may increase the risk of loss of intermingled late-successional forests."[165]

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[159] 1994 FSEIS p 3&4 – 45
[160] 1994 FSEIS p 3&4 – 66
[161] 1994 ROD p 45. 1994 FSEIS vol I p 2-23. 2004 FSEIS vol I p 129
[162] 2004 FSEIS vol I p 129
[163] Perry et al. Sept 4, 2001 letter to the RIEC. See also 2004 FSEIS vol I pp 108-109.
[164] 1994 FSEIS vol I p 3&4-29.
[165] 1994 FSEIS vol I p 3&4-49. 2000 FSEIS vol I p 17.

So, the reserve system may not only be conceptually flawed for rare species with limited dispersal capabilities, but it is also non-functional for species that can disperse.

The current DEIS analysis is mostly limited to an projection of the abundance of various forest structural stages, while failing to fully consider other important attributes and indicators of ecosystem integrity. For instance, providing the historic *abundance* of structurally complex forests does not ensure support for healthy populations of wildlife if the habitat is fragmented and not arranged in an appropriate spatial pattern. BLM's analysis asks: "*What levels of habitat would be available under each alternative for [special status] species."* In the FEMAT report and 1994 FSEIS, "*The evaluation of late-successional and old-growth forest ecosystems is expressed as an expected likelihood of achieving long-term past conditions based on three attributes that characterize the quantity and quality of the ecosystem."*[166] Those three attributes are: (1) abundance and diversity, (2) process and function, and (3) connectivity.

II. AMOUNT OF LATE SUCCESSIONAL HABITAT IS INSUFFICIENT.

The current abundance of LSOG in the reserves is insufficient to provide a functional interconnected late-successional old-growth ecosystem, so any additional increment of LSOG outside the reserves (such as survey and manage buffers in the matrix) helps to provide important short-term functionality while the reserves regrow and recover from past logging. The following map of the 66,000 acre Fall Creek LSR clearly shows, with small light-green polygons, the fragmenting effect of past clearcutting. This LSR contains 44% late successional habitat, which is even more than the region-wide average for all reserves (37%).

[166] 1994 FSEIS vol I p 2-68.

III. DIVERSITY OF HABITAT IS IMPORTANT.

Diversity of habitat types is another important attribute LSOG considered by the 1994 FEIS. The survey and manage buffers help contribute to *diversity* simply because each one is in a unique location outside the reserves. Each physical location has a unique combination of geology, soils, slope, aspect, elevation, climate, and especially history of disturbance, therefore LSOG that is retained in different locations will represent a wider diversity of forest-types.

The scientists' Sept 4, 2001 letter to the RIEC says, "Species, species assemblages, and the genetic structure of populations may vary at relatively fine scales for small organisms (which account for by far the largest share of diversity), raising the possibility that each remaining older forest is to some degree unique in its biological structure."

Since survey and manage buffers retain LSOG outside of the reserves, the buffers protect different locations with different geophysical settings and different stand histories, and will thereby enhance the diversity of habitat types within the overall forest ecosystem.

IV. PROPOSED REMOVAL OF SURVEY AND MANAGE

All action alternatives remove the Survey and Manage measures that require the agency to survey for and protect sites of Bureau Sensitive Species when planning a site-specific logging project. The BLM is required pursuant to agency policy to "conduct[] evaluations of the distribution, abundance, population trends, current threats, or habitat for those species using available information." DEIS at 692.

As an initial point, the BLM is eliminating the survey and manage program which satisfied the agency's conservation duties towards these Bureau Sensitive Species. The BLM is eliminating these protections, but does not elaborate on the measures the BLM will take to satisfy their conservation duties. The BLM suggests that the reserve system being set up in WOPR will protect these species; however, this reserve system was not set up to benefit these species or takes into account these species whatsoever, because BLM plainly eliminates the goal of supporting viable populations of old-growth associated species from the WOPR revision. DEIS at 22. This is inadequate treatment of Bureau Sensitive Species.

Not all of these species react to forestry activities the same way the spotted owl does. For example, while thinning in reserves may benefit the spotted owl in the long run, thinning could extirpate many sensitive species from an area. The BLM needs to put a program in place to conserve and analyze impacts to Bureau Sensitive Species.

Also, the BLM's analysis of the vast impact of the removal of this program is woefully inadequate. First, the BLM claims that with complete and species specific surveys, the BLM could analyze the impacts to these species under the various alternatives, but says that the cost of conducting that analysis is too high to conduct all at once during this broad planning stage.

However, this is why Survey and Manage existed in the first place. The BLM has conservation and evaluation responsibilities towards these species, and the most effective way to meet this obligation was a project by project system of surveys, where project receipts would pay for the surveys. It is completely irrational for the BLM to assert that it cannot pay for surveys across the landscape, while also eliminating the only measure designed to mitigate that knowledge gap.

Secondly, the BLM should take into consideration the known sites of various species. The BLM states that for these sensitive species, the BLM will conduct evaluations of impacts to the species based on known information. Over the past two decades the BLM has surveyed for and discovered many known sites of various Bureau Sensitive Species. Those site locations and concentrations should be disclosed to the public in this NEPA process. The BLM could draw conclusions from the surveys conducted for these species concerning range, habitat, and distribution, because little is known about the range and distribution of these species. None of this analysis exists for any species with the exception perhaps of the red tree vole. Failure of the BLM to even attempt this analysis with the existing information it has from decades of survey efforts is a failure to take a hard look at the impact of removing these protections in the future.

Third, the BLM claims that the true analysis of the impact of removing protections for these species was conducted in 2004, the 2004 Final SEIS to Remove or Modify the Survey & Manage Mitigation Measure Standards and Guidelines. DEIS at 692. It incorporates that analysis here. There are several problems with this approach. First, the 2004 ROD and FEIS does not contemplate the various changes in the current alternatives with altering riparian reserve widths, altering the reserve system, altered protections for other late-successional species, like owls and murrelets. All of these changes render the analysis useless because all the underlying protection and buffer standards have changed. Further, there has likely been a lot of new information and significant changes that would render the baseline information in 2004 useless as well. Additionally, it is likely that the data concerning habitat and known sites that are over a decade old is now stale. It is plainly not accounting for the decade plus of surveys that have been conducted for all these species.

Additionally, the BLM cannot rely on a non-NEPA document to cure a lack of analysis in the present document. The 2004 ROD and FEIS, while it went through a NEPA process in 2004, the document was invalidated, DEIS at 692. Therefore, without a new decision on that NEPA document that analysis cannot be relied upon by connected later decisions.

As a final point, the BLM makes a massive faulty assumption regarding Bureau Sensitive Species in the DEIS. The BLM assumes that the habitat and sites of species that fall within the reserve system would receive protection. However, the BLM is permitting in the reserves various types of commercial timber harvest activities that downgrade or removal late-successional habitat. Without maintain the Survey and Manage program on reserve lands, the BLM cannot make this assumption. The BLM would also have to map out the location of every known sensitive species site in order to assure the protection of these sites on the reserves.

V. SURVEY AND MANAGE BUFFERS CONTRIBUTE TO THE FUNCTION OF LSOG FORESTS

The survey and manage species and buffers clearly contribute to the *function* of the LSOG forest, another important old-growth attribute considered in 1994. "Functions … refer to ecological values of the late-successional and old-growth ecosystem that (1) maintain or contribute to the maintenance of populations of species that use these ecosystems, …" [167] The survey and manage buffers contribute disproportionately to this attribute of forest ecosystems, because the buffers are not just randomly designated late successional areas; they are areas that have been surveyed and are known to actually harbor "populations of species that use these ecosystems," and not just any species, but rare and uncommon species that this forest plan was intended to protect. The presence of these rare and uncommon old-growth species is strong evidence that the survey and manage buffers contribute to the function of the old-growth forest ecosystem.

The 2000 and 2004 FEISs both recognize that if populations of survey and manage species are not maintained well-distributed across their native range there will be a "loss of normal biological function." [168]As a result of the 2004 ROD there are now 193 species that will have "insufficient habitat," resulting in some loss of biological function where those species are significantly reduced in population or no longer occur.[169]

The 1993 FEMAT Report also recognized the functional importance of many taxa included in the survey and manage program and the "broad benefits" of retaining even small fragments of LSOG in the matrix.

> *Although an important function of the Matrix is to provide for dispersal of organisms, perhaps of greater importance is the maintenance of organisms with key functional roles in the forest ecosystem. Taxa such as fungi, nitrogen-fixing organisms, and arthropods influence natural succession, nutrient cycling, and other ecosystem processes. Maintenance of populations of these organisms in the Matrix is essential to long-term forest productivity, as well as biodiversity.*
>
> *Old forest patches as small as only a few acres can also provide important refugia for sedentary organisms.... Lichens, fungi, bryophytes, mollusks, arthropods, vascular plants, and the less mobile vertebrates were consistently identified during the expert panel process as benefiting from even small fragments of old forest. <u>Panelists consistently reiterated the important functional roles played by these organisms. Panelists highlighted the necessity of maintaining these organisms well distributed throughout the ecosystem, not just confined to reserves.</u>*
>
> *<u>Summary of mitigation measures having broad benefits</u>*
> *(4) Retain small patches of late-successional or old-growth forest within the Matrix. These small patches can provide important habitat for arthropods, fungi, lichens, bryophytes, vascular plants, mollusks, small mammals, amphibians, and bats. Species*

[167] 1994 FSEIS vol. I p 3&4-37.
[168] 2000 FSEIS vol I p 191. 2004 FSEIS vol I pp 119-121.
[169] 2004 FSEIS vol I pp 124-125.

that are poor dispersers, narrow in their habitat requirements, have restricted geographic ranges and are sensitive to variation in microclimates will benefit most from retention of these patches of late-successional forest.
(6) Survey upland sites for rare, endemic, or sensitive organisms prior to any disturbance caused by management. Protect sites where these organisms occur (e.g. special habitats such as serpentine barrens, wetlands, rock outcrops).[170]

VI. CONSERVING SURVEY AND MANAGE SPECIES ENSURES THAT ECOLOGICAL PROCESS CONTINUE

Ecological processes are another important attribute of LSOG considered in the 1994 FEIS. Examples of ecological *processes* provided directly by survey and manage species include nitrogen fixation (by lichens), nutrient cycling (by fungi, arthropods, and mollusks), symbiosis (in which fungi provide water and nutrients to vascular plants, including virtually all the dominant trees species in the late successional forest, in exchange for photosynthate produced by the plants). Loss of survey and manage protections will lead to reduced benefits related to these processes.

The diversity of functions and processes represented by survey and manage species also enhances the resiliency of the entire forest ecosystem, which is particularly important in the face of climate change and other pressures. This resiliency value of biodiversity also refutes the assertion in the 2004 EIS that if survey and manage species are truly rare, then they must play only a minor role in ecosystem processes and functions.[171] As the climate changes, species that are rare today could become much more important tomorrow. Conserving survey and manage species helps ensure that ecological processes will continue under changing conditions.

VII. SURVEY AND MANAGE BUFFERS PROVIDE HABITAT CONNECTIVITY.

The survey and mange buffers provide important *connectivity* between larger fragments of suitable habitat. The 1995 FSEIS says "Connectivity is a measure of the extent to which the landscape pattern of the late-successional and old-growth ecosystems provides for biological and ecological flows that sustain late-successional old growth ecosystems and plant species across the range of the northern spotted owl." [172]

The current fragmentation of the landscape is not just *between* the reserves but also *within* the reserves themselves. The survey and manage buffers can be viewed as "stepping stones" that link larger patches of late-successional habitat wherever they occur. The added increment of connectivity provided by survey and manage buffers may be very important for enhancing persistence values while the fragmented forests recover.

The design of the Northwest Forest Plan includes large Late Successional Reserves, managed to protect LSOG habitat for species associated with LSOG, with intervening matrix areas, where

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[170] 1993 FEMAT pp IV-186 to IV-190 (emphasis added).

[171] 2004 FSEIS vol II pp 207-208.
[172] 1994 FSEIS vol I p 3&4-38.

more logging is allowed. But the matrix is not a sacrifice zone. There are several standards & guidelines (including survey and manage) to ensure that the matrix plays a role in the ecosystem management scheme of the Northwest Forest Plan.

[F]orests in the matrix function as connectivity between Late Successional Reserves and provide habitat for a variety of organisms associated with both late successional and younger forests. Standards & guidelines for the matrix are intended to provide for important ecological functions such as dispersal or organisms, carryover of some species from one stand to the next, and maintenance of ecologically valuable structural elements such as down logs, snags, and large trees.[173]

Riparian reserves are also located between the LSRs, and, like the Matrix, they are intended to provide connectivity and dispersal. However, the riparian reserves, even more so than the LSRs, are highly impacted by past logging and construction of roads that follow streams, so they are not currently providing adequate connectivity. The objective is that 80 percent of the reserves will be covered with LSOG, but FEMAT estimated that the riparian reserves were only about 31 percent covered with medium and large conifers (versus 42% for the LSRs)[174]. While riparian reserves recover from past disturbance, the survey and manage buffers clearly help serve an important function for connectivity between the LSRs. The 2004 FEIS did not consider the benefit of survey and manage in this context.

Related to connectivity, there is concern for persistence of many species covered by the survey and manage program in part because of the species' limited dispersal capabilities.[175] The scientists' Sept 4, 2001 letter to the RIEC said, "Studies and modeling over the last few years suggest that many LSOG associates in the PNW may be limited more by dispersal than by the abundance of habitat per se, including species of lichens, bryophytes, mollusks, fungi, and invertebrates (Boughton 2001, Sillett et al. 2000). This implies that every remaining piece of suitable habitat becomes an important focus for eventual colonization of the surrounding landscape."

VIII. THE SURVEY AND MANAGE PROGRAM CONTRIBUTES TO KNOWLEDGE AND UNDERSTANDING.

Another "value-added" feature of the survey and manage program is the knowledge gains that contribute to the agencies' understanding of the ecosystem. This value was attributed to some other mitigation but also applies to survey and manage and has not been adequately recognized in the FEIS.

Many of the survey and manage species are included in the program because they are thought to be closely associated with late-successional old-growth forests, yet for some species little is known about their specific habitat associations and their specific role in a functional interconnected old-growth ecosystems.[176] The 1994 EIS said that "opportunities to enhance knowledge about ecosystem function and management in the Adaptive Management Areas of

[173] 1994 ROD pp B-1 to B-2.

[174] FEMAT pp IV-51, IV-54
[175] 1994 FSEIS Appendix J2.
[176] 1994 ROD p C-6

Alternative 9 actually increased the likelihood that this alternative would provide late-successional characteristics in the future." [177] A similar *knowledge-value* is provided by the survey and manage program which not only informs and improves the design of projects at the local scale through pre-disturbance surveys (2001 ROD p 15), but also includes a comprehensive program of strategic regional surveys designed to gain scientifically useful information about little-known, rare, and uncommon species.[178] 2004 ROD eliminates both pre-disturbance surveys and strategic surveys designed to increase knowledge. The objective of functional interconnected late-successional old-growth ecosystem will be reduced to the extent that future knowledge will not be generated by the survey and manage program.

The DEIS at 692 says:

> *…the information in the 2004 SEIS and 2007 SEIS does present analysis based on the incomplete survey information available that concludes that most Survey & Manage species would have sufficient habitat to support stable populations under the No Action alternative without the Survey & Manage measure. … Compared to the No Action alternative, all action alternatives allocate more acres to the Late-Successional Reserve, which the Northwest Forest Plan expected to meet the needs of late-successional and old-growth related species.*

First, we find is very odd that BLM would attempt to tier to previous EISs that were found to be legally deficient by the courts. The analysis in the DEIS is just a few pages and does not address the flaws in those earlier EISs.

Second, the DEIS needs to take a hard look at species that would NOT have sufficient habitat. The fact that "most" species would have sufficient habitat does means that "some" won't.

Third, the DEIS needs to take a hard look at the consequences of increased logging in the reserves which is a likely result of weaker rules for logging in reserves. The standards & guidelines for LSRs allow far too much discretionary logging so the LSRs may not adequately protect rare and uncommon species (or listed species). This concern is amplified because riparian reserves are eliminated in LSRs. The action alternatives leave very little of the BLM landscape off-limits to logging. Subtracting structurally complex LSR, inner riparian zones, and congressionally reserves lands, leaves 63% of BLM lands open to logging under the preferred alternative.

2015 BLM RMP Analysis of what's open to logging

Open to logging	Acres	Not open to logging	Acres	
LSR	636,635	LSR that is structurally complex*	463,910	
outer riparian zone**	167,729	inner riparian zone	232,083	
HLB Low	77,384	cong reserved	40,537	
HLB mod	224,582	district reserves - not including road footprint*	187,926	
HLB uneven	274,199			
East Side Mgt Lands	151,885			
District Reserve Road Footprint**'	33,701			
Totals	1,566,115		924,456	2,490,571
Percentages	**63**		**37**	

[177] 1994 FSEIS vol I p 3&4-46. FEMAT p IV-72.
[178] 2000 FSEIS vol I p 330. The

Fourth, the DEIS needs to account for the increased uncertainty caused by climate change. Species may be less secure than previously assumed and more logging will cause greater risk to wildlife than assumed in previous analyses relied on here.

Fifth, the DEIS failed to take a hard look at the adverse effects on wildlife (including survey and manage species) caused by eliminating other key aspects of the Northwest Forest Plan, such as reducing protection for riparian reserves. The DEIS analysis seems to assume that survey and manage species are mainly dependent on the LSRs when in fact they are dependent on the combination of LSRs, riparian reserves, and other standards & guidelines (including the survey and manage requirements themselves). The matrix standards & guidelines for green tree retention, and down wood retention have significant benefits for wildlife. See 1994 ROD p 29; 1994 FSEIS, Appendix J2. The DEIS needs to clearly disclose the adverse wildlife effects of alternatives that remove these requirements. The EIS supporting the NWFP states:

> *[General Mitigation Measures] Application of Riparian Reserve Scenario 1 in the intermittent streams would benefit a wide variety of terrestrial and aquatic species by providing additional habitat. These species include the northern spotted owl, coho salmon, amphibians, small mammals, and some vascular plants. Connectivity of the ecosystem would also be improved.*[179]

The NWFP Record of Decision adopted Riparian Reserve Scenario 1 with the explicit intention to benefit: spotted owls, marbled murrelets, marten, red tree vole,[180] vascular plants, bryophytes, amphibians[181] (especially tailed frog, Van Dyke's salamander, clouded salamander, Del Norte salamander, black salamander, Cope's giant salamander, Cascade torrent salamander, southern torrent salamander[182]), bats,[183] birds, mammals, mosses, arthropods,[184] goshawk, fisher, bufflehead, harlequin duck,[185] 19 mollusks,[186] 12 species of lichen, 23 species of fungi,[187] and 130 species that were subject to "additional species analysis" because of viability concerns and received mitigation in the form of wider riparian buffers).[188]

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[179] 1994 FSEIS p 3&4 – 49.

[180] 1994 FSEIS, Appendix B-11, p B-143 -145.

[181] 1994 ROD p B-13.

[182] 1994 FSEIS p 3&4 – 176; 1994 FSEIS, Appendix J2, p 45.

[183] 1994 FSEIS pp 3&4 – 186-187.

[184] 1994 FSEIS, pp 3&4 – 61, 81.

[185] 1993 SAT Report, Ch 5, pp 296-298, 304, 308—309, 310.

[186] 1994 ROD p 38.

[187] 1994 FSEIS, Appendix J2, pp 20 – 23.

[188] 1994 FSEIS, Appendix J2; 1994 FSEIS, Appendix B11, pp B-143 – B-145. Martin Raphael. 2012. The Function of Riparian Reserves for Terrestrial Species – What Was the Intent? http://ecoshare.info/wp-content/uploads/2013/01/Raphael-buffers.pptx; See Heiken, D. 2013. Riparian Reserves Provide Both Aquatic & Terrestrial Benefits - A Critical Review of Reeves, Pickard & Johnson (2013). https://dl.dropboxusercontent.com/u/47741/Heiken%202013.%20Review%20of%20Reeves%20et%20al%20Riparian%20Proposal.pdf

BLM's DEIS fails to disclose the consequences of the fact that the old-growth forest ecosystem is currently non-functional. When such a high percentage of the historic amount of mature and old-growth has already been logged, protecting a high percentage of the small amount of remaining habitat does not ensure adequate protection. Likewise, including a high percentage of the forest plan area in the reserve system does not ensure adequate protection, because past logging has already affected such a high percentage of the reserves. Given the existing level of degradation, every acre of mature and old-growth forest is important. Acres with survey and manage species are even more important. Before cutting more of the remaining mature and old-growth forest, it is important to implement mitigation measures to protect species that contribute to the functionality of the overall mature and old-growth ecosystem.

Because the reserves are degraded and not fully functional and will remain so for the next century, the 1994 FSEIS considered, and the 1994 ROD adopted, a number of mitigations, including survey and manage, that will help maintain and restore some of the attributes of functional interconnected forest ecosystems and increase the likelihood that certain species will persist.[189]

The DEIS needs to disclose that Survey and manage buffers play a disproportionately important role in conservation of species because they are not randomly located, but rather they are (1) known to provide habitat for and be occupied by at-risk species and (2) they are located in areas that are threatened with immediate habitat modification.

The DEIS does not adequately disclose the ecological consequences of increased logging in the absence of the survey and manage program, nor does the DEIS explain how they expect to get rid of survey and manage now, after two courts have rejected prior efforts to eliminate the program. BLM must fully disclose the purposes of the program and provide a compelling rationale for abandoning it.

BLM cannot rely on the fact that a large fraction of the landscape is in reserve land allocation, when the old forests in reserves are highly fragmented and a large fraction of the reserves are covered by early and mid-seral forests that do not provide habitat for species of concern.

The scale of analysis makes the alternatives look similar, but this is misleading. At the site scale survey and manage makes a big difference. The 2004 Survey and Manage EIS clearly admits that implementing survey and manage "generally adds protection and reduces risk to species" compared to not doing it.

The DEIS fails to disclose that the Special Status Species Programs (SSSP) are far less protective than survey and manage. The scientific basis of these programs is weak. These programs are often under-funded and inconsistent. Special Status Species Programs give too much discretion to local managers causing inconsistent application and loss of occupied sites. BLM has far too much discretion (just in the fuzzy words) to make choices <u>not</u> to search for and <u>not</u> to protect SSSP. These program slack an "action forcing" mechanism, so the public will be unable to hold the agencies accountable for implementing the programs. Experience has shown that the agencies only act in the interests of wildlife when forced to do so. BLM and other federal

[189] See 2000 S&M FSEIS vol I pp 17-18. 2004 S&M FSEIS vol I p 17.

agencies are notorious for abusing such discretion and making choices in favor of timber extraction and against species conservation. The EIS should disclose the historical facts that lead Judge Dwyer to say in May 1991, that, "*...a deliberate and systematic refusal by the Forest Service and the Fish and Wildlife Service to comply with the laws protecting wildlife ...[demonstrates] a remarkable series of violations of the environmental laws."* [190]

"Site management" for SSSP is far less protective than for survey and manage species. BLM's approach to SSSP is to only protect high priority sites, but unlike survey and manage requirements, there are no consistent criteria or mechanisms to ensure that high priority sites are accurately and consistently identified and protected. The main difference between survey and manage and SSSP is the discretion SSSP affords local managers. This means that BLM's main expectation with the decision to eliminate the survey and manage program is to give local managers discretion to NOT conduct surveys and NOT protect sites. This means we are going from an accountable and consistent system to an unaccountable and inconsistent (i.e. arbitrary and capricious) system of species conservation.

> *Based on BLM Manual 6840, the BLM shall address Bureau Sensitive species (BSS) and their habitats in land use plans and shall implement measures to conserve these species and their habitats, to promote their conservation, and reduce the likelihood and need for these species to be listed under the Endangered Species Act." –DEIS page 680.*

The BLM DEIS largely ignores the binding direction to address and conserve BSS species in favor of a strategy that eliminates the Survey and Manage program, logs known sites, and relies on hypothetical future habitat to mitigate for the actual and certain loss of sensitive species from logging sites that they are known to inhabit.

The BLM presents no quantified analysis of the population levels or trends for any of the Survey and Manage species to be dropped from the program or the handful[191] that will be managed as BSS species. As disclosed on page 692 of the DEIS "there is incomplete and unavailable information relevant to the effects of the action alternatives on Survey and Manage species." What is certain is that the BLM intends to dramatically increase logging of known sites in the short term while relying on hypothetical future habitat. This strategy is not informed by actual species-specific population-informed data or analysis

IX. PACIFIC FISHER

As stated on page 703 of the DEIS the "BLM did not forecast population trends of fisher, because a quantified relationship between the specific number of individuals and the availability of habitat is unknown." This holds true for most BSS and S&M species. Yet the BLM is willing to conclude that hypothetical future habitat outweighs the impacts of refusing to look for, analyze, or buffer habitat for rare species in the planning area. This despite the fact that all of the action alternatives reduce denning habitat, resting habitat and total habitat for the first 10-20 years of implementation.

The fisher is likely to be proposed for federal listing during the RMP process. Management actions must be analyzed to protect and enhance specific habitat features critical to fishers.

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[190] http://clinton6.nara.gov/1993/07/1993-07-01-forest-background.html

[191] Only 5 of 28 current Survey and Manage Species are BSS species. DEIS 692.

Merely reporting generic fisher habitat types from various alternatives is necessary but fails to address needed conservation actions for specific habitat features (large denning trees, hollow logs, mistletoe trees, dense understory shrub, densely vegetated riparian reserves).

The Fish and Wildlife service is conducting a status review of the west coast fisher (78FR16828-16829) and a proposed listing is expected fall 2014. A 2012 update of fisher (77FR70010) states "*Existing regulatory mechanisms on Federal, State, and private lands do not provide sufficient protection for the key elements of fisher habitat, or the certainty that conservation efforts will be implemented or effective. The magnitude of threats is high as they occur across the range of the DPS, resulting in a negative impact on fisher distribution and abundance."* (Emphasis added) Thus, it would be prudent for the DEIS to analyze actual conservation actions to preserve and promote "key elements of fisher habitat" needing special management that would protect fishers and allow for them to increase abundance and range. A well-documented native fisher population is found primarily in the Medford BLM District.[192] A spatially explicit analysis is needed to identify lands with high habitat value as proposed, but analysis also needs to identify where specific conservation actions are needed. Some specific protections would be to protect all snags, live trees >32" dbh since these are used for denning and likely unavailable on most private timberlands. Fuels treatment projects are in conflict with fisher preferred habitat and spatially explicit analysis is needed to ensure that cumulative fuels treatment impacts do not harm fisher habitat. Fishers prefer undisturbed riparian areas. The robust riparian reserves in the no action alternative would best meet the needs of fishers and this conservation needs to identify for fishers. Current project level analysis simply assumes that project impacts are not important because there is abundant fisher habitat that is not being impacted. This is false and not scientific. Landscape scale spatially explicit analysis is needed in this RMP process to identify critical habitat for fishers for protection and enhancement of "key elements."

X. GOLDEN EAGLE AND BALD EAGLE

For the Golden Eagle, the BLM acknowledges that threats include "increased off-road recreation" [193] yet every action alternative includes more acres designated for ORV use while no analysis or data is provided regarding actual impacts to Golden Eagle populations and behavior.

The BLM analyzes impacts to the Bald Eagle at the entire planning level scale, and concludes that there will be "indistinguishable" differences between the action alternatives at this scale. Given that there are only approximately 250 thousand acres of nesting habitat on BLM lands, the BLM should be looking specifically at the impacts to these various habitat patches (older forest in close proximity to large water bodies). Merely concluding that there will be minimal differences at a scale of analysis taking into account millions of acres is inadequate under NEPA. Which sites will be logged, which sites will be retained? Does commercial thinning impact the species even if these sites are located in reserves? Please address these questions in the FEIS.

XI. BLACK-TAILED DEER AND ROOSEVELT ELK

[192] RMP Planning Criteria at 191.
[193] DEIS at 709.

BLM analyzes impacts of the plan revision process to deer and elk using early-seral habitat as a proxy for impacts to the species. BLM assumes that there is a need to increase early-seral habitat because ODFW has documented declines in deer populations across the state. DEIS at 676. To establish a proper baseline for analysis, the BLM instead needs to focus on deer population changes in the project area as opposed to state-wide. We are concerned that deer populations in the project area are stable, perhaps eliminating a need to create early-seral forests on BLM lands in the project area. Additionally, even though population numbers have declined since the 1980's we are concerned that this is an improper baseline for population analysis given the prevalence of clearcut logging in the years proceeding and programs to eliminate predators. In other words, deer numbers in 1979, might have been the highest in Oregon's recorded history, and do not necessary reflect an accurate or ecologically appropriate number of deer for the state and project area. Please develop a more accurate baseline for modeling and interpretation.

XII. WOLVES

Wolves are wide-ranging predators that can exist in a wide variety of habitat types. They are habitat generalists in terms of terrain and vegetation (Boyd 1999, Oakleaf et al. 2006). They are not wilderness dependent, but their survival depends on the availability of cover and relatively secure areas that allow them to avoid humans and escape persecution (Carroll et al. 2003). To successfully inhabit an area they require a year-round prey base of wild ungulates (Boyd et al. 1994, Fritts and Carbyn 1995). Deer, elk, beavers, wild turkeys, marmots, and other small mammals are probably preyed on also.

Because wolves are wide-ranging, disturbance and effects to the species will occur across BLM lands as the species continues to move west and south. Effects could occur during project activities from noise, road building, timber felling, yarding, hauling, smoke (prescribed fire), and increased human activity and presence. Additionally, effects will also be seen by grazing allotments.

Gray wolves are sensitive to road associated factors. (de Vos 1948, Mech et al. 1988, Thurber et al. 1994, Paquet and Callahan 1996, Boyd and Pletscher 1999). For gray wolves, both Mech et al. (1988) and Thiel (1985) found that when road densities exceed about 1 mi/mi^2, wolves avoided or were displaced from areas. Mladenoff el al. (1995) found that road density was the major predictor of wolf pack location. Jensen et al. (1986) reported that road densities >0.6 km/km^2 were apparent barriers to wolf dispersal. Wolves have also been documented to be killed by collisions with vehicles (Gibeau and Heuer 1996, Paquet and Callahan 1996).

The BLM needs to develop standards to ensure that road densities in the forests it manages remain below road densities over 1 mi/mi^2 or manage areas over this road density to prevent any new road construction temporary or permanent. The BLM in its DEIS failed to consider this issue at all, and a failure to do so is a failure to take a hard look at the issue under NEPA.

Specifically, to conserve complete arrays of species and associated ecological interactions, management schemes must consider the density of roads. Road densities greater than 1 mi/mil are considered detrimental to wolf and elk populations Qensen et al. 1986). Wolf pup survival rates indicate that wolves may tolerate road densities higher than 1 mi/mi2 if extensive roadless regions exist adjacent to wolf territories (Mech 1989). But road densities within much of eastside forests exceed 2.5 mi/mi2 (e.g., Colville and Winema National Forests), and remaining roadless regions are quickly disappearing. Protection of terrestrial vertebrates, as well as fisheries resources, requires a moratorium on road building plus efforts to remove existing roads. Henjum, M.G., J.R. Karr, D.L. Bottom, D.A. Perry, J.C. Bednarz, S.G. Wright, S.A.Beckwitt and E. Beckwitt. 1994. Interim Protection for Late-Successional Forests, Fisheries, and Watersheds: National Forests East of the Cascade Crest, Oregon and Washington. A Report to the Congress and President of the United States by the Eastside Forests Scientific Society Panel.

Pups are born at a natal den in spring (generally mid-to late April) and remain there with their mother for about 2 months (Mech 1970, Boyd 1999). During this time any disturbance that results in the female leaving the den may expose the pups to predation or inclement weather. The sensitivity of females to human disturbances at den sites varies greatly among individuals (Boyd 1999). Due to the potential disruption of breeding as a result of human activity associated with any timber harvest, hauling, or road construction activity, these activities and any other activities that could cause disruption should be restricted from April through June. BLM failed to take a hard look at this issue in violation of NEPA.

Wolves are also impacted by grazing activities and grazing allotments. There are 3 potential effects of the proposed grazing activities on gray wolf:

1) Cattle presence on the allotment could displace deer, the primary prey of gray wolves in this area, and thus cause wolves to move to other areas to hunt. Studies have found that deer either moved or changed their use patterns when cattle were turned into allotments (Mackie 1981). Wolves are wide-ranging predators that have been known to travel more than 20 miles away from a den or rendezvous site while hunting (Mech and Boitani 2003). Cattle use of the allotment may result in wolves having to travel further to hunt deer.

2) Human management of the grazing allotment; eg. maintaining fences and water developments, placing salt, moving cattle, looking for cattle, may disturb gray wolves that may be in the allotments. Human disturbance at natal den or rendezvous sites may result in abandonment of the sites (Fritts et al. 2003, Frame et al. 2005).

3) The possibility of livestock/wolf interactions that would result in wolf control actions. Although wolves normally prey on wild ungulates or other wild animals, they sometimes attack and kill livestock or other domesticated animals. Livestock depredation by wolves is difficult to predict and seems to be influenced by many factors. Newborn livestock in remote

places are more vulnerable than larger, older stock that are kept closer to humans, and leaving livestock carcasses out and available for scavenging may increase the risk of wolf depredation (Fritts et al. 2003). The proximity of livestock to wolf homesites can also be a factor in determining the potential for wolf to depredate on livestock (Stone et al. 2008).

The BLM needs to develop conservation measures for its grazing allotments that will deter, wolf-livestock conflict and reduce the need for lethal control actions. This should include, livestock carcass and bone pile removal from allotments, retirement of allotments near rendezvous or den sites, elimination of attractants for livestock near any den sites or rendezvous site, and active implementation of non-lethal techniques to deter conflict when necessary. Please take a hard look at these issues in the FEIS.

XI. RED TREE VOLE

Under the former management mandate (2001 ROD), vole surveys were required pursuant to the species Survey Protocol (now 3.0) and any sites discovered were required to be managed pursuant to the species Management Recommendations (2.0). There was a frequently used exception for pre-disturbance surveys in thinning projects in stands under 80 years old (Pechmann Exemption). WOPR greatly reduces these protections in all alternatives, completely eliminating the vast majority of the species range (all habitat south of Highway 20) from any survey or management regime.

The DEIS contains no analysis or disclosure regarding the impacts of the proposed actions on Red Tree Voles occurring outside the Northern Oregon Distinct Population Segment. What are the population levels and trends for Red Tree Voles (RTV) elsewhere in the planning area? How will genetic connectivity be assured? How many known active RTV sites will be logged? How many RTV will be harmed by such logging?

> *"Since every RTV site in the NOCDPS is a critical for persistence, the lack of provisions for pre-disturbance surveys and known site protection under alternatives A and C would negatively affect the species." DEIS at 738.*

Pages 738 and 744 of the DEIS indicates that Alternatives A and C would negatively affect the species by logging 136 of 383 known sites. Given the acknowledgment that "every RTV site in the NOCDPS is critical for persistence" of the species, the contention on page 744 that the BLM is unsure if such logging would contribute to the need to list the species under the ESA is in error.

A spatially explicit analysis for managing the red tree vole is needed on the entire planning area to assure abundance/distribution for its viability and as an important food source for northern spotted owls and other predators.

The simplistic modeling based on Huff et al 2012 is not adequate and the BLM needs to use Dunk and Hawley. The federal register notice for listing the north Oregon coast red tree vole states:

> *The most comprehensive analysis of current red tree vole habitat conditions specific to the North Coast Range DPS is a report by Dunk (2009, entire). Dunk (2009, p. 1) applied a red tree vole habitat suitability model (Dunk and Hawley 2009, entire) to 388 Forest Inventory Analysis (FIA) plots systematically distributed on all ownerships throughout the DPS (the FIA is a program administered by the USDA Forest Service, and is a national scientific inventory system based on permanent plots designed to monitor the status, conditions, and trends of U.S. forests).*[194]

Certainly the BLM has access to similar plot information identified by the Fish and Wildlife Service to conduct recommended analysis. We are particularly concerned about habitat fragmentation and decreased abundance due to proposed heavy thinning on the Medford District that would space mature trees to the extent that red tree voles would be locally extirpated (e.g. 40% canopy for spotted owl dispersal habitat). Management for abundant and continuous distribution of red tree voles needs to be spatially linked to management for northern spotted owl recovery.

Sites in Reserves: In the WOPR analysis of effects to red tree voles, the BLM forecasted effects to the species by "applying observed detection rates and mean size of occupied stands against acreage of habitat in the Harvest Land Base" and "assumed all sites would be protected in reserves." However, there is no requirement it appears from the management objectives and actions that surveys be conducted in reserves for red tree voles when activities are planned that could remove red tree vole habitat.

Any timber harvest activities in reserves will remove and displace voles. "Continuing timber harvest in younger forest areas adjacent to remaining patches of older forest diminishes the habitat quality of these stands by maintaining them in an isolated and fragmented condition that may not allow for persistent populations of red tree voles." Federal Register /Vol. 76, No. 198 /Thursday, October 13, 2011 / Proposed Rules 63735. Thinning younger stands occupied by tree voles can reduce or eliminate voles from these stands (Biswell 2010, pers. comm.; Swingle 2010, pers. comm.), and Carey (1991, p. 8) suggests activities that result in rapidly developing (changing, unstable) younger forests are a limiting factor for red tree voles. *Id.* at 637-38.

If the BLM wants to make the assumption that all vole sites are reserved in its analysis, all timber removal activities in the reserves should require full and complete red tree voles surveys, and the adequate protection of these red tree vole sites. *Id.* at 637-38. This should include protections of large blocks of habitat not just isolated patches of older forests created by the current Management Recommendations because the FWS's "evaluation of the remaining older forest patches within the DPS indicate they are likely insufficient to sustain red tree voles over the long term due to their relatively small size and isolated nature." *Id.* at 637-38.

Non-high priority sites: Although the baseline No Action Alternative takes into account the 2001 ROD, it does not mention or consider the "Non-High Priority" process that has designated many acres of existing red tree vole sites as non-high priority and cleared them for

[194] 76FR63724

logging. Not factoring in this option would allow the BLM to selectively log certain new red tree vole sites and it overlooks an option existing land managers had under the NFP. Its availability could influence the BLM's decision to eliminate Survey and Manage for red tree voles in most of the alternatives. Please disclose the amount of acres that have been designated or are proposed to be designated non-high priority. The BLM should develop an alternative that uses the survey and non-high priority approach to managing sites in the Harvest Land Base. Further surveys would contribute to a greater understanding of this imperiled species and inform future management and recovery decisions, not to mention the listing status of the species.

Additionally, will it be possible for the BLM to use the non-high priority process north of highway 20? This is not clear.

Need to List the Species: Based upon the findings of the FWS's Warranted but Precluded Findings for the North Coast Oregon DPS of the red tree vole, any reduction in federal vole protections will result in threats to the persistence of the species, and a potential need to list the species. The North Oregon Coast DPS extends north of the Siuslaw River to the Columbia, and the FWS concluded "that the ongoing effects of the destruction, modification, and curtailment of its habitat, in conjunction with other factors described in this finding, pose a significant threat to the persistence of the North Oregon Coast DPS of the red tree vole." FR 63740.

"Clearly, existing and projected amounts of older conifer forest habitat conducive to red tree vole persistence are less than the amounts projected to have occurred historically and with which tree voles have evolved. High-quality older forest habitat remains in isolated fragments, most of which are too small to support tree voles, and are so widely separated as to be likely well beyond the dispersal capability of the species. Unlike historical conditions, which were highly stochastic, these changes are likely to be permanent. Based on our analysis of best available information, we conclude the remaining high-quality habitat within the DPS is likely insufficient to support red tree voles over the long term, and persists in a fragmented and isolated condition that renders local populations of red tree voles vulnerable to extirpation or extinction through a variety of processes, including genetic stochasticity, demographic stochasticity, environmental stochasticity, and natural catastrophes." FR 63754.

Based on these conclusions by FWS, any reductions to protections to the species will contribute to the need to list the species. This is particularly true because "red tree voles are afforded more protection on Federal lands than on State Forest and private lands within the DPS, primarily as a result of the Survey and Manage protections" *id,* and every BLM DEIS Alternative aside from the no-action alternative removes Survey and Manage protections, or reduces these protections dramatically. Based on the WPB findings by the FWS, the BLM should have developed an alternative that set aside specifically large blocks of habitat in areas critical for red tree vole persistence, dispersal, and genetic connectivity. The BLM did not develop any alternative to this regard and did not analyze these issues at all.

Further, the BLM DEIS assumes a large number of sites will be treated as non-high priority, this was not the understanding of the FWS that concluded "all sites on Federal land within the DPS are considered high-priority sites with the exception of 198,000 ac (80,130 ha) of the southernmost portion of the DPS (primarily located within the Siuslaw River drainage)."

Undermining survey and manage protections and the high-priority treatment of vole sites will lead to threats to the species persistence within the North Oregon Coast DPS, not just the area north of Highway 20.

XII. BLACK BACKED WOODPECKER

Spatially explicit analysis is needed to identify expected areas of snag shortages over the entire landscape. Snag retention standards are needed for black-backed woodpeckers. Adjacent industrial private timber management produces virtually no snags.

Post fire forests that are aggressively clear-cut do not provide habitat for the Black Baked Woodpecker. Numerous mammals, birds and amphibians are dependent on snags and down wood. Fishers, black-backed woodpeckers and other future candidates for federal listing need active management to assure snag habitat is protected or artificially created. The BLM needs to reconsider assumptions about stand replacing fire regimes and treatments to reduce high intensity fire (Odion et al. 2014). Standards for snag retention during post fire logging are needed to assure viability of snag dependent animals currently in decline (e.g. fishers, black-backed woodpecker, olive sided flycatcher). Areas with existing or modeled snag shortages would be candidates for snag creation where unwanted competing trees exist within outer Riparian Reserves. There needs to be systematic active management to maintain desirable snag densities at appropriate spatial scales. At a minimum snags, live trees >32" dbh and hollow logs need to be protected in fisher areas during timber harvest. Similarly, dense stands of trees and fire-killed snags need to be maintained for black-backed woodpeckers.

The BLM must identify a spatially explicit analysis of the effects of salvage logging, thinning, and fire suppression on wildfire dependent black-backed woodpeckers. The black-backed woodpecker is undergoing a federal status review and a proposed listing is likely during summer 2014. The findings from the Federal Register notice (78FR21097)[195] states:

> *On the basis of our determination under section 4(b)(3)(A) of the Act, we find that information in the petition and readily available in our files presents substantial scientific or commercial information indicating that listing the Oregon Cascades-California population and the Black Hills population of the black-backed woodpecker may be warranted. This finding is based on information provided in the petition, in addition to information readily available in our files, on the possible loss of black-backed woodpecker habitat due to* ***salvage logging, fire suppression, and forest thinning****, and on the possible negative population effects due to small population size and climate change. We will initiate a status review to determine whether listing each population as endangered or threatened under the Act is warranted.* (emphasis added)

Thus, the BLM needs to analyze management options that would improve viability of black-backed woodpeckers by instituting conservation measures to provide large patches of intact burned forest, manage for dense forests with no thinning, curtail fuels treatment, and reduce the intensity of fire suppression efforts in appropriate potential habitat.

XII. MARBLED MURRELET

[195] http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0F5

In the NFP and original BLM RMPs, the agency would survey prior to logging in any potential Marbled Murrelet habitat. If there is any indication of occupancy, the agency would protect a 0.5 mile radius of all contiguous existing and recruitment habitat (stands capable of becoming habitat in 25 years). These areas would be managed as LSR. Recruitment habitat was required to "protected and enhanced" by any silvicultural treatment. (Eugene RMP at 62).

WOPR alters this regiment in all alternatives as laid out below. In the preferred alternative, murrelet surveys are restricted to the first 35 miles from the coast, and marbled murrelet habitat generally can extend up to 55 miles inland. Additionally, survey habitat is much more strictly defined as detailed out below. Timber harvest is allowed without surveys if large legacy trees are withheld from harvest and habitat is "maintained."

*Alternative A: No surveys, protect existing sites, seasonal disruption restrictions

*Alternative B: Surveys 35 miles from Coast in "mature or structurally-complex coniferous forest" and "conifer forests under 80 years old with platform trees (must be within 35 miles of coast, conifer, dbh greater than 19.1, over 33 meters tall, potential structure over 10 meters from ground, and contains platform over 4 inches in diameter. If stand occupied protect all occupied habitat plus 300 foot buffer around occupied stand. In stands under 80 with platforms, no surveys needed if platform trees aren't removed; maintain habitat (need to define); seasonal restrictions during breeding season.

*Alternative C: surveys in conifer stands over 120 years old, protect sites same as above for 10 years, and existing site protection lasts 10 years

*Alternative D: surveys same as B (but no 35 mile limitation), buffer all contiguous habitat within .5 mile radius of occupied stand (no gaps wider than 100 meters in forest)

Existing Sites: Marbled Murrelets have high nest-site fidelity, and as such, the PSG protocol recommends treating all occupied Marbled Murrelet sites as occupied sites indefinitely. A murrelet site, due to the inability to locate an exact nest location, occupies the entire area of contiguous forest. Given that the BLM is under direction from the FWS to protect occupied habitat, a majority of BLM alternatives say that the BLM will protect existing sites, but it is unclear what this means. DEIS at 722.

Pursuant to the PSG Protocol and available murrelet studies, occupied habitat means all the trees in a contiguous stand, including platform and non-platform trees. Any logging within this occupied habitat opens up the stand to predators and fragments the bird's habitat, resulting in take.

The BLM states that under three of the four action alternatives, all existing murrelet sites would be "retained." DEIS at 733. The BLM needs to elaborate on what this means. We assume it means that the entire survey area, i.e. contiguous forest stand, for each murrelet nest site is to be

protected, off limits from any kind of logging. Marbled Murrelet nest sites are compromised by forest and canopy openings that can be created by thinning or adjacent clearcutting. The BLM if indeed it is committed to protecting existing occupied sites, needs to ensure that all these sites are off limits from commercial harvest of any kind, because logging will create forest edges and openings that will expose these nest sites to an increased risk of predation. Additionally, even if these sites are in reserves this does not guarantee their protection because of the logging permitted in reserves that can downgrade or remove older forest.

300 Feet: In two of the BLM Alternatives the BLM proposes to protect Marbled Murrelet nest sites with a buffer of 300 feet as opposed to a half mile. This results in marbled murrelet occupied sites are approximately 6.5 acres in size as opposed to approximately 500 acres in size. The BLM provides no analysis or scientific justification that these 300 feet buffers will ensure protection of the nest site. Almost assuredly, a 6 acre nest site for the murrelet will result in the failure or predation of that nest site. We have attached numerous studies on the murrelet to that regard. Therefore, the BLM's assumption in the DEIS, that these sites will not be "taken" because of this 300 foot buffer is false and has zero scientific justification or rationale. This prescription will result in violations of the ESA, the MAMU Recovery Plan, the 5 Year Review Recommendations, and the NWFP Recommendations.

Potential or Suitable Habitat: We are concerned that the BLM is defining potential or suitable survey habitat for these alternatives too narrowly, and will accordingly miss certain types of Marbled Murrelet nest sites from this survey regiment. Murrelets will nest in younger stands if a single legacy tree is present, but the BLM is taking a stand level approach. When averaged, stands that provide nesting trees and habitat for murrelets could have average DBH, tree height, and various measurements that will not satisfy the BLM survey standards laid out above. Please provide scientific justification for the assertions that a large cohort of legacy trees within a forest stand is necessary for marbled murrelet habitat.

The BLM either needs to delete the DBH and height limitations or any limitations based on the number of platform trees present, or the BLM needs to factor in the percentage of nest sites that will occur outside of survey habitat and account for their loss and destruction in the modeling of the impacts. As an illustration, the BLM admits that over 10% of the existing occupied sites exist outside of what the agency has modeled or considered "nesting habitat." DEIS at 733. The agency needs to take a hard look at this issue.

35 Mile Delineation: Please explain or provide ecological or scientific justification for the 35 mile mark in Alternative B. It seems entirely arbitrary and will result in the take of murrelets nesting outside this area.

Habitat "Maintenance": Under the alternatives where surveys are required in the future, we are concerned that the BLM's habitat maintenance program will not result in adequate protection of the newly discovered nest site, not make it safe to assume that new sites will be retained, or that

Marbled Murrelets will continue to reproduce at these locations. The BLM is permitting logging, as long as the large legacy trees with platforms are not removed. Again, it is inadequate to just protect potential Marbled Murrelet nest trees in a stand. Logging trees that provide canopy closure around these legacy trees opens the stand up to corvids and will result in dramatic risk of nest predation and failure. The entire contiguous stand with large buffers needs to be protected in perpetuity to protect murrelets.

Large Block Habitat: The BLM should have considered blocking up large areas of habitat known to contain legacy and platform trees to provide refuges for the marbled murrelet. Aside from the no action alternative, it appears every alternative is reducing protections for the Marbled Murrelet. Given the species flat lining or declining population levels, coupled with an alarming drop in juvenile numbers which signal problems with reproduction, should implicate an alternative that strengthens protections for the species and creates special reserves for the species to guarantee viability of the species.

False Assumptions: In numerous places throughout the DEIS, the BLM assumes that murrelet populations are increasing. This is false, and we have attached numerous recent studies to this regard. Alternatives that all reduce protections for the species because they are based upon this false assumption flaws the NEPA process.

Studies: We have attached numerous studies that provide scientific support for the points made above. Please contact us for further scientific information or any questions regarding the studies and science provided.

XIII. OREGON SPOTTED FROG

Analysis and survey data are needed for the Oregon spotted frog because it has been proposed for federal listing and proposed critical habitat identified. The federal register notice (78FR53582-53632) for proposed listing of the Oregon spotted frog identifies two Oregon spotted frog populations in the planning area. The BLM must identify the need for a field survey in the decision area to locate additional populations in the Lakeview District and Medford District Ashland Resource Area. In the absence of a systematic field survey the BLM must assume that suitable spotted habitat is occupied and will be adversely impacted from grazing, water withdrawals, and potential introductions of alien predator species. The BLM must identify suitable Oregon spotted frog habitat for spatially explicit analysis purposes and to guide needed field surveys. The BLM must treat a species proposed for listing as if it is already listed. The RMP must identify conferencing with US Fish and Wildlife Service to guide the final decision of needed conservation actions and field surveys for the Oregon spotted frog.

XIV. NORTHERN SPOTTED OWL

WOPR Proposed Actions Common to All Action Alternatives:

"Protect stands of older, structurally complex conifer forest" and "maintain habitat for NSO" In LSR.

*Maintain means keep Nesting Roosting and Foraging Habitat (NRF) and dispersal. (Cites III-15 of recovery plan for management allowed in NRF)

*Maintain NRF, Nesting Roosting and Foraging Habitat defined as multi-layered, multi-species canopy, diameter over 30 inches dbh and canopy cover over 60% and decadence components

*Harvest generally prohibited, but road construction allowed, hazard logging allowed unless it downgrades habitat (NRF to dispersal).

*Fire suppression, fuels reduction, insect and disease logging, or any other logging to promote overall health of stand allowed even if it downgrades or removes habitat.

*No requirement for surveys.

*Alternatives A and C: No protections for spotted owl known or historic sites, no requirement for spotted owl surveys. Entirely based on land allocations.

*Alternative B: Is the same as A, except that the Sub-Alternative will protect known and historic sites within the Harvest Land Base, treating these areas as Reserves.

*Alternative D: Maintains all known and historic sites, like Sub B.

NRF and Recovery Action 32 Habitat: It is unclear from the DEIS, but is NRF habitat now being defined as only multi-layered, multi-species canopy, diameter over 30 inches dbh and canopy cover over 60% and decadence components? Spotted owls can and do nest in forests over 80 years old, even if they have not yet developed full decadence components present in unique old-growth forests like RA 32 habitat. In this new plan and DEIS, is the BLM equating RA 32 habitat to NRF habitat?

Better Comparison with NFP:

Generally, spotted owl management under the Northwest Forest Plan consisted of a land allocation approach (Late-Successional Reserves, Riparian Reserves, etc.) and site specific management. In LSRs, timber harvest was not allowed in stands over 80, and in stands under 80 only thinning was permitted to accelerate growth of the stand. In the Matrix, the agency was required to retain 100 acres of best NSO habitat as close as possible to the nest site or owl activity center as a core. Cores are managed as LSR, even if later unoccupied. Additionally within an owl home range (historic, modeled, or documented), the agency is required to maintain certain percentages of the owl's home range (appx. 1.5 mile radius) and certain percentage of the owl's nest core (appx. .6 miles radius). This maintenance of owl habitat generally required the agency to maintain over 60% canopy cover in the area post-treatment.

Also across the Matrix were Connectivity Blocks, where individual tree retention was higher, and the agency was required to maintain 25% of the best habitat within these blocks. Also within each fifth field watershed, 15% of all Matrix lands had to be late-successional forest to help meet spotted owl needs.

The agency is also required to survey for the species in potential habitat, and abide by recommendations made by USFWS to mitigate or eliminate adverse impacts to the species and critical habitat. The agency is also required to comply with the owl's recovery plan.

Under WOPR, almost every alternative shifts these various layers of protection to one land allocation based approach. But the WOPR analysis is unclear and not specific on the impact of the removal of these various protections. For example, if the BLM retained that 15% standard what would still be protected vs. what would be lost? This side by side comparison specific to former individual protective standards is needed to fully grasp the impact of the proposed changes, and to better analyze which changes would be most beneficial or harmful to the species. Please elaborate on a protective standard by standard basis in the FEIS.

Importance of BLM Lands: As an initial point, it is unclear from the NEPA documents produced by the BLM how important BLM lands are to the northern spotted owl. From the logging numbers and conclusions from the modeling in Appendix S, it appears that the differences in harvest land base allocations and volume to be logged will not make any significant impact on owl habitat or recovery objectives. Accordingly, BLM concludes that the primary role of its lands for the northern spotted owl is connectivity in the "central Klamath," coast province.

But this contradicts the DEIS (p 746), that states that BLM are "indispensable" for the northern spotted owl, and critical for both east-west and north-south dispersion. Given the critical nature of BLM reserves, and the critical dispersal element these lands play, the BLM should choose an alternative or modification of an alternative that maximizes reserve size and maximizes dispersal corridors.

In the agency description of riparian reserve objectives, the contribution of conservation and recovery of species is limited to "special status riparian associated species". Formerly the reserves contributed to dispersal and connectivity corridors for terrestrial species as well.

Riparian reserves were originally designed in part to facilitate spotted owl movement between reserves. Given the BLM's lands indispensable need towards owl connectivity, these riparian dispersal corridors should be increased, but it appears that almost every alternative is moving to shrink these riparian corridors. In fact, in the purpose and need for riparian corridors, benefit to terrestrial species like the northern spotted owl was completely ignored, even though this was one of the primary reasons for this allocation's original creation. The BLM should consider an alternative that increased riparian reserve size and protections in order to benefit dispersal capabilities for the northern spotted owl and other terrestrial species. Also it appears the BLM failed to take a hard look at the terrestrial species benefits that are provided by the riparian reserves, or the potential for these benefits to continue.

Scale of Analysis: We are concerned that the spotted owl's scale of analysis was too broad, and may have eliminated many conservation potential benefits by operating on such a large scale. We understand that this scope of analysis is needed for overall harvest projections and a bigger picture, but more local and detailed analysis is needed to more fully capture impacts to individual owl sites, areas of threatened connectivity, and how to rehab or connect isolated patches of owl habitat.

It is clear from the conservation needs of the spotted owl, spelled out on page 747-48, that all high quality habitat is needed for owl recovery, and all sites need to be protected. We are concerned that the definitions of what is considered high-quality habitat has changed, and may have led to much potential habitat falling through the cracks.

Generally under the Northwest Forest Plan, forests over 80 years in age were considered to have developed some older forest characteristics that benefited spotted owls, and was considered nesting, roosting, and foraging habitat (NRF). NRF habitat was considered high-quality owl habitat. It appears that the BLM has not adapted this definition of owl habitat, but has used a more complex metric by factoring in tree height, diameter, canopy cover and a range of other variables that are captured in a rating based on owl selection, i.e. "strongly selected for" or "strongly selected against."

The WOPR NEPA description of the models used for spotted owl habitat are not elaborated upon well. Spotted owl habitat suitability is rated on a 0 to 100 scale (higher numbers indicating better habitat) and the scale is based upon canopy cover, mean tree diameter, and slope. This new metric raises a lot of questions. Exactly what variables were included, and how are they weighted? Were legacy trees accounted for or secondary older cohorts accounted for and how? Additionally, the BLM divided owl habitat into four categories "strongly selected for", "selected for", "selected against", and "strongly selected against." I believe this means that a "strongly selected for" area had a high proportion of northern spotted owl nest locations based on the relative habitat suitability value.

It would be beneficial to the public and our organization to see how this new metric rates against the more simple analysis of stand age. In other words, we would like to know and see maps of how much of the BLM land is over 80 years in age, and how much of this land falls within the different new allocations. We need to see these maps and tables side by side with the new interpretations of owl habitat. How many forests over 80 were lost with this new metric and in what areas, or how many forests were gained based on this new habitat value interpretation?

It was make sense based on the owl's crashing demography that the BLM would err on the side of caution, and use the definition of habitat that would capture the most possible acreage to conserve based on the owl's needs and the indispensable nature of BLM lands to these needs. Additionally, it appears that the BLM excluded habitat that was not in large chunks of certain sizes from its modeling or consideration for conservation. Again it would be nice to see on a map and in tables, how much habitat was lost through these consolidations, and in what areas were they lost. It is a hard reality that much of BLM land in western Oregon is in the checkerboard and highly fragmented, but it would be nice to know that the habitat restoration efforts over the past 20 years were not in vain. Perhaps many of these isolated areas are close to being connected by recovering riparian corridors, or recently thinned forests nearing 80 years in age and attaining mature forests characteristics.

We are worried, that this block defining may have incidentally excluded a good deal of habitat that was formerly the focus of numerous recovery efforts. It would also be beneficial to see maps of where thinning had formerly taken place, so that the BLM could take full advantage and consideration of past restoration efforts. It could be that forests poised to more quickly attain habitat characteristics that would benefit the owl because of restoration efforts, will be lost in the definition shuffle and large scale approach taken by the BLM here.

Please include this analysis, these tables and maps, and comparisons in the FEIS.

Appendix S Modeling: The BLM states that it modeled in all potential timber harvest when calculating and modeling effects from the alternatives to the species. They specifically did not

include any patches under 10 acres, any forests over 500 meters from a road, any early-seral forest, and any forest logged within 50 years. DEIS at 1484.

We are concerned that BLM also did not account for in the model logging defined as "fire-suppression, fuels reduction, insect and disease control, and other activities needed to protect health of the stand or adjacent stands." This type of logging is permitted in LSRs even if it downgrades or removes spotted owl habitat. DEIS at 938.

We have seen numerous timber sales under the Northwest Forest Plan that have logged extensively, downgrading and removing spotted owl habitat that has been classified as "fire-suppression, fuels reduction, insect and disease control" and almost every timber sale planned is justified as a promotion of stand health.

Based on historic rates of this logging, the BLM needs to anticipate and account for a similar degree of this type of forest activity into the future, and needs to model its impact to the Northern Spotted Owl. BLM's failure to do so fails to satisfy the "hard look" required under NEPA.

Additionally, the modelling for the northern spotted owl appears to have an improper baseline. The No Action Alternative is defined as the existing 1995 RMPs for the various BLM districts. DEIS at 27. However, the models for impacts to Northern Spotted Owl habitat uses a baseline of no timber harvest. Appendix S, Page 1464. This is misleading to the public. Under the existing 1995 RMPs, the BLM was largely focused on restorative thinning projects to expedite the creation of Northern Spotted Owl habitat. By in essence changing the baseline to no timber harvest when analyzing impacts to the owl, the BLM masks the beneficial effect of the thinning regiment because under a no timber harvest baseline, these plantations are going to take much longer to development into taller, larger trees and other metrics the BLM is using to define good spotted owl habitat, or "strongly selected for" spotted owl habitat.

The analysis needs to be consistent with its baseline approach, and the modeling for the Northern Spotted Owl needs to be based upon the current management regime under the 1995 RMPs.

Protection of existing sites:

Generally, Northern Spotted Owl management under the 1995 RMPs consisted of a land allocation approach (Late-Successional Reserves, Riparian Reserves, etc.) and site specific management. In LSRs, timber harvest was not allowed in stands over 80, and in stands under 80 only thinning was permitted to accelerate growth of the stand. In the Matrix, the agency was required to retain 100 acres of best NSO habitat as close as possible to the nest site or owl activity center as a core. Cores are managed as LSR, even if later unoccupied. Additionally within an owl home range (historic, modeled, or documented), the agency is required to maintain certain percentages of the owl's home range (appx. 1.5 mile radius) and certain percentage of the owl's nest core (appx. .6 miles radius). This maintenance of owl habitat generally required the agency to maintain over 60% canopy cover in the area post-treatment. To facilitate this management surveys were required for Northern Spotted Owls, and the BLM was also required to comply with the spotted owl's recovery plan.

It appears in every action alternative that surveys for Northern Spotted Owls are not required. Are spotted owl surveys required for management actions in reserves under the various alternatives? The purpose of creating and protecting these reserves is to protect and recover the

Northern Spotted Owl. Thinning efforts that have been occurring for decades in Late-Successional Reserves were done to accelerate the development of spotted owl habitat. Riparian Reserves and dispersal habitat have been maintained to allow spotted owls to recolonize this new habitat, which the BLM models to be extensive in the future in Appendix S.

However, as touched on above, management activities and logging is permitted in the reserves even if it downgrades or removes spotted owl habitat. Surveys should be required for the Northern Spotted Owl for projects in the reserves because the BLM is not modeling for future owl sites, and we want to protect owls that are recolonizing thinned/restored habitat. This would also be an essential monitoring tool for the species, to determine if indeed the species is recolonizing commercially thinned forests.

In order to satisfy Recovery Action 10 and the mandate to conserve spotted owl sites, the BLM needs to conduct surveys for spotted owls and protect sites that it finds. The BLM states that it will, "[i]n areas of significant population decline, sustain the full range of survival and recovery options for the species in light of significant uncertainty." Page 747. The entire planning area is defined as an area of significant population decline. The BLM's insistence on abandoning the unified federal management plan for public lands within the range of the Northern Spotted Owl (NSO) may result in significant unintended consequences that curtail timber production. Existing Habitat Conservation Plans (HCP) and designated critical habitat necessary for the survival and recovery of NSO populations rested upon the assumption that the BLM would implement the NWFP including the protection of terrestrial connectivity values provided by full NWFP Riparian Reserve buffers. The BLM's action alternatives call that assumption into question.

As stated on page 749 of the DEIS:

> *analyses differs from the analyses done by the US Fish and Wildlife Service to inform its decisions on NSO recovery and NSO critical habitat (USDI FWS 2011Aa, Appendix C; USDI FWS 2012). These differences arise from differences in planning needs and regulatory requirements, as well as differences in data availability. The Service delineated critical habitat units, in part, assuming that existing NWFP land use allocations and management standards would continue, including on BLM-administered lands. In contrast, the BLM evaluated scenarios in which NWFP land use allocations and management standards would change on BLM-administered lands in the planning area." –DEIS page 749.*

By withdrawing from the NWFP, the BLM puts existing HCPs, the NSO Recovery Plan, and the basis for NSO critical habitat designations at immediate risk. In contrast, the NWFP provided regulatory certainty that contributes directly to the stated purpose of the RMP Revision Process to contribute to economic stability.

Please note page 769 of the DEIS acknowledges that alternatives A and C would provide less east-west NSO habitat connectivity between the Oregon Coast Range and the Oregon Western Cascades. This is a key distinction in that the USFWS has "identified east-west connectivity through this area as essential the conservation" of the species. DEIS page 769.

Given that the NSO Recovery Plan identifies habitat loss via fire as a significant issue for NSO survival and recovery, the BLM decision on page 774 of the DEIS not to analyze the effects of

its management on this aspect of NSO recovery is noteworthy. We would again point out that page 194 of the DEIS indicates that:

> *The HITA includes management such as thinning and regeneration harvest with no retention and rapid reforestation on a relatively short rotation. This management approach would result in continuous horizontal and vertical fuel profiles and conditions more closely aligned with high severity fire.- DEIS page 194.*

As stated on page 798 of the DEIS "*the NSO currently is under significant biological stress, and at risk of extirpation, over much of the moist forest portion of its range."* Given this reality, and given the BLM's proposal to dramatically increase even-age harvest that increases fire hazard in moist forests, the BLM must analyze and disclose the impacts of its activities on NSO survival and recovery.

Page 804 of the DEIS indicates that the BLM is aware of Recovery Action 6 which calls for thinning of moist forest plantations in order to develop structurally complex forests. Yet the DEIS contains no analysis of the BLM's proposal to greatly increase the creation of moist forest plantations that will presumably then require thinning to attain structural complexity. Indeed, the BLM appears committed to eliminating the leave tree and wood retention standards and guidelines that provide at least some structural complexity in NWFP regeneration harvest units. The US Fish and Wildlife Service relied upon the retention of structural legacies in harvest units over time in development of the NSO Recovery Plan and in the designation of NSO critical habitat.

The final decision on this plan revision should emphasize a large, well-connected reserve system, and do the most to emphasize the unique role of BLM lands in terms of connectivity, productive low-elevation habitat, and demographic support.

DEIS at 746 says -

> *In the Coast Range, the BLM has no opportunity, through habitat management, to reduce risks to the northern spotted owl during the next 50 years, and there are no substantive differences among the alternatives in their potential effects on those risks. However, in the western Cascades and Klamath Basin, the BLM, under all alternatives, would contribute to self-sustaining northern spotted owl populations during the next 50 years. ... The alternatives differ substantively in their contributions to east-west northern spotted owl movement between the Coast Range and western Cascades.*
>
> ** BLM-administered lands are indispensable:*
>
> ** To northern spotted owl reproduction, movement and survival in the southern half of the Coast Range, and in western and central portions of the Klamath Basin;*
>
> ** And in supporting north-south species movement through the southern portion of the Coast Range, and east-west species movement between the Coast Range and western Cascades."*

The final decision must address these "indispensables" with larger reserves, and high quality dispersal habitat (e.g., wider stream buffers, light-touch forestry, etc.) We remain concerned that the scale of analysis under-represents the importance of BLM lands elsewhere.

XV. BARRED OWL: INCREASED LOGGING OF HABITAT WILL INCREASED SPOTTED OWL EXTINCTION RISK

The Revised Recovery Plan for the Northern Spotted Owl includes Recovery Action 32 (RA 32) which recommends protection of a subset of high quality spotted owl habitat. The DEIS fails to clearly articulate the specific purpose of RA 32, which is to mitigate for the invasion of the barred owl. BLM should definitely meet FWS' RA 32 recommendation, but BLM must also consider how to address the more fundamental issue, which is how to manage owl habitat so that the two owls are more likely to co-exist on the landscape.

Since the Revised Recovery Plan for the NSO is not a NEPA document, BLM must conduct a full NEPA analysis to evaluate the efficacy of RA 32 as a mitigation and whether there is more than BLM can do to achieve the goal of spotted owl recovery in the face of barred owl competition, such as conserve *all suitable owl habitat* instead of just a *subset of high quality habitat*. Neither BLM nor FWS has conducted a NEPA analysis to consider whether conserving all suitable habitat, rather than just a subset, would better meet spotted owl recovery objectives. A NEPA analysis of this issue will show that protecting all suitable NRF habitat will not only increase the chances of spotted owl recovery, but provide a host of complementary benefits, including clean water, carbon storage, prevent new species listings, enhance recreation and scenic values, maintain quality of life, and provide community stability.

When deciding whether to protect all suitable nesting, roosting, foraging habitat for the spotted owl or just a subset of high quality habitat, it is important that BLM consider the best available information which is contained in part in the latest meta-analysis of all the spotted demography studies. We expect this report to show that the spotted owl is doing worse than expected, providing support for a cautionary decision to protect all suitable owl habitat instead of just a subset. BLM and others appear to be trying to keep this information out of the public record by saying it is in peer review. Nevertheless, the Department of Interior helped pay for this study; its employees helped collect data and write the report; the report is likely in BLM's possession; and we understand the BLM officials have been briefed on its contents, so it would be arbitrary and capricious not to fully consider the latest meta-analysis and make it part of the administrative record.

In DEIS Appendix S, BLM considered a model that segregated landscape patches into groups ("bins"), including "selected for" owl habitat and "strongly selected for" owl habitat. BLM should protect all selected for habitat, not just strongly selected for. Conserving all suitable/all selected habitat is more likely to advance recovery in several ways. First, it prevents the loss of habitat available for both species, thus reducing the risk of adverse competitive interactions between the two owls. (See more on that below.) Second, it increases the likelihood of future recruitment of additional high quality habitat. Suitable habitat that is not yet "high quality" habitat, is likely the best candidates for future recruitment of high quality habitat. If such habitat is instead logged it will prevent or delay recruitment of more high quality habitat.

The DEIS also needs to critically review the assumption implicit in RA 32 that "allowing for other threats, such as fire and insects, to be addressed by restoration management actions" will in fact enhance rather than detract from spotted owl recovery objectives. As explained in great detail in the fire and fuel section, forest treatments intended to reduce the threat of fire are more likely to cause harm to the owl than fire itself. See the fire and fuel section and Heiken, D. 2010. Log it to save it? The search for an ecological rationale for fuel reduction logging in Spotted Owl habitat.[196]

Barred owl competition and displacement are significant concerns documented in the recent status reviews for the northern spotted owl. The 2004 status review panel unanimously identified barred owls as a future threat to the spotted owl. [197]

The invasion of the barred owl undermines a critical assumption underlying the Northwest Forest Plan - that all *suitable* owl habitat is *available* to spotted owls. With the invasion of the barred owl, tens of thousands of acres old forest owl habitat (which was in short supply even before the barred owl arrived) are now occupied and defended by barred owl to the exclusion of spotted owls. Many acres that were previously assumed to be available to spotted owls is no longer available because the barred owl is there. The logical response now is to protect and restore more suitable owl habitat to reach previously established spotted owl recovery goals.

Based on well-established scientific principles, such as the species/areas relationship, BLM needs to protect more suitable habitat to ensure that these two owl species can co-exist, and to decrease the likelihood of competitive exclusion. This is corroborated by FWS' Final Recovery Plan for the Northern Spotted Owl, which recommends protection of "substantially all of the older and more structurally complex multi-layered conifer forest outside of MOCAs" in westside provinces (as well as on non-federal lands). "These forests are characterized as having large diameter trees, high amounts of canopy cover, and decadence components such as broken-topped live trees, mistletoe, cavities, large snags, and fallen trees."[198] This recovery action is intended to reduce competitive pressures between spotted and barred owls, but unfortunately an analysis has not been done to show *how much* additional habitat needs to be protected to help assure co-existence of the competing owls, and the USFS and BLM have not taken steps to implement this recovery plan recommendation.

The FY2014 Annual Report On Northern Spotted Owl Monitoring states:

> *There is mounting evidence that barred owls may be negatively impacting the spotted owl population within the KSA [Klamath Study Area]. This is illustrated by several apparent population trends: (1) spotted owl detections have been steadily decreasing (Figure 6) and reached the lowest point in 2014, when barred owl detections reached their highest level; (2) fecundity rates appear to be declining (Figure 8) and in only 2 of the previous 10 years was the rate above the 25 year average; and (3) the fecundity rate for sites with known barred owl presence was lower than at other sites and is continuing to decline. Forsman et al. (2011a) noted that the consistency of the negative associations between spotted owl demographic rates and the presence of barred owls supports the conclusion*

[196] Oregon Wild. V 1.0. May 2010. http://dl.dropbox.com/u/47741/Heiken_Log_it_to_Save_it_v.1.0.pdf
[197] https://web.archive.org/web/20060927184758/http://www.sei.org/owl/meetings/Presentations/June/Gutierrez%20Threats.pdf.
[198] See Recovery Action 32.

that barred owls are having a negative effect on spotted owl populations. The recent KSA data, with the combination of decreasing occupancy and reduced fecundity, appears to reinforce this conclusion.[199]

A recent telemetry study showed that in fragmented landscapes barred owls have a survival advantage relative to spotted owls, but that survival advantage diminishes in landscapes with a higher proportion of older forest. In other words, conservation of mature & old-growth forest should be favored because spotted owls are able to compete nearly equally with barred owls in landscapes with a high proportion of old forest.

[200]

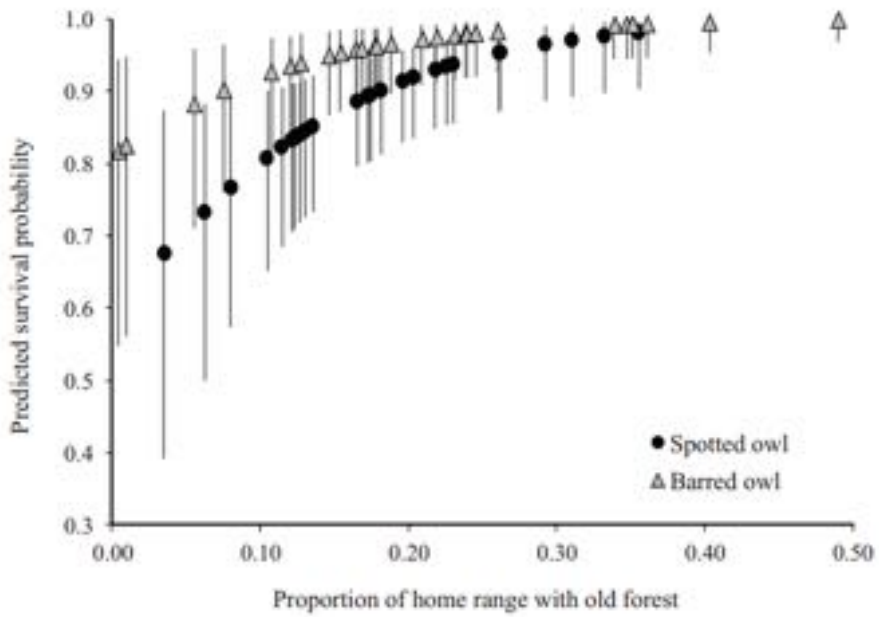

Figure 13. Predicted relationship between mean proportion of old conifer forest within the home range and seasonal (6-month) survival probabilities of radio-marked northern spotted owls ($n = 29$) and barred owls ($n = 28$) in western Oregon, USA, 2007–2009. We calculated point estimates with 95% confidence intervals at observed mean values for each individual under the best-supported model of survival, which included the additive effects of species and proportion of old conifer forest within the home range.

BLM has no NEPA analysis to tier to that supports RA 32 and addresses (on a range-wide scale) how to mitigate the adverse competitive interactions between spotted owls and barred owls. Before BLM adopts a plan that degrade more suitable owl habitat they must consider a range of NEPA alternative that protects more than just the "structurally

[199] Hollen, Horn, et al 2015. Demographic characteristics of northern spotted owls (*Strix occidentalis caurina*) in the Klamath Mountain Province of Oregon, 1990-2014. http://www.reo.gov/monitoring/reports/nso/KLA%20nso%20demog%20annual%20report%202014.pdf

[200] Wiens, J.D., Anthony, R.G., and E.D. Forsman. 2014: Competitive Interactions and Resource Partitioning Between Northern Spotted Owls and Barred Owls in Western Oregon. Wildlife Monographs 185:1–50; 2014; DOI: 10.1002/wmon.1009. https://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/48214/AnthonyRobertFisheriesWildlifeCompetitiveInteractions.pdf

complex older forest" in order to increase the chances that spotted owls and barred owls can co-exist.

The final Recovery Plan for the Northern Spotted Owl has partially addressed the barred owl issue by adopting Recovery Action 32 which urges the FS and BLM to "Maintain substantially all of the older and more structurally complex multi-layered conifer forests on Federal lands outside of MOCAs…" based on the idea that "protecting these forests will not further exacerbate competitive interactions between spotted owls and barred owls as would occur if the amount of shared resources were decreased.[201]" The revised critical habitat for the northern spotted owl was also expanded to "… increase the likelihood that spotted owls would be able to persist in areas where barred owls are also present. … [A]dditional critical habitat may allow for coexistence of the two species, potentially reducing competition. [202]

In considering this recommendation the agencies must prepare NEPA analysis which considers the full potential of suitable habitat quantity and quality and its mediating influence on the interactions between spotted owls and barred owls. Maintaining a subset of suitable habitat as recommended by the recovery plan is one option, but the agencies must consider the full benefits of protecting all suitable habitat, not just a subset, and providing additional mitigation in matrix areas such as managing the matrix to enhance habitat for owl prey species. The recovery plan is not a NEPA document and FWS was not required to consider all reasonable alternatives. Action agencies like the FS and BLM on the other hand are required to fully consider alternatives. It would be wise to do so at a range-wide level, but until that is done, the agencies should not adversely modify any suitable habitat. The recovery plan purports to offer the agencies an exception to the recommendation in Recovery Action 32 ("Land managers have made significant investments of time and resources in planning projects that may have been developed prior to the approval of this Recovery Plan, thus some forests meeting the described conditions might be harvested…"[203] however, FWS cannot exempt the action agencies from NEPA. Protection of additional suitable habitat in order to reduce competitive interactions between the two owls is now a recognized tool in the toolbox and represents significant new information about *any* proposal to modify suitable habitat regardless of how far the planning process may have proceeded.

A 2010 Draft report "Population Demography of Northern Spotted Owls" corroborates the need to protect more than just the highest quality spotted owl habitat as contemplated in the draft Recovery Action 32.

> *We also found a negative relationship between recruitment rates and the presence of Barred Owls and a positive relationship between recruitment and the amount of suitable owl habitat in the study areas. Recruitment was higher on federal lands where the amount of suitable owl habitat was generally highest. [p 96].*
>
> *While our observational results do not demonstrate cause-effect relationships, they provide support for the hypothesis that the invasion of the range of the Spotted Owl by Barred Owls is at least partly the cause for the continued decline of Spotted Owls on*

[201] FRP p 34.
[202] Dugger et al. 2011; Forsman et al. 2011." FWS 2012. CHU draft EA, p 53, 62. http://www.fws.gov/oregonfwo/Species/Data/NorthernSpottedOwl/Documents/CH_DRAFTEnvAssmnt_6.1.12.pdf.
[203] FRP p 35.

federal lands. Our results also suggest that Barred Owl encroachment into western forests may make it difficult to insure the continued persistence of Northern Spotted Owls.[204] *The fact that Barred Owls are increasing and becoming an escalating threat to the persistence of Spotted Owls does not diminish the importance of habitat conservation for Spotted Owls and their prey. In fact, the existence of a new and potential competitor like the Barred Owl makes the protection of habitat even more important, since any loss of habitat will likely increase competitive pressure and result in further reductions in Spotted Owl populations.*[205]

Our results and those of others referenced above consistently identify loss of habitat and Barred Owls as important stressors on populations of Northern spotted Owls. In view of the continued decline of Spotted Owls in most study areas, it would be wise to ***preserve as much high quality habitat in late-successional forests for Spotted Owls as possible****, distributed over as large an area as possible. This recommendation is comparable to one of the recovery goals in the final recovery plan for the Northern Spotted Owl,*[206] *but* ***we believe that a more inclusive definition of high quality habitat is needed*** *than the rather vague definition provided in the 2008 recovery plan. Much of the habitat occupied by Northern Spotted Owls and their prey does not fit the classical definition of "old-growth" as defined by Franklin and Spies (1991), and a narrow definition of habitat based on the Franklin and Spies criteria would exclude many areas currently occupied by Northern Spotted Owls. [p 99]...*[207] *"Population Demography of Northern Spotted Owls." DRAFT COPY 17 December 2010. This draft manuscript is in press at the University of California Press with a projected publication date of July 2011. It will be No. 40 in Studies In Avian Biology, which is published by the Cooper Ornithological Society.*[208]

A well-known axiom of the species-area relationship from island biogeography holds that as habitat area increases, the number of cohabiting species also increases.[209]

The major causes of population and species extinction worldwide are habitat loss and interactions among species. ... The most robust generalization that we can make about population extinction is that small populations face a particularly high risk of extinction. ... [E]mpirical support for the extinction-proneness of small populations has been found practically wherever this issue has been examined. ... The loss of habitat reduced population size ... Larger habitat patches have larger expected population sizes than smaller patches. Therefore, other things being equal, we could expect large habitat patches to have populations with a lower risk of extinction than populations in small

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[204] *See also* Olson et al. 2004.
[205] Horn and MacArthur 1972, Olson et al. 2004, Carrete et al. 2005. [pp 97-98]
[206] USDI Fish and Wildlife Service 2008.
[207] Eric D. Forsman, Robert G. Anthony, Katie M. Dugger, Elizabeth M. Glenn, Alan B. Franklin, Gary C. White, Carl J. Schwarz, Kenneth P. Burnham, David R. Anderson, James D. Nichols, James E. Hines, Joseph B. Lint, Raymond J. Davis, Steven H. Ackers, Lawrence S. Andrews, Brian L. Biswell, Peter C. Carlson, Lowell V. Diller, Scott A.Gremel, Dale R. Herter, J. Mark Higley, Robert B. Horn, Janice A. Reid, Jeremy Rockweit, Jim Schaberl, Thomas J. Snetsinger, and Stan G. Sovern.
[208] http://www.reo.gov/monitoring/reports/nso/FORSMANetal_draft_17_Dec_2010.pdf.

[209] *See especially,* Part III - Competition in a Spatial World *in* Tilman, D. and P. Karieva, Eds. 1997. Spatial Ecology: The Role of Space in Population Dynamics and Interspecific Interactions. Monographs in Population Biology, Princeton University Press. 368 pp.

patches. ... More generally, the relationship between patch size and extinction risk provides a key rule of thumb for conservation: other things being equal it is better to conserve a large than a small patch of habitat or to preserve as much of a particular patch as possible. ... [T]here are likely to be many complementary reasons why large patches have populations with low risk of extinction. " [210]

The territorial occupancy model developed by Lande (1987), extended here to include two competing species, represents a useful tool for evaluating how equilibrium breeding numbers could be affected by changes in habitat availability, demographic parameters, dispersal behavior and interspecific competition … Its application shows that **increases in the exclusive suitable habitat of each species is the best option to maintain viable populations of territorial competitors** in a same area, given that it reduces competition for territories. Increases in habitat overlap by reducing the exclusive habitat available for one species strongly affected the outcome of competition, resulting in extinction of the species for which exclusive habitat had been eliminated.[211]

From these ecological foundations, one can see that the barred owl, by invading, occupying suitable habitat and excluding spotted owls, has reduced the effective size of the reserves that were established in 1994, and thereby reduces the potential population of spotted owls. Extinction risk is increased by this loss of habitat and smaller population. If we provide more suitable habitat, the population potential increases, and the risk of extinction decreases. The most rational way to respond is to protect remaining suitable habitat, expand and restore the reserve system to provide more suitable habitat to increase the likelihood that the two owl species can co-exist.[212]

This view is corroborated by owl biologist David Wiens who was interviewed on the Lehrer News Hour, he said: "*The more habitat you protect, the more you're going to alleviate the competitive pressure between the species. Rather than reducing it and increasing the competitive pressure between these two species, we need to provide as much habitat as possible for them*."[213] Robert Anthony agrees, "*If you start cutting habitat for either bird, you just increase competitive pressure.*"[214] And in the same article Eric Forsman added "*You could shoot barred owls until you're blue in the face," he said. "But unless you're willing to do it forever, it's just not going to work*."

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[210] Oscar E. Gaggiotti and Ilkka Hanski. 2004. Chapter 14 - Mechanisms of Population Extinction. *In* Ecology, Genetics, and Evolution of Metapopulations. Elsevier. 2004. http://web.archive.org/web/20070612211945/http://www.eeb.cornell.edu/sdv2/Readings/Gaggiotti&Hanski.pdf

[211] Martina Carrete, Jose´ A. Sa´nchez-Zapata, Jose´ F. Calvo and Russell Lande. Demography and habitat availability in territorial occupancy of two competing species. OIKOS 108: 125-136, 2005 http://www.ebd.csic.es/carnivoros/personal/carrete/martina/recursos/13.%20carrete%20et%20al%20%282005%29%20oikos%20108-125.pdf.

[212] Put another way, when threatened with extinction, "the best defense is a strong offense" that is, species are more likely to persist if they have a large, well-distributed population size and if we minimize all manageable threats. Dunham, Jason. 2008. Bull trout habitat requirements and factors most at risk from climate change. http://www.fs.fed.us/rm/boise/AWAE/projects/bull_trout/bt_Dunham.html

[213] DAVID WIENS. News Hour interview. "Biologists Struggle to Save the Spotted Owl." December 18, 2007. http://www.pbs.org/newshour/bb/science/july-dec07/owl_12-18.html.

[214] Welch, Craig. 2009. The Spotted Owl's New Nemesis. Smithsonian Magazine. January 2009. http://www.smithsonianmag.com/science-nature/The-Spotted-Owls-New-Nemesis.html?c=y&page=2

The book "Signs of Life: How Complexity Pervades Biology" by Sole and Goodwin has an interesting discussion that immediately brings to mind the barred owl/spotted owl issue. Chapter 7 of the book describes work being done by a Japanese researcher named Kaneko who developed and explored a modeling concept called "coupled map lattices." The lesson from these models is that when habitat is abundant, competing species operate within the "coexistence regime" but when habitat becomes scarce the model switches to a new attractor and operates in the "exclusion regime." This model strongly supports the idea that retaining more habitat increases the likelihood that spotted and barred owls can coexist, and if we eliminate reserves or continue to log suitable habitat in the matrix, then barred owl may competitively exclude and extirpate the spotted owls. Similar results are demonstrated in resource competition models described by Tilman, Lehman, and Thompson. 1997.[215]

XVI. SISKIYOU MOUNTAIN SALAMANDER

The proposal to eliminate the survey and manage program and to allow for ground-disturbing activities in the majority of Siskiyou Mountain Salamander (SMS) sites managed by the BLM may directly contribute to the need to list the species under the Endangered Species Act (ESA). Implementation of the action alternatives in the DEIS would undermine several key elements of the 2007 SMS Conservation Strategy that were deemed necessary in order to "maintain well-distributed populations" and "avoid a trend towards listing under the ESA."

The BLM is planning to eliminate the Adaptive Management Area (AMA) land use allocation that contains 67% of known SMS sites according to page 12 of the 2007 SMS Conservation Agreement to which the BLM is a party. The BLM is also proposing to significantly reduce the width of Riparian Reserves that were relied upon as a selection criterion for determining "high priority" SMS sites.

Page 5 of the SMS 2007 Conservation Agreement and page 5 and 40 of the 2007 Conservation Strategy indicate that "*significant changes in Forest Service or BLM land-use allocation within the area of the conservation strategy"* must trigger *"immediate review of the Conservation Agreement."*

Page 3 of the Conservation Agreement acknowledges, *"habitat loss, degradation and additional fragmentation of discrete populations are all potential threats to the species."* The BLM RMP action alternative may directly contribute to all three of these threats to species persistence.

Page 4 of the Conservation Strategy indicates that the location of reserves (including Riparian Reserves) influenced the selection of high priority SMS sites and page 18 indicates that an objective of the strategy was to *"utilize the existing federal land use allocations as a foundation*

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[215] Tilman, Lehman, and Thompson. 1997. Plant diversity and ecosystem productivity: theoretical considerations. Proceedings of the National Academy of Sciences. 94:1857-1861. http://www.cedarcreek.umn.edu/biblio/fulltext/t1694.pdf. See also, Tilman, D. and P. Karieva, Eds. 1997. Spatial Ecology: The Role of Space in Population Dynamics and Interspecific Interactions. Monographs in Population Biology, Princeton University Press. 368 pp. and Valenti D., Fiasconaro A., Spagnolo B. Pattern formation and spatial correlation induced by the noise in two competing species http://arxiv.org/PS_cache/cond-mat/pdf/0401/0401424v1.pdf.

for providing a high likelihood of continued persistence." This objective, and the underlying assumptions of the Conservation Strategy, are undermined by BLM plans to abandon the land-use allocations of the NWFP.

Page 17 of the Conservation Strategy indicates that it rests upon the reasonable assumption that *"clearcut logging is no longer carried out on Forest Service or BLM lands within the range of this species."* The RMP DEIS renders this assumption invalid.

Please note that page 21 of the Conservation Strategy indicates *"if intervening lands become highly disturbed and unsuitable habitat conditions predominate, connectivity to retain interacting individuals across the landscape may need to be re-addressed."*

Page 21 of the Conservation Strategy also notes "long-term effects on the species from federal land management of occupied salamander habitat sites that are not chosen as high priority sites are unknown." The RMP DEIS does not disclose or analyze the uncertainties associated with BLM plans for non-high priority SMS known sites.

Please note that the January 24, 2008 Federal Register Notice by the USFWS denying ESA protection to SMS specifically states that "*given the stability of Federal Land and Resource Management Plans and the Northwest Forest Plan since its establishment in 1994, we assume that significant changes to current land management practices on Federal lands are not likely to occur within 20 years*."[216] This RMP DEIS renders that assumption invalid.

The USFWS also relied upon the belief that SMS management would include *"NWFP Matrix Standards and Guidelines [that] are designed to provide for important ecological functions such as dispersal of organisms, carryover of some species from one stand to the next, and maintenance of ecologically valuable structural components…"* 4388. The BLM RMP revisions undermine the NWFP conservation strategy relied upon by the USFWS in its determination that SMS need not be listed.

Additionally, as stated by the USFWS, the "*Survey and Manage guidelines have provided additional security for salamander populations across the vast majority of the range of the Siskiyou Mountains salamander.*" 4390. That security would be removed under every BLM RMP action alternative.

The USFWS determination not to list SMS under the ESA specifically mentions the 2007 Conservation Agreement and its assumption that *"many additional populations will continue to persist in reserved lands and in Matrix where habitat is retained for other reasons."* 4390. As discussed above, the BLM is proposing to reduce the size of Riparian Reserves and eliminate Matrix tree retention standards that were relied upon in both the Conservation Agreement and in the USFWS listing assessment.

XIII. PROPOSED TO BE LISTED SPECIES

Original RMPs under the NFP required the protection and conservation of proposed to be listed species. The new purpose and need for BLM WOPR eliminates this category of species for conservation mandates (likely overlooked in No Action Alternative). There is no analysis in the

[216] Vol. 73, No. 16. 4381.

DEIS of these particular limbo species. These species would be considered Bureau Sensitive Species, but the BLM states that it will only be providing conservation measures for these species to the extent that they are compatible with O&C Act purposes. Proposed to be listed species, deserve ESA protections, but the FWS is unable to address these protections given other higher priorities. These species should deserve special treatment under the plans, as they did under the NFP. Merely conserving to extant compatible with the O&C Act will lead to conflicts with the ESA, and potential future listings of these species.

OFF ROAD VEHICLES

While there is responsible Off Road Vehicle (OHV) use in western Oregon, illegal off road vehicle (ORV) use is predictable, widespread, and systemic on some BLM lands in the analysis area.

> *In this analysis, the BLM assumed that OHV users would operate vehicles consistent with BLM decisions about OHV use. Although the BLM has some site-specific and anecdotal information about illegal OHV use, the BLM does not have a basis for predicting the location or effects of any widespread or systemic illegal OHV use. – DEIS, 321*

Throughout the DEIS, the BLM refuses to analyze or disclose the significant, predictable, ongoing impacts of illegal off-road vehicle (ORV)[217] use. There is no rationale basis for the agency's contention that off-road vehicle users will abide by BLM rules and regulations.

Off-road vehicle damage to meadow and riparian habitats is particularly pronounced, significant, and predictable. Numerous meadow and riparian sites have been blocked or rehabilitated by the BLM on a continuous basis, only to be trashed by motorized use again and again.

The analysis contained in the DEIS repeatedly assumes that off-road vehicle damage is limited by steep forested landscape, yet page 623 of the document acknowledges that in "most of the interior south, the ability to track numerous different routes across the open space can lead to degradation and erosion…."

Rather than disclosing and analyzing the foreseeable impacts of illegal ORV use, the DEIS repeatedly claims that "the BLM does not have a basis for predicting the location or effects of any wide spread or systemic illegal OHV use." This is not an accurate statement. By observing past illegal OHV impact acres, it is reasonable to assume that sites that have been repeatedly trashed will be trashed again. Additionally, the BLM ignores the need to create an ORV enforcement strategy rather than relying on a strategy of user compliance that has been proven ineffective.

Please note that there is at least one website dedicated to advocating that the public violate BLM travel management policies in the Medford District.[218]

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[217] Please note, the BLM refers to such vehicles as "off highway vehicles" (OHVs) when it is much more accurate to describe them as "off road vehicles" (ORVs).

The agency's reliance on regulations and land use allocations to mitigate significant and foreseeable ORV damage to watersheds, wildlife and recreation has been proven ineffective. Approximately 75% of ORV riders regularly ignore regulations such as speed limits and closures. *See, e.g.*, Testimony of Jack Gregory, Special Agent in Charge (Ret.) USFS Southern Region, Before Subcommittee on National Parks, Forests, and Public Lands, U.S. House of Representatives, March 13, 2008, (hereafter "Gregory Testimony"). The testimony at 8 states:

> *Even if agency ORV route planning makes sense in downtown offices and public meeting rooms, there must also be a well-funded on-the-ground monitoring and enforcement component. This is where [agencies have] failed time after time. Once plans are drawn up and implemented, there is not adequate funding for field resources to police this activity where it's actually occurring. Throughout my years of working for the FS, I witnessed the development of many good plans, but a failure to provide the field resources to properly execute them. It is unfortunate that the FS is long on "plans" and seemingly good intentions, but very short on effective field implementation, particularly with providing necessary LE [law enforcement] resources for dealing with serious problems.*

Similarly, another law enforcement officer has publicly testified "about the growing burden on local law enforcement caused by a growing minority of reckless OHV riders and the need for effective management." Statement of Frank Adams, Executive Director of the Nevada Sheriffs' and Chiefs' Association, at the Senate Energy and Natural Resources Off-Highway Vehicle Management on Public Lands, Jun 2008. Sheriff Adams noted that "any kind of public lands law enforcement [is] challenging, but particularly with OHVs given the technology that allows users to cover vast distances in remote areas over a short period of time." *Id*. The Sheriff observed:

> *With such great land-masses and so few enforcement officers, it does not take a large group of individuals disobeying federal and local laws to cause a problem. We have determined that a small number of individuals riding OHVs that use our outdoors for recreation are causing the problems. They are reckless in the operation of their vehicles; they disregard instructions to stay off of sensitive lands and are destructive to the facilities that are provided for their use. This is evident by the increase in the number of injuries that are being reported and the increase in the number of search and rescue mission that occur. We see blatant disregard for areas that are posted as "do not travel" as they have been designated sensitive areas. Part of the problem that encourages this reckless behavior stems from the feeling of anonymity that many of the OHV riders have because there is no way of identifying them or their vehicles. Most States do not require a license plate for such vehicles. Those States that do require tagging, the tags are not large enough to be seen with out being in almost on top of the vehicle. If you are able to determine that there is a tag on the OHV, determining the tag number is almost impossible. Id*. at 3.

While assuredly many ORV riders have lawful intentions and "follow the rules," a disturbingly high percentage show a pronounced preference and practice among off-road vehicle

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[218] http://www.grantedright.com/Home_Page.html

recreationists to travel cross-country and ride off of legal routes. Indeed, this conclusion is derived from publically available data generated by the ORV community itself.

Monaghan and Associates, a marketing research firm, conducted a 2001 study at the behest of the Colorado Coalition for Responsible OHV Riding, a coalition of off-road vehicle representatives, environmentalists and public officials. *See* Status and Summary Report; OHV Responsible Riding Campaign. Researchers surveyed Colorado off-road vehicle riders through a series of three focus groups.

Monaghan and Associates found that the majority of off-roaders understand that staying on designated routes is "fundamental trail etiquette" and that going off trail is not "correct" off-road vehicle behavior. *Id*. at 11. The survey revealed, however, that regardless of this knowledge "as many as two-thirds of adult users go off the trail occasionally." *Id*. A significant percentage of riders, 15-20%, admitted to frequently breaking the rules and riding off of legal routes often. *Id*. Survey participants also stated that "others" ride off-route and cause most of the damage. *Id*. at 7. "Many reluctantly admit to having gone off trail 'a couple times' but felt that it is permissible if rarely done .... '*just this one time. '" Id.* (emphasis in original). Tellingly, the report concluded: "In a 'nutshell,' it is our premise that further ***information*** and ***education*** per se - will <u>not</u> result in substantial behavioral change." *Id*. at 1 (emphasis in original).

Similar results were found in Utah. In 2002, the Utah Division of Parks & Recreation commissioned Utah State University to survey riders to determine their "OHV uses and owner preferences." The university conducted a telephone survey of 335 riders from a random sample of the 50,676 people who registered off-road vehicles with the state in 2000. *See* Fisher, Andrea L., Dale J. Blahna, and Rosalind Bahr, 2001; Off Highway Vehicle Uses and Owner Preferences in Utah. Logan, Utah. Utah State University, at iv,

The Utah report reveals that an inordinate number of riders prefer to ride "off established trails." Of the ATV riders surveyed, 49.4% prefer to ride off established trails, while 39% did so on their most recent excursion. Of the dirt bike riders surveyed, 38.1% prefer to ride off established trails, while 50% rode off established trails on their most recent excursion. *Id*.

It should be noted that pro-ORV groups commissioned both of the studies cited above. Additionally, these data are ratified by two other recent reviews. In 2006, the Montana Fish, Wildlife and Parks received survey responses from 446 owners of registered off-road vehicles. *See* Lewis, M.S., and R. Paige. 2006: Selected Results From a 2006 Survey of Registered Off-Highway Vehicle (OHV) Owners in Montana. Responsive Management Unit Research Summary No. 21. Prepared for Montana Fish, Wildlife and Parks. Among the full sample of respondents, almost a quarter, 23%, "never" or "sometimes" comply with Montana's law against cross-country driving even though off-route riding has been illegal there since 2001. *Id*. at 2. Over 28% "never" or "sometimes" avoid riparian areas and wetlands, in violation of rules for federal and state public lands in Montana. Sixty-four percent of those surveyed have used an off-road vehicle while hunting. *Id*. at 2. The majority of this hunting subset admits to illegally riding cross-country — over 58% have traveled off of legal routes to retrieve downed game. *Id*. In the context of the assumption that land use allocations and designated BLM routes will cure unlawful ORV behavior, this figure is notable to the extent that the survey found that "[t]wo-thirds of the respondents who have used an OHV when hunting reported they have seen written materials (e.g., brochures, posters, articles, etc.) that address the topic of hunting and responsible OHV

use." *Id*. The survey concluded, therefore, "most OHV owners in Montana have been exposed to a variety of safety and responsible use information." *Id*. at 4. Regardless of this "education," the survey noted:

> *OHV owners do not always follow important guidelines for responsible use when operating OHVs. For instance, about a third of the respondents who have used an OHV when hunting disagree or strongly disagree that "OHV users should NOT travel off legal routes to retrieve harvested game." Only 42 percent of the respondents who have used an OHV when hunting reported they always follow this guideline. Nearly 7 percent reported they never follow this guideline. And, 52 percent reported they follow this guideline sometimes. Id*. (emphasis in original).

Echoing these findings are the results of a 2003 survey of Wisconsin ATV users. A study of "motivations and attitudes" by graduate student Robert A. Smail at the University of Wisconsin - Steven's Point, included a survey of user preferences for riding and found nearly two-thirds of respondents prefer to ride off maintained trails.

> *[S]urvey respondents were asked to indicate where they prefer to ride their ATV. Of the five possible choices, 'On maintained trails' (28.5%) ranked third. The top choice was 'On user created trails' (33.3%) followed closely by 'Cross country, off trails and roads' (32.0%). In other words, 65.3% of all users prefer to ride off of maintained trails." Id. Dr. Smail concluded that the survey results demonstrated that past orthodoxies premised on education and the assumed "positive peer-pressure" flowing from membership in established "rider clubs" are not adequate to generate trail-riding compliance; they had "no influence." Id. at 69. Rather, "[t]hese results indicate that messages promoting responsible ATV riding or use will need to be reformulated and law enforcement will need to be increased in order to prevent resource damage and user conflict.*[219]

Finally, the U.S. Fish and Wildlife Service found a near universal disregard for motorized guidelines when the BLM experimented with a "voluntary off-road vehicle route system" in Nevada. The area in question serves as a refuge for the disappearing Sand Mountain Blue butterfly, a species proposed for listing under the Endangered Species Act. A 2006 monitoring report compiled over a three-year period found that "98 percent of all existing routes continued to be used and new routes were created, indicating an ongoing expansion of habitat degradation." Nevada Fish and Wildlife Office, U.S. Fish and Wildlife Service. 2007. 12-Month Finding on a Petition to List the Sand Mountain Blue Butterfly (*Euphilotes pallescens ssp. arenamontana*) as Threatened or Endangered with Critical Habitat. Federal Register, Vol. 72, No. 84. *See* pages 24260-61. The study also found that "about 50 percent of all noncompliance points occurred *at or near red carsonite posts installed to alert riders that travel was discouraged in areas behind the posts*" to protect sensitive butterfly habitat. *Id*. at 24261, (emphasis added). The cumulative impacts of such "noncompliance points" were four-fold as each discouraged route experienced multiple incursions. *Id*. The FWS noted that "[h]igh levels of noncompliance occurred *from the*

[219] Robert A. Smail, July 2007, Wisconsin All Terrain Vehicle Owners: Recreational Motivations and Attitudes Toward Regulation, A Thesis Submitted in partial fulfillment of the requirements of the degree Master Of Science In Natural Resources Resource Policy And Planning College Of Natural Resources University Of Wisconsin, Stevens Point, Wisconsin, copy obtained from author.

onset of implementation of the voluntary system, and the number of incursions into habitat outside of the encouraged routes *increased* in 2006. *Id*. at 24260-61.

Providing a broader overview, in September 2007, the Izaak Walton League, one of the country's oldest conservation groups, released a study of state game and fish managers revealing that 83% of wildlife managers have seen "resource damage to wildlife habitat" caused by ORVs and 72% cited "disruption of hunters during hunting season" as another impact from ORVs. "Off-Road Vehicle Impacts on Hunting and Fishing, The Izaak Walton League of America, 2007, at 15.

Similarly, fully 60% of fisheries managers deemed ORV use to generate adverse impacts on Riparian resources. *Id*. at 16. Notably, 41% of wildlife and 50% of fisheries managers do not believe that current standards and protections adequately protect the resources they are responsible for with the perceived attitude of lawlessness playing a central role: "We have numerous rules and regulations, but many ORV riders have an attitude that they should not apply to them and many just ignore some rules because they want to ride someplace. It increases law enforcement effort and takes time from other areas." *Id*. at 15. "There seems to be a misconception that just because you own a piece of equipment that can go almost anywhere, that you are entitled to go almost anywhere including public land dedicated to wildlife management. This needs to change." *Id*. at 16. Further, "They go where they please, when they please, if they please. Not all do this, but many do. They cause significant upland erosion as well as stream side and in-stream damage." *Id*. "Many ORV riders seemingly have no conservation ethic or appreciation for habitat management or understanding of the damage they cause." *Id*. Another said: "While there is regulatory ability, there is insufficient enforcement response capability to adequately respond to illicit ORV use." *Id*. at 15.

In a tracking review on federal land managers, in December 2007, the Public Employees for Environmental Responsibility ("PEER") released the first-ever survey of federal rangers' views on off-road vehicle issues. "Rangers for Responsible Recreation: Off-Road Vehicle Issues Survey of SW Law Enforcement Professionals - Bureau of Land Management (BLM) & Forest Service (FS), 2007.

Strikingly:

> *• 91% of respondent rangers agree "off-road vehicles present a significant law enforcement problem in my jurisdiction";*
>
> *• More than half (53%) feel "off-road vehicle problems in my jurisdiction are out of control"; and*
>
> *• 74% say that off-road abuses "are worse than they were five years ago" while fewer than one in six (15.2%) believe the situation is improving. Id. at 1.*

Moreover, the survey found that rangers believe their agencies are unequal to the task of controlling ORV abuse:

> *• 62% believe their agency is not "prepared to deal with the ORV problems we are experiencing"; and*

• 78% do not think their department "devotes adequate resources to cope with ORV problems." Id. at 3.

An article published in the Washington Post entitled "'Off-Road Rage' Climbs as Trails Get More Crowded," was published on August 12, 2008, and appeared in section A at page 2. The report provides additional documentation of many ORV riders' unlawful — even violent — disregard of the rules and regulations applicable to ORV use on public lands.

Additionally, in the Roseburg BLM District, the White Rock OHV area is listed in Table N-287 (Appendix N, page 1284) as "managed as Extensive Recreation Management Areas (ERMA)" under alternatives C and D. However, this is the only place in the entire DEIS where the White Rock OHV area is mentioned. There is no NEPA analysis of the environmental impacts of creating this new OHV area. In fact, the DEIS makes it seem as if it is an existing OHV emphasis area. It is not. Local OHV enthusiasts have asked the BLM to create the White Rock Emphasis Area, but the Roseburg BLM has not acted on this request. The BLM cannot now choose alternative C or D and create it without any NEPA analysis.

OHV recreationists have severely degraded this area by riding off trails, riding through wetlands, and by creating play mud-bogs in areas like Yellow-Jacket Springs. They have violated closed and barricaded roads to do this. The Roseburg BLM has admitted they are powerless to enforce current regulations that forbid resource damages. Making a new White Rock OHV area, without NEPA analysis would only exasperate this problem.

I. THERE IS GREATER DEMAND FOR NON-MOTORIZED RECREATION THAN FOR EXPANDED ORV OPPORTUNITIES.

As illustrated on Table 3-126 (page 448) of the DEIS, there are currently three times as many participants interested in wildlife viewing and nature study on BLM lands than in motorized off-highway vehicle travel. Similarly, driving on *existing BLM roads,* camping and picnicking, non-motorized travel and hunting all draw more than one million participants yearly and significantly exceed the demand for motorized ORV travel.

In the Medford District the demand for non-motorized recreation compared to ORV use is even more pronounced. Page 462 of the DEIS projects 85,000 hiking trail users at sites within 30 minutes of Medford and only 18,589 ORV visits in the same area. Within an hour of Medford the BLM anticipates 137,371 hiking visits and only 30,041 ORV participants.

Please note that page 493 of the DEIS clearly establishes that "the most common outdoor recreation activities, requiring the least equipment or specialized skill, have the greatest participation numbers, and…provide the greatest total net benefit."

Given that the public prefers non-motorized recreation and that it provides the most social and economic benefits, it is arbitrary and capricious for the BLM to continue to emphasize ORV use

on tens of thousands of acres of public lands to the detriment of terrestrial and aquatic forest resources, neighboring landowners and other forest users.

II. BLM ORV ROUTE DESIGNATION CRITERIA

Page 638 of the DEIS indicates that the agency is aware of the route designation criteria in 43 CFR 8342 which directs the agency that ORV "[a]reas and trails shall be located to minimize damage to soil, watershed, vegetation, air, or other resources of the public lands and to prevent impairment of wilderness suitability." Yet all of the action alternatives appear to codify ORV routes that directly harm soils, streams, riparian vegetation, and lands with wilderness character.

Page 638 also acknowledges that 43 CFR 8342 directs the BLM that ORV"[*a]reas and trails shall be located to minimize harassment of wildlife or significant disruption of wildlife habitats. Special attention will be given to protect[ing] endangered or threatened species and their habitats."* Yet the action alternatives appear to codify numerous ORV routes that directly harm listed species such as the northern spotted owl (NSO).

The DEIS must analyze, disclose, avoid, or mitigate the impacts of foreseeable ORV noise harassment from proposed motorized use on NSO reproductive success and behavior patterns.

We bring to your attention the following language from pages 82-83 of the Rogue River/South Coast Biological Assessment FY04-08 for the Medford District BLM and the Rogue River-Siskiyou National Forests, July 11, 2003:

> *Noise above ambient levels may disturb or flush from their nest site, could cause a juvenile to prematurely fledge or could interrupt foraging activity. While the effects of noise are not clear, any of these impacts could result in the reduced fitness or even death of an individual bird due to missed feedings, or reduced protection of the young if adults are disturbed.*
>
> *There has been little data regarding the impacts of noise on spotted owls and other listed species. However, the Service has recently analyzed the available data on spotted owls, murrelets and other species (USFWS 2003c; Appendix D), and has consulted species experts who have worked extensively with spotted owls to determine the extent to which above-ambient noises affect spotted owls. The results of this analysis indicate that spotted owls may flush from their nest or roost or may abort a feeding attempt of their young when the following activities occur up to the specified distances (Table 11). The Lacy Washington office of the Service in two biological opinions has used this data and it is the Service's current understanding of harassment distances based on the best available science. Consequently, it will be incorporated into this Opinion as current guidance for harassment distances for various activities as it relates to adverse effects to the spotted owl from harassment due to disturbance. If the Services' understanding of these distances changes, adjustments to these distances may be recommended in the future.*
>
> *Above-ambient noises further than these Table 11 distances from spotted owls are expected to have ether negligible effects or no effect to spotted owls. The types of reactions that spotted owls could have to noise that the Service considers to have a*

negligible impact, include flapping of wings, the turning of a head towards the noise, hiding, assuming a defensive stance, etc.[220]

The risk to spotted owls from noise disturbance is tied to the timing of the activity and is highest when adults are defending young or eggs in a nest or are feeding and protecting recently fledged juveniles. During this period, the separation of adults and their young could result in death or injury to the young as a result of predation. The leading known causes of mortality in juvenile spotted owls are starvation and predation by great horned owls (Miller 1989; USDI 1990a~listing document). The time period when adults or offspring are unable to move away from threats or noises is between the time that the eggs are laid and when the young can fly, which is generally about two weeks after the young fledge from the nest. After the young are able to fly, we assume that adults and young may move, but would stay together if annoyed by noise from the proposed action.

The timing of these development benchmarks (nesting and fledging) varies geographically, although spotted owls are generally believed to start laying their eggs around the beginning of March. In Oregon, data based on fledge dates indicate June 30th is the date by which almost all juveniles are capable of flight. This 1 March – 30 June period of vulnerability is called the "critical nesting period."

Activities that may result in above-ambient noise levels include the use of mechanized tree harvest equipment, road hauling, aircraft/helicopters, heavy equipment, hydraulic hammers, blasting, and road construction and maintenance equipment. In some instances, noise levels produced by these activities can remain above ambient levels out to one mile (for blasting) and still affect spotted owls. If potentially disturbing activities are implemented during the spotted owl critical nesting season (March 1 – June 30) within the prescribed distances in Table 11 of occupied or unsurveyed spotted owl habitat, those activities may adversely affect spotted owls by causing adults to flush from their nest site, abandon a nest, or cause juveniles to prematurely fledge, interrupt foraging activity, or result in increased predation due to less protection when the adult flushes. After June 30, it is presumed that most fledgling spotted owls are capable of sustained flight and can avoid harmful disturbances; thus, disturbance from proposed actions within the prescribed distances shown in Table 10 of known activity centers or unsurveyed suitable habitat, and between July 1 and September 30, may affect, but are not likely to adversely affect, spotted owls.

The SW Oregon administrative units typically utilize minimization measures to avoid adverse impacts to nesting spotted owls wherever they occur, but it is likely that some adverse impact may occur to owls due to disturbance in unsurveyed habitat within or adjacent to project areas. The SW Oregon administrative units and the Service, used an average of the new Service disturbance distances to assess the potential impacts associated with tree harvest activities (the average of disturbance distances associated with tree harvest =100 yards - Table 10), they estimated 40 percent of an average zone of 300 feet around a standard project area (presumed to be 50 acres) would be NRF (as

[220] USFWS 2003.

determined by the percentage of suitable habitat in the matrix according to the Environmental Baseline Tables in the Assessment).

We also bring to your attention that page III-85 of the Rogue River-Siskiyou Draft Environmental Impact Statement for Motorized Vehicle Use indicates that noise disturbance from OHV use is roughly the equivalent of that which occurs from chainsaw use:[221]

Page 638 of the DEIS further acknowledges that 43 CFR 8342 directs the BLM that ORV:

> *"[a]reas and trails shall be located to minimize conflicts between of[f]-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors."* Yet the BLM continues to emphasize and prioritize ORV use near homes and communities. As stated on page one the May 5, 2009 comments of the City of Jacksonville regarding the Draft Timber Mountain Recreation Management Plan DEIS, "[*n]oise from BLM sponsored OHV trails is not compatible with the existing and proposed non-motorized reaction of Jacksonville land. The BLM must provide sufficient distance and buffers between BLM trails and Jacksonville land so that OHV noise does not disturb the peace and quiet desired by hikers, equestrians, picnickers and other non-motorized recreational pursuits."*

With regard to public off-road vehicle travel the BLM must analyze the "closed" option for the as a first step to protect sensitive public lands from motorized vandalism and associated illegal activities (trash dumping, poaching, meth labs, marijuana gardens, soil/plant destruction, invasive plant introduction, pathogen introduction of *P. lateralis*, and mobilization of fish killing fine sediment).

Circumstances have changed since 1995 with exponential growth of motorized vehicle activity on public lands. Deferring analysis for basic RMP decision about motorized use designations would jeopardize other outcomes for soil productivity, timber production, quality traditional recreation, fire prevention, public safety, endangered species recovery, and water quality. Deferring basic analysis and motorized use designations would not be consistent with BLM directives to minimize damage from motorized use. Analysis needs to clearly distinguish between unauthorized motorized use that damages lands (vandalism) and motorized use that is currently authorized (recreation). Lumping these creates huge amounts of confusion and misinformation.

It is prudent to single out the Medford District for motorized use analysis and subsequent designations with RMP decision as the Medford District has had unprecedented and ongoing damage from motorized users due to its context. A network of historic but unauthorized mining roads are regularly used by off highway vehicles to access fragile Jeffrey pine savannas, meadows, and wetlands where rare plants are destroyed and meadow hydrology irreparably damaged. Similarly, a large system of abandoned native service logging roads are regularly damaged during the wet season to access off road areas within timber stands. The French Flat ACEC on the Medford District receives nearly daily damage by off road vehicles despite official

[221] http://www.fs.fed.us/r6/rogue-siskiyou/projects/travel/deis.shtm

vehicle closures to protect *Lomatium cookii*, a federally listed species. Similar damage occurs on most serpentine lands in the Medford District with naturally sparse vegetation, mining history, and gentle slopes that make these areas attractive to motorized vandals. The interspersion of hundreds of home-owners adjacent Medford District BLM lands provides for illegal motorized access that is largely unregulated.

Analysis must inform the public and decision makers that ongoing and largely unregulated motorized access to Medford District BLM lands is connected to illegal and undesirable activities such as: destruction of critical habitat for coho salmon; destruction of listed plant species critical habitat; increased soil compaction; destruction of upland and riparian plants; animal poaching; timber theft; toxic trash dumping; meth labs; stream water pollution; marijuana gardens; rodenticide use that kills spotted owls, fishers, foxes; fertilizer applications that poison streams with excessive nitrates; stolen vehicle abandonment and stripping; wildfire ignitions; chronic illegal occupancy; and illegal mining. All of these transgressions have been repeatedly reported on Medford District lands by our staff and others. BLM cannot dismiss this as a "law enforcement" issue because no amount of law enforcement could effectively reverse current trends and impacts because of the network of off road activity not visible from most system road. The DEIS needs to analyze a combination of actions for the Medford RMP to effectively address motorized vehicle activities that can easily undermine other resource allocations. Streams and wetlands in the Medford District predicted to be protected from logging are being severely damaged with off road vehicles. In severe cases, cumulative soil impacts from OHV and past logging would exceed the 15% soil compaction standard making some timber stands off limits for programmed harvest.

We recommend that motorized analysis include a combination of spatially explicit "closed" designations, legal administrative prohibitions, law enforcement, physical barriers, coordination with adjacent land owners (especially the Forest Service), signs, agency monitoring, citizen monitoring, outreach, and education. We agree that intensive recreational development for off highway vehicle could be deferred from this RMP decision, but ongoing off highway vandalism must be effectively reduced. Currently, it is not practical to have "limited" off highway use areas on the Medford District except for areas currently being analyzed for legitimate recreation (e.g.,Johns Peak, Quartz Creek). Managed recreation and unregulated vandalism are two distinct issues and must be kept separate. Analysis assumptions that areas designated "closed" would not have significant impacts is false, however, anticipated off highway damage would be accounted for in "cumulative effects" that would include "illegal" use.

Recovery actions need to be incorporated into an alternative in the DEIS. At a minimum, coho passage issues both on and off public lands need to be addressed in systematic and timely manner. Similarly, reductions in non-point pollution from roads and off road use need to by systematically addressed with spatially explicit analysis. Priorities for restoration and protection would focus on spatially explicit occupied critical coho habitat. An annual timetable for specific recovery actions must be incorporated into analysis. Habitat quality contingent for increasing coho abundance is directly correlated with road densities in small 6th or the coho spawning watersheds.

III. THE DEIS UNDER-ESTIMATED THE ECONOMIC VALUE OF RECREATION

Recreation and other amenity values associated with forest conservation, not only provide direct economic benefit to those who enjoy those activities, but there are indirect benefits for the whole economy. Public land recreation and amenities like clean water and scenic views, help attract people to the region, help create jobs in non-recreation sectors, and help grow the whole economy.

Speaking about the natural amenities in the Northern Rockies, the National Parks and Conservation Association says:

Three million acres of national parks and protected wildlands—and eight million more of other public lands— give rise to our rivers and lakes, and support world-class biodiversity as well as ski hills, hiking trails, and fishing access sites.

Combined, these amenities drive a powerful economic engine, fueled by a core of national parks and adjacent protected lands. Tourism brings more than $3 billion to the Crown each year—Glacier National Park alone generates more than $110 million in new money to local economies, not to mention those entrepreneurial tourists who choose to relocate and start businesses here.

The stories in this report point to the Crown's spectacular wildlife, its scenic appeal, and its unmatched outdoor recreation as anchors to which our economic success is tethered.

[A] growing number of "footloose" businesses—outfits that locate where they choose, often far from markets, but close to amenities that deliver a high quality of life.[222]

From this perspective, recreation is not just another industry that provides a few direct jobs, rather recreation and amenities are an engine of economic growth across diverse economic sectors. The EIS needs to recognize this.

In 2012 Oregon BLM lands recreation generated $223 million in economic activity while timber production only provided $23 million. DEIS at 472.

"*The most common outdoor recreation activities, requiring the least equipment or specialized skill, have the greatest participation numbers, and...provide the greatest total net benefit."* [223] BLM should therefore reduce emphasis on OHV recreation. These noisy, dangerous, polluting machines displace and conflict with other low impact recreation. Only a small fraction of all recreation visits are associated with OHVs. There were 10.8 million recreation participants on Oregon BLM lands in 2013. Only 826,556 "participants" utilized BLM lands for ORV travel in 2012, while 2,564,574 "participants" visited Western Oregon BLM lands for wildlife viewing and nature study.

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[222] NPCA 2012. Pathways to Prosperity - The Natural Roots of Economic Success in the Crown of the Continent http://www.npca.org/assets/pdf/Pathways-to-Prosperity-Final.pdf. See also, Todd Cherry, Dan Rickman, 2010, "Environmental Amenities and Regional Economic Development", Routledge, 336 pages. http://www.gbv.de/dms/zbw/597954267.pdf ; https://books.google.com/books?id=PWiNAgAAQBAJ&printsec=frontcover#v=onepage&q&f=false

[223] DEIS at 493.

Oregon/BLM recreation related jobs are growing at a much faster rate (and with less volatility) than are timber jobs. DEIS at 567.

SALVAGE LOGGING

I. BLM CANNOT ADOPT A PROGRAM OF SALVAGE LOGGING WITHOUT TAKING A HARD LOOK

This is a programmatic EIS and BLM is clearly contemplating a program of salvage logging where commodity extraction trumps ecological values after natural disturbance events, including within reserves. This will conflict with a wide variety of management objectives (late successional habitat, complex early seral habitat, recovery of listed species, watershed protection, carbon storage, community stability, fire hazard reduction, etc.)

This program of salvage logging will cause very significant cumulative effects. BLM has never produced an adequate programmatic analysis of the effects of salvage logging, yet significant salvage logging was conducted during the last 20 years without any credible programmatic analysis of its effects on late successional habitat objectives. There is significant new information about the adverse effects of salvage logging since the last programmatic NEPA analysis was done. Now is the time to take the required "hard look" at the effects of salvage logging, and the time to adopt scientifically sound and ecologically appropriate policies for management of forest ecosystems following natural disturbance.

II. SALVAGE LOGGING IS INCOMPATIBLE WITH ECOSYSTEM MANAGEMENT

The DEIS (p 434) says "In all alternatives, salvage would take place in the Harvest Land Base after a high or moderate severity fire event." And under Alternative C "Within the Late-Successional Reserve, the BLM would conduct timber salvage after disturbance,…" (DEIS p 62). This is not consistent with the best available science regarding how to achieve ecological objectives in reserves. BLM was a cooperating agency in the Interior Columbia Basin Ecosystem Management Project which asked (and concluded) –

> **Can salvage timber sales be compatible with ecosystem-based management?**
> … Our findings suggest that this type of harvesting is not compatible with contemporary ecosystem-based management. Ecosystem-based management would emphasize removing smaller green trees with greater attention to prevention of mortality rather than removal of large dead trees.[224]

The DEIS does not fully and accurately describe the benefits of retaining large dead trees and the benefits of natural recovery after natural disturbance, nor does the DEIS fully and accurately describe the adverse effects of salvage logging.

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[224] Quigley, Thomas M., tech. ed. 1996; The Interior Columbia Basin Ecosystem Management Project: Scientific Assessment.) Gen. Tech. Rep. PNW-GTR-382; Page 178.

We strongly urge BLM to adopt an alternative that prohibits post-disturbance salvage logging in all reserves (only allowing felling of imminent hazard trees in areas of high public use). Based on current ecological science, this is the best way to meet objectives for reserves. Large dead trees which are the target of salvage logging are old growth structurally elements that provide significant ecological value even if they are not surrounded by green trees. Large snags provide "life boats" allowing many late successional organisms to persist in "young" forests. Science shows that best way to develop complex old forest is to maintain complex young forest and allow forest to regenerate naturally and move through succession without interference. Salvage logging is adverse to reserve objectives because it removes late successional habitat components that take a long time to develop once they are removed and creates atypical simplified habitat structures and patterns.

BLM cannot take a hard look at the issues of snag habitat and complex young forests without considering the dynamics of snags and dead wood in natural forests. Natural young forests are typified by large amounts of dead wood. Salvage logging results in atypical and undesirable ecological conditions.

> Spies et al. (1988) reported that amounts of CWD were high in the youngest successional stages, were lowest in 60-80-year-old forests, and were high in old stands (< 500 years). After 500 years CWD amounts declined to an intermediate level. Spies and Franklin (1988) reported that CWD input may be low in young stands because of the small size of dead and dying stems. Volumes in these stands are often high, however, due to residual CWD from the previous stand.[225]

Jerry Franklin's long career studying old forests led him to the conclusion that salvage logging is not compatible with conservation of old growth ecosystems.

> There are implications for management of old-growth stands selected for perpetuation. Salvage logging is inappropriate since it removes at least two of the major structural components -dead and down- that are key elements of the system. In all likelihood, some of the more decadent, live trees would also be removed. Salvage logging is also inappropriate because of the damage inevitably done to root systems and trunks of the residual stand which results in accelerated mortality of trees and overall deterioration of the stand.[226]

We also urge BLM to minimize salvage logging in other areas including the timber management areas. The purpose of this recommendation is to realize the benefits of complex early seral

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[225] Lofroth, Eric. 1998. The dead wood cycle. In: Conservation biology principles for forested landscapes. Edited by J. Voller and S. Harrison. UBC Press, Vancouver, B.C. pp. 185-214. 243 p. http://www.for.gov.bc.ca/hre/deadwood/DTrol.htm.

[226] Franklin, J.F., K. Cromack, Jr., W. Denison, A. McKee, C. Maser, J. Sedell, F. Swanson, and G. Juday. 1981. Ecological characteristics of old-growth Douglas-fir forests. PNW-GTR-118. USDA Forest Service. PNW Research Station. February 1981.
http://www.fs.fed.us/pnw/pubs/gtr118part1.pdf
http://www.fs.fed.us/pnw/pubs/118part2.pdf

habitat which is one of the most under-represented forest habitat types in western Oregon. Unsalvaged, naturally regenerated, young stands are one of the rarest forest types in the Pacific northwest, and their biodiversity rivals that of old-growth forests.

> Indeed, naturally developed early-successional forest habitats, with their rich array of snags and logs and nonarborescent vegetation, are probably the scarcest habitat in the current regional [Pacific Northwest] landscape.[227]
>
> "There has been a loss of diverse young forests on all ownerships. … Conservation of diverse young forests has received little attention in forest policy."

Janet Ohmann; Science Findings, Issue 56; Seeing the trees for the forest: mapping vegetation biodiversity in coastal Oregon forests; (September 2003). http://www.fs.fed.us/pnw/sciencef/scifi56.pdf.

III. BLM NEEDS TO CONSIDER ALTERNATIVE APPROACHES TO SALVAGE LOGGING

In timber management areas BLM should consider alternative approaches to salvage logging modeled on the recommendations of the Beschta report. Specifically:

- prohibit post-fire logging AND roadbuilding on all sensitive sites, including: severely burned areas (areas with litter destruction), on erosive soils, on fragile soils, in roadless/unroaded areas, in riparian areas, on steep slopes, and any site where accelerated erosion is possible. We would add: Late-Successional and Riparian Reserves, and protective land allocations or designations including Botanical and Scenic River Areas;
- protect all live trees;
- protect all old snags over 150 years old;
- protect all large snags over 20 inches dbh;
- protect at least 50% of each size class of dead trees less than 20 inches dbh.[228]

BLM should also consider alternatives for salvage logging that address the recommendations in the following publications:

- *Society for Conservation Biology Scientific Panel on Fire in Western U.S. Forests. Reed F. Noss (editor), Jerry F. Franklin, William Baker, Tania*

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[227] Lindenmayer, David B. and Jerry F. Franklin. 2002. Conserving Forest Biodiversity: A Comprehensive Multiscale Approach. Island Press. Washington, DC: 69. *See also*, DellaSala, D.A., J.E. Williams, C. Deacon-Williams, and J.F. Franklin. Beyond smoke and mirrors: a synthesis of fire policy and science. Conservation Biology, Pages 976–986. Volume 18, No. 4, August 2004. http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/17521/Beyond%20smoke%20and%20mirrors.pdf

[228] *See* Beschta RL, Frissell CA, Gresswell R, Hauer R, Karr JR, Minshall GW, Perry DA, and Rhodes JJ. 1995. Wildfire and Salvage Logging: recommendations for ecologically sound post-fire salvage logging and other post-fire treatments on Federal lands in the West. Corvallis, OR: Oregon State University. Available at: http://www.fire-ecology.org/science/Beschta_Report.pdf.

Schoennagel, and Peter B. Moyle. Ecological Science Relevant to Management Policies for Fire-prone Forests of the Western United States. February 24, 2006. http://www.conservationbiology.org/sections/namerica/FireWhitepaper.pdf.

- *See also the published version, Reed F. Noss (editor), Jerry F. Franklin, William L. Baker, Tania Schoennagel, and Peter B. Moyle. 2006. Ecology and Management of Fire-prone Forests of the Western United States. Society for Conservation Biology Scientific Panel on Fire in Western U.S. Forests. August 2006. http://www.conbio.org/images/content_policy/2006-8_SCB_NA_Statement_Wildland_Fire.pdf.*

BLM in the DEIS at 212 states "The ability to conduct salvage harvest for purposes of protecting human health and safety within the dry forest would be available under all alternatives." We are concerned that this authority is not adequately constrained. We support felling of real and imminent hazard trees in areas that are frequently used by workers and the public (e.g., in developed recreation sites and along paved roads). However, we have too often seen hazard tree removal used as an excuse for commodity extraction in areas that are not a high priority for hazard removal (e.g., remote locations where people visit infrequently and/or risk exposure is brief periods such as passing by large snags along a remote road or trail). BLM should consider (1) felling and retaining hazard trees onsite for ecological benefits, (2) keep workers out of the way of hazards as a way to retain high value large snags; (3) recognize that the public is risk tolerant when they are visiting wild forests. The public does not want a sanitized recreational experience on their public lands.

The DEIS at 813 concludes "In northern spotted owl critical habitat in the Harvest Land Base, the No Action alternative and Alternative B, Sub-alternative B, and Alternative D would allow salvage operations that meet down wood and snag retention standards, the minimum level needed 'to conserve and restore habitat elements.'" We are concerned about "managing for minimums." BLM should be managing for optimal levels of key habitat elements such as large trees, and dead and down wood. This requires retaining abundant levels of green trees for long-term recruitment of high levels of snags. BLM should consider alternatives that meet DecAID 50-80%+ tolerance levels for species associated with dead wood and sensitive to low levels of dead wood.

Appendix B "Management Direction" regarding salvage logging raises several concenrs. It urges BLM to minimize commercial loss and deterioration" but it does not balance with objective with any of the significant trade-offs including: recovery of listed species; protecting soil, water, and watersheds; mitigating the landscape shortage of large snags in the checkerboard lands; mitigating the temporal "snag gap" caused by stand replacing disturbance; development of future complex habitat (early seral or late seral); or carbon storage.

IV. BLM MUST TAKE A HARD LOOK AT THE ADVERSE EFFECTS OF SALVAGE LOGGING

Salvage logging also causes a host of adverse effects associated with logging in general, e.g., watershed degradation, erosion, sedimentation, road impacts, habitat fragmentation, soil

compaction, visual blight, etc. Many of these effects are worse than green timber sales because the soil lacks structure and protection normally found in green forests.

Renowned fisheries expert James Karr said:

> … I joined eight other scientists to explore whether forests might be restored by logging soon after a fire. We had among us a wealth of knowledge across a wide range of fields. We pored over several decades of research but found nothing to show that fire-adapted forests might be improved by logging in the wake of a fire.
>
> In fact, we found just the opposite: Most plants and animals in these forests are adapted to periodic fires; they have a remarkable way of recovering – literally rising from the ashes.
>
> These forests have evolved with fire. Periodic fires have been part of a normal cycle lasting thousands of years. Logging a burned forest damages the soil, carrying away nutrients, robbing seedlings of moisture and clogging nearby streams. Trees in a burned landscape, both dead and alive, continue to provide homes for wildlife after a fire and form the building blocks of new forests.[229]

BLM should carefully review the post-fire science summary prepared by the World Wildlife Fund in 2006.

> In general traditional forestry has viewed fire as bad and dead trees as a waste. These views have skewed public policies about post-fire logging. However, current scientific understanding recognizes that disturbance and dead trees are in fact critical to forest health. Of the approximately thirty scientific papers on post-fire logging and additional government reports published to date, not a single one indicates that logging provides benefits to ecosystems regenerating post-disturbance. In general, post-fire logging impedes regeneration when it compacts soils, removes "biological legacies" (e.g., large dead standing and downed trees), introduces or spreads invasive species, causes soil erosion when logs are dragged across steep slopes, and delivers sediment to streams from logging roads. Further, a large body of science on disturbance ecology (e.g., recent books on Mt. St Helens and studies in the Yellowstone Ecosystem and elsewhere) indicate that when natural disturbance events are preceded and/or followed by land management activities they often impair the recovery of forest ecosystems.[230]

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[229] Karr, James. 2005 Nature doesn't benefit from logging fire-damaged lands | The News Tribune, Tacoma, WA. ftp://ftp2.fs.fed.us/incoming/r5/Klamath/Mt.HebronRestoration/MountHebron.Records/MtHebronRestoration.ProjectRecord/D.%20ScopingComments.Analysis/ArtleyAttachment9.FullArticles/Pub10.Karr2005.Tribune.pdf

[230] Dominick A. DellaSala 2006. POST-FIRE LOGGING SUMMARY OF KEY STUDIES AND FINDINGS. World Wildlife Fund, February 2006. ftp://frap.cdf.ca.gov/pub/incoming/IMMP/Post%20Fire%20Salvage%20Logging%20Papers/Post%20Fire%20Logging%20Review%202006.pdf

In October 2013, 250 scientists signed a letter urging greater attention to the conservation of complex early seral forests and natural recovery after fire. These scientists conclude that the

> *"current state of scientific knowledge, … indicates that [salvage logging] would seriously undermine the ecological integrity of forest ecosystems on federal lands. … This post-fire habitat, known as 'complex early seral forest,' is quite simply some of the best wildlife habitat in forests and is an essential stage of natural forest processes. Moreover, it is the least protected of all forest habitat types and is often as rare, or rarer, than old-growth forest, due to damaging forest practices encouraged by post-fire logging policies. While there remains much to be discovered about fire in our forests, the scientific evidence indicates that complex early seral forest is a natural part of historical fire regimes in nearly every conifer forest type in the western U.S. (including ponderosa pine and mixed-conifer forests) … Numerous studies also document the cumulative impacts of post-fire logging on natural ecosystems, including the elimination of bird species that are most dependent on such conditions, compaction of soils, elimination of biological legacies (snags and downed logs) that are essential in supporting new forest growth, spread of invasive species, accumulation of logging slash that can add to future fire risks, increased mortality of conifer seedlings and other important re establishing vegetation (from logs dragged uphill in logging operations), and increased chronic sedimentation in streams due to the extensive road network and runoff from logging operations."*[231]

The EIS needs to carefully and comprehensively disclose and consider the following issues before approving a program of post-disturbance salvage logging:

a. the natural range of variability and existing rarity of complex young forests (e.g., young forests that are unsalvaged after disturbances). Since large snags are outside the natural range of variability across the landscape, the agency must retain all large snags to start moving the landscape toward the natural range of variability, or the agency must carefully justify in the NEPA analysis every large snag it proposes to remove. See Jerome J. Korol, Miles A. Hemstrom, Wendel J. Hann, and Rebecca A. Gravenmier. Snags and Down Wood in the Interior Columbia Basin Ecosystem Management Project. PNW-GTR-181. http://www.fs.fed.us/psw/publications/documents/gtr-181/049_Korol.pdf. This paper estimates that even if we apply enlightened forest management on federal lands for the next 100 years, we will still reach only 75% of the historic large snag abundance measured across the interior Columbia Basin, and most of the increase in large snags will occur in roadless and wilderness areas.
b. the ecological values (such as wildlife habitat) associated with snags, dead wood, and complex young forests. See Rose, C.L., Marcot, B.G., Mellen, T.K., Ohmann, J.L., Waddell, K.L., Lindely, D.L., and B. Schrieber. 2001. Decaying Wood in Pacific

[231] Della Sala, D. et al (2013) Open Letter to Members of Congress from 250 Scientists Concerned about Post-fire Logging. October 30, 2013. http://geosinstitute.org/images/stories/pdfs/Publications/Fire/Scientist_Letter_Postfire_2013.pdf or http://www.scribd.com/doc/181401520/Open-Letter-to-Members-of-Congress-from-250-Scientists-Concerned-about-Post-fire-Logging-October-30-2013

Northwest Forests: Concepts and Tools for Habitat Management, Chapter 24 *in* ***Wildlife-Habitat Relationships in Oregon and Washington*** (Johnson, D. H. and T. A. O'Neil. OSU Press. 2001) http://web.archive.org/web/20060708035905/http://www.nwhi.org/inc/data/GISdata/docs/chapter24.pdf

c. Given the regional deficit of young complex forests and the fact that many species, such as woodpeckers and secondary cavity users, appear to be adapted to exploit the structure and resources available within disturbed forests, the agencies should comprehensively consider and disclose the direct and indirect effects of salvage logging on species associated with young complex forests. The Forest Service has numerous Management Indicator Species whose populations have not been monitored, so the agencies lack the information necessary to that the salvage logging program will maintain species viability.

d. the effects of salvage logging on the development of complex forest habitat; "The early post-disturbance period of forest ecosystem development - pre-tree-canopy closure - is profoundly important!" because it is heterogeneous, light-energy rich, structure rich, biodiversity rich, and process rich. "**Removal of legacies is most profound long-term impact**" because of the "Importance of Coarse Wood:
   - Habitat for species
   - Organic seedbeds (nurse logs)
   - Modification of microclimate
   - Protection of plants from ungulates
   - Sediment traps
   - Sources of energy & nutrients
   - Sites of N-fixation
   - Special source of soil organic matter
   - Structural elements of aquatic ecosystems"

   Jerry Franklin - What is a 'Good' Forest Opening? – Powerpoint http://courses.washington.edu/esrm315/Lectures/FranklinEarlySuccession.pdf

e. all the new science related to salvage logging and dead wood, including but not limited to: Beschta R.L., J.J. Rhodes, J.B. Kauffman, R.E. Gresswell, G.W. Minshall, J.R. Karr, D.A. Perry, F.R. Hauer, and C.A.Frissell, 2004. Postfire management on forested public lands of the western USA. Cons. Bio.,. http://pacificrivers.org/files/post-fire-management-and-sound-science/Beschta-etal2004.pdf and Rose, C.L., Marcot, B.G., Mellen, T.K., Ohmann, J.L., Waddell, K.L., Lindely, D.L., and B. Schrieber. 2001. Decaying Wood in Pacific Northwest Forests: Concepts and Tools for Habitat Management, Chapter 24 in Wildlife-Habitat Relationships in Oregon and Washington (Johnson, D. H. and T. A. O'Neil. OSU Press. 2001) http://web.archive.org/web/20060708035905/http://www.nwhi.org/inc/data/GISdata/docs/chapter24.pdf

f. "Conservation of diverse young forests has received little attention in forest policy." USDA PNW Research Station. *Science Findings.* Sept 2003. http://www.fs.fed.us/pnw/sciencef/scifi56.pdf. "[T]here's a looming shortage of diverse young forests - where seedlings intermingle with fallen logs, standing dead

snags, and shrubs - that provide specialized habitat for certain animals and plants. … there's a looming gap in diverse, young, early-successional conifer forest, the type of forest that once came in naturally after forest fires. These young forests, up to 10 years old, have a diversity of forest structures - fallen logs and dead snags - and a diversity of plant life. They are important habitat for the western bluebird and other birds that prefer open areas, as well as some shrub species. Today, because of intense timber management on private lands, young forests don't get the chance to develop much diversity." OSU. 2001. Press Release: Researchers Assess Forest Sustainability. http://web.archive.org/web/20060914032259/http://oregonstate.edu/dept/ncs/newsarch/2001/Oct01/assess.htm According to the CLAMS project: "Diverse young forests: also rare but receiving less attention. Legacy tree habitat: uncertain future.." Ohmann, Spies, Gregory, Johnson. 2002. Vegetation Biodiversity in the Oregon Coast Range. http://www.fsl.orst.edu/clams/download/presentations/j02s_ohmann_10june02.pdf (slide 24).

g. Hutto, R.L., 2006. Toward Meaningful Snag-Management Guidelines for Postfire Salvage Logging in North American Conifer Forests. Conservation Biology Volume 20, No. 4, 984–993. http://web.archive.org/web/20090310114517/http://avianscience.dbs.umt.edu/documents/hutto_conbio_2006.pdf ("Species such as the Black-backed Woodpecker (*Picoides arcticus*) are nearly restricted in their habitat distribution to severely burned forests. Moreover, existing postfire salvage-logging studies reveal that most postfire specialist species are completely absent from burned forests that have been (even partially) salvage logged. I call for the long-overdue development and use of more meaningful snag-retention guidelines for postfire specialists, and I note that the biology of the most fire-dependent bird species suggests that even a cursory attempt to meet their snag needs would preclude postfire salvage logging in those severely burned conifer forests wherein the maintenance of biological diversity is deemed important.")

h. A recent study of birds that use post-fire mosaics highlighted the importance of resprouting shrubs and forbs on the re-establishment of nesting birds following wildfire. "Of the 39 species for which nests were found, 14 (37%) used cavities and 25 (63%) built open-cup nests.... Species that built cup nests used snags, residual live trees, resprouting hardwoods, and other ground vegetation and downed wood. The associations between the presence of breeding species and forb and shrub cover indicate that these are important components of the early establishment of bird populations following stand-replacing fires. These data suggest that post-fire management of resprouting hardwoods and herbaceous vegetation should consider potential impacts to bird species that nest and forage in burned forests." CFER 2007. Response of Birds to Fire Mosaics. CFER News. Winter 2007. http://www.fsl.orst.edu/cfer/pdfs/Vol7_1.pdf.

i. BLM's Western Oregon Plan Revision (WOPR) DEIS (p. LII) admits that structurally complex young forests develop old forest characteristics twice as fast as structurally deprived initial conditions.

j. Mark E Swanson, Jerry F Franklin, Robert L Beschta, Charles M Crisafulli, Dominick A DellaSala, Richard L Hutto, David B Lindenmayer, and Frederick J

Swanson 2010. The forgotten stage of forest succession: early-successional ecosystems on forest sites. Front Ecol Environ 2010; doi:10.1890/090157

k. Bats find favorable habitat in burned areas with abundant and diverse snags and abundant and diverse flying insects. Salvage logging will remove potential roost sites, and food sources. Carol Chambers and Erin Saunders. BATS IN THE BURNS - Studying the impact of wildfires and climate change. BATS. Bat Conservation International. Winter 2013, Volume 3, No. 4. http://www.batcon.org/index.php/media-and-info/bats-archives.html?task=viewArticle&magArticleID=1154

l. "Leaving a damaged forest intact means the original conditions recover more readily," says David Foster, … director of the NSF Harvard Forest LTER site. "Forests have been recovering from natural processes like windstorms, fire and ice for millions of years. What appears to us as devastation is actually, to a forest, a natural and important state of affairs." 10-16-2012 Press Release 12-198, In Blown-Down Forests, a Story of Survival To preserve forest health, the best management decision may be to do nothing. http://www.nsf.gov/news/news_summ.jsp?cntn_id=125744; Audrey Barker Plotkin, David Foster, Joel Carlson, and Alison Magill 2013. Survivors, not invaders, control forest development following simulated hurricane. Ecology, 94(2), 2013, pp. 414–423. http://harvardforest.fas.harvard.edu/sites/harvardforest.fas.harvard.edu/files/publications/pdfs/BarkerPlotkin_Ecology_2013.pdf

m. "Unmanaged early-seral stages of forest development are now considered to be among the most threatened habitat types in coniferous regions of the western United States (Noss et al. 2006, Thomas et al. 2006). Not surprisingly, concern has arisen over viability of populations that use broadleaf vegetation in early-seral forest, particularly as this habitat type contributes disproportionately to forest biodiversity (Halpern and Spies 1997). In the northwestern United States, a number of bird species thought to be strongly associated with early-seral broadleaf habitat have declined and are considered conservation priorities (Altman 1999, U.S. Fish and Wildlife Service 2002). Because the PNW represents a substantial portion of the ranges of these species, loss of quality early-seral habitat could increase risk of extinction." M. G. BETTS, J. C. HAGAR, J. W. RIVERS, J. D. ALEXANDER, K. MCGARIGAL, AND B. C. MCCOMB. 2010. Thresholds in forest bird occurrence as a function of the amount of early-seral broadleaf forest at landscape scales. Ecological Applications, 20(8), 2010, pp. 2116–2130. http://www.fsl.orst.edu/flel/pdfs/Betts%20et%20al%202010%20Ecol%20Apps.pdf

Before adopting a widespread salvage logging program, BLM needs to carefully consider and disclose reasons NOT to remove snags. Science tells us that natural forests develop after disturbance with abundant structural legacies. These legacy features include snags and down wood which play a wide variety of valuable ecological services for the developing forest, including but not limited to:

- nutrient uptake, storage, and release
- water uptake, storage, and release
- mycorrhizal colonization

- wildlife habitat, in particular for primary cavity species which are recognized as a "keystone" element of healthy forests
- allowing some forest species to linger in burned forests after disturbance and to recolonize burned forests sooner after disturbance, thereby shortening the period during which burned stands are unsuitable for wildlife
- providing food for insects that in turn feed a wide variety of other wildlife such as birds and bats
- favorable sites for seed germination and establishment
- mechanical thinning of the regenerating stand due to the process of snag fall
- shade and cover for everything from seedlings to big game
- perches, nest, and den structures.
-

In general, the larger the piece size, the longer they tend to last. But salvage logging removes those very elements that are most valuable for wildlife and most difficult to replace.

Since this project involves post-fire commodity extraction (also often referred to erroneously as "salvage" logging) please carefully analyze, consider, and disclose the site-specific analysis of the many reasons NOT to do post-fire commodity extraction, including but not limited to:

- adverse impacts to soil, such as erosion, compaction, displacement, litter disturbance, nutrient depletion; loss of chemical buffering; loss of soil organic matter; loss of burrowing wildlife that help aerate soils; reduction of nitrogen fixing plants that boost soil fertility; loss of slope and snow stabilizing effects which could lead to mass wasting or eliminate mechanisms that may mitigate mass wasting;
- loss of down wood functions s such as trapping sediment and aiding water infiltration, and creating microsites favorable for germination and establishment of diverse plants, and habitat for diverse wildlife;
- loss of decaying wood and depletion of the "savings account for nutrients and organic matter" which affects site productivity through the removal of dead trees which store nutrients and slowly release them to the next stand. Marañón-Jiménez, S., Fernández-Ondoño, E., and J. Castro. 2013. Charred wood remaining after a wildfire as a reservoir of macro- and micronutrients in a Mediterranean pine forest. International Journal of Wildland Fire. http://dx.doi.org/10.1071/WF12030 ("Partially charred wood represented a considerable pool of nutrients, due to both the relatively high concentrations and to the great amount of biomass still present after the fire. Potential contributions of the charred wood were particularly relevant for N and micronutrients Na, Mn, Fe, Zn and Cu, as wood contained 2–9 times more nutrients than the soil. Post-fire woody debris constitutes therefore a valuable natural element as a potential source of nutrients, which would be lost from ecosystems in cases where it is removed")
- Recent studies indicate that wood may release nutrients more rapidly than previously thought through a variety of decay mechanisms mediated by means other than microbial decomposers, i.e. fungal sporocarps, mycorrhizae and roots, leaching, fragmentation, and insects;
- loss of nutrients from live trees that are determined to be "dying." Live trees produce serve as refugia for animals, invertebrates, and mycorrhizae; produce litter fall; and help cycle nutrients which are all extremely valuable in the post-fire landscape;

- loss of wood that serves to buffer soil chemistry and prevent extreme changes in soil chemistry;
- water quality degradation;
- loss of water storage capacity in down logs;
- altered timing of storm run-off which could lead to peak flows that erode stream banks and scour fish eggs;
- delaying the pace of vegetative recovery and reducing the quality/diversity of the vegetation community;
- dead trees serve as a natural fence that protects young seedlings from browse by cattle and big game. This is one way that young aspen and other valuable species can get their start;
- spread of invasive weeds through soil disturbance and extensive use of transportation systems;
- loss of legacy structures that can carry species, functions, and processes over from one stand to the next;
- loss of terrestrial and aquatic habitat (mostly snags and down logs) potentially harming at least 93 forest species (63 birds, 26 mammals, and 4 amphibians) that use snags for nesting, roosting, preening, foraging, perching, courtship, drumming, and hibernating, plus many more species that use down logs for foraging sites, hiding and thermal cover, denning, nesting, travel corridors, and vantage points for predator avoidance;
- Depletion of large wood structures in streams that can cause: 1) simplification of channel morphology, 2) increased bank erosion, 3) increased sediment export, 4) decreased nutrient retention, 5) loss of habitats associated with diversity in cover, hydrologic patterns, and sediment retention;
- commercial salvage usually removes the largest trees, but this will disproportionately harm wildlife because: (1) larger snags persist longer and therefore provide their valuable ecosystem services longer and then serve longer as down wood too, and (2) most snag-using wildlife species are associated with snags >14.2 inches diameter at breast height (dbh), and about a third of these species use snags >29.1 inches dbh.
- Truncation of symbiotic species relations and loss of biodiversity. Sixteen species are primary cavity excavators and 35 are secondary cavity users; 8 are primary burrow excavators and 11 are secondary burrow users; 5 are primary terrestrial runway excavators and 6 are secondary runway users. Nine snag-associated species create nesting or denning structures and 8 use created structures.
- Reduced avian and terrestrial species diversity which affects plant and invertebrate diversity. Since different wildlife help disperse different sets of seeds and invertebrates, reduced wildlife diversity can significantly affect pace of recovery and the diversity of the regenerating stand. Snag- associated wildlife play a greater role in dispersal of invertebrates and plants, while down wood-associated wildlife play a greater role in dispersal of fungi and lichens. Down wood-associated species might contribute more to improving soil structure and aeration through digging, and to fragmenting wood which increases surface area encouraging biological action that releases nutrients.
- loss of partial shade that helps protect the next generation of forest;
- loss of cover quality and fawning areas for big game;

- loss of future disturbance processes such as falling snags that help thin and diversify the next generation of forest;[232]
- increased human activity and human access that can increase fire risk;
- increased fine fuels on the forest floor that can cause an increase in fire hazard;
- loss of seed sources, and
- loss of diversity of vegetation and microsite conditions.
- The fact that regional standards for snags and down wood fail to incorporate the most recent science indicating that more snags and down wood (especially large snags and logs) are required in order to maintain species viability and sustain site productivity.
- Arguments in support of the "reburn hypothesis" are specious. (1) partial reburn may be completely natural and desirable in some cases to consume some fuel and diversify the regenerating forest, and (2) salvage logging will cause a pulse of fine fuels on the ground and actually increase the reburn risk/hazard above natural levels, and (3) fuels that fall to the ground over time will to some extent decay as they fall.
- Uncertainty calls for a cautious approach.
-

Compare these adverse impacts of salvage logging to the few scant reasons to salvage (e.g., economic recovery of fiber).

V. THE DEIS FAILS TO RECOGNIZE THE SIGNIFICANT ECOLOGICAL VALUE OF RETAINING LARGE SNAGS

Protecting large snags from salvage logging is particularly important. Because large snags last much longer than small snags, large snags are disproportionately valuable as wildlife habitat, nutrient and water reservoirs, soil stabilizers, etc. If the agency chooses to conduct a salvage operation in this fire area, they must use a diameter cap and protect these scarce and valuable forest structures.

Jerry Franklin, in commenting on a large fire salvage project in 2015 said:

> Large snags and logs are the most important surviving structural elements or biological legacies of a forest disturbance (Franklin et al. 2002), excepting only surviving large live trees. Importance, in this case, refers to the roles of these structures in:
>
> (1) Providing essential habitat for an immense array of species;
> (2) Maintaining important ecosystem functions; and
> (3) Structurally enriching the young forest stand, making it possible for mid- and latesuccessional species to re-colonize the stand much earlier in its chronological development than would otherwise be the case (Franklin et al. 1987).

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[232] JAMES A. LUTZ AND CHARLES B. HALPERN. 2006. TREE MORTALITY DURING EARLY FOREST DEVELOPMENT: A LONG-TERM STUDY OF RATES, CAUSES, AND CONSEQUENCES. Ecological Monographs, 76(2), 2006, pp. 257–275. This study showed that mortality from mechanical damage ("crushing disturbance") from falling limbs and trees and snow loads can be a more significant factor than suppression mortality. See also, Brown, Martin J.; Kertis, Jane; Huff, Mark H. 2013. Natural tree regeneration and coarse woody debris dynamics after a forest fire in the western Cascade Range. Res. Pap. PNW-RP-592. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 50 p. "Snag fall and fragmentation added so much wood to the ground—thousands of meters of log length per hectare—that it probably constitutes a significant ecological disturbance in itself, a kind of rain of logs.")

The importance of large snags and down wood for a broad array of species is recognized in the EIS document. These structures provide habitat for early as well as late successional species and sustain many important ecosystem processes (e.g., Harmon et al. 1986). However, the long persistence and multiple roles played by the large pulse of snags, logs, and other CWD provided by the stand-replacement event (Harmon et al. 1986; Maser et al. 1988) do not appear to be adequately recognized in the analysis of how much of this wood should be retained. For example, large Douglas-fir logs continue to fulfill important ecological functions, such as habitat for small mammals and salamanders, for 200 to 250 years after their death. Cedar snags can persist for at least as long as 1 ½ centuries and as logs for over twice that long.

The massive input of large dead wood is characteristic and critical to stand development processes and the ultimate provision of habitat for late-successional species following stand replacement fires (Maser et al. , 1988; Franklin et al. 2002). As noted these wood structures may persist and play functional roles for several centuries, particularly in the case of decay resistant species. Large pines may also persist as snags for several decades and additional periods as logs on the forest floor. In fact, the entire recovering forest ecosystem will depend upon this pulse of CWD until it reaches a point in its development where the new stand begins to generate snags and logs of comparable size and heartwood content-generally between 100 and 200 years (Maser et al. 1988; Franklin et al., 2002). Consequently, basing snag and CWD retention following salvage on levels of these structures found in existing mature and old forests is not appropriate; *all of this initial pulse of wood is needed to reach those levels one to two centuries from now!* Indeed, the use of mature forests as a standard for CWD is particularly inappropriate since this is the period when CWD levels are at their lowest level during the entire natural developmental sequence from stand-replacement fire to old growth (see diagram in paper by Spies in Maser et al. 1988). It certainly does not appear to me that the approach taken in the DEIS reflects an appreciation of the fact that this one-time input oflarge and decay resistant CWO is all that the recovering forest ecosystem is going to get for the next 100 to 200 years.

The importance of snags, logs, and other CWD is recognized in FEMAT's (1993) scientific analysis. For example (my underlining for emphasis):

> *Because of the important role of dead wood in late-successional and old-growth forest ecosystems, and because there is much to learn about the role of dead wood in the development of forests, only limited salvage is appropriate in Late-Successional Reserves. .. <u>The Final Draft Recovery Plan [for the NSO] would allow removal of small-diameter snags and logs, but would also require retention o[snags and logs likely to persist until the new stand begins to contribute significant quantities of coarse woody debris</u>." FEMAT 1993, p. IV-37.*
>
> *Snags provide a variety of habitat benefits for a variety of wildlife species associated with late-successional forests. <u>Accordingly, following stand-replacing disturbances. management should focus on retaining snags that are likely to</u>*

> *persist until late-successional conditions have developed and the new stand is again producing large snags. FEMAT 1993, p. III-37.*
>
> *Following a stand replacing disturbance, management should retain adequate coarse woody debris quantities in the new stand so that in the.fi1ture it will contain amounts similar to natural regenerated stands. The analysis that determines the amount of coarsewoody debris to leave must account for the filii period of time before the new stand begins to contribute coarse woody debris .... FEMA T 1993, p. III-37.*

> In summary, general salvage of large snags and logs is clearly antithetical to the goal of rapid recovery of fully functional late-successional forest habitat and inappropriate within the Late Successional Reserves.

Jerry Franklin. Comments on the Klamath NF, Westside Fires Salvage DEIS. 6 April 2015.

Retaining large snags is necessary to mitigate the "snag gap" caused by stand replacing disturbance. It may seem counter-intuitive but fire results in a snag shortage. One of the most significant and lasting effects of stand replacing disturbance such as fire, wind, or regeneration logging is to bring the process of snag recruitment to a virtual standstill for many decades. Even if snags are not removed by the disturbance, snags created by the disturbance will fall down over time and few if any snags are created. This results in a "snag gap" that has serious adverse consequences for habitat and many other ecological processes. The apparent abundance of large snags after a stand replacing disturbance masks a severe shortage of large snags down the road.

In Congressional testimony in July 2004, Jerry Franklin said:

> It is sometimes argued that following a stand-replacement fire in an old-growth forest that snags and logs are present in "excess" of the needs of the site, in terms of ecosystem recovery. In fact, the large pulse of dead wood created by the disturbance is the only significant input of woody debris that the site is going to get for the next 50 to 150 years—the ecosystem has to "live" off of this woody debris until the forest matures to the point where it has again produced the large trees that can become the source for new snags and logs (Maser et al. 1988).

Dr. Jerry F. Franklin, Professor of Ecosystem Studies, College of Forest Resources, University of Washington. July 15, 2004. TESTIMONY FOR THE RECORD ON OVERSIGHT HEARING ON "RESTORING FORESTS AFTER CATASTROPHIC EVENTS" BY HOUSE COMMITTEE ON RESOURCES, SUBCOMMITTEE ON FOREST AND FOREST HEALTH. http://www.signaloflove.org/clearcutting/reports/fire3/Franklin%20Jerry%20July%202004%20testimony.pdf.

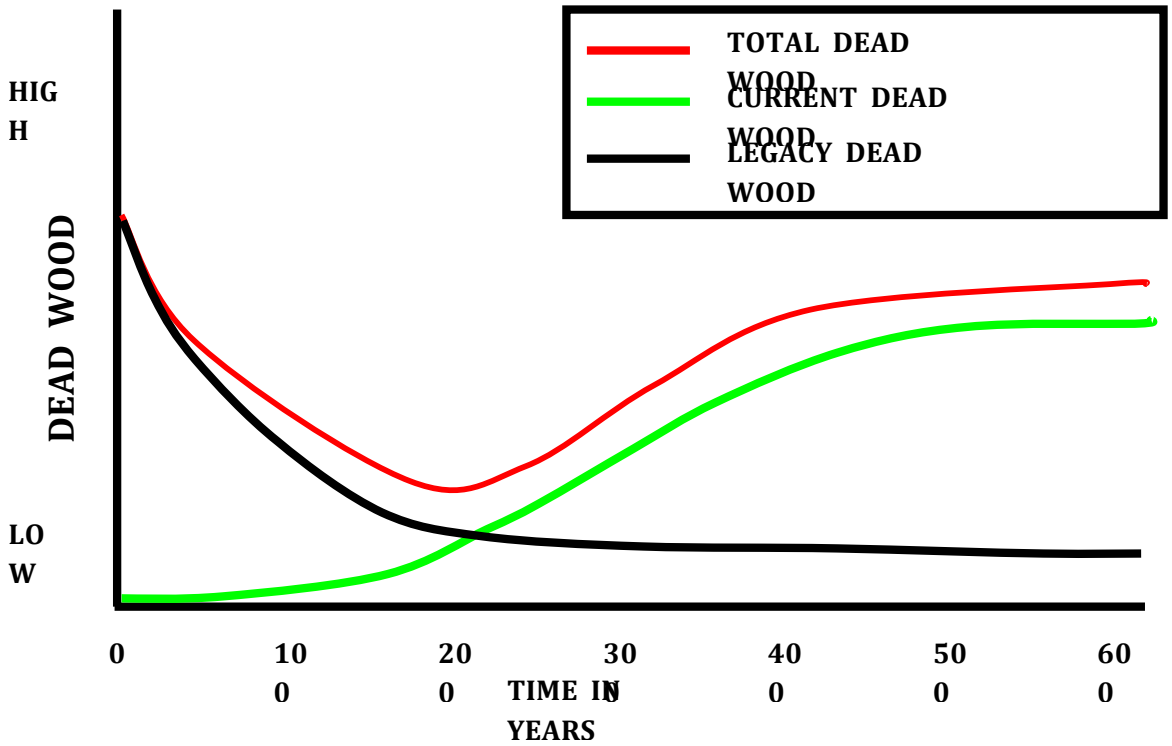
Similarly, Johnson & Franklin's 2008 Forest Plan for the Klamath Tribes says of large fires;

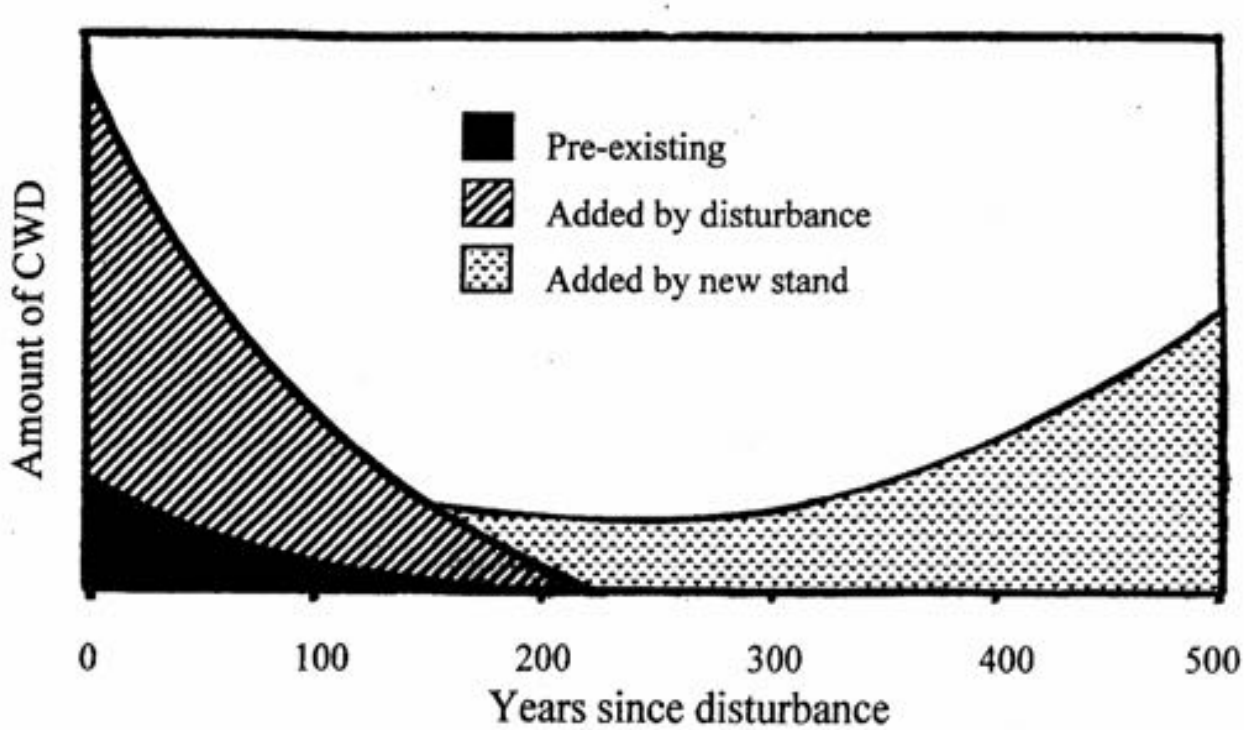
> Such fires do generate a large pulse of dying, dead and down material. After a stand-replacement fire, that pulse of large wood is all of the large wood that the recovering

ecosystem is going to get for the next century or more—i.e., until trees of large size are once again a part of the stand. Some of this dead wood legacy will persist and fulfill important functional roles in the recovering forest for many decades and, in the case of the largest and most decay resistant material, even for a century or more.

1. The agency must recognize the asymmetric nature of snag dynamics after all types of stand replacing disturbance. High rates of snag fall would be expected in the decades following disturbance, while low rates of snag recruitment would be expected in the decades following a disturbance. This unavoidably results in a serious deficit of snags at some point in the future.
2. In order for the NEPA analysis to fully address the snag habitat issue it must look carefully at the snag gap from both ends.
    a. The snag gap begins when too many of the current snags are gone. So the snag gap is exacerbated on the front end by salvage logging which removes too many large snags.
    b. The snag gaps ends when the next stand grows to the point that it contains large trees and some of them die, so the snag gap is exacerbated on the back end if there is a significant delay in tree regeneration.
3. The agency has a tendency to focus on the back end of the snag gap which is allegedly mitigated by tree replanting, but this benefit is in the distant future and remains speculative. The agencies tend to ignore the effect of logging on the front end of the snag gap (which is concrete and unavoidable).
4. Logging which retains only enough snags to meet snag requirements after harvest will not meet snag requirements in a few years after those few retained snags fall.
5. Both the RMP and the Northwest Forest Plan (p C-13) require that snags be maintained through time, so our goal must be to manage snags to minimize the time period that there is a deficit of snags.
6. The NEPA analysis must account for snag fall rates and figure out how to minimize the snag gap. Every day that the "snag gap" is lengthened by salvage logging is a violation of the RMP. Models that may be used to analyze snag dynamics can be found here: http://www.for.gov.bc.ca/hre/deadwood/DTmod.htm.
7. There is a strong correlation between the size of the snags and the length of time it is likely to remain standing, so salvage must be designed to retain all the large snag and only remove trees from smaller size classes.
8. Consider this example: Assume that the stands currently have 30 large trees/acre and 24 of those will be removed via salvage logging while 6 trees/acre will be retained for snag habitat. Further assume that in 50 years 2 percent of the large snags will remain standing as snag habitat. Two percent of 6 trees/acre is FAR LESS than 2 percent of 30 trees/acre, so there is a virtual statistical certainty that salvage logging will exacerbate the snag gap.
9. The snag gap is really exacerbated by salvage logging in two ways — first by targeting removal of the large and most persistent component of the snag population, and second by accelerating the rate that remaining snags fall and are lost from the snag population. New science from Idaho reveals that Ponderosa pine snags persist longer in unlogged areas. See Russell, R.E., Saab, V.A., Dudley, J.G., and J.J. Rotella. 2006. Snag longevity in relation to wildfire and postfire salvage logging. Forest Ecology and Management 232 (2006) 179-187. http://www.fs.fed.us/rm/pubs_other/rmrs_2006_russell_r001.pdf ("The predicted half-life of

a ponderosa pine snag was 7-8 years in salvage logged plots and 9-10 years in unlogged plots.”)





The agency often compares their proposed snag retention levels to the *average* number of snags across the landscape, without recognizing that after a significant disturbance such as fire “the

rate of input [of snags] to the CWD pool is 100-1000x the rate expected for an unburned steady-state forest (Harmon et al 1986). Even afterwards, in the next 5 or 6 years, the rate of input is still 5 or 10 or even 100 times that steady-state rate."
http://web.archive.org/web/20050428020846/http://www.brownandbrown.tv/warner-presentation-2002-05-14b.pdf

The shortage of snags in the decades following stand replacing fire is acknowledged by the Forest Service on page 136 of the Wallowa-Whitman National Forest's Trail Vegetation Management Project EA (October 2012). http://www.fs.usda.gov/project/?project=34482

The BLM has previously admitted that a "high proportion" of snags "are expected to persist for at least 50 years." Roseburg BLM 2009, Little Wolf 3 Density Mgt EA. http://www.blm.gov/or/districts/roseburg/plans/files/LittleWolf3EA.pdf. This means that salvage logging can exacerbate the snag gap the front end by at least 50 years.

An example of how salvage would lengthen the period that a forest remains inhospitable to wildlife is provided by the following study, Payer, D.C., and D.J. Harrison. 2000. Structural differences between forests regenerating following spruce budworm defoliation and clear-cut harvesting: Implications for marten. Canadian Journal of Forest Research 30(12): 196572. ("Summary: The authors looked at the use of clearcuts and areas where spruce budworm has caused mortality in relation to the American marten. When establishing new territories, martens avoid clearcuts but do not avoid stands with a history of extensive tree mortality caused by eastern spruce budworm. Although live tree basal area was similar between stand types, the results showed that the vertical structure provided by large snags can offset the limited availability of live trees for the marten, particularly where coarse woody debris and understory vegetation are plentiful.") http://www.umaine.edu/cfru/documents/payer.pdf

Salvage Logging is Incompatible with Watershed Recovery
Salvage logging should be avoided and minimized because it will violate the O&C Act mandate to protect watersheds and favorable conditions of water flow. Salvage retards watershed and aquatic recovery.

> In short, by adding another stressor to burned watersheds, postfire salvage logging worsens degraded aquatic conditions accumulated from a century of human activity (CWWR 1996,NRC 1996, 2002,McIntosh et al. 2000). The additional damage impedes the recovery and restoration of aquatic systems, lowers water quality, shrinks the distribution and abundance of native aquatic species, and compromises the flow of economic benefits to human communities that depend on aquatic resources (Beschta et al. 2004).

Karr, J. R., J. J. Rhodes, G. W. Minshall, F. R. Hauer, R. L. Beschta, C. A. Frissell, and D. A. Perry. 2004. The effects of postfire salvage logging on aquatic ecosystems in the American West. BioScience 54:1029-1033.

http://www.sierraforestlegacy.org/Resources/Conservation/FireForestEcology/SalvageLoggingScience/Salvage-Karr04.pdf *citing* Beschta, ,R.L., J. J. Rhodes, J. B. Kauffman, R. E. Gresswell, G. W. Minshall, J. R. Karr, D.A. Perry, F.R. Hauer, C. A. Frissell. 2004. Postfire Management on Forested Public Lands of the Western United States. Conservation Biology 18: 957–967.

Downloadable at:
https://www.researchgate.net/publication/227654964_Postfire_Management_on_Forested_Public_Lands_of_the_Western_United_States?ev=prf_pub

The quantity, quality, and rate of revegetation has a direct contribution to controlling erosion and sedimentation. USGS has described the role of vegetation in slope stability and erosion as follows:

> In a watershed, vegetation provides five major physical functions that help control soil erosion during rainfall events (Spittler, in press):
>
> - Interception of rainfall, which extends the time for water to reach the ground surface and absorbs raindrop impact energy.
> - Mulching of the ground surface to provide temporary water storage and slow release, slope roughness, and energy absorption.
> - Structural support of loose, surficial material.
> - Reinforcement of the deeper soil by roots, which increases the natural slope stability.
> - Maintains conditions necessary for soil micro-organisms that provide soil structure.
> -

http://web.archive.org/web/20040218052053/http://landslides.usgs.gov/html_files/ofr95-508/skrep2.html *citing* Spittler, T.E., in press, Fire and the debris-flow potential of winter storms, in, Proceedings of the Symposium on Brush Fires in California Wildlands: Ecology and Resource Management: International Association of Wildland Fire.

Wagenbrenner et al (2015) found that –

- Post-fire salvage logging increased soil compaction and decreased vegetative cover.
- Salvage logging greatly increased sediment production from more disturbed plots. ("Sediment production from the skidder plots was 10–100 times the value from the controls.")
- Salvage logging delayed post-fire recovery of vegetation and sediment production. ("The relative differences in sediment production between the disturbed plots and the controls tended to increase over time as the controls exhibited more rapid regrowth." Data were taken 2-8 years post-harvest.)
-

Joseph W. Wagenbrenner, Lee H. MacDonald, , Robert N. Coats, Peter R. Robichaud, Robert E. Brown. 2015. Effects of post-fire salvage logging and a skid trail treatment on ground cover, soils, and sediment production in the interior western United States. Forest Ecology and Management. Volume 335, 1 January 2015, Pages 176–193.
http://www.nrel.colostate.edu/assets/nrel_files/labs/macdonald-lab/pubs/Salvage-logging-Wagenbrenner%20et%20al-ForEcolMgmt-2015.pdf

Salvage logging will set back vegetative recovery that has already started and thereby retard attainment of riparian and aquatic management objectives. In research on post-fire logging on the Winema NF, Sexton (1998) found that salvage logged sites produced only about 38% of the

understory biomass of that on the unlogged site; and one year later produced only about 27% of the understory biomass of that on the unlogged site. In fact, Sexton's (1998) study comparing salvaged and unsalvaged areas of a fire on the Winema NF one and two years after logging showed:

Salvage Areas	**Unsalvaged Areas**
reduced vegetation biomass	greater vegetation biomass
reduced species diversity	greater species diversity
reduced species richness	greater species richness
reduced growth of planted seedlings	greater growth of planted seedlings
reduced survival of planted seedlings	greater survival of planted seedlings

Sexton, Timothy O. 1998. Ecological effects of post wildfire activities (salvage-logging and grass-seeding) on vegetation composition, diversity, biomass, and growth and survival of *Pinus ponderosa* and *Purshia tridentata*. MS Thesis Oregon State University. Corvallis, OR. 121p

Similarly, Dan Donato, looked at the effects of salvage logging at the Biscuit fire in SW Oregon and found that cutting down dead trees and hauling away logs killed 71 percent of the naturally established seedlings which were abundant after the fire but scarce after logging. D. C. Donato, J. B. Fontaine, J. L. Campbell, W. D. Robinson, J. B. Kauffman, B. E. Law. Post-Wildfire Logging Hinders Regeneration and Increases Fire Risk. www.sciencexpress.org. 5 January 2006. Shatford and Hibbs recently found similarly encouraging results of natural regeneration.

> Over the 2005 field season, natural regenerating conifers were sampled in 38 plots within 11 historic fires in the Klamath-Siskiyou Region … Years since stand replacing wildfire ranged from [18 years to 9 years] … The density of natural regenerating conifers ranged over three orders of magnitude … Although the abundance of natural regeneration was frequently high, the age and size of saplings ranged considerably … Frequently, the regenerating saplings were overtopped by shrubs and hardwoods. There was no evidence of recent conifer mortality (i.e. no dead or dying saplings) caused by competition … Saplings were generally in good condition with dominant trees having live crown ratios of 50% or greater.

Shatford, J., Hibbs, D.E. 2005. Predicting Post-fire Regeneration Needs: Spatial and Temporal Variation in Natural Regneration in Southwestern Oregonadn Northern California. Pp 29-32 *in* Cooperative Forest Ecosystem Research Program (CFER) 2005 Annual Report. http://www.fsl.orst.edu/cfer/pdfs/CFER_ar05.pdf. This data reveals that natural regeneration is not only demonstrably successful but also species diverse and variable both spatially and temporally. All of these attributes are highly beneficial in terms of both wildlife habitat and fuel hazard.

The adverse effects of salvage logging on vegetative recovery described by Sexton are not unique to the Ponderosa pine forest type. The results are in fact quite consistent with the results found by Michael Grifantini et al after salvage logging in Douglas fir forests in northwestern California. Grifantini, M.C., Stuart J.D., and L. Fox III, 1992. "Deer Habitat Changes Following Wildfire, Salvage, Logging and Reforestation, Klamath Mountains, California," Proceedings of

the Symposium on Biodiversity of Northwestern California, Oct 28-30, 1991, Santa Rosa, CA. UC Wildland Resource Center Report 29. December 1992.

Climate change is expected to increase the magnitude and intensity of rain events which can cause significant erosion, especially after disturbances such as fire and logging. It would be wise to retain extra material on site after fire in order to intercept and absorb the energy of rain drops, absorb and store water, stabilize soil, capture and store mobile sediment, etc. Garbrecht, J. D., J. L. Steiner, and C. A. Cox (2007), Climate change impacts on soil and water conservation, Eos Trans. AGU, 88(11), 136. http://www.agu.org/eos_elec/2007/11-136_climate.html. The agency needs to ensure that the hydrology and erosion models used in the NEPA analysis accurately account for the expected increase in storm impacts due to climate change.

The adverse effects described by Sexton appear to be long lasting. Busse at al 1996 found that the annual growth rate of pines was reduced by almost 20% where understory vegetation had been removed thirty years earlier. In addition, research has shown a direct relationship between the level of on-site coarse woody debris and the amount active ectomycorrhizal root tips. Graham, R. T., Harvey, A. E., Jurgensen, M., F., Jain T. B., Tonn, J. R., and Page-Dumroese, D. S. 1994. Managing coarse woody debris in forests of the Rocky Mountains. Res. Pap. INT-RP-477. Ogden, UT: U. S. Department of Agriculture, Forest Service, Intermountain Research Station, 13 p. See also Russell T. Graham, Theresa Benevidez Jain, and Alan E. Harvey FUEL: LOGS, STICKS, NEEDLES, DUFF, AND MUCH MORE. The Joint Fire Science Conference and Workshop
http://web.archive.org/web/20060829024013/http://jfsp.nifc.gov/conferenceproc/T-10Grahametal.pdf

Undisturbed litterfall after wildfire reduces soil erosion caused by both rain and overland-flow. By disturbing needle cover and effectively reducing the soil coverage, logging and yarding will cause increased in erosion compared to not logging. Pannkuk, C. D., and P. R. Robichaud. 2003. Effectiveness of needle cast at reducing erosion after forest fires, *Water Resources Research*, Vol. 39, No. 11, doi:10.1029/2003WR002318, 2003.
http://www.agu.org/pubs/crossref/2003/2003WR002318.shtml They found that a 50 percent ground cover of Douglas fir needles reduced water flow erosion by 20 percent and rain-induced erosion by 80 percent. A 50 percent ground cover of ponderosa pine needles reduced water flow erosion by 40 percent and rain-induced erosion by 60 percent.

VI. SALVAGE LOGGING IS INCOMPATIBLE WITH SPOTTED OWL RECOVERY

The Revised Recovery Plan for the northern spotted owl recommends retention and restoration of structure function and process across the dry forest landscape. This includes legacy retention after fires. The 2011 Final Revised Recovery Plan for the Northern Spotted Owl says,

> In general, we recommend that dynamic, disturbance-prone forests of the eastern Cascades, California Cascades and Klamath Provinces should be actively managed in a way that reconciles the overlapping goals of spotted owl conservation, responding to climate change and restoring dry forest ecological structure, composition and processes,

including wildfire and other disturbances (Noss et al. 2006, Spies et al. 2006, 2010a, Agee and Skinner 2005, Healey et al. 2008, Mitchell et al. 2009). …

…[O]ur intent in this Revised Recovery Plan is to embed spotted owl conservation and recovery within broader dry forest ecosystem restoration efforts to increase the likelihood spotted owl habitat will remain on the landscape longer and develop as part of this fire adapted community … To accommodate future disturbances and restore ecosystem resiliency, we believe it is essential to restore ecosystem structure, composition and processes. Restoring ecosystem structures that provide resiliency will necessitate maintaining and restoring the biological legacies that typically persist through disturbance events and influence the recovery process in the post-disturbance landscape (Franklin et al. 2000). With respect to the dry forest landscapes, structural legacies include not only the large trees that tend to be fire tolerant, but the snags and downed wood that were created as a result of the disturbance event. Structural legacies serve valuable functions such as reproductive structures that facilitate plant propagation, modifying microclimates, or improving connectivity through the disturbed area (Franklin et al. 2007). … These principles should be part of any dry forest restoration treatment: … Retain and restore heterogeneity within stands (i.e., manage for fine-scale mosaic within stands). This includes both vertical and horizontal diversity. …

… [P]ost-fire timber harvest activities "undermine many of the ecosystem benefits of major disturbances" (Lindenmayer et al. 2004:1303) and frequently "ignore important ecological lessons, especially the role of disturbances in diversifying and rejuvenating landscapes" (DellaSala et al. 2006:51). … studies of spotted owls in post-fire landscapes indicate that spotted owls use forest stands that have been burned, but generally do not use stands that have been burned and logged. Consistent with restoration goals, post-fire management in these areas should promote the development of habitat elements that support spotted owls and their prey, especially those which require the most time to develop or recover (e.g., large trees, snags, downed wood). Such management should include retention of large trees and defective trees, rehabilitation of roads and firelines, and planting of native species (Beschta et al. 2004, Hutto 2006, Peterson et al. 2009). We anticipate many cases where the best approach to retain these features involves few or no management activities. … Many researchers supported the need to maintain habitat for spotted owl prey. For example, Lemkuhl et al. (2006) confirmed the importance of maintaining snags, downed wood, canopy cover, and mistletoe to support populations of spotted owl prey species. Gomez et al. (2005) noted the importance of fungal sporocarps which were positively associated with large downed wood retained on site post-harvest. Carey et al. (1991) and Carey(1995) noted the importance of at least 10 to 15 percent cover of downed wood to benefit prey. The costs and benefits of post-fire harvest to the development of habitat for spotted owls and their prey should be evaluated by interagency teams (e.g., Level 1 teams) during the consultation process.

> · Recovery Action 12: In lands where management is focused on development of spotted owl habitat, post-fire silvicultural activities should concentrate on conserving and restoring habitat elements that take a long time to develop (e.g., large trees, medium and large snags, downed wood). Examples of areas where we

> believe this recovery action would greatly benefit future spotted owl habitat development include such fire-affected areas as the Biscuit fire, the Davis fire and the B&B complex.

USFWS 2011. Final Revised Recovery Plan for the Northern Spotted Owl. pp III-20, III-32 – III-34, III-48 – III-49. Note also, the 1994 Northwest Forest Plan ROD (page C-11, and 1994 FSEIS page F-146) says that " ... activities required by recovery plans for listed threatened and endangered species take precedence over Late-Successional Reserve standards and guidelines."

Also, keep in mind the FWS' June 28, 2011 Response-to-Comments on the Revised Recovery Plan says "Whether a burned area could support nesting spotted owls is not relevant to our recommending focusing on spotted owl habitat restoration and conservation of legacy habitat elements in areas where pre-fire management focused on developing spotted owl habitat. This recovery action is designed to provide for legacy habitat elements remaining after high-intensity fires which will contribute to future habitat development." http://web.archive.org/web/20130315193800/http://www.fws.gov/oregonfwo/Species/Data/NorthernSpottedOwl/Recovery/Library/Documents/Comments.Responses.pdf And, keep in mind "where pre-fire management focused on developing spotted owl habitat" includes all dry forests, e.g. "[O]ur intent in this Revised Recovery Plan is to embed spotted owl conservation and recovery within broader dry forest ecosystem restoration efforts"

The 2008 FRP (p 116) also says "Large and old trees, either living or dead, are important wherever they occur." The FWS response-to-comments on the draft recovery plan says "post-fire harvest recommendations stress the need to conserve large trees, both living and dead, as they are important components to the restoration of owl habitat after wildfire events." And recommends that after fire or other disturbance the agencies should "conserve the remaining large trees and snags." http://www.fws.gov/pacific/ecoservices/endangered/recovery/pdf/NSO_RPApp_F_Response_to_Comments_5_7_08.pdf. Since large snags take a very long time to grow and recruit, salvage logging should retain all large snags. Any salvage logging proposal must also carefully disclose and balance all detrimental effects and alleged beneficial effects of salvage logging and connected actions like road building.

Clark (2007) looked at post-fire habitat selection by spotted owls after several wildfires in southern Oregon and determined that low severity fire in nesting, roosting, foraging habitat appears to benefit spotted owl occupancy and colonization.

> Initial occupancy was positively influenced by the amount of roosting and foraging habitat with low severity burn within the core ($\beta = 0.08$, 95% C.I. = -0.02 – 0.17) … Colonization rates were positively influenced by the amount of nesting, roosting and foraging habitat that received a low severity burn within the core ($\beta = 0.08$, 95% C.I. = 0.02 – 0.15).

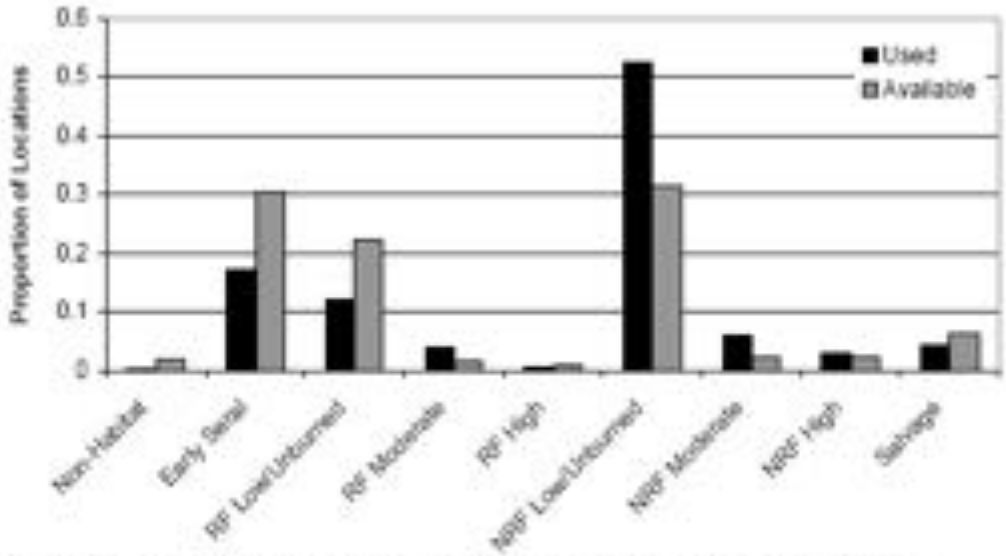


Figure 6.1. Proportions of used and available habitats for northern spotted owls monitored at the Timbered Rock Fire and surrounding areas from September, 2004 to August, 2006.

Darren A. Clark. 2007. Demography and Habitat Selection of Northern Spotted Owls in Post-Fire Landscapes of Southwestern Oregon. M.S. Thesis. Oregon State University. Robert Anthony, Advisor. Figure 6.1 shows that nesting, roosting, foraging habitat is used more frequently than random sites even after it has experienced moderate or high severity fire, while areas that were salvage logged were used less frequently than random sites.

See also, Clark, Anthony & Andrews 2013. Relationship Between Wildfire, Salvage Logging, and Occupancy of Nesting Territories by Northern Spotted Owls. The Journal of Wildlife Management 77(4):672–688; 2013; DOI: 10.1002/jwmg.523 ("Timbered Rock had a 64% reduction in site occupancy following wildfire (2003–2006) in contrast to a 25% reduction in site occupancy at South Cascades during the same time period. This suggested that the combined effects of habitat disturbances due to wildfire and subsequent salvage logging on private lands negatively affected site occupancy by spotted owls. In our second analysis, we investigated the relationship between wildfire, salvage logging, and occupancy of spotted owl territories at the Biscuit, Quartz, and Timbered Rock burns from 2003 to 2006. Extinction probabilities increased as the combined area of early seral forests, high severity burn, and salvage logging increased within the core nesting areas.")

VII. SALVAGE LOGGING WILL INCREASE FIRE HAZARD AND IS INCOMPATIBLE WITH FUEL MANAGEMENT OBJECTIVES

BLM should avoid salvage logging and replanting because it increases fire hazard by moving small hazardous fuels from the canopy to the ground where they are more available for combustion and replanting creates a dense continuous fuel profile that is conducive to fire severity and fire spread.

The DEIS needs to disclose that salvage logging will increase fire hazard, e.g.:

> "The slash created by the harvest and fuels treatments that is left on the ground for site protection and future site productivity, would create a short term (zero - eight years) fire hazard. The fuel-bed created by these treatments would be, in large part, comprised of material in the smaller size classes. These fuels would contribute to the flammability and continuity of fuels on a local level, as well as across the landscape. Under good burning conditions, fires burning in these slash fuel types have the potential to spread rapidly and extensively."

Bitterroot NF Burned Area Recovery DEIS, p. 3-12.

> "There's no science that demonstrates re-burn potential in areas where there is downed wood or decayed wood."

Craig Bobzien, Bitterroot NF Acting Supervisor (Missoula Independent, July 19, 2001)

> "We found no studies documenting a reduction in fire intensity in a stand that had previously burned and then been logged."

Environmental Effects of Postfire Logging (USDA Forest Service, 2000)

> "[We] are aware of no evidence supporting the contention that leaving large dead wood material significantly increases the probability of reburn."

Wildfire and Salvage Logging (Beschta, et al., Oregon State University, 1995)

> "The removal of large, merchantable trees from forests does not reduce fire risk and may, in fact, increase such risk."

Dept. of Agriculture and Interior, Report to the President (September 2000)

The best available science indicates that salvage logging increases small fuels that are most hazardous, and reduces large wood which is most valuable to wildlife.

> Our study examined fuel succession patterns by surveying downed woody fuels across a chronosequence of dry coniferous forest stands that burned with high fire severity (95–100% overstory tree mortality) within mixed- and high-severity wildfires in eastern Washington and Oregon, USA, between 1970 and 2007. We sampled forests in which ponderosa pine (*Pinus ponderosa*) and Douglas-fir (*Pseudotsuga menziesii*) are the dominant early-seral tree species … Relative to unlogged stands, post-fire logging initially increased surface woody fuel loads, increasing small diameter fuel loads by up to 2.1 Mg/ha during the first 5 years after fire and increasing medium diameter fuel loads by up to 5.8 Mg/ha during the first 7 years after fire. Logging subsequently reduced surface woody fuel loads, reducing large diameter fuel loads by up

> to 53 Mg/ha between 6 and 39 years after wildfire … The initial pulse of elevated surface fuels in logged stands was expected under our first hypothesis. Post-fire logging transfers woody debris in tree branches and tops from the canopies of fire-killed trees to the forest floor, producing well-documented conditions of higher surface woody fuels in logged stands than in unlogged stands in the first 1–4 years following logging (Donato et al., 2006, 2013; McIver and Ottmar, 2007; Monsanto and Agee, 2008; Keyser et al., 2009). Higher amounts of surface woody fuels – especially small and medium diameter woody fuels – can increase short-term fire hazards in logged stands by increasing potential rate of spread and fire-line intensity … Post-fire logging was most effective for reducing large diameter surface fuels, consistent with our second hypothesis. By removing tree boles, post-fire logging reduced maximum large diameter fuel loadings and produced a long period of reduced large diameter fuels, including both sound and rotten fuels. Although large diameter fuels may contribute little to fire spread rates (Hyde et al., 2011) and are typically disregarded in fire behavior modeling ….

David W. Peterson, Erich K. Dodson, Richy J. Harrod 2015. Post-fire logging reduces surface woody fuels up to four decades following wildfire. Forest Ecology and Management 338 (2015) 84–91.
http://www.firescience.gov/projects/06-3-4-16/project/06-3-4-16_Peterson_et_al_-_2015_-_FEM_-_post-fire_logging_and_fuels.pdf. This study showed that salvage logging is most effective at reducing large fuels, which contribute least to fire hazard, but the study strangely failed to consider the effect on habitat. Reducing large wood for 40 years or more will have a significant adverse effect on wildlife habitat. It s also notable that this study focuses on fuels, but failed to note whether any of the numerous fire areas they looked at across Oregon and Washington had actually reburned. Studies that have looked at this issue, show that the risk of reburn (with or without salvage logging) is small, while the risk to wildlife from salvage logging is great.

Similar results were found in a "NecroDynamics" model that looked at 7 fires in the eastern slopes of the Oregon Cascades.

> Salvage logging immediately increased surface fine woody fuel loadings by 160–237% above maximum loadings observed in unmanipulated stands, and were higher during the initial 18–22 years post-fire … [O]ur modeling results suggest salvage logging has mixed effects on reducing hazardous fuel conditions since it increases fine woody fuel loadings and decreases coarse woody fuel loadings. … [P]rescriptions can be altered. For example, [to] retain a higher abundance of snags which would reduce the magnitude of difference in fine woody fuels between salvaged and unmanipulated stands during early in post-fire succession …. Although salvage logging reduces coarse woody fuel loadings, alone it does not mitigate re-burn hazard because it increases fine woody fuel loadings …. Additionally, intensive reforestation typically substitutes conifer biomass for shrub biomass, limiting hazardous fuels reduction unless additional efforts are employed … Understory woody vegetation reestablishes rapidly in these dry-mixed conifer forests (Dunn and Bailey, in press) and can be a highly-flammable fuel layer (Weatherspoon and Skinner, 1995), as well as a source of post-fire fine woody fuels when shrub crowns die (Table 4). This suggests salvage logging alone will not mitigate contributions to re-burn hazard from dead biological legacies when the temporal dynamics of multiple fuelbeds

(e.g. fine woody fuels, coarse woody fuels, and regenerating vegetation) are evaluated. R … Salvage logging to enhance ecosystem resilience may not be appropriate if multiple ecosystem functions and resources are considered, including; coarse wood use by wildlife (Cahall and Hayes, 2009; Hutto, 1995; Fontaine et al., 2009; Saab et al., 2005), functional attributes of early seral vegetation (Swanson et al., 2010), compounding effects on soil and nutrient pools (Brais et al., 2000; Triska and Cromack, 1980) and reduced water and carbon storage (Harmon et al., 1986).

Christopher J. Dunn, John D. Bailey 2015. Modeling the direct effects of salvage logging on long-term temporal fuel dynamics in dry-mixed conifer forests. Forest Ecology and Management 341 (2015) 93–109. http://www.sierraforestlegacy.org/Resources/Conservation/FireForestEcology/SalvageLoggingScience/Dunn&Bailey2015.pdf The authors suggested modifying salvage logging prescriptions to retain more snags, which would help retain fine fuels in the canopy longer and reduce the amount of fine fuels that are moved from the canopy to the ground.

A study of the portions of the Biscuit fire that were previously burned by wildfire, reveals that salvage logging did not reduce the severity of subsequent fires, and in fact salvage logging appeared to increase the severity of subsequent wildfires. See Jonathan R. Thompson, Thomas A. Spies, and Lisa M. Ganio. 2007. **Reburn severity in managed and unmanaged vegetation in a large wildfire.** Proceedings of the National Academy of Sciences. *PNAS* published online Jun 11, 2007. http://www.fs.fed.us/pnw/pubs/journals/pnw_2007_thompson001.pdf ("In places that burned with high severity in the Silver Fire, areas that were salvage-logged and planted burned with even higher severity than comparable unmanaged areas.") http://www.fs.fed.us/pnw/research/PNAS_Biscuit_Author_Comments_PNW.doc. This represents significant new information about salvage logging. ("Some, including forest scientists, would have expected fire severity to be lower in the logged and planted sites, where large wood was removed, broadcast burning done to reduce fine surface fuels, and some vegetation management conducted possibly reducing the cover of flammable shrubs. That our findings were the opposite of this expectation indicates that the large diameter wood is not a major factor in flammability …").

A recent scientific study scientific study of post-fire logging (McIver and Ottmar 2007) showed that salvage logging causes a four-fold increase in fine fuels and that increase can last for 15 years. Fine fuels tend to cause wildfires to rapidly spread which is more likely to kill young trees and set back forest recovery. Unlogged fire areas (the controls) had lower levels of fine fuels but had higher levels of large fuels. Large fuels do not tend to exacerbate the spread of fire but they can heat the soil. However, soil heating is a patchy phenomena that forests have evolved with and can tolerate. Retaining the large wood is also important for wildlife habitat and soil conservation. The scientific consensus in the fuel management literature is that it is more important to control small fuels. J.D. McIver, and R. Ottmar. 2007. Fuel mass and stand structure after post-fire logging of a severely burned ponderosa pine forest in northeastern Oregon. Forest Ecology and Management. Volume 238, Issues 1-3 , 30 January 2007, Pages 268-279. http://www.sierraforestlegacy.org/Resources/Conservation/FireForestEcology/SalvageLoggingScience/Salvage-McIver07.pdf

Donato looked at the effects of salvage logging after the Biscuit fire and found that—

> Postfire logging significantly increased both fine and coarse downed woody fuel loads (Fig. 1B). This pulse was comprised of unmerchantable material (e.g., branches), and far exceeded expectations for postfire logging-generated fuel
> loads (5, 6). In terms of short-term fire risk, a reburn in logged stands would likely exhibit elevated rates of fire spread, fireline intensity and soil heating impacts (7). Postfire logging alone was notably incongruent with fuel reduction goals. Fuel reduction treatments (prescribed burning or mechanical removal) are frequently intended following postfire logging, including in the Biscuit plan, but
> resources are often not allocated to complete them (8). Our study underscores that, after logging, mitigation of short-term fire risk is not possible without subsequent fuel reduction treatments.

D. C. Donato, J. B. Fontaine, J. L. Campbell, W. D. Robinson, J. B. Kauffman, B. E. Law. Post-Wildfire Logging Hinders Regeneration and Increases Fire Risk. www.sciencexpress.org. 5 January 2006.

The 1987 Bland Mountain fire burned east of Canyonville and was heavily salvage logged. The same area then reburned in 2004 with high fire intensity. Salvage logging did not appear to save these plantations from intense fire, in fact, the removal of large logs and dense replanting may have made the fire more intense. One fact is unquestionable, that is that fire hazard is high in young plantations even when they are salvaged. Salvage logging does nothing to address this fact, and may in fact lead to increased density of conifer vegetation types that are more flammable than the mixed conifer-broadleaf vegetation types that may be less flammable.

The NEPA analysis asserts that leaving large numbers of snags is unsafe and the NEPA document describes an undesirable scenario with respect to the no action and action alternatives, but the NEPA document must acknowledge the fire risks associated with salvage logging including: (a) salvage logging will remove most of the largest logs that least prone to burn (because large logs hold the most water the longest and they have relatively high ratios of volume to surface area), (b) salvage logging leave behind almost all of the smallest material which is most prone to drying and burning (e.g., relatively low ratio of volume to surface area), (c) the proposed action may lop and scatter the tops of large trees that are too big for the ground-based harvest machinery, (d) salvage logging equipment and workers could start fires, (e) increased human access increases the risk of human caused ignition, (f) the replanting will create a fuel load that is dense, uniform, extensive, volatile, and close to the ground (During an extreme weather conditions this is one of the most extreme fire hazards in the forest).

There is little empirical support for the idea that salvage logging reduces the intensity or severity of subsequent fire. Recent data show an actual increase in fire severity where post-fire logging had occurred. McIver, James D.; Starr, Lynn; [Technical Editors] 2000. Environmental effects of postfire logging: literature review and annotated bibliography Gen. Tech. Rep. PNW-GTR-486. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 72 p. http://www.fs.fed.us/pnw/pubs/gtr486.pdf. Harma K., and P. Morrison. 2002. Analysis of Vegetation Mortality and Prior Landscape Condition, 2002 Biscuit Fire

Complex. Pacific Biodiversity Institute.
http://web.archive.org/web/20060518211529/http://www.siskiyou.org/issues/pbivegetative.pdf
Dennis C. Odion, Evan J. Frost, James R. Strittholt, Hong Jiang, Dominick A. Dellasala§, And Max A. Moritz. 2004. Patterns of Fire Severity and Forest Conditions in the Western Klamath Mountains, California. Conservation Biology. Volume 18 Issue 4 Page 927 - August 2004. http://www.blackwell-synergy.com/links/doi/10.1111/j.1523-1739.2004.00493.x.

Salvage typically removes the largest logs that act as water "reservoirs" and are least prone to drying. *See* Amaranthus, M.P.; Parrish, D.S.; and D.A. Perry. 1989. Decaying Logs as Moisture Reservoirs After Drought and Wildfire. In: Alexander, E.B. (ed.) Proceedings of Watershed '89: Conference on the Stewardship of Soil, Air, and Water Resources. USDA-FS Alaska Region. RIO-MB-77. p. 191-194. This study found that large down logs in a post-fire landscape contain 25 times more moisture than the surrounding soil. While the authors recommended preventing large accumulations of "woody residue" (which the author described as very small diameter material--branches, twigs, etc.), they also recommended leaving down logs after fires to PREVENT future fire severity. They concluded that, "When forest managers are analyzing for fire risk, they should take into account the high water content of fallen logs during the period in which wildfire potential is greatest... Fallen trees, in a range of decay classes, therefore provide a long-term reservoir of moisture. A continuous supply of woody material left on the forest floor, not only protects the productive potential of the forest soil, but also provides a sanctuary for ectomycorrhizae and a significant source of moisture in the event of prolonged drought or wildfire." The study was conducted in the Klamath region in an area with roughly 40 inches of annual rainfall. It was published in 1989 in Proceedings of Watershed '89: a conference on the stewardship of soil, air and water resources. USDA Forest Service, Alaska Region: pp. 191-194 (1989).

VIII. SALVAGE LOGGING IS INCOMPATIBLE WITH COMMUNITY STABILITY

The DEIS admits that the timber industry is inherently volatile and timber production causes community instability. Salvage logging amplifies these adverse effects by creating unpredictable temporary pulses in log supply.

The DEIS (p 277) assumed that salvage logging would occur at the rate of 359 acres per year. This is misleading because fires do not occur in a steady rate over time. This are highly episodic, with some years producing few wildfires and other years producing many thousands of acres of wildfires. Salvage logging would likely following this episodic, boom-bust pattern. The DEIS did not disclose this disruptive effect on community stability.

ROADS, TRANSPORTATION, AND TRAVEL MANAGEMENT

Approximately 30 percent of the [BLM] road mileage is in fair to poor condition, primarily due to depleted surfacing aggregate and worn-out minor culverts. Currently the deferred maintenance backlog exceeds $300 million.

All of the BLM developed action alternatives call for increasing the size of the transportation network[233] despite the fact that the BLM already has a $317 million-dollar deferred road maintenance backlog of which $127 million is within the Medford District. DEIS at 646. Hence the range of action alternatives is arbitrarily narrow and excludes consideration of a reasonable action alternative that would avoid new road construction.

Additionally, the proposed new road construction is likely to have disproportionately large impacts on watershed and wildlife values. As stated on page 317 of the DEIS, "within the sediment delivery distance (200 feet), newly constructed roads would primarily be constructed to provide access for forest thinning within the riparian reserves" thereby harming water quality and terrestrial wildlife habitat connectivity. Already 36% of the 14,330 miles of inventoried BLM logging roads (that the agency cannot afford to maintain to standard) are located within 200' feet of streams. DEIS page 314. Every action alternative will contribute to the road maintenance backlog to the detriment of aquatic and wildlife objectives and values.

As indicated on page 650 of the DEIS, the Medford District will be disproportionately impacted by the BLM's proposal to increase the size of the existing transportation system. The Medford District has be far the most projected new road construction to access timber harvest with the lowest comparative volume per acre. This strategy undercuts the sustainable harvest mandate of the O&C Act and the stated purpose of sustainable forest production for the RMP Revisions.

Please note that the BLM is deferring transportation management planning and analysis of environmental and social effects to a hypothetical future NEPA planning process[234] while preparing to authorize a significant increase in the size and impacts of its road system in this planning process. NEPA does not permit such an approach.

I. BLM MUST PROVIDE ADDITIONAL INFORMATION WHEN DEFERRING TRAVEL PLANNING DECISIONS

We are concerned that the Draft RMP does not go far enough to set the legal existing footprint of travel routes and curtail additional route proliferation while the travel planning process is in deferment. BLM's Travel and Transportation Manual (Manual 1626) requires BLM to complete certain tasks through the RMP if it is deferring travel planning, as it is here. Among these required tasks include producing a map of the known network of transportation linear features and defining interim management objectives for areas where route designations were not completed concurrent with the RMP.[235] According to both the TMP Manual and Handbook, delineating travel networks can be deferred for up to 5 years after signing the Record of Decision for the RMP.[236] However, BLM must also come up with an action plan and planning schedule to indicate areas that will have travel planning completed concurrently with the RMP process and which areas will be deferred.[237]

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[233] DEIS at 648.
[234] DEIS at 636.
[235] BLM Manual 1626.06(B)(2).
[236] BLM Manual 1626.06(B)(3); BLM Handbook 8342(I)(C)(ii).
[237] BLM Handbook 8342(IV)(B).

We appreciate the work that has been completed in Appendix P of the Draft RMP entitled "Off-highway Vehicle Management Guidelines." The Draft RMP explicitly states that BLM developed these guidelines consistent with BLM Handbook H-8342. We acknowledge that several of the guidelines of Handbook H-8342 have been met for a deferred travel plan, there are some outstanding measures that have yet to be taken. We urge BLM to incorporate the following documentation and information in the RMP:

II. BLM SHOULD MAP THE CURRENT SYSTEM OF AUTHORIZED EXISTING TRAVEL ROUTES.

BLM Handbook 8342 states that BLM must assess the current ground transportation linear feature database during the pre-planning stage for the RMP since it is essential that that a credible baseline inventory is available for eventual TMP efforts and to decide which areas are higher priority for designating routes.[238] Thus, even though BLM can defer designation of a travel network, it still must document the current system of existing authorized routes now, during the RMP stage. Appendix P of the Draft RMP states that BLM is "*currently working on an inventory of all user-created motorized and non-motorized routes within the decision area . . . as a baseline to guide future implementation-level route designations within the areas that are designated "Limited to Existing Routes."* [239](emphasis added). The Draft RMP goes on to state that *"[r]ecreation routes (authorized and unauthorized) have been created in response to demand for trail-based recreation*."[240]

We encourage gathering inventory data on all routes, including user-created and unauthorized, for the purposes of knowing what exists on the ground. However, BLM should not be adding user-created or unauthorized routes to its baseline inventory maps of the existing travel network as these routes were not authorized by the agency. The baseline route inventory should only include those that were legally created or authorized by the agency and all other routes should be slated for closure and rehabilitation.

III. BLM SHOULD SET CRITERIA FOR PRIORITIZING AREAS FOR TRAVEL PLANNING AND PROVIDE A CLEAR PLANNING SCHEDULE.

Handbook 8342 mentions that BLM should consider completing certain units for travel planning during the RMP process, such as smaller areas or sub-units that have sufficient travel and transportation information, areas that are most heavily used, or areas that have existing social conflicts, resource concerns, or a defined need for route definition or development for administrative, public access or other needs first.[241] The Handbook also states that RMPs should "provide a clear planning sequence, including public process (focusing on user groups and stakeholders), initial route selection criteria, and constraints for subsequent road and trail selection and identification." [242]

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[238] BLM Handbook 8342(IV)(A).
[239] DEIS at 1377.
[240] Id.
[241] BLM Handbook 8342(IV)(B).
[242] BLM Handbook 8342(IV)(H)(iv)(2).

While the Draft RMP describes the process for selecting a final road and trail network, it does not set areas that should be prioritized for travel planning after the ROD is signed. The Draft RMP also does not provide a clear planning sequence or schedule for completing travel planning for the planning area within 5 years of signing the ROD. Setting criteria, priority areas and a schedule for completion will provide both the agency and the public with the expectations that travel planning will occur in a reasonable and timely fashion, in addition to following the policy guidance of BLM Handbook 8342.

One good example of setting a schedule for deferred travel planning at the RMP level is in the Proposed RMP for the Lander Field Office. In the Lander Proposed RMP, Appendix W, Table W.1 sets forth priority ranking, timeframes for completion and interim and final restrictions for each travel management planning zone. This is an appropriate approach to deferred travel planning that BLM should adopt in this RMP.

BLM also has broad authority to close areas in the interim to protect public lands and resources.[243] In addition, BLM must immediately close any areas where the agency finds that off-road vehicles are or will cause considerable adverse effects upon natural or cultural resources.[244] BLM has policy guidance (IM 2013-035) that describes how RMPs and TMPs should address temporary closures including defining thresholds for when ORV related closures will take place. BLM should issue temporary closures for any area where ORVs are currently harming or may harm natural or cultural resources in the interim period before BLM can designate the appropriate travel network.

IV. BLM SHOULD GATHER INVENTORY DATA FROM THE PUBLIC RELATED TO NON-MOTORIZED TRAVEL ROUTES.

Handbook 8342 provides that the RMP should *"[o]utline additional data needs and a strategy for collection."*[245] *In addition, the Handbook states that "[i]t is essential that the BLM identify all existing routes to the extent feasible*." [246]

Historically, non-motorized trails have been an underrepresented linear feature through BLM travel planning. The same is true with considering non-motorized recreational experiences. However, BLM must ensure that it is incorporating all non-motorized trail data from the public. In order to do so, BLM should gather as much data from the public on non-motorized trails as possible including trail location, use, time of use and compatibility with other uses. BLM should make clear in its data calls that data should be submitted in line with the step-by-step process outlined in *BLM Technical Reference 9113-1, Planning and Conducting Route Inventories.*

The following guidance set out in BLM Handbook 8342 provides additional considerations for gathering data from non-motorized users of the public lands in the decision area:

[243] 43 C.F.R. § 8364.1.
[244] 43 C.F.R. § 8341.2.
[245] BLM Handbook 8342(IV)(H)(iv)(1).
[246] BLM Handbook 8342(V)(D).

While the BLM should collect as much relevant information as possible during the RMP planning process, the data collection should be informed and guided by the issues and concerns identified by the ID team and through public scoping. Transportation data at the RMP level may tend to overlook the most recently created routes and fail to identify trails to a greater degree than roads. Input and collaboration with trail user groups, research through guidebooks and online trail information sources may be helpful in identifying areas where additional field data collection is important. Areas that are important local or regional destinations for trail use, or where dispersed recreation activities are highly popular (e.g., rockhounding) may require an interactive approach to data collection and public review of the transportation inventory.

The importance of making effective use of GIS technology cannot be overemphasized. For example, GIS can be utilized in the public involvement process to allow the public to have an interactive interface with the route data being presented. This can greatly facilitate the public's ability to understand and comment on the accuracy of the data that will be evaluated for possible inclusion in the designated route network (see Appendix 9 for examples of how GIS can facilitate the TTM process.)

Recommendations: BLM must map and document the existing authorized route system as of the date of this RMP and clarify that user-created or unauthorized routes will not be considered as part of the baseline inventory. BLM should prioritize areas for comprehensive travel planning with interim closures and restrictions and specific timeframes for completion, no later than 5 years from the signing of the ROD. BLM should gather inventory data from the public related to non-motorized travel routes to inform the travel planning process.

V. BLM HAS A DUTY TO MINIMIZE IMPACTS OF ROUTE DESIGNATIONS.

In response to the growing use of ORVs and corresponding environmental damage, Presidents Nixon and Carter issued executive orders mandating that BLM only allow ORV use on the public lands if certain conditions were met.[247] Pursuant to those orders, BLM regulations require that designated ORV "areas and trails shall be located:

(1) "to minimize damage to soil, watershed, vegetation, air, or other resources of the public lands, and to prevent impairment of wilderness suitability;"
(2) "to minimize harassment of wildlife or significant disruption of wildlife habitats;" and
(3) "to minimize conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors."[248]

[247] Exec. Order No. 11,646, 37 Fed. Reg. 2877 (Feb. 9, 1972); Exec. Order No. 11,989, 42 Fed. Reg. 26,959. May 25, 1977.
[248] 43 C.F.R. § 8342.1(a)-(c); *see also* Exec. Order 11,644, § 3(a) (similar language).

BLM's Travel Management Manual 1626 states that BLM must pay particular attention to thoroughly documenting how the minimization criteria was considered in making both ORV designations (Manual 1626.06(A)(2)(a)) and route designations (Manual 1626.06(B)).

Together these mandates impose a rigorous process and high threshold for BLM to designate OHV areas and travel routes in the planning area. BLM must carefully assess and document how *each* designated area or route will: (1) minimize impacts to the soil, watershed, vegetation, air, wilderness or other resources, and (2) minimize conflicts between motorized users and the visitors engaging in quiet, non-motorized forms of recreation. BLM must be sure to address those and other impacts through careful application of the minimization criteria on a route-by-route basis.[249]

The Draft RMP provides that *"[t]he BLM applied designation criteria in 43CFR 8342 when designating lands as open, limited, or closed to off-road vehicles. All designations are based on the protection of the resources of the public lands, the promotion of the safety of all the users of the public lands, and the minimization of conflicts among various uses of the public lands.*" [250] However, the Draft RMP provides no information on how the criteria were applied.

A number of federal courts have held that BLM and other federal land management agencies must *apply* these so-called "minimization criteria" to area and trail designations and *articulate* a reasonable basis for concluding that the designation minimizes impacts to important resources. For example, in addressing a BLM planning process, one federal court held that *"[a]cknowledging the minimization standards is not the same as applying them.*" [251] Further, BLM must provide sufficient information "*for someone other than the BLM to know why or how the routes were chosen.*" [252] "[*r]ecord does not demonstrate whether or how [the agency] implemented and incorporated the minimization criteria*" (under analogous Forest Service regulations);[253] (detailed survey and inventory of routes inadequate where "there is nothing in the record to show that the minimization criteria were in fact applied when OHV routes were designated").

The Ninth Circuit Court of Appeals recently struck down a plan for failing to properly apply the minimization criteria. [254] In *WildEarth Guardians*, the Ninth Circuit held that, *"[w]hat is required is that the Forest Service document how it evaluated and applied the data on an area-by-area basis with the objective of minimizing impacts*." [255] "Moreover, as various district courts have held, "*mere consideration of the minimization criteria is not sufficient to comply with the regulation."*[256]

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[249] *See, e.g.*, *SUWA*, 981 F. Supp. 2d at 1105 (BLM must apply minimization criteria "at the route specific level" to assess "the effects of route designations," and must provide sufficient information "for someone other than the BLM to know why or how the routes were chosen").
[250] DEIS at 638.
[251] *S. Utah Wilderness Alliance v. Burke*, 981 F. Supp. 2d 1099, 1104-06 (D. Utah 2013).
[252] *Id.* at 1105. *See also, Idaho Conservation League v. Guzman*, 766 F. Supp. 2d 1056, 1071-74 (D. Idaho 2011)
[253] *Ctr. for Biological Diversity v. BLM*, 746 F. Supp. 2d 1055, 1071-81 (N.D. Cal. 2009)
[254] *WildEarth Guardians v. USFS*, No. 12-35434 (9th Cir. June 22, 2015).
[255] *Id*., slip op. at 24.
[256] *Id*., slip op. at 25.

Thus, it is unequivocally clear that BLM cannot designate OHV areas or routes without applying the minimization criteria and documenting how it was applied for individual designations. The draft has nothing to show how the criteria was applied to the decision area.

***Requested Remedy*:** BLM must design OHV areas in the plan that minimizes conflicts among users and damage to natural resources. Areas must be evaluated to ensure that they are located and bounded to meet the minimization criteria for purposes of BLM management and enforcement. We request that BLM apply the minimization criteria by showing how it is specifically minimizing impacts to resources and conflicts to other uses for each route as required by law.

VI. BLM MUST PROVIDE A RANGE OF ALTERNATIVES FOR OHV AREA DESIGNATIONS.

The range of alternatives is "*the heart of the environmental impact statement*."[257] NEPA requires BLM to "*rigorously explore and objectively evaluate*" a range of alternatives to proposed federal actions.[258] "*An agency must look at every reasonable alternative, with the range dictated by the nature and scope of the proposed action.*" [259]An agency violates NEPA by failing to "*rigorously explore and objectively evaluate all reasonable alternatives*" to the proposed action.[260] This evaluation extends to considering more environmentally protective alternatives and mitigation measures.[261]

In regards to OHV area designations, BLM has not met its obligation to consider a reasonable range of alternatives. As stated in the Draft RMP, *"[e]ven under the most restrictive alternative for OHV use (Alternative C), the BLM would close less than 1 percent of BLM-administered lands in the decision area to OHV use.*"[262] This is the same analysis that was overturned by the district court and upheld by the 9th Circuit Court of Appeals five years ago for the BLM RMP for Southeastern Oregon. The 9th Circuit held:

The ORV analysis is also flawed . . . It considered no alternative that proposed closing more than a fraction of the planning area to ORV use, as opposed to merely designating areas for "limited" use. As ONDA observes, the BLM did not consider any alternative that would have closed more than 0.77% of the planning area to ORVs. Indeed, every alternative would have reduced the extent of closed areas from that in effect previously. It is precisely this sort of "uncritical[ ]" privileging of one form of use over another that we have held violates NEPA. Closures, not just "limited" designations, must be considered to comply with NEPA.

Or. Natural Desert Ass'n. v. BLM, 625 F.3d 1092, 1123-1124 (9th Cir. Or. 2010) (citations omitted).

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[257] 40 C.F.R. § 1502.14.
[258] *See* 40 C.F.R. §§ 1502.14(a), 1508.25(c).
[259] *Nw. Envtl. Defense Center v. Bonneville Power Admin*., 117 F.3d 1520, 1538 (9th Cir. 1997).
[260] *City of Tenakee Springs v. Clough*, 915 F.2d 1308, 1310 (9th Cir. 1990) (quoting 40 C.F.R. § 1502.14).
[261] *See, e.g., Kootenai Tribe of Idaho v. Veneman*, 313 F.3d 1094, 1122–23 (9th Cir. 2002) (and cases cited therein).
[262] DEIS at 640.

The BLM nonetheless maintains that its analysis of ORV designations is adequate because it considered a wide range of use allocations between open and limited ORV designations, and because it could implement emergency closures if necessary. We disagree. Limited ORV use is simply not identical to no ORV use. A limited designation, even with the possibility of closure, does not provide protection equivalent to a straightforward closure.[263]

Here, as in the RMP for Southeastern Oregon, the BLM has not considered closing more than 0.7% of the planning area to OHV use.[264] This does not meet BLM's legal obligation to consider a reasonable range of alternatives as discussed by the 9th Circuit in the case cited above.

Recommendation: BLM must consider alternatives that consider closing more than a very small fraction of the planning area to OHV use.

SOCIOECONOMICS

The draft RMP and DEIS are based on flawed economic reasoning and analysis that attempt to justify an expanded timber sale program that creates more economic harm than good.

The most significant economic and social effects of the preferred RMP alternative (Alternative B) will be associated with a 60% increase in timber harvests over current levels at a time when markets are severely distorted by negative externalities and logging subsidies and affected communities are evolving away from an unhealthy dependence on the timber industry.[265] The DEIS fails to provide an explanation of why the increase in logging proposed under alternatives A, B, and C is economically justified and why the no harvest and natural selection alternatives were rejected when they represent the only alternatives that can fulfill statutory sideboards that specify under what conditions BLM timber should be offered for sale.

I. BLM'S NEEDS AN ECONOMICALLY RATIONAL TIMBER SALE PROGRAM.

The BLM has misconstrued its legal mandate as one that requires an increase in logging. While there are dozens of statutes, regulations, and executive orders that have bearing on management of western Oregon BLM lands the controlling authority with respect to timber supply is the Oregon and California Railroad and Coos Bay Wagon Road Grant Lands Act (O&C Act; 43 U.S.C. 1181a et seq.).

In pertinent part, the O&C Act requires that western Oregon O&C lands be managed "for permanent forest production, and the timber thereon shall be sold, cut, and removed in conformity with the princip[le] of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities."[266] The O&C Act also provides that "timber from said lands in an amount not less than . . . the

[263] *Or. Natural Desert Ass'n. v. BLM*, 625 F.3d 1092, 1123-1124 (9th Cir. Or. 2010) (citations omitted).
[264] Draft RMP, Table 3-220, p. 639
[265] The timber harvest baseline in the DEIS is 144.3 million board feet (mmbf) in 2012. Alternative B, the preferred alternative, would increase this cut to 230.2 mmbf.
[266] 43 U.S.C. § 1181a.

annual sustained yield capacity . . . shall be sold annually, or so much thereof as can be sold at reasonable prices on a normal market."[267]

BLM has invoked this legal mandate as the primary purpose and need for the RMP revision process. In particular, the driving force behind the RMP revision and the proposed increase in timber harvest is to respond to what the agency has determined to be a "substantial, long-term departure from the timber management outcomes predicted under the 1995 RMPs." The 1995 RMP estimated a sustained yield allowable sale quantity, and current harvest levels are roughly 1/3 of that. However, there is nothing in the O&C Act that requires the BLM to actually sell that amount of timber each year. Indeed, the O&C Act puts significant conditions on BLM's timber sale program: (1) it must be offered at reasonable prices; (2) under normal market conditions, and (3) to achieve a variety of purposes, including community stability. If none of these conditions can be met, then no timber sale program much less an expanded one need be implemented. Against this backdrop, it is clear that the proposed increase in logging cannot be justified.

II. REASONABLE PRICES PRECLUDE ANY ADDITIONAL TIMBER SALES DURING THIS PLANNING CYCLE

In developing the RMP and DEIS, the BLM has not discussed the process the agency intends to use to ensure that when offered for sale, its timber receives reasonable prices. While current practice is to offer timber for sale at or below a fair market value based on current market prices for comparable timber,[268] there is nothing to suggest that this price setting method is reasonable, especially when the agency has at its disposal other methods for determining fair market value that are designed to cover all costs of production from the seller's (BLM) perspective. The issue of sales below fair market value from the seller's perspective is an issue that has plagued the agency for decades, and one that could be remedied in this planning cycle. As stated succinctly in 1997 in a PEER white paper on the subject, "[b]ecause no seller would perpetually sell a product for less than its cost, this suggests that Congress intended that BLM appraisals insure cost-recovery when the fair market value of timber is estimated."[269]

For a private entity a reasonable price that covers the costs of production includes direct material costs, labor costs, sale and administration costs, and provisions for markup to achieve a desired internal rate of return on investment plus markup for profits. This is simply known as full cost pricing. But the BLM is not a private firm. It also bears responsibility for the economic, social and environmental costs it may pass on to society – negative externalities. OMB Circular A-94 ("General Principles" Section 5) is explicit in this requirement for federal programs:

> Analyses should include comprehensive estimates of the expected benefits and costs to *society* based on established definitions and practices for program and policy evaluation. Social net benefits, and not the benefits and costs to the Federal Government, should be the basis for evaluating government programs or policies that have effects on private citizens or other levels of government. Social benefits and costs can differ from private

[267] Id.
[268] DEIS at 479.
[269] Public Employees for Environmental Responsibility (PEER). 1997. Land of No Return$. Bankruptcy of the BLM Public Domain Forestry Program. White Paper Number 13. Hood River, OR: PEER.

> benefits and costs as measured in the marketplace because of imperfections arising from: (i) *external economies or diseconomies* where actions by one party impose benefits or costs on other groups that are not compensated in the market place; (ii) monopoly power that distorts the relationship between marginal costs and market prices; and (iii) taxes or subsidies (emphasis in original).[270]

The Department of Interior (DOI) has fully embraced OMB's mandate to consider negative externalities in planning decisions:

> *In many cases the benefits provided by the raw materials and products that flow from DOI managed lands, as well as the production, distribution and use of these products, also may cause adverse effects on the environment, economy, or society. Economists typically characterize these adverse effects as* negative externalities…. *The ability to evaluate these negative externalities is an important component to strengthening the set of information available to decision makers" (emphasis in original).*[271]

To correct for the presence of negative externalities, the DOI has stated its commitment to full cost accounting to "help promote more cost-effective investments on public lands."[272] The BLM has further reinforced this mandate through an agency-wide directive to account for all of the market and non-market values affected by management activities with a strong preference for quantitative methods when certain criteria are met: (a) when significant non-market values are at risk; (b) when alternatives present a strong contrast between extractive and non-extractive uses of the land, and; (c) when the magnitude of the proposed change in management is large.[273] The draft RMP meets each of these.

In the draft RMP, there are no provisions for or even discussion of how the BLM intends to go about offsetting both the federal financial costs and negative externalities of an increased timber sale program. The range of negative externalities associated with BLM timber sales includes a wide array of costs associated with diminished recreational and commercial fish landings, sediment removal, increased flooding, loss of water quality, increased habitat restoration costs, loss of tourism revenues, and social costs of carbon emissions, to name a few.[274] The most logical way to account for these and one most consistent with market principles, DOI commitments, and BLM guidance is to incorporate these costs into minimum bid prices. The methods and sources of information needed to meet the reasonable price standard and set minimum bid prices that reflect all agency and social costs are well established, and have been

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[270] The full text of Circular A-94 is available online at: https://www.whitehouse.gov/omb/circulars_a094#6.
[271] US Department of Interior (DOI). 2012. The Department of The Interior's Economic Contributions. Fiscal Year 2011, Chapter 7 – The Externalities of DOI Activities: Moving Towards Full Cost Accounting. Washington, DC: US DOI.
[272] Id.
[273] Bureau of Land Management. 2013. Instruction Memorandum 2013-131, Change 1, attachment 1, "Economic Methods for Estimating Nonmarket Environmental Values. Accessible online at: http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2013/IM_2013-131__Ch1.print.html.
[274] *See, e.g.* Niemi, Ernie and Ed Whitelaw. 1999. Assessing Tradeoffs in Forest Management. General Technical Report PNW-GTR-403. Portland, OR: USDA Forest Service, Pacific Northwest Research Station; Talberth, John and Karyn Moskowitz. The Economic Case Against National Forest Logging. Santa Fe, NM: Forest Conservation Council and Forest Guardians.

for decades. To illustrate, consider the negative externalities associated with lost recreation value and carbon emissions and what they imply for reasonable prices of BLM timber.

The value of recreation on BLM and other public lands is typically expressed in terms of consumer surplus – or the amount people are willing to pay over and above the costs of travel, supplies, lodging, fees, and other financial outlays they make in association with particular recreation experiences. For all BLM administered lands in western Oregon, the DEIS estimates consumer surplus associated with outdoor recreation to be $222,872,000 per year ($232,676,040 in 2015 dollars).[275] Although a significant portion of this value is generated on lands allocated to Recreation Management Areas (RMA), recreation use is widely dispersed because many of those who participate in recreation activities seek access to the secluded sites and old growth forests provided by even small and isolated patches of BLM lands in an otherwise heavily logged landscape for uses such as wildlife viewing, camping, hunting, and nature study.[276] So recreation value is spread out on all BLM lands, included those allocated to timber management.

The BLM administers roughly 2.5 million acres of land. This implies that an average acre yields $93.07 in recreation related consumer surplus benefits each year. Even aged management as planned under all action alternatives destroys this recreation value since such stands are in abundance while mature and old growth forests are increasingly scarce and so substitute sites are already in short order. This is especially true because the greatest scarcities in the western Oregon region are for camping, trails, and other recreation opportunities that bring people closest to nature and provide solitude.[277] The most suitable sites for expansion of camping opportunities and trail use are in these unmanaged forests. Assuming this value is destroyed for all future years (50) in the analysis period yields an average present value cost to recreation of $2,395 per acre at a 3% discount rate. This is a cost of providing federal timber that must be factored into the BLM's determination of reasonable price, or minimum bid.

Historically, minimum bids are set close to current appraised values – roughly $300 per thousand board feet (mbf) anticipated under this RMP. An average acre of mature forest in the suitable timberland base on BLM lands in western Oregon yields roughly 46.2 mbf and so minimum bids will probably be close to $13,860 per acre.[278] Adding the recreation externality to this would boost the minimum bid needed to cover costs to $16,255 per acre or $351/mbf – an increase of 17.3%.

As another example, consider the social costs of carbon dioxide emissions (SCC) associated with logging activities. A typical acre of mature or old growth forest in the Pacific Northwest stores roughly 500 metric tons of carbon per acre.[279] The DEIS estimates 150 metric tons per acre on

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[275] DEIS at 494, Table 3-150.
[276] DS Consulting. 2013. Summary and Key Findings for the Bureau of Land Management Recreation Outreach and Public Participation of the Resource Management Plans for Western Oregon. Portland, OR: DS Consulting, Prepared for the Oregon BLM.
[277] ECONorthwest. 2015. Outdoor Recreation Scarcity and Abundance in Western Oregon: A Spatial Analysis. Portland, OR: ECONorthwest.
[278] Department of Interior. 1992. Report of the Secretary of the Interior to the Endangered Species Committee. Related to the Application by the Bureau of Land Management for Exemption from the Requirements of Section 7(a)2 of the Endangered Species Act.
[279] DellaSala, Dominick. 2015. Comments on Revised Draft CEQ Guidelines on Greenhouse Gas (GHGs) Emissions and Climate Change NEPA analysis. Ashland, OR: Geos Institute.

western Oregon BLM lands – a figure that includes clearcuts, plantations, and natural forests.[280] When logged, about half of this is released as a carbon dioxide CO^2 pollutant after accounting for the amount temporarily stored in wood products before they decay.[281] The emissions associated with a typical mature or old growth logging unit thus generates 917.5 metric tons of carbon dioxide equivalent (CO^2-e) per acre.[282] The social cost of these carbon dioxide emissions (SCC) have been well studied, and incorporated into federal agency decision making as the BLM notes in the DEIS.[283] At a SCC price of $42.77 per metric ton CO^2-e[284], this means $39,241 per acre in social costs. If the BLM minimum bid price is adjusted to offset both the social costs of carbon dioxide and the cost to recreation values it would thus have to be set at $55,496 per acre or $1,201/mbf – an increase of 400% over present minimum bid levels.

Another approach for internalizing negative externalities of logging into minimum bid requirements would be to incorporate the growing body of literature on ecosystem service values and studies on how logging affects them. This is the "lost services" approach and may present a more tractable alternative to estimating negative externalities on a case-by-case basis. For example Niemi (2015) quantified the annual ecosystem service benefits associated with provision of biological diversity (northern spotted owl habitat), water quantity, water quality, and carbon storage and then estimated the effects of an increase in industrial logging activities proposed on western Oregon BLM lands. He found that "[t]he value of these lost services likely would average at least $50,000 per acre and perhaps more than $100,000 per acre, especially on lands with large trees."[285] By the same methods used above, this would translate into minimum bid prices between 1,382/mbf and $2,465/mbf needed to offset these negative externalities.

Regardless of which approach is used – lost services or case-by-case estimation of the negative externalities associated with logging – the BLM has an obligation to incorporate this information into the design of its timber sale program so that minimum bids received reflect the true social cost of providing timber from federal land and thus reflect a reasonable price. But offering BLM timber sales at minimum bid prices of $1,200/mbf or more would be prohibitive for buyers now purchasing logs on the open market at roughly half this amount, at best. But this is a reasonable outcome, by law, since the O&C Act sets conditions on whether or not (reasonable prices and normal markets) BLM timber must be offered for sale at all. Thus, by the reasonable price standard alone, the BLM should adopt the no-harvest alternative. The DEIS and draft RMP must be revised to consider this outcome.

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[280] Calculated by multiplying the teragrams carbon figure from DEIS Table 3-23 (373.02) x 1,000,000 (metric tons per teragram) divided by the 2.5 million acres of western Oregon BLM lands.
[281] DellaSala. 2015. Note 6.
[282] Converting carbon to carbon dioxide equivalent (CO2-e) units requires multiplication by an adjustment factor of 3.67. The 500 metric tons carbon thus represents 1,835 metric tons of CO2-e. If half of this is lost to logging it thus represents a per acre emission factor of 917.5.
[283] DEIS at 483.
[284] This is the 2007 average social cost of carbon figure of $37 per metric ton CO2-e (DEIS at xx) converted into current (2015) dollars.
[285] Niemi, Ernie. 2013. Economic Value of Goods and Services Produced by the O&C Lands With and Without Industrial Logging. Eugene, OR: Natural Resource Economics.

III. NORMAL TIMBER MARKET CONDITIONS DO NOT EXIST

The second condition Congress set on the offering of timber from O&C lands is the condition that BLM only participate in "normal" markets. The concept of normal markets is a precise term for economists. It means markets that are not distorted by one or more market failures that take the form of externalities, public goods, missing markets, subsidies, monopoly power, barriers to competition, and asymmetrical information.[286] Markets for BLM timber are severely distorted by many of these market failures. The presence of negative externalities has been discussed above. In particular, each acre of BLM timber offered for sale may generate negative externalities of up to $100,000.[287]

Timber subsidies also abound. These subsidies take the form of numerous federal, state, and local government programs and policies that result in more timber being cut than would be in the absence of such programs and policies. The BLM and US Forest Service, for example, help supply timber from private lands through right of way and log haul permits that grant private logging companies unlimited use of federal roads to bring their logs to markets. The State of Oregon offers tremendous tax breaks to logging companies. In 1999, former Governor Kitzhaber rescinded the timber harvest privilege tax, which has now led to a $60 million a year shortfall in school funding. Timber companies do not have to pay property taxes at the rate most landowners pay. Instead, they pay based on what is known as "current use valuation" that translates into property taxes of just 10% of what other private landowners pay.

Another major subsidy takes the form of unemployment insurance paid by other businesses to compensate for the timber industry's failure to maintain community stability by overcutting its lands, exporting wood, and engaging in other practices harmful to labor. As noted by Niemi and Whitelaw (1999):

> *The amount of benefits paid to workers in the lumber and wood products industry often has exceeded the industry's premiums. Between 1980 and 1991, for example, the unemployment-insurance benefits paid to workers laid off from Oregon's lumber and wood products industry exceeded the total premiums paid by more than $221 million (1992 dollars).[288] Business owners in other industries, and their workers, bore the burden of making up this difference.*

The problem of missing markets is, perhaps, the greatest market failure in play with respect to BLM timber sales. While clean water, carbon storage, recreation, pollination, scenery, and biological diversity are public goods with vastly more value than timber they are not paid for because they are non-exclusive and non-rivalrous.[289] The typical results are:

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[286] Various forms of market failure are discussed in depth in most intermediate level macroeconomics courses. But a more accessible list has been compiled by Economics Online at: http://www.economicsonline.co.uk/Market_failures/Types_of_market_failure.html.

[287] Niemi, 2013, Note 21.

[288] ECONorthwest with data provided by the Oregon Employment Division. Data on file with: ECONorthwest, 99 W. Tenth, Suite 400, Eugene, OR 97401.

[289] This is also known as the public goods market failure. Public goods are goods that are non-exclusive (meaning no one can be excluded from enjoying them) and non-rivalrous (meaning one person's use does not diminish the next). Because of these characteristics, private markets cannot supply them. The outcome is that they are under-provided. For a useful synopsis, see: http://www.pitt.edu/~upjecon/MCG/MICRO/GOVT/Pubgood.html.

> *...underprovision of a good, service, or amenity relative to the efficient level of provision; excessive levels of discommodities and disamentities, relative to the efficient level; overexploitation of a resource, relative to the efficient level of exploitation; and underinvestment in the management, conservation, and productive capacity of a resource.*[290]

This is an accurate portrayal of what is occurring on Oregon's federal, state, and private timberlands. While development of missing markets in the form of payments for ecosystem services (PES) is forthcoming, the lack of PES markets at this time is one of the key explanatory factors in the dramatic overcutting of Oregon's state and private timberlands (see below) and use of techniques such as short rotation clearcutting that are so damaging to soils, watersheds, long term forest productivity, wildlife, scenery, biological diversity.[291] Adding more BLM timber to the mix in this context of missing markets is unjustified. Despite Congress's unambiguous language, the draft RMP and DEIS are silent on the entire concept of normal markets, these market failures, and how the proposed increase in logging is justified in the presence of them.

Additional timber sales will not meet the purpose of protecting watersheds, regulating stream flow, and contributing to economic stability. Congress also put constraints on BLM's timber sale program in the form of a set of purposes that a sustained yield supply of timber is supposed to serve alongside the purpose of a permanent source of timber supply. These include "protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities."[292] But the proposed increase in logging of 60% and 688 new miles of road[293] (Alternative B) runs counter to these purposes.

As demonstrated elsewhere in these comments, all remaining tracts of mature and old growth forest need protection because they are key landscape components for regulating stream flow, water quality, and water temperature and for responding to increasing scarcities of campsites, trails, and other recreation needs that depend on unlogged forests. Putting more of these stands on the chopping block is thus inconsistent with O&C Act requirements. So is the plan to build new logging roads. It is remarkable that the BLM is proposing new road construction when, in fact, forest roads in western Oregon already represent an extreme disruption of healthy watershed function.[294] The dominant effects of these high road densities on stream and riparian networks are well known and involve "alteration of routing of water, water-born chemicals, sediment, and mass movements to and through native stream networks."[295]

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[290] Randall, Alan. 1981. Resource Economics: An Economic Approach to Natural Resource and Environmental Policy. Columbus, OH: Grid Publishing.
[291] Zwick, Steve. 2010. Oregon Company Taps California Protocol to Earn More by Logging Less. Published online at Ecosystem Marketplace: http://www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page_id=7520&section=home
[292] 43 U.S.C. § 1181a.
[293] DEIS at 648.
[294] *See, e.g.*, Oregon Department of Forestry (ODF). 2000. Report of the Ad Hoc Forest Practices Advisory Committee on Salmon and Watersheds to the Oregon Board of Forestry. Section B: Forest Roads. Salem, OR: ODF.
[295] Swanson, Fred, Julia Jones, Beverly Wemple and Kai Snyder. 1999. "Roads in Forest Watersheds – Assessing Effect from a Landscape Perspective." Published in Proceedings of the Seventh Biennial Watershed Management Conference, Charles W Slaughter, editor. Water Resources Center Report No. 98. Davis, CA: University of California.

With respect to community stability, even the DEIS concedes that additional BLM timber supplies make no sense: "[b]ecause the timber industry has a long, national history of high volatility, alternatives with harvest volumes that exceed current levels are likely to introduce greater instability into local economies, based on past business cycles."[296] Thus, not a single one of the criteria Congress cited as purposes of a timber sale program on lands managed under the proposed RMP can be met through an increase in logging over current levels.

IV. OVERCUTTING ON PRIVATE LANDS DEMANDS A REDUCTION IN BLM TIMBER SALES

To the extent that BLM timber sales are offered during this planning cycle, Congress requires the timber sale program to be consistent with permanent forest production and the principle of sustained yield. In making this consistency determination, it is essential for the BLM to account for logging on non-BLM ownerships and consider how the pattern of logging on those lands relates to the demand and supply of goods and services provided by BLM lands. This duty is amplified by NEPA's requirement to take connected actions and cumulative effects into account.[297] Moreover, there is nothing in the O&C Act that limits the concepts of forest production and sustained yield to timber only. Indeed, as noted by DellaSala et al. (2005) "the O&C term 'forest production' interpreted in today's climate means more than timber volume and includes multiple natural resource objectives related to watershed health, carbon sequestration, fish and wildlife habitat, recreation, endangered species, and other values inherent to BLM lands that also contribute to community stability."[298]

In light of this, if the rate of harvest on private timberlands is unsustainable then BLM must adjust its allowable sale quantities (ASQ) calculations downward to ensure that the overall supply of timber and other goods and services from all Oregon's forestlands comes closer to a level that is commensurate with maintaining permanent forest production and the principle of sustained yield. If BLM fails to do this, then it will be exacerbating rather than countering the effects of overharvesting on lands outside its jurisdiction.

Unsustainable logging is indeed the situation in Oregon on state and private forestlands within the western Oregon BLM ownership matrix. Using a GIS dataset provided through World Resources Institute's Global Forest Watch Program[299] CSE conducted a watershed-by-watershed analysis of the rate of forest cover loss versus forest cover gain during 2000-2013.[300] Net forest cover change is a more important indicator of sustainability than volume-based measures such as growth versus removal since it is forest cover that determines the overall ability to provide a suite of ecosystem goods and services. The results indicate a significant overcutting on state and private forestlands. In particular, as compared with 2000, there are 452,364 fewer acres that meet minimum definitions (30% canopy closure of trees 5 meters in height). This is a result of forest

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[296] DEIS at 568.

[297] Connected actions include private timber harvests facilitated by BLM's programs such as road right of way and log haul permits (40 CFR § 1508.25(a)1) Cumulative impacts analysis requires consideration of non-federal actions affecting the planning area (40 CFR § 1508.7).

[298] DellaSala, Dominick, Nancy Staus and Erik Fernandez. 2005. Importance of Western Oregon BLM Lands and Reserves to Fish and Wildlife Conservation. Ashland, OR: World Wildlife Fund.

[299] Available online at www.globalforestwatch.org.

[300] Talberth, John and Erik Fernandez. 2015. Deforestation, Oregon Style. Lake Oswego, OR: Center for Sustainable Economy. Available online at:

loss (1,476,209 acres) exceeding acres of forest cover gain (1,023,845 acres). If sustained yield is measured by sustained forest cover (forest gain = forest loss) than this implies an overall rate of overcutting of 42%. In some watersheds the rate overcutting is much worse. In the McKenzie River's Quartz Creek drainage, since 2001, nearly 7,200 acres (2,913 ha) of forest cover have been lost to extensive clearcutting while only 2,576 acres (1,043 ha) have been gained through natural afforestation or reforestation – an overcutting rate of 279%.[301]

Federal timber sale planners have often adjusted ASQ to compensate for overcutting on private lands, as they should. For example, in 1991 the Lolo National Forest had to adjust its ASQ downward to compensate for "higher than anticipated" rates of logging on private industrial timberlands within its checkerboard ownership pattern.[302] The BLM should follow suit and revise the ASQ during this planning cycle to compensate for dramatic overcutting on Oregon's state and private forestlands. To compensate adequately, the ASQ should be set close to zero.

The BLM arbitrarily rejected analysis of the no-harvest and natural selection alternatives when they represent the only economically rationale choices. As the foregoing suggests, neither a continuation of nor an increase in BLM's timber sale program can be economically justified during this planning cycle. A reasonable price for BLM timber that offsets agency costs and internalizes the negative externalities of logging would too high at current market prices to attract timber sale purchasers. But the law, DOI policy, and BLM guidance all require such a reasonable price. Nor can the BLM justify its timber sale program in the face of markets that are not normal but severely distorted by negative externalities, subsidies, missing markets, and other well-known sources of market failure. Nor can the BLM demonstrate that its timber sale program meets Congressionally imposed sideboards designed to ensure that the timber sale program protects watersheds, water flow, economic stability, and recreation. Because of this, BLM's decision to reject the no harvest and natural selection alternatives is groundless.[303] Overcutting on adjacent state and private lands underscores not only the need to consider in detail, but need to select one of these reasonable alternatives.

V. REMEDIES THAT MUST APPEAR IN THE FINAL RESOURCE MANAGEMENT PLAN

To remedy these deficiencies in the DEIS's socioeconomic analysis, we request that the following:

1. A detailed explanation of the process the agency intends to use to ensure that when offered for sale, its timber receives reasonable prices that compensate for all agency costs and negative externalities.
2. A detailed assessment of the negative externalities generated by timber sales under each action alternative. As discussed above, the methods and sources of information are readily available.

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[301] Talberth, John and Catherine Koehn. 2015. The Liquidation of Forests in McKenzie's Quartz Creek, Oregon. Lake Oswego, OR: Center for Sustainable Economy. Available online at: http://sustainable-economy.org/forest-liquidation-in-quartz-creek/.

[302] Hirt, Paul W. 1994. A Conspiracy of Optimism. Management of the National Forests Since World War Two. Omaha, NE: University of Nebraska Press.

[303] DEIS at 77, 79.

3. A detailed assessment of the ecosystem service values generated by BLM forestlands in their natural state. Again, the agency has at its disposal both the methods and sources of information to do so.
4. A detailed assessment of externalities, subsidies, missing markets and other timber market failures in the planning area that distort normal market conditions. In light of these market failures, the FEIS should discuss how the final RMP offers corrections.
5. A detailed assessment of the rate of harvest on adjacent state and private forestlands and the implications this has for the relative value of goods and services from BLM lands. As part of this analysis, the BLM should discuss adjustments needed to its long term allowable sale quantity estimates (ASQ) needed to compensate for unsustainable timber harvesting on these lands and meet the goal of sustainable forest cover.
6. A detailed consideration of both the no-harvest and natural selection alternatives.

VI. TIMBER SUPPLY AND DEMAND

> *[An] upward shift in the [BLM] timber supply curve would lead to lower stumpage prices (between 1 and 9 percent) and reductions in private harvests as timberland owners adjust their harvest downwards as prices fall." -DEIS page 516.*

Downward market pressure on timber prices from increased harvesting on public lands negatively impacting private timberland owners is an inappropriate outcome from this planning process.

VII. ECONOMIC STABILITY

> *Because the timber industry has a long, national history of high volatility, alternatives with harvest volumes that exceed current levels are likely to introduce greater instability to local economies, based on past business cycles." –DEIS page 568.*

Introducing greater instability to local economies is an inappropriate outcome for BLM land management. The O&C Act specifically mandates that BLM forest management must have the objective of "contributing to the stability of local communities and industries."[304] Selecting an alternative that will increase instability in local communities will violate the O&C Act.

VIII. THE TIMBER YIELD PROJECTIONS

BLM must have a reduction factor determined to reduce to reduce modeled timber volume on lands that are at high risk for erosion and subsequent sediment pollution into streams. Similarly, timber yield must exclude salvage from riparian reserves, critical spotted owl habitat, and black-backed woodpecker breeding range located generally east of I-5.

[304] 43 USC 1181(a).

Many BLM timber stands have not been logged because the areas have low standing volume and are too steep and erosion prone for building roads. Timber yield projections need to make a large reduction in timber harvest on the Medford District due to high erosion risk lands, economics of building long risky roads for low timber volumes, and ecological risks to coho salmon. The analysis needs to be explicit (quantitative) when it creates sediment risks to coho salmon critical habitat while providing certainty for timber volumes. We believe this unanalyzed trade-off is illegal because of the ESA. Many medium and large scale mass erosion incidents will deliver sediment to streams because they are "in-channel" events and not likely to be effectively buffered by proposed riparian reserves (e.g. debris flows, stream-side slides) thus the need for full one tree protection buffers on headwater channels, erosion prone swales, unchanelled valleys and unstable erosion prone headwalls. Analysis needs to take a hard look at choosing for the outcome of reduced mass erosion with wider no cut riparian buffers since many if not most smaller streamside slides occur within a few hundred feet of the stream. Models exist for predicting mass erosion due to geology, slope and morphology (Lee Benda attachment) but these features are best determined during site specific project analysis. Nevertheless, timber yield needs to be reduced using these mass erosion models. Economics of road construction to low volume and very steep areas on the Medford District is also a limiting factor. Timber yield cannot assume all trees can be equally accessed with roads.

IX. INCREASED LOGGING ON BLM LAND WILL UNDERMINE COMMUNITY STABILITY.

The O&C Act provides that O&C lands:

> *shall be managed . . . for permanent forest production, … for the purpose of … contributing to the economic stability of local communities and industries …*

The Oregon Department of Forestry recognizes that conservation of federal lands helps provide regulatory stability for non-federal lands

> [T]he Northwest Forest Plan … serves as the conservation *anchor for the Oregon Plan for Salmon and Watersheds. The Northwest Forest Plan in turn took pressure off of private lands to provide for recovery of spotted owls, murrelets, and salmonids listed under the ESA. Our fear is that a leaner forest plan would no longer provide adjacent non-federal forest lands protection from added land use restrictions to comply with federal environmental laws.*- Roy Woo, Oregon Department of Forestry letter to Forest Service regarding new forest planning rules, 4-7-03.

BLM should not threaten regulatory stability on non-federal lands by increasing timber harvest in older forests or using controversial regeneration harvest methods.

"Because the timber industry has a long, national history of high volatility, alternatives with harvest volumes that exceed current levels are likely to introduce greater instability into local economies, based on past business cycles." DEIS (p 568).

DEIS at 472 concludes:

> *Over the long-term (1969-2007), timber-based industries nationally exhibited low or negative growth rates with high volatility compared with the United States economy as a*

whole, indicating that these industries tend to be inherently volatile. Increases in timber industry activity in the planning area could bring additional exposure to greater economic instability.

The DEIS acknowledges that the timber industry is far more volatile than other industries so boosting timber jobs does not necessarily translate to community stability. This new information requires a fundamental shift in thinking and must be a significant factor in making a final decision on this Plan revision.

DEIS at 568-569 states "*The expansion of existing timber-based firms or the addition of new ones would bring additional jobs and earnings to the planning area, but could make the whole planning area more vulnerable to large fluctuations inherent in domestic and international timber markets."* This statement seems to imply that volatility may adversely affect the region but benefit local communities. This is exactly backwards. The EIS needs to look at the adverse effects of volatility at the local level. Volatility would have its greatest effect in local communities that have the lowest levels of economic diversity, the greatest dependence on commodity production, and would therefore see the greatest fluctuations in jobs and income. The gain and loss of jobs caused by timber industry volatility would cause a variety of social problems related to job insecurity, depression, substance abuse, health care insecurity, domestic abuse, etc. which would in turn cause an increase in the demand for social services that are not adequately funded. If BLM would emphasize development of less volatile economic sectors through provision of amenities instead of commodities, the social problems described above would be diminished and the demand for social services would be reduced.

Proponents of more logging on federal land still subscribe to the outdated view that logging is good for communities. The evidence does not bear this out.

NWFP monitoring results found that -

> *Assumptions were challenged regarding both socioeconomic and ecological relationships, with implications for both. One of the more important set of findings concerns the role of the federal lands. From a socioeconomic perspective, it was assumed that timber flow from federal lands was a key determinant of community well-being. This turns out to be true in some communities, but not in most.*[305]
>
> *Historically, employment in solid-wood products manufacturing (SIC 24) has been volatile. ... Over the entire period of 1965 through 2000, employment positively or negatively changed more than 5 percent 13 times between successive years. Since 1991, changes in employment between years have generally varied between 1 and 2 percent, with a high of a 4-percent decline in 1996.* [306]

The DEIS needs to disclose that increasing federal timber supply will not prevent the overall declining trend of employment in the timber industry. Only "[*a]bout 400 of the 11,000 jobs lost in the timber industry since 1994 were based on reductions in timber harvesting on federal*

[305] Draft synthesis of the NWFP 10-year monitoring reports. 4-15-05. Pps 13-14.

[306] USDA/USDI. 5-volume Northwest Forest Plan, 10-Year Socioeconomic Monitoring Report, http://www.fs.fed.us/pnw/publications/gtr649/pnw-gtr649_vol3_pt5.pdf pp 40-41

lands. The remaining 10,600 job losses occurred during a period of an increased log supply and were the result of less efficient mills closing and mills continuing to invest in labor-saving technologies. ... The FS and BLM no longer play significant roles in the supply of timber in the Plan area as a whole."[307]

All things being equal, a more diversified economy is a more stable economy. Oregon will always have a timber industry based on non-federal forest lands. The highest and best use of BLM lands, in terms of community stability, is to conserve the resources on those lands to provide a stable flow of ecosystem services such as clean water, carbon storage and recreation opportunities, that will help diversify the economy, and mitigate the economic instability caused by logging on non-federal lands.

Increased logging threatens the economic stability of local communities by: recoupling counties to the boom-bust timber industry, by increasing local communities dependence on a volatile and declining industry, and by reducing the quality of life that helps sustain and grow a more healthy and diverse economy. Logging is a boom-bust industry that undermines community stability rather than enhancing it. The final decision should uphold the O&C Act (43 USC 1181a) mandate to foster community stability through increased forest conservation which helps stabilize communities by enhancing quality of life and helping to diversify the economy so communities are less dependent on the inherently volatile timber industry.

The Sonoran Institute has conducted a study of rural economies in the west and identified some insightful correlations. "*It turns out there is an inverse relationship between resource dependence and economic growth; the more dependent a state's economy is on personal income earned from people who work in the resource extractive industries, the slower the growth rate of the economy as a whole."* When one looks at resource dependence, Douglas County looks a lot like Wyoming whose economic performance is at the bottom of the pack. Given BLM's mandate for community stability, they should be trying to steer the economy *away* from commodities and toward a more diverse economic base. [308]

The Sonoran Institute's Report also found that proximity to "protected public lands" is positively correlated with economic growth. Other growth factors include access to education, transportation, airports, entertainment, and mountains. Western Oregon's economic assets are notable: proximity to Interstate 5, numerous airports and sea ports, diverse cities with lots of high wage jobs in "producer services," good educational infrastructure, high rates of in-migration, proximity to public lands, ready public access to both mountains and the Pacific coast, etc. All these factors reinforce the idea that the highest and best economic use of BLM lands is to help diversify the economy, not turn the clock back toward commodity dependence. The best way to do this is to protect the best (mature & old-growth) and restore the rest (thin the plantations).

Ray Rasker makes a compelling case for an economic stability strategy based on non-consumptive uses of public lands -

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[307] 10-Year Socio-Economic Report. pp 46-47. http://www.fs.fed.us/pnw/publications/gtr649/pnw-gtr649_vol3_pt5.pdf

[308] Ray Rasker. Prosperity in the 21st Century West. Sonoran Institute. 2004. http://www.sonoran.org/pdfs/Prosperity%20Report.pdf

The fallacy of the community stability policy can be exposed at two levels. First, as learned from lessons of the former Soviet Union, centrally planned economies do not work. Even if it were possible to manipulate natural ecosystems- of which we know very little-to produce a steady and predictable flow of grazing, mineral, energy, and timber resources, it is unlikely that the economy of nearby communities would remain stable. Factors such as price, the application of labor-saving technologies, international competition, the availability of capital, and the changing preferences of consumers all play as much a role in determining the health of local resource dependent industries as does the supply of raw materials from public lands.

Second, the premise that public resources such as forage, timber, minerals, and energy can stimulate local economic stability presumes that the local economy is indeed dependent on federally-owned resources. All too often the role public land managers play in community development is based on an antiquated, mythical view of the economy.

Three forces are at work in shaping the world economy. First, the industrial economy is becoming uncoupled from the primary products economy (i.e., raw materials). Many of the most valuable "products" in today's economy, like computer software and medical technology, require few raw materials. Second, within the industrial economy itself, employment has become uncoupled from production. Manufacturing efficiency has decreased the demand for physical labor. Instead, human resources are increasingly applied in research, design, engineering, finance, marketing, and other "knowledge-based" or "value-added" applications. Third, capital has become "footloose"-money follows good ideas, no matter where they occur on the globe.

Today, where the final product rolls off the assembly line is less important than who adds the most value to production. And, if most of a finished product's value lies in the amount of human ingenuity and modern technology that is applied, then those countries with the best-trained and educated work force will command the largest piece of the economic pie.

Lester Thurow points out that the seven key industries of the next few decades are all "brainpower" industries: microelectronics, biotechnology, new materials industries, civilian aviation, telecommunications, robots and machine tools, and computers and software. An important aspect of these industries is that they are "footloose"-they can locate anywhere in the world. According to Thurow:

Where they will be located depends upon who can organize the brainpower to capture them. In the century ahead comparative advantage will be man-made."

[T]he common mythology of the region is that the extraction and export of raw materials are what matter. A commonly heard phrase is that "true wealth comes from the ground." [I]t is clear that a "rear-view mirror" approach to economic development will not suffice. Communities in the West must shift their focus from what worked in the past, and ask

instead what will work in the future. Economic wealth consists of much more than raw materials. There is also wealth in the quality of the environment for non-consumptive uses.

… For many rural communities, the economic benefit of living adjacent to public lands has historically been access to vast repositories of raw material. Because of this economic history there has been a tremendous bias on the part of public agencies to equate quantitative expansion in commercial activities with social and economic well-being. Lacking is a perspective on economic development that measures the role of quality of life as provided to community residents living next to public lands: the mountains, scenery, wildlife, clean water, wilderness, and other non-commercial amenities.

Community stability can best be assured by economic diversity.

The cornerstone of an economic diversity strategy is the creation of a favorable business climate and the protection of the cultural, social, and environmental qualities that make a community a pleasant place to live and do business. In addition, the strategy should include investment in the infrastructure, such as education and telecommunications facilities, in order to promote entrepreneurial activity. In many instances, the most economically productive role of public lands is not in resource extraction or tourism, but in protecting the landscape, the wildlife, the rivers and streams, and the scenery-all those things that collectively enhance the quality of life for local residents.

In the 1800's the challenge for the West was to promote growth-to make the most use of the natural resource endowments of the region. In the 1990's, the challenge is to use this endowment intelligently, without despoiling the quality of life for the region's residents, and without foreclosing opportunities for economic diversification. Simply put, if scenery is part of what attracts and retains modern business activity, beyond tourism, then an unsightly clearcut will have more than ecological costs; it will be bad for the economy.

[A] community stability strategy which emphasizes commodity extraction has been shown to be counter-productive, particularly when those activities threaten the amenity-based foundation of the new economy.[309]

A study in Finland showed that the employment effects of forest conservation are not adverse, and this study did not even consider the long-term stabilizing effect from the quality of life provided by healthy forests.[310]

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[309] Raymond Rasker. A New Look at Old Vistas: The Economic Role of Environmental Quality in Western Public Lands. Colorado Univeristy Law Review. 1994. http://www.sonoran.org/programs/pubs/Rasker%20-%20CU%20Law%20Review%201994.pdf

[310] Kniivilä, M. & Saastamoinen, O. 2002. The opportunity costs of forest conservation in a local economy. Silva Fennica 36(4): 853–865. http://www.metla.fi/silvafennica/full/sf36/sf364853.pdf

BLM should emphasize forest conservation and restoration as the best way to ensure community stability. BLM can meet the social and economic objectives by focusing their efforts on forest restoration, including thinning dense young tree farms that were established following clearcutting. This will help meet the restoration objectives of the Northwest Forest Plan, while also creating jobs and producing some woods projects.

The FEIS needs to consider the economic impacts of shifting the regulatory burden to non-federal lands, and the economic costs of increasing communities' dependence on the inherently boom-bust timber industry. The Northwest Forest Plan and ESA protections allow private timber owners to continue logging with fewer environmental restrictions. If BLM disengages from the Northwest Forest Plan, then private logging may have to be restricted. This could cause uncertainty and instability for local communities and industries. BLM's NEPA analysis must explicitly address this cause-effect relationship on community stability.

Global warming and ocean acidification caused by more logging will also cause community instability, as reflected in part by the Social Cost of Carbon (SCC). To meet the O&C Act mandate for community stability, BLM should adopt the alternative that emits the least greenhouse gases and stores the most carbon in the forest.

Intact forests provide a wide variety of ecosystem services that contribute to community stability. These include: clear drinking water, carbon sequestration & climate stability, recreation opportunities, scenic beauty, viable populations of a wide variety of wildlife functional groups such as pollinators, nitrogen fixers, non-timber commodities such as salmon, mushrooms, & greenery, habitat for socially valued imperiled species, hunting and fishing opportunities.

REGENERATION HARVEST IS NOT NEEDED

BLM should not be managing forests in a way that makes rare old forests even more rare, and makes over abundant young forests even more common. Logging proponents say that regeneration harvest of mature forest is needed to enhance early seral forest, which is in short supply, but this assertion is not well supported.

> *The amount of early-successional forest on the landscape within the range of the northern spotted owl is probably greater now than at any time in the past. ... Any species that find optimum habitat in burned forests must have had the dispersal and reproductive capabilities to find and reproduce in these dispersed and infrequent patches of habitat. In general, species associated with early-successional conditions are good dispersers, have high reproductive rates, and are able to persist in small patches of habitat that result from small-scale disturbance* (Hunter 1990, Smith 1966)....

Compared to their historic populations, species associated with these early-successional conditions have increased in abundance. For example, Raphael et al. (1988) estimated that populations of 11 species of birds have probably tripled over historic numbers, and another 4 species have more than doubled. Raphael et al. (1988) and Raphael (1988) compared the estimated abundance of amphibians, reptiles, birds, and mammals from historic times to their present abundance and concluded that the early-successional associates that have increased over

time were associated with more open, drier conditions; were widely distributed (larger total geographic ranges than species associated with late-successional conditions); and, had wider ecological tolerances (i.e., they occupy a greater variety of habitat types). As noted by Harris (1984), birds associated with early-successional forest are more often migrants whereas late-successional associates are generally permanent residents. These studies also show that whereas some species associated with early-successional conditions reach their maximum abundance in early-successional forest, none of the species were restricted to that successional stage.

The creation of early-successional conditions as a result of logging has produced a different pattern on the landscape than the pattern that likely would have resulted solely from natural disturbance. Patches of early-successional forest are now more evenly distributed across the landscape, and sizes of patches are smaller. This pattern may have resulted in a more widespread distribution of early-successional species than in the past.

[T]here is currently additional acreage of early-successional forest intermixed in a fragmented pattern within all of the Late-Successional Reserves and Riparian Reserves on federal lands within the range of the northern spotted owl. As well, natural disturbances will continue to create early-successional conditions. The federal forest lands occur within a broader landscape of nonfederal lands where additional early-successional forest will be created through logging and other management activity. These lands will contribute to the maintenance of early-successional forest over time.[311]

Also, there is no shortage of early seral forest. In fact, thre's already too much early seral in the Oregon Coast Range.[312]

BLM's analysis for the 2015 RMP Revisions DEIS (Vol 1, p 183) indicates that the "current condition" shows no shortage of "early seral forest" across 1.3 million acres of dry Douglas fir forests.

[311] 1994 NWFP FSEIS, pp 3&4-203 – 204.
[312] . Janet Ohmann. Trends in Early Seral Forest at the Stand and Landscape Scale. http://www.slideshare.net/ecoshare/janet-l-ohmann-trends-in-early-seral-forest-at-the-stand-and-landscape-scale. (Slides 12, 29 show there is "no shortage of early seral" in Coastal Oregon, and early seral "exceeds the HRV" [historic range of variability].)

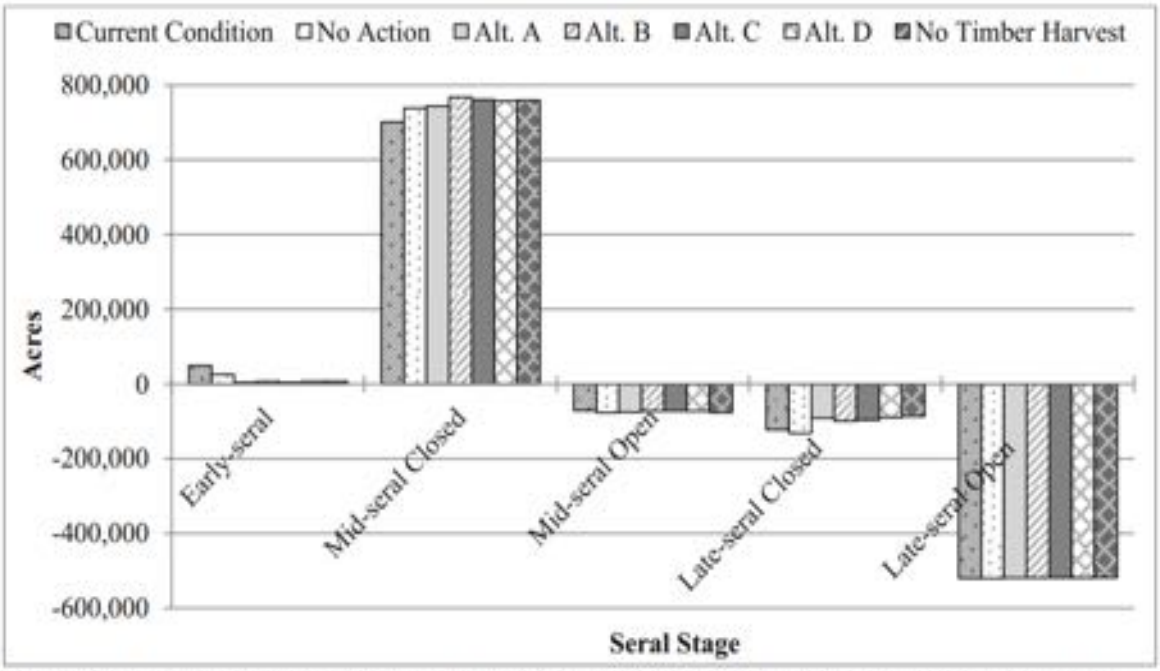

Figure 3-32. Departure from reference conditions in the Douglas-fir/dry vegetation type by seral stage; current conditions and by alternative and the No Timber Harvest Reference Analysis in 2063.

[313] This figures shows that the biggest shortage is late seral and BLM's main focus should remain transitioning over-abundant mid-seral stands to help mitigate the persistent deficit of late-seral stands.

There are many ways of enhancing early-seral habitat without sacrificing mature forests, for instance, we could:

- Modify the way we fight fire and how we react after fire, e.g., leave areas to recover naturally after fire instead of salvage logging and replanting which more closely resembled industrial clearcutting;
- Modify practices on non-federal lands to encourage greater retention of live and dead trees during harvest, tolerate slower conifer re-establishment and greater diverse of native vegetation, e.g., discourage herbicide spraying to control competing native vegetation;
- Embed structure-rich "gaps" (e.g. patches of very heavy thinning) in young stand thinning projects. See Miller, Randall. 2014. Practitioners Approach to Early Seral Habitats on Lands Managed Primarily for Older Forest, or There is More to Healthy Forests than Conifer Trees. Siuslaw NF.[314]
- Extend the early seral character of existing very young stands that are starting to become dominated by conifers.

[313] http://www.blm.gov/or/plans/rmpswesternoregon/files/draft/RMP_EIS_Volume1_pg_173-235.pdf
[314] http://www.slideshare.net/ecoshare/09-practitionersapproachtoearlyseralhabitatsonlandsmanagedprimarilyforolderforestorthereismoretohealthyforeststhanconifertreesmiller; Cheryl Friesen and Norm Michaels 2010. Effects of Incorporating Gaps into Commercial Thinning Prescriptions: Best Available Science, 3-30-2010, Central Cascades Adaptive Management Partnership (CCAMP). http://ecoshare.info/projects/central-cascade-adaptive-management-partnership/synthesis-papers-tools/

Oregon Wild's scoping 2011 comments on the Coos Bay Wagon Road and Roseburg BLM Secretarial Pilot Projects shed further light on this issue.

I. COMPLEX EARLY SERAL FOREST

One of the primary restoration objectives we keep hearing for these projects is the need to restore complex early seral forest. This may well be an important goal. However, this goal needs to be validated and if valid, alternative means of meeting the goal must be explored. With a little thought and creativity one can see that many ways to increase rare early seral habitat without sacrificing rare mature & old-growth forests.

Validation of the early seral habitat objective requires, among other things, asking if the current and projected amount of early seral habitat might be adequate to meet the needs of the opportunistic and generalist species that tend to occur in those areas. Only the interior valleys (and a few ridgetops) of western Oregon likely had persistent early seral conditions, while most of the federal forest landscape had transient early seral conditions associated with disturbances. Early seral wildlife species likely evolved to take advantage of early seral conditions when and where it could be found in the shifting mosaic of seral conditions.

Natural disturbance processes continue to operate across the landscape, including fire, wind, ice storms, landslides, floods, volcanoes, native insects, native disease, etc. Each of these helps create various sized patches of early seral forests every year. Many predict that climate change will increase the frequency of these natural events, suggesting that any shortage of early seral conditions might just take care of itself. "Ecologically, increased distribution and frequency of disturbances may result in increased distribution and dominance of early successional ecosystems dominated by fire adapted species..." [315] Conversely, it may become harder to maintain existing late-seral ecosystems and species, so existing late-successional old-growth forests should be retained in order to avoid making the shortage of late seral forest worse.

There is widespread recognition that early seral forest is produced in abundance on non-federal lands (through industrial clearcutting). Current industrial forest practices do not produce *high quality* or *long-lasting* early seral forest. It is also true, but not widely recognized that the *absolute abundance* of early seral forest on non-federal lands might partially mitigate for its lack of quality.

Early seral vegetation also exists along many streams, rock outcrops, meadows, as well as roadsides, landings, and other disturbed sites throughout the forest. An honest assessment of the early seral shortage must account for the quantity, quality and functionality of all these early seral forest elements.

If there is indeed a shortage of complex early seral forest, we must evaluate a full range of alternative ways of increasing either the quantity and/or quality of such features. Alternatives that have been suggested include:

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[315] Lemieux, Christopher J., Daniel J. Scott, Rob G. Davis and Paul A. Gray. 2008. Changing Climate, Challenging Choices: Ontario Parks and Climate Change Adaptation. University of Waterloo, Department of Geography: Waterloo, Ontario http://web.archive.org/web/20101023221023/http://www.fes.uwaterloo.ca/geography/faculty/danielscott/PDFFiles/NRCAN-Report-FINAL.pdf

Possible policy changes---- Private Lands

Goal: create more diverse early seral forest without increasing landowner cost or regulatory burden

Ideas:

- Remove free-to-grow requirement
- Remove regeneration requirement in its entirety
- Allow substitution of an invasives eradication plan, enhanced wildlife tree plan, or logging debris retention plan

(a) Reform forest practices on non-federal lands to retain more legacy structures and allow a longer period of conifer establishment and more vegetation diversity after harvest, as suggested by Norm and Debora Johnson in 2007. [316]

(b) Rely on natural processes such as fire, wind, insects, etc. Since the public has been misinformed that natural forest mortality processes are undesirable, this approach would work best if we increase public tolerance for natural processes. This approach may also require reform of fire suppression policies and post-fire salvage logging and replanting, as suggested by Norm Johnson, Jerry Franklin, and others in 2007 Early Seral Forest Symposium. [317]

(c) Aggressive pre-commercial thinning in existing very young stands or failed plantations to extend the early seral stage, as suggested in the Chalk Parker Project on the Middle Fork District of the Willamette NF;

(d) Create patches of heavily-thinned, structure-rich "gaps" in variable density thinning projects in dense planted stands <80 years old, as suggested by numerous projects around the region.

All these alternative methods would allow meaningful restoration of early seral forest conditions without unnecessarily sacrificing mature forests.[318]

Another reason that regeneration logging is not needed is because climate change may increase early seral. Efforts to artificially enhance early seral should recognize that climate change might take care of this for us, and in fact might make it much harder to hang on to the mature forests we have. "Ecologically, increased distribution and frequency of disturbances may result in increased distribution and dominance of early successional ecosystems dominated by fire

[316] K. Norm Johnson, Debora L. Johnson. 2007. Policies to Encourage Diverse, Early Seral Forest in Oregon: What Might We Do? http://www.reo.gov/ecoshare/ccamp/good_forest_opening/powerpoints/Early%20seral%20talkrevfinal.ppt

[317] http://www.reo.gov/ecoshare/ccamp/Good_Forest_Opening.shtml.

[318] Oregon Wild 2011. Scoping Comments on the Wagon Road and Roseburg BLM Secretarial Pilots. http://www.oregonwild.org/oregon_forests/forest-management/in-your-forests/files-for-eyes-on-the-agencies/Wagon_Road_and_Roseburg_Pilots_scoping_6-29-2011_BLM.pdf

adapted species..."[319] Conversely, it may become harder to maintain existing late-seral ecosystems and species, so existing late-successional old-growth forests should be retained in order to avoid making the LSOG shortage worse.

II. CURRENT RESTORATION THINNING PROGRAMS ARE MEETING OBJECTIVES

There is a pervasive misconception circulating among many people including local, state, and federal politicians and journalists that environmental restrictions have shut-down logging on our federal forests. It has become popular to repeat this misinformation and it has become nearly a full-time job refuting it. The facts speak for themselves.

The most recent data from the Forest Service and BLM on timber offered for sale under the Northwest Forest Plan between 1995 and 2010 reveal that the agencies have offered for sale 8.7 billion board feet of timber. This is equivalent to 1.74 million log truckloads. If parked end-to-end, these trucks would stretch along Interstate 5 from Seattle to San Diego more than 14 times. This is not gridlock – far from it.

Furthermore, any suggestion that a "promise" of timber was made and not kept is highly misleading. The timber industry likes to say that the NWFP promised them 1 billion board feet per year. However, the timber volumes described in the NW Forest Plan are clearly presented as "estimates," not hard targets. "*The PSQ [probable sale quantities] levels shown are estimates. ... They represent our best assessment of the average amount of timber likely to be awarded annually in the planning area over the next decade, following a start-up period."*[320] *"PSQ levels are presented as an effect, not a goal, of the standards and guidelines. Therefore, harvests within areas specified for habitat protection will be greatly curtailed."*[321]

The real timber targets are set each year by Congress. Data provided by the FS and BLM show that since 1995 the agencies have met 82% of the cumulative timber targets established by Congress. The small short-fall is primarily the result of two major legal blunders that agencies brought upon themselves (i.e., failure to comply with Survey and Manage and the Aquatic Conservation Strategy requirements). It is unfair to blame conservationists when the agencies simply failed to protect streams and wildlife as promised in the plan.

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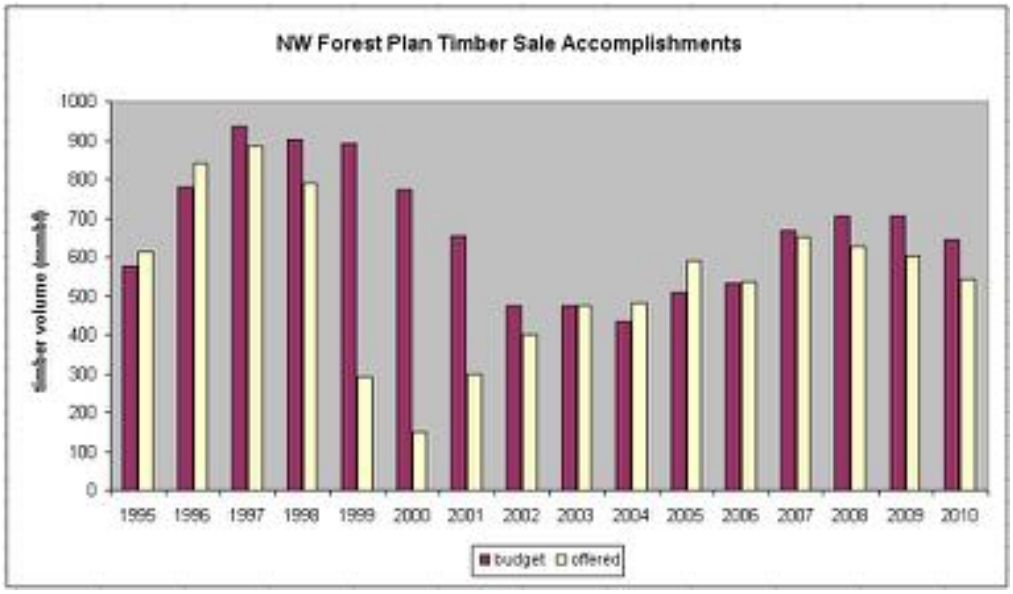
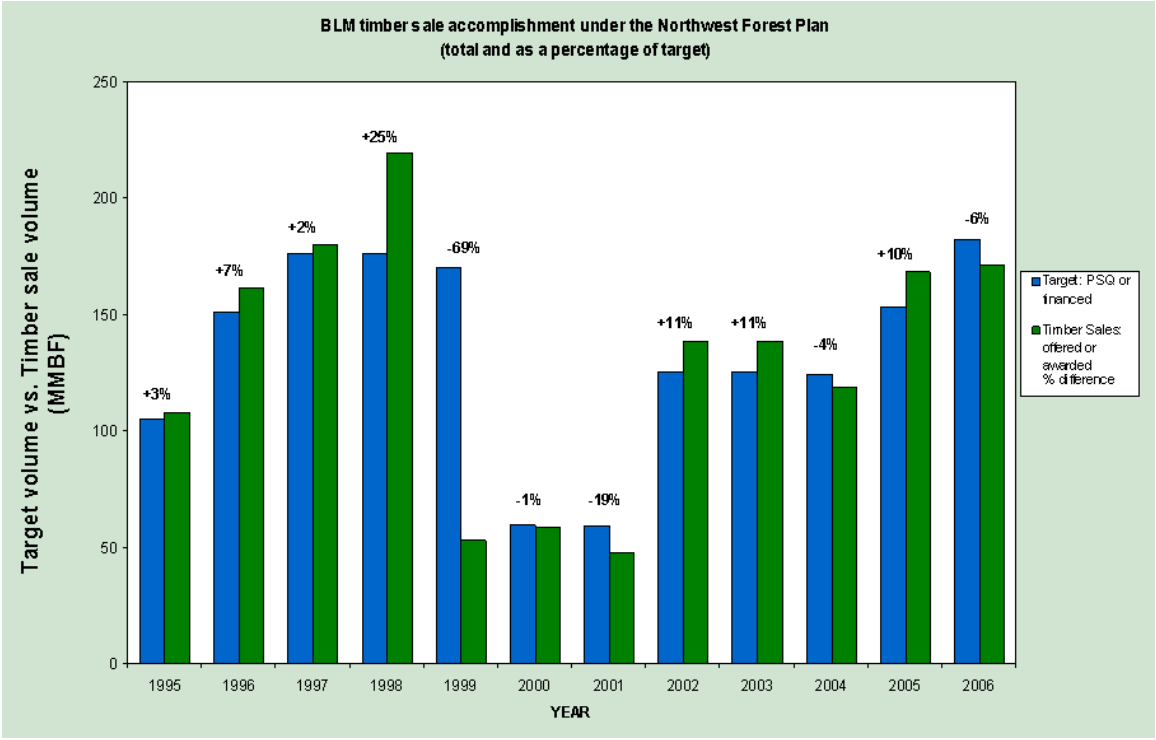
[319] Lemieux, Christopher J., Daniel J. Scott, Rob G. Davis and Paul A. Gray. 2008. Changing Climate, Challenging Choices: Ontario Parks and Climate Change Adaptation. University of Waterloo, Department of Geography: Waterloo, Ontario.http://web.archive.org/web/20101023221023/http://www.fes.uwaterloo.ca/geography/faculty/danielscott/PDFFiles/NRCAN-Report-FINAL.pdf

[320] 1994 NWFP ROD, p 19.

[321] 1994 NWFP ROD, p 66.

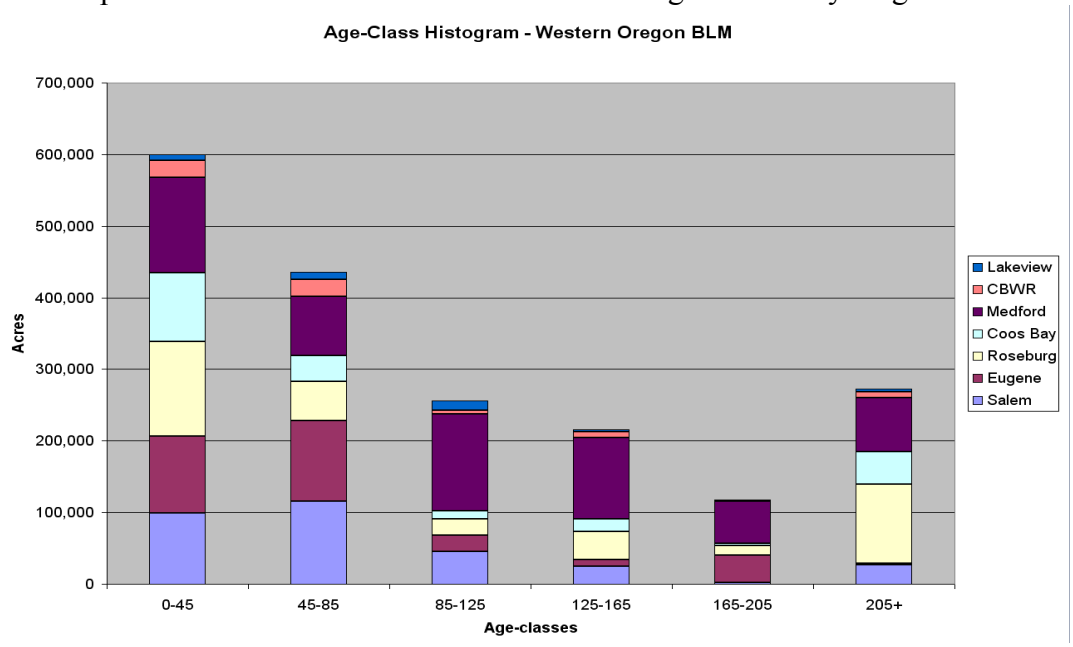


Timber Sale Accomplishments of USFS And BLM (Regionwide) Under The Northwest Forest Plan

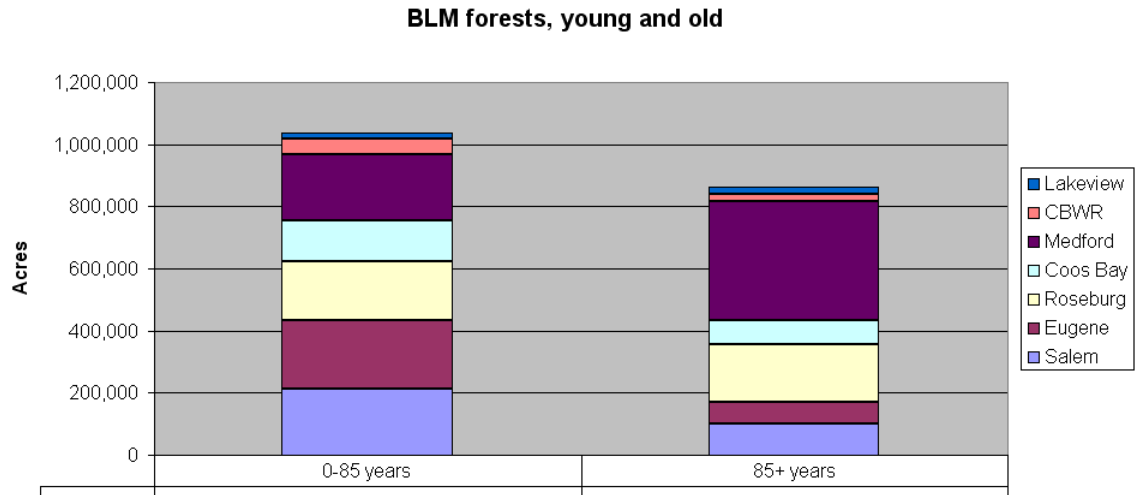


Timber Sale Accomplishments For Western Oregon BLM Districts Under The Northwest Forest Plan

The following age-class histogram created using BLM data shows that older forests are relatively under-represented and the bulk of the needed thinning work is in young stands.



This is the same data showing young versus old forests, split at 85 years.



	0-85 years	85+ years
Lakeview	18,660	22,519
CBWR	47,263	23,981
Medford	215,659	382,826
Coos Bay	132,714	76,680
Roseburg	186,901	185,587
Eugene	219,917	71,618
Salem	214,483	99,795

FIRE AND FUELS

The DEIS at page 10 indicates that restoring fire-adapted ecosystems to increase fire resiliency is part of the purpose of the RMP revisions. Page 10 additionally acknowledges that the "owl recovery plan recommends active management within the dry forest landscape to restore ecosystem resiliency," and that "under the O&C Act, BLM management must account for potential loss of this timber to fire." Hence "the purpose of this action includes restoring fire-adapted ecosystems to increase fire resiliency."

The fire resiliency purpose of the RMP revisions is directly thwarted by the BLM proposal to conduct:

> *"management such as thinning and regeneration harvest with no retention and rapid reforestation on a relatively short rotation. This management approach would result in continuous horizontal and vertical fuel profiles and conditions more closely aligned with high severity fire." DEIS page 194.*

It appears that every action alternative developed by the BLM will include logging techniques known by the agency to increase fire hazard. This directly inhibits the alleged purpose and need of increasing fire resiliency stated on page 10 of the DEIS. "The purpose of the action includes restoring fire-adapted ecosystems in increase fire resiliency." DEIS page 10.

The BLM's proposal to utilize logging techniques to known to increase fire resiliency in some instances while concurrently utilizing logging techniques to decrease fire hazard in other instances is arbitrary and capricious.

The DEIS fails to analyze or disclose an action alternative that would codify the dry forest restoration developed by Franklin and Johnson and successfully implemented in the BLM "pilot projects."

I. INCREASE FIRE RESISTANCE BY MAXIMIZING THE EXTENT OF LATE SUCCESSIONAL RESERVES

One of the purposes of this EIS is to restore fire-adapted ecosystems to increase fire resiliency. Recognizing that all forests in western Oregon are "fire-adapted," this purpose should be clarified to maintain fire resistance in mature and old growth forests, and to avoid regeneration harvest that creates dense young plantations that represent a very hazard fuel condition. BLM should pursue this important purpose across all forest types.

In the final decision on this RMP revision, BLM should avoid both high- and moderate-intensity timber harvest because DEIS (p 194) admits that:

The High Intensity Timber Area includes management such as thinning and regeneration harvest with no retention and rapid reforestation on a relatively short rotation. This management approach would result in continuous horizontal and vertical fuel profiles and conditions more closely aligned with high severity fire. ... [T]here currently exists an overabundance of young and closed conditions and the likelihood of large, high severity fire has increased. Large areas of no retention are not representative of the prevailing

vegetative patterns and structure associated with frequent fire, low-severity or mixed-severity fire regimes.[322]

Moderate Intensity Timber Area includes thinning and regeneration harvest with 5-15 percent basal area retention, and longer rotations and rapid reforestation. This management approach would result in more continuous horizontal and vertical fuel profiles and conditions more closely aligned with high severity fire. Additionally, contiguous fuel profiles have reduced stand-level fire resistance.

Adopting high- or moderate-intensity timber harvest is therefore inconsistent with the purpose and need for this EIS to *"restore fire-adapted ecosystems to increase fire resiliency."*

Figures 3-40 and 3-41 clearly show that areas with less logging (i.e. the reserves) create conditions that are much more fire resistant, while areas with more logging (i.e., the harvest land base) creates conditions that present much greater fire hazard.

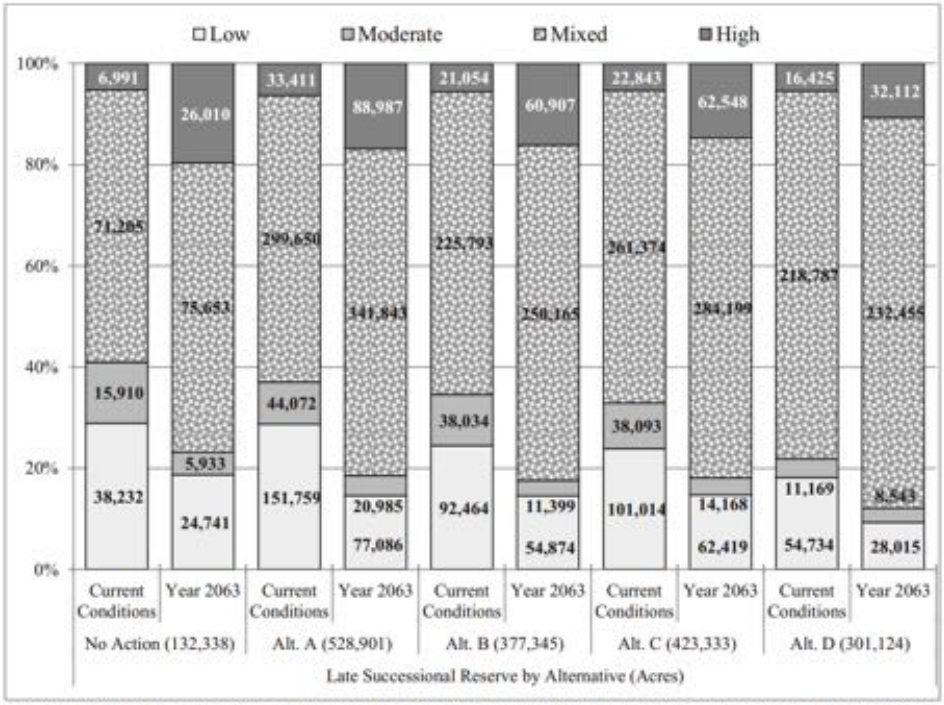


Figure 3-40. Stand-level fire resistance categories in the Late-Successional Reserves in the dry forest in the interior/south for the current condition and each alternative in 50 years.

[322] Taylor and Skinner 2003, Larson and Churchill 2012.

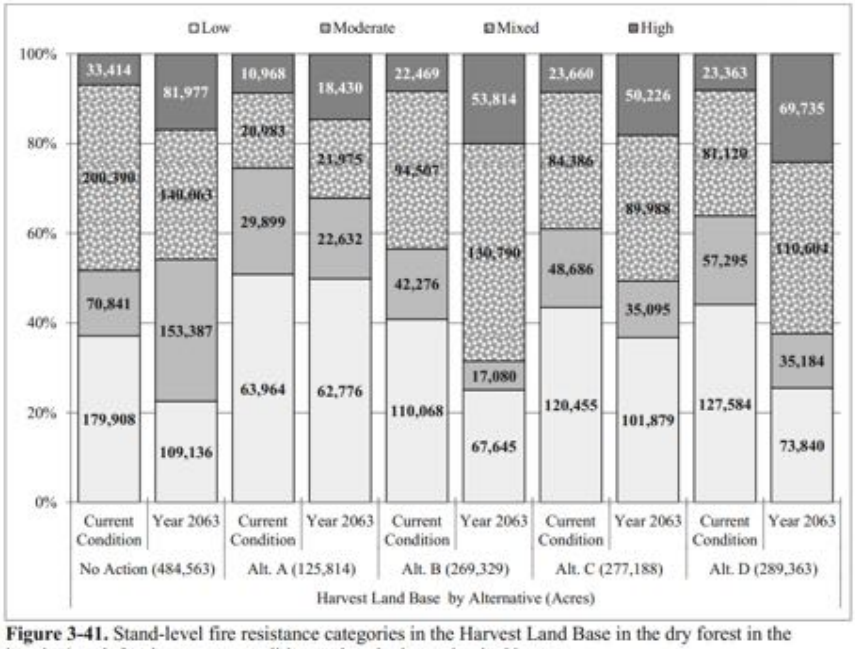


Figure 3-41. Stand-level fire resistance categories in the Harvest Land Base in the dry forest in the interior/south for the current condition and each alternative in 50 years.

Furthermore, the harvest land base probably has a greater fire hazard than this analysis recognizes given the fact that the EIS relies on some faulty assumptions about the effects of thinning on forest structure and fire hazard (explained below).

II. FOREST CONSERVATION HELPS MODERATE FIRE BEHAVIOR

DEIS 187 says that lower density stands tend to have higher fire resistance. The DEIS also adopts the notion that fire exclusion increases fire hazard. DEIS (p 194) says:

Uneven-Aged Timber Area [and] the Owl Habitat Timber Area … Both of these management scenarios would result in the greatest reduction of low and moderate stand-level resistance and the largest increase in the mixed- and high-resistance acres.

However, these DEIS assertions are not supported by the evidence from SW Oregon. The EIS needs to reflect the best available science which indicates that open stands (such as those resulting from thinning) tend to have more surface and ladder fuels (over time), as well as greater wind penetration, lower humidity, dryer fuels, longer flame lengths, and higher fire intensity at the flame front. Forests with a dense canopy tend to have a more cool, moist, and less windy fire microclimate, and the canopy helps suppress the growth of surface and ladder fuels.

Table 3-41 (DEIS p 187) needs to reflect the fact that complex older forests tend to be more fire resistant and resilient compared to young forests and logged forests. “Mixed” resistance is not described or defined. It would be useful for the public and the decision-maker to understand the complex old forests have several characteristics making them more fire resistant (e.g., thick bark, high canopies, hardwood understory that acts as a heat sink, canopy that suppresses ladder fuels and helps maintain cool-moist-les-windy microclimate) and know that this mixed-resistance old forest is the condition that historically dominated the forest landscape, and this is the condition

that results in the mixed severity fires that wildlife evolved with. Logging complex old forests is likely to reduce fire resistance and increase fire hazard.

The DEIS (p 187) says that only single-storied mature forests have HIGH resistance to wildfire. The EIS needs to disclose that open canopy forests tend to have more severe fire effects and that logging to create open forest conditions on large areas of BLM land (such as by logging to simplify complex forests) will have significant trade-offs for wildlife that need more complex forests. Forests lacking complex dead wood and complex understory do not provide high quality habitat for spotted owls and numerous other species.

The EIS needs to reflect the best available information (provided below) indicating that greater time-since-fire actually increases fire resistance. That is, fires are likely burn more severely in forests that have been more recently logged or burned, and are likely to burn less severely in closed-canopy forests that have not been recently logged or burned. This may be related to the fact that closed canopy forests maintain a cool-moist microclimate that helps retain higher fuel moisture and more favorable fire behavior. Canopy cover also helps suppress the growth of ladder fuels. The significance of this is that it may make sense to variably retain more canopy cover while thinning and don't focus on treatment of canopy fuels except to provide some well-spaced "escape hatches" for hot gases generated by surface fires.

Odion et al (2004) studies fire in the Klamath Mountains region and found -

> *Long absence of fire predicts low severity fire effects. Absence of fire enables closed canopy forest vegetation to replace shrub and open forest vegetation through succession. Shade reduces available fuel below the canopy as well as its potential surface heat output during fire events, making canopy fires less likely to occur. Therefore, severe fire effects are not correlated with the age of woody fuels. Instead, weather and climate dictate canopy fire behavior in closed canopy forests.*
>
> *Tree plantations, which typically follow high-severity fires under traditional forestry practices, exhibited "twice the burn severity" of closed canopy forests (20 percent), even though they accounted for only four (4) percent of the study area. The relative combustibility of structurally homogeneous tree plantations supports a self-reinforcing "feedback" dynamic of high-severity fires, and the authors anticipate continued high-severity fires in roaded and planted portions of the landscape.*

IMPLICATIONS- The central conclusion of the paper is that long absence of fire predicts low-severity fire effects in Klamath mixed evergreen forests. This conclusion has four management implications:

1. The fuel build-up model formulated for southwestern ponderosa pine forests does not apply to Klamath mixed evergreen forests, and fuel treatments intended to prevent crown fires based on this model are misdirected.

2. Fuel treatments designed to impose a low-severity fire regime may be ecologically detrimental because highly severe fire effects, to some degree, support diverse vegetation community structures and habitats for which the Klamath region is globally unique. Some fuel treatments also may adversely affect soils, water quality, wildlife habitat, and spread noxious weeds.

3. Fuel treatments may be ecologically beneficial in tree plantations where past logging left behind unnatural fuel profiles.

4. Naturally ignited wildland fires may be beneficial to a variety of conservation objectives in Klamath forests. Home ignitability mitigation in the wildland-urban interface may increase options for backcountry wildland fire use.

Fuel reduction projects in SW Oregon must consider the implications of Odion, D.C., E.J. Frost, J.R. Strittholt, H. Jiang, D.A. DellaSala and M.A. Moritz. 2004. Patterns of fire severity and forest conditions in the western Klamath Mountains, California. Conservation Biology 18(4): 927-936. [323]

In a mixed-conifer, mixed-severity fire regime study area in SW Oregon, Crystal Raymond found that,

> *Fire severity was greater in thinned treatments than untreated. … The additional fine wood left from the thinning operation (despite whole-tree yarding) most likely caused higher fire intensity and severity in the thinned treatments*."
>
> *… [T]he presence of activity fuels increased potential surface fire intensity, so increases in canopy base height did not decrease the potential for crown fire initiation. … [C]rown fire is not a prerequisite for high fire severity; damage and mortality of overstory trees in the wildfire was extensive despite the absence of crown fire, and the low predicted crown fire potential before and after the fuel treatment. Damage to and mortality of overstory trees were most severe in thinned treatments (80 – 100% mortality), least severe in the thinned and under-burned treatment (5% mortality), and moderate in untreated stands (53-54% mortality) following a wildfire in 2002. Fine fuel loading was the only fuel structure variable significantly correlated with crown scorch of overstory trees. Percentage crown scorch was the best predictor of mortality 2 years post-fire. Efforts to reduce canopy fuels through thinning treatments may be rendered ineffective if not accompanied by adequate reduction in surface fuels*. [324]
>
> *A greater percentage of pre-fire fine wood was consumed in the thinned plots than in the unthinned plots during the Biscuit fire suggesting that fine fuel moisture may have been lower in the thinned plots*." And "*the Biscuit Fire was observed to have more moderate fire behavior in stands with a sub-canopy tree layer compared to more open stands, suggesting that the sub-canopy trees did not function as ladder fuels. … Higher foliar moisture of broad-leaved species could have dampened fire behavior, inhibiting rather than aiding crown fire initiation."*

Similarly, Hanson and Odion (2006) compared wildfire behavior in seven previously thinned mixed-conifer forests vs. adjacent unthinned forest in the Sierra Nevada and found —

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[323] http://nature.berkeley.edu/moritzlab/docs/Odion_etal_2004.pdf.

[324] Crystal L. Raymond. 2004. The Effects of Fuel Treatments on Fire Severity in a Mixed-Evergreen Forest of Southwestern Oregon. MS Thesis. http://depts.washington.edu/nwfire/publication/Raymond_2004.pdf.

> *Contrary to our hypothesis, the mechanically thinned areas had significantly higher fire-induced mortality (p =.016, df = 6) and combined mortality (p =.008, df = 6) than the adjacent unthinned areas. Thinned areas predominantly burned at high severity, while unthinned areas burned predominantly at low and moderate severity … Possible explanations for the increased severity in thinned areas include persistence of activity fuels, enhanced growth of combustible brush post-logging, desiccation and heating of surface fuels from increased insolation, and increased mid-flame windspeeds. Given that sampling transects in thinned versus unthinned areas were only 100 m apart in each experimental unit, fire weather should have been the same for the thinned and unthinned areas sampled in each site. Thus, mechanical thinning on these sites appears to have effectively lowered the fire weather threshold necessary for high severity fire occurrence.*[325]

A study in mixed-conifer forests in California showed that forest reserves were more effective than logging in terms of reducing fire hazard.

> *[T]he efficacy of seven traditional silvicultural systems and two types of reserves used in the Sierra Nevada mixed conifer forests is evaluated in terms of vegetation structure, fuel bed characteristics, modeled fire behavior, and potential wildfire related mortality. The systems include old-growth reserve, young-growth reserve, thinning from below, individual tree selection, overstory removal, and four types of plantations. These are the most commonly used silvicultural systems and reserves on federal, state, and private lands in the western United States. Each silvicultural system or reserve had three replicates and varied in size from 15 to 25 ha; a systematic design of plots was used to collect tree and fuel information. The majority of the traditional silvicultural systems examined in this work (all plantation treatments, overstory removal, individual tree selection) did not effectively reduce potential fire behavior and effects, especially wildfire induced tree mortality at high and extreme fire weather conditions. Overall, thinning from below, and old-growth and young-growth reserves were more effective at reducing predicted tree mortality.*[326]

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[325] Hanson and Odion. 2006. Fire Severity In Mechanically Thinned Versus Unthinned Forests of the Sierra Nevada, California 2006 Fire Congress Proceedings. ftp://ftp2.fs.fed.us/incoming/r5/VMS/reference_library/Fire%20and%20Fuels%20References/Hanson%20and%20Odion%20%202006%20Fire%20severity%20in%20thinned%20vs%20unthinned%20forests%20.pdf

[326] Scott L. Stephens and Jason J. Moghaddas. 2005. Silvicultural and reserve impacts on potential fire behavior and forest conservation: Twenty-five years of experience from Sierra Nevada mixed conifer forests. Biological Conservation 125 (2005) 369–379. See also Morris Johnson, David L. Peterson, and Crystal Raymond 2009. Fuel treatment guidebook: illustrating treatment effects on Fire hazard. Fire Management Today 69(2) http://www.fs.fed.us/fire/fmt/fmt_pdfs/FMT69-2.pdf p 32-33

III. BLM NEEDS TO REFLECT THAT WILDFIRE MAY BE MORE CONTROLLED BY WEATHER THAN FUELS

DEIS p 175 discusses the effects of fire exclusion in dry forests. This analysis over-emphasizes the effects of fuel and under-emphasizes the effects of weather on fire. Forests throughout BLM lands in western Oregon almost always have enough fuel to carry fire. Weather conditions are a large determinant of the extent and severity of fire. Protecting homes and communities require treatments in the "structure ignition zone" immediately around structures, not across the forest landscape.

The agencies must recognize that most large fires are climate driven, not fuel driven.

> *Within forests, annual burned area correlated at least as strongly with spring–summer vapour pressure deficit (VPD) as with 14 other drought-related metrics, including more complex metrics that explicitly represent fuel moisture. Particularly strong correlations with VPD arise partly because this term dictates the atmospheric moisture demand."* [327]

Littell et al (2009) looked at a large number of fires that occurred in the western U.S. during the 20th Century and found -

> *Our analyses indicate that year-of-fire climate is the strongest influence on area burned in forested ecosystems, but fire size may be limited secondarily by fuel continuity between or within forest stands (Rollins et al. 2002). For example, continuity may be less limiting for fire regimes in which crown fires are the dominant mechanism than in lower-elevation forests characterized by surface fires…*
>
> *[R]elationships described in Westerling et al. (2006) hold for more of the 20th century than previously shown.... These relationships all support our claim that drying of fuels is the primary mechanism for large WFAB [Wild fire area burned] in the higher-elevation and northern mountainous ecoprovinces. Wild fire area burned in these ecoprovinces thus appears to be limited by climate rather than fuel availability, ...*
>
> *Our analyses indicate that year-of-fire climate is the strongest influence on area burned in forested ecosystems, but fire size may be limited secondarily by fuel continuity between or within forest stands (Rollins et al. 2002). For example, continuity may be less limiting for fire regimes in which crown fires are the dominant mechanism than in lower-elevation forests characterized by surface fires, ...*
>
> *Climate controls on the area burned by wildfire in the western United States are strong, even during the dominant period of fire suppression and exclusion in the last two-thirds of the 20th century. Roughly 39% (1916–2003) to 64% (1977–2003) of the fire area burned can be related directly to climate. The variance explained by climate implies that fuel treatments, for example, might be tailored to specific ecosystems and climate–fire relationships. Recognizing that most ecoprovinces have significant ecological variability,*

[327] A. Park Williams, Richard Seager al 2014. Correlations between components of the water balance and burned area reveal new insights for predicting forest fire area in the southwest United States. International Journal of Wildland Fire 24(1) 14-26 http://dx.doi.org/10.1071/WF14023 http://www.publish.csiro.au/?paper=WF14023

climate-limited ecoprovinces may be less influenced by fuel treatment than fuellimited ecoprovinces (at least for area burned, if not fire severity).[328]

The fire and fuels analysis does disclose trade-offs associated with logging. The DEIS says that forest management is a surrogate for fire, but wildfire creates complex forest structures that wildlife evolved with, while logging causes far different effects than fire. Logging requires roads and removes forest structure. The EIS needs to disclose the many ways in which logging is not a surrogate for fire.

IV. LOGGING HABITAT TO "SAVE" IT FROM FIRE COULD DEGRADE HABITAT

The DEIS (p 195) says "*BLM assumed that the restoration approach taken in the Late Successional Reserve in the dry forest would include stand density reductions, cultivation of large trees with old-growth characteristics, and introductions of heterogeneity into increasingly uniform stands, and treatments to reduce fire risk adjacent to high-value habitat."* The DEIS does not adequately disclose the adverse effects of these habitat-modifying treatments that will likely be conducted with commercial logging that removes primary constituent elements of spotted owl habitat.

DEIS (p 158) describes for thinning as a "no regrets" approach to climate adaptation. This is misleading. No regrets describes strategies that are beneficial whether or not climate driven disturbance occurs. This is not the case here. Forest thinning involves complex trade-offs that could help or harm the forest and its inhabitants, and the alleged benefits often accrue only if treated areas subsequently burn during the brief window that fuel reduction treatments may be effective. This is not a no regrets strategy.

A more specific example is the spotted owls that prefers to live in fuel-rich forests with high canopy cover. Thinning to reduce climate stress will likely result in adverse effects on spotted owls. Thinning is therefore NOT a "no regrets" strategy for spotted owls. In fact, leaving suitable spotted owl habitat unmanaged is probably the closest thing to a no regrets climate strategy for the spotted owl. The EIS fails to make this important point clear. Even when logging is conducted with an intention to reduce fire effects, such logging will still cause net negative effects on spotted owls and other wildlife that prefer to live in forests with dense canopy cover and complex structure. The DEIS failed to adequately disclose trade-offs between the needs of wildlife and the adverse effects of logging for fire resiliency. The net effects of logging plus wildfire are far worse for wildlife than the effects of fire alone.

Logging intended to benefit dense forest habitat will also reduce the quality of habitat by removing various constituent elements of their preferred habitat, and the NEPA analysis must therefore include some evaluation of ecological costs and benefits — e.g., the high probability that logging will degrade habitat vs. the low probability that fuel reduction logging will interact favorably with fire and thus benefit habitat. This evaluation requires an estimate of the probability of future wildfire. To assume, as many analyses do, a 100% chance of future wildfire

[328] Jeremy S. Littell, Donald McKenzie, David L. Peterson, Anthony L. Westerling (2009) Climate and wildfire area burned in western U.S. ecoprovinces, 1916–2003. Ecological Applications: Vol. 19, No. 4, pp. 1003-1021. http://naldc.nal.usda.gov/download/34676/PDF.

over-estimates the likelihood of treatments will interact with fire, thus over-estimating the ecological value of fuel treatments, and under-estimating the ecological effects of logging on habitat.[329]

There is a strong interest among the federal land management agencies to conduct widespread logging in suitable spotted owl habitat in order to reduce the effect of fire. The agencies view fuel reduction logging as beneficial to owl habitat because modeling shows that fire behavior is moderated by fuel reduction, but proponents never seem to conduct a careful evaluation of the relative probability, and the relative harms, of logging versus wildfire. Strangely, the probabilistic aspects of this issue have been largely ignored in the owl science literature, but recently explored in the forest-carbon literature which recently showed that although thinning can modify fire behavior, logging to reduce fire effects is likely to remove more carbon by logging than will be saved by modifying fire.[330] The reason for this seemingly counterintuitive outcome is a result of the "law of averages." As explained by Cathcart et al 2009 —

> *The question is—if the implementation of fuels treatments within the Drews Creek watershed had the beneficial effect of reducing the likelihood of wildfire intensity and extent as simulated in this study, why is the expected carbon offset from fuels treatment so negative? The answer lies in the probabilistic nature of wildfire. Fuels treatment comes with a carbon loss from biomass removal and prescribed fire with a probability of 1. In contrast, the benefit of avoided wildfire emissions is probabilistic. The law of averages is heavily influenced that given a wildfire ignition somewhere within the watershed, the probability that a stand is not burned by the corresponding wildfire is 0.98 (1 minus the average overall conditional burn probability …*
>
> *Thus, the expected benefit of avoided wildfire emissions is an average that includes the predominant scenario that no wildfire reaches the stand. And if the predominate scenario for each stand is that the fire never reaches it, there is no avoided CO2 emissions benefit to be had from treatment. So even though severe wildfire can be a significant CO2 emissions event, its chance of occurring and reaching a given stand relative to where the wildfire started is still very low, with or without fuel treatments on the landscape.*[331]

Both carbon and spotted owl habitat tend to accumulate in relatively dense forests with intermediate or longer fire return intervals. Thus, we can likely read these studies and replace the word "carbon" with the word "spotted owl habitat" and the results will likely hold.

DEIS pp 773-774 identifies "Issue 3" whether the alternatives will help reduce the loss of habitat due to wildfire, but the DEIS says no additional analysis is required, and the reasons given are

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[329] See Heiken, D. 2010. Log it to save it? The search for an ecological rationale for fuel reduction logging in Spotted Owl habitat. Oregon Wild. v 1.0. May 2010. http://dl.dropbox.com/u/47741/Heiken_Log_it_to_Save_it_v.1.0.pdf.

[330] Mitchell, Harmon, O'Connell. 2009. Forest fuel reduction alters fire severity and long-term carbon storage in three Pacific Northwest ecosystems. Ecological Applications. 19(3), 2009, pp. 643–655 http://www.fs.fed.us/pnw/pubs/journals/pnw_2009_mitchell001.pdf.

[331] Jim Cathcart, Alan A. Ager, Andrew McMahan, Mark Finney, and Brian Watt 2009. Carbon Benefits from Fuel Treatments. USDA Forest Service Proceedings RMRS-P-61. 2010. http://www.fs.fed.us/rm/pubs/rmrs_p061/rmrs_p061_061_079.pdf.

confusing: "As explained in **Appendix S**, the relative habitat suitability surfaces the BLM developed to address Conservation Needs 1, 2 and 4 include forecasts of habitat change from wildfire. Thus, the evaluations of Conservation Needs 1, 2 and 4 also address Conservation Need 3. The BLM needed no additional analysis." We could find no analysis in Appendix S or elsewhere in the EIS explaining that alternatives with more logging will create hazardous fuel condition and expose spotted owls to greater risk from wildfire.

In an effort to advance the discussion and help the agencies conduct better risk assessments in the NEPA context we have prepared a white paper in an attempt to clarify the critical considerations in a probabilistic risk assessment that compares the risk of logging versus wildfire.[332] Log it to save it? The search for an ecological rationale for fuel reduction logging in Spotted Owl habitat.[333] This report is most relevant in SW Oregon but the proposed evaluative framework is applicable in the east Cascades, northern California, and elsewhere. This report focuses on carbon and spotted owl habitat, but the analysis is relevant for any species or forest value that requires relatively dense forest cover, such as American marten, Pacific fisher, pileated woodpecker, northern goshawk, etc.[334]

To justify such fuel reduction logging in suitable owl habitat on ecological grounds requires several findings: (1) that wildfire is highly likely to occur at the site of the treatment, (2) that if fire does occur it is likely to be a severe stand-replacing event, and (3) that spotted owls are more likely to be harmed and imperiled by wildfire than by logging at a scale necessary to reduce fire hazard. Available evidence does not support any of these findings, which raises serious questions about the need for and efficacy of logging to reduce fuels in western Oregon and other forests lacking frequent fire return intervals.

The probabilistic element of the risk equation demands careful consideration. Both logging and fire have meaningful consequences, so the issue really boils down to a comparative probabilistic risk assessment where risk is characterized by two quantities: (1) the magnitude (severity) of the possible adverse consequence(s), and (2) the likelihood (probability) of occurrence of each consequence.

Framework for Assessing the Risk of Wildfire vs. Fuel Reduction Logging			
	Likelihood of event	Magnitude of harm	Net Benefit
Wildfire	LOW: Stand replacing wildfire is not common in western Oregon. Fire suppression policy prevails. The chance that any given acre of forest will experience wildfire is low.	LOW: The majority of wildfire effects are not stand replacing. Fire is a natural process to which native wildlife are adapted. There is still a deficit of natural fire processes on the landscape.	Fire is likely less harmful to habitat than fuel reduction logging.

[332] Heiken, D. 2010.
[333] Oregon Wild. v 1.0. May 2010. http://dl.dropbox.com/u/47741/Heiken_Log_it_to_Save_it_v.1.0.pdf.
[334] See for instance, Aubry et al 2013. Meta-Analyses of Habitat Selection by Fishers at Resting Sites in the Pacific Coastal Region. The Journal of Wildlife Management 77(5):965–974; 2013; DOI: 10.1002/jwmg.563.

Logging	HIGH: To be effective in controlling fire, logging must be very extensive, and sustained. Many more acres would need to be logged than would burn.	HIGH: Widespread logging will have significant impacts on canopy, microclimate, understory vegetation, down wood, and long-term effects on recruitment of large trees and snags.	Fuel reduction logging is likely more harmful to habitat than wildfire.

The white paper is organized around these risk evaluation parameters.

In spite of what we often hear, that federal forests are not at imminent risk of destruction by wildfire. Fire return intervals remain relatively long, due to both natural factors and active fire suppression policies. Wildfire severity also remains moderate. Most wildfires are NOT stand replacing. Most fires are in fact low and moderate severity.

The location, timing, and severity of future fire events cannot be predicted making it difficult to determine which forests will benefit from treatment - consequently fuel treatments must be extensive and many stands will be treated unnecessarily, thus incurring all the costs of fuel logging, but receiving none of the beneficial effects on fire behavior.

Furthermore, logging for purposes of fuel reduction has impacts on owl and prey habitat that remain under-appreciated, especially the reduction of complex woody structure, and the long-term reduction in recruitment of large snags and dead wood. Fuel reduction logging also has complex effects on fire hazard with potential to increase fire hazard, especially when fuel reduction efforts involve removal of canopy trees.

When all this evidence is put together, it becomes clear that "saving" the spotted owl by logging its habitat to reduce fuels often does not make any sense.

Similar conclusions were reached is several studies, reviews, and expert commentaries, such as:

Odion et al. 2014, who looked at the relative effects of fire versus thinning and fire on spotted owl habitat in two regions of interest: the Klamath and dry Cascades --

> *Using empirical data, we calculated the future amount of spotted owl habitat that may be maintained with these rates of high-severity fire and ongoing forest regrowth rates with and without commercial thinning. Over 40 years, habitat loss would be far greater than with no thinning because, under a "best case" scenario, thinning reduced 3.4 and 6.0 times more dense, late-successional forest than it prevented from burning in high-severity fire in the Klamath and dry Cascades, respectively. Even if rates of fire increase substantially, the requirement that the long-term benefits of commercial thinning clearly outweigh adverse impacts is not attainable with commercial thinning in spotted owl habitat. It is also becoming increasingly recognized that exclusion of high-severity fire may not benefit spotted owls in areas where owls evolved with reoccurring fires in the landscape.*

We found that the habitat recruitment rate exceeded the rate of severe fire by a factor of 4.5 in the Klamath and 10 in the dry Cascades, leading to a deterministic increase in dense forest habitat over time, assuming no other disturbance events. In contrast, previous published assessments of fire on spotted owls have not explicitly considered fire and forest regrowth rates (Wilson and Baker 1998, Lee and Irwin 2005, Roloff et al. 2005, 2012, Calkin et al. 2005, Hummel and Calkin 2005, Ager et al. 2007, Lehmkuhl et al. 2007). Not including the probability of high-severity fire, which is low, leads to highly inflated projections of the effects of thinning versus not thinning on high-severity fire (Rhodes and Baker 2008, Campbell et al. 2012).

Our calculations of thinning effects included rates of forest regrowth along with high-severity fire. The calculations illustrate how the requirement that the long-term benefits of thinning clearly outweigh adverse impacts (USFWS 2011) is not attainable as long as treatments have adverse impacts on spotted owl habitat. This is because the amount of dense, late-successional forest that might be prevented from burning severely would be a fraction of the area that would be thinned.

This would not be a concern if thinning effects were neutral, but the commercial thinning prescriptions being implemented call for forests with basal area reduced by nearly half to 13.5-27.5 m2/ha, which is mostly well below the minimum level known to function as nesting and roosting habitat (ca. 23 m2/ha) (Buchanan et al. 1995, 1998). … Even an immediate doubling of fire rates due to climate change or other factors would result in far less habitat affected by highseverity fire than thinning. In addition, much of the highseverity fire might occur regardless of thinning, especially if the efficacy of thinning in reducing high-severity fire is reduced as fire becomes more controlled by climate and weather (Cruz and Alexander 2010). Clearly, the strategy of trying to maintain more dense, late-successional forest habitat by reducing fire does not work if the method for reducing fire adversely affects far more of this forest habitat than would high-severity fire, and the high-severity fire might occur anyway because it is largely controlled by climate and weather.

While much of the concern about fire and thinning in dry forests of the Pacific Northwest has focused on spotted owls, it may also apply to other biota associated with dense, old forests, including species of conservation concern, such as Pacific fisher (Martes pennanti pacifica), which research indicates may benefit from mixed-severity fire (Hanson 2013), the Northern Goshawk (Accipiter gentilis), and, following fire, the Black-backed Woodpecker (Picoides arcticus), … Our findings highlight the need to be cautious about conclusions that thinning treatments are needed for species found in dense forest and that they will not have unintended consequences (e.g., Stephens et al.2012) until long-term, cumulative impacts are better understood. As we found with spotted owls, long-term and unintended consequences may be substantial for species that rely on dense, late-successional forests.[335]

[335] Dennis C. Odion, Chad T. Hanson, Dominick. A. DellaSala, William L. Baker, and Monica L. Bond. 2014. Effects of Fire and Commercial Thinning on Future Habitat of the Northern Spotted Owl. The Open Ecology Journal, 2014, 7, 37-51 37. http://benthamopen.com/toecolj/articles/V007/37TOECOLJ.pdf.

V. REGENERATION HARVEST REDUCES FIRE RESILIENCY

The DEIS did not adequately disclose the extent to which regeneration logging will convert naturally resistant and resilient mature forests into tree plantations which have a dense homogenous fuel structure close to the ground and represents a significant fire hazard.

Logging in many cases will actually increase fire hazard, but the EIS does not fully account for the impacts on wildlife. DEIS Figure 3-40 and 3-41 clearly show that timber management areas tend to have fuel conditions with greater fire hazard compared to the reserves where forests are better conserved. The DEIS does not carry this analysis forward into the analysis of effects on the northern spotted owl habitat (and numerous other wildlife that prefer to live in dense forests). Based on the fuel conditions created by logging, fires will likely be larger and more severe. There will likely be spill-over effects from the harvest areas to the reserves. The EIS needs to more fully disclose the adverse effects of logging on spotted owls

DEIS at 159 states,

> *In dry forests under all action alternatives, management would emphasize increasing fire resistance and resilience, which would often also increase resistance to drought, insects, and pathogens. The No Action alternative does not explicitly prohibit management to increase fire resistance and resilience, but does not have the same emphasis as in the action alternatives, especially within the Late-Successional Reserve and the Riparian Reserve*."

This is flawed for several reasons.

- First, BLM seems to assume that active management to reduce fire, insects, and drought will provide net benefits. In reality, fire and insects are natural processes that forests evolved with. Logging removes important features of wildlife habitat and is far more likely to cause adverse effects on wildlife compared to natural processes like fire and insects.
- Second, BLM seems to assume that active management (i.e. logging) will provide net ecological benefits. In reality, active management will interfere with these natural processes and cause more harm than good. For instance, beetle mortality is likely to kill the trees most susceptible to beetles, while sparing those trees that are best adapted to defend themselves from beetle attack. Logging removes trees without regard to their adaptive capacity. Logging will be removing adaptive genes from the forest, while natural processes recruit those individuals most likely to offer adaptive traits.
- Third, logging for resistance and resilience to fire and other natural disturbance agents will most often involve dramatic reduction in stand densities. This will imperil many species that prefer to live in dense forests, including spotted owls, and primary prey such as flying squirrels and red tree voles. In short, increasing resilience to fire, reduces resilience for spotted owls.
- Fourth, risk reduction logging is allowed in LSRs under the Northwest Forest Plan (as long as the benefits of action are clear and compelling) so BLM cannot cast aspersions on the no action alternative. In fact, BLM needs to give the action alternatives lower marks because they grant BLM more discretion to conduct active management In reserves that is not properly conditioned on ensuring net ecological benefits.

DEIS at 159 also says, "*Comparing recent satellite imagery of western Oregon with that collected in the mid-1990s, Reserves with minimal or no active management tended to become homogeneous with respect to stand density, age, and condition. Such landscapes appear to be increasingly vulnerable to large, stand-replacing fire*." This is highly speculative, misleading, and not supported by any evidence.

- First, reserves were intended to be spatially distributed and redundant, so that the system of reserves could absorb large disturbance events and still function. See Jerry Franklin's statements following the Biscuit Fire.
- Second, mature forests are less vulnerable to fire, while dense stands of young trees are more vulnerable to fire, so it's really the timber management areas with abundant areas of young reproduction that pose the greatest fire hazard. (See the science excerpts below.)
- Third, the assertion that large reserves are more vulnerable is contradicted in the DEIS. DEIS (p 194) admits that:

> *The High Intensity Timber Area includes management such as thinning and regeneration harvest with no retention and rapid reforestation on a relatively short rotation. This management approach would result in continuous horizontal and vertical fuel profiles and conditions more closely aligned with high severity fire. … [T]here currently exists an overabundance of young and closed conditions and the likelihood of large, high severity fire has increased. Large areas of no retention are not representative of the prevailing vegetative patterns and structure associated with frequent fire, low-severity or mixed-severity fire regimes*.[336]

Moderate Intensity Timber Area includes thinning and regeneration harvest with 5-15 percent basal area retention, and longer rotations and rapid reforestation. This management approach would result in more continuous horizontal and vertical fuel profiles and conditions more closely aligned with high severity fire. Additionally, contiguous fuel profiles have reduced stand-level fire resistance.

Contrary to popular belief, old forests present much less of a fire hazard compared to dense young plantations resulting from regenharvest. Older forests spend most of their lifecycle in a condition of tall trees where most of the fuels are held high above the ground and relatively unavailable for combustion by surface fires. Mature forest canopies also help maintain cool, moist conditions, reduce wind speeds, and suppress the growth of ladder fuels. Regeneration harvest results in young forests of short-stature where the fuels are densely packed and close to the ground where they are available for combustion and present more of a hazard.

> *Large blocks of old-growth forests – rather than large contiguous blocks of young growth or highly simplified forests – are the best scenario for reducing catastrophic wildfire.*[337]

Lindenmayer et al (2009) say –

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[336] Taylor and Skinner 2003, Larson and Churchill 2012.

[337] Jerry Franklin, David Perry, Reed Noss, David Montgomery, Christopher Frissell. Simplified Forest Management To Achieve Watershed And Forest Health: A Critique. National Wildlife Federation. http://www.coastrange.org/documents/forestreport.pdf

> *Contrary to claims by some commentators (e.g., National Association of Forest Industries 2009a,b,c), industrial logging is likely to make some kinds of forests more, not less, prone to an increased probability of ignition (Krawchuk & Cumming 2009) and increased fire severity and/or fire frequency (Uhl & Kauffman 1990; Thompson et al. 2007; Bradshaw et al. 2009; Malhi et al. 2009).*[338]

The 1992 Draft Recovery Plan for the Northern Spotted Owl says, "*High surface fire potential during early succession in Douglas fir was identified by Isaac (1940) as a 'vicious cycle' of positive feedback...*"[339] while "Mature to old-growth forests [in the west Cascades subregion] have a low surface fire behavior potential (Agee and Huff (1992)."[340]

Cochrane et al (2012) recently showed that a patchwork of small clearcuts in areas of the Umpqua National Forest actually increased the size and spread of recent fires. *"[T]he simulated exacerbation of overall fire spread rates is still realistic owing to increased crown fire prevalence caused by the continuous, even-aged fuel complexes of the treated areas.*"[341]

The 2000 National Forest Roadless Area Conservation FEIS (p 3-92 -93) noted the fire hazard associated with regeneration logging:

> *[E]arly successional vegetative growth often forms into dense thickets that create a highly flammable situation. New tree growth, whether from natural regeneration or planted nursery stock, produces needles and twigs that become the fine fuel that contributes to wildland fire spread. ... Post-harvest fuel conditions commonly found in some managed forests prompt many scientists to conclude that harvested forests have a higher propensity for large, severe wildland fires than forests that have not been harvested. A recent report by the National Research Council (2000) speaks to the issue of post-harvest fuel management in Pacific Northwest forests.*
>
> *"Logging has been proposed as a possible surrogate for fire in reducing fuel accumulation with the added benefit of economic return (Agee 1993), but logging and clearcutting do not necessarily reduce flammable fuels…rapid regeneration of early-successional shrubs and trees can create highly flammable fuel conditions within a few years of cutting. Without adequate treatment of small woody residues, logging may exacerbate fire risk rather than lower it (Agee 1993)…"*

Two fires in 2002 on the Umpqua National Forest were evaluated for their effect on the forest. Excerpts from the March 2003 Wildfire Effects Evaluation Project by the Umpqua N.F. make clear the impact of creating more tree plantations:

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[338] David B. Lindenmayer, Malcolm L. Hunter, Philip J. Burton, & Philip Gibbons. 2009. Effects of logging on fire regimes in moist forests. Conservation Letters xx (2009) 1–7. http://soln.org/wp-content/uploads/2010/01/effects-of-logging-on-fire-regimes-in-moist-forests.pdf

[339] 1992 NSO Recovery Plan page 444

[340] 1992 NSO Recovery Plan page 452

[341] M. A. Cochrane, C. J. Moran, M. C. Wimberly, A. D. Baer, M. A. Finney, K. L. Beckendorf, J. Eidenshink, and Z. Zhu. 2012. Estimation of wildfire size and risk changes due to fuels treatments. International Journal of Wildland Fire. http://dx.doi.org/10.1071/WF11079. http://www.publish.csiro.au/?act=view_file&file_id=WF11079.pdf

> *"Plantations had a tendency to increase the rate of fire spread and increased the overall area of stand-replacement fire effects by spreading to neighboring stands." Page 4*
>
> *"Fire burned most plantations with high intensity and spread rapidly through the canopy of these young stands." Page 20.*
>
> *"Plantation mortality is disproportionately high compared to the total area that plantations occupied within the fire perimeter. Page 26-27.*
>
> *"Crown fire spreads readily through these young stands: rates of fire spread can be high, and significant areas or mortality can occur in and adjacent to these stands." Page 32.*

Finally, the report says that the fire behavior in forest that had not been converted to tree farms was normal. "*The pattern of mortality in the unmanaged forest resembles historic stand-replacement patch size and shape*."[342]

The 2013 BAER Report for the Douglas Complex Fires in SW Oregon said "While the severity varied throughout the fire area, young timber plantations carried the fire while older stands tended to be more resistant. This is mostly due young timber plantations having a high density of ground fuels."[343]

VI. FIRE AND FUEL IN THE WILDLAND URBAN INTERFACE

The EIS should provide a map showing the Wildland Developed Areas, including the one-mile buffer. Where BLM intends to protect people and property from fire, we urge BLM to focus fuel treatments on the structure ignition zone, which is generally within 100 feet of structures. Treatment beyond the structure ignition zone should focus on harmonious goals including ecological restoration, carbon storage and clean water.

We urge BLM to focus fuel treatments on dense young plantations that are the most hazardous rather than mature forests that tend to be much more fire resistant and resilient.

The DEIS (p 202) says –

> *The extent of the Harvest Land Base under each alternative and the associated changes in vegetation due to differing management direction would influence the overall patterns in stand-level fire hazard, rather than changes within the reserves. … all alternatives would have similar effects on fire resistance within the Late-Successional Reserve.*

The EIS should do more to highlight the fact that alternatives with greater timber harvest, especially regeneration timber harvest and logging in mature forests, will result in greater fire hazard to homes and communities, while greater forest conservation in reserves would result in greater fire safety for communities.

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[342] Page 64. Umpqua NF. Wildfire Effects Evaluation Project. March 2013. http://web.archive.org/web/20041118062947/http://www.fs.fed.us/r6/umpqua/publications/weep/weep.html.

[343] HSG9 – Douglas Complex Fire Burned Area Emergency Rehabilitation Plan. BLM Douglas Complex BAER Team. Sept 5, 2013. (p 12).

SOIL RESOURCES

I. DETRIMENTAL SOIL DISTURBANCE.

"Detrimental soil disturbance could result in some reduction in future tree growth."[344] Detrimental soil disturbance directly inhibits the "sustained yield of timber" that forms part of the purpose and need for this planning process.

As stated on page 608 of the DEIS:

> *"The alternatives would increase the acreage of detrimental soil disturbance from timber harvest, road construction and fuels treatments by 13 to 30 percent of current amounts during the first decade."*

Further, on page 616 of the DEIS the BLM acknowledges that increased soil compaction and organic matter removal "*have the greatest potential to reduce forest productivity*."

Hence the BLM should have developed a reasonable action alternative that would have reduced, as opposed to increased the amount of detrimental soil disturbance associated with intensive harvest activities and road construction that are emphasized in the action alternatives. Such a reasonable action alternative would best meet the alleged planning purpose of sustained forest production in the long-term while avoiding significant harm to soil resources.

II. MACHINE SLASH PILING

On page 618 of the DEIS the BLM appears to indicate that machine piling may occur within logging units (and not just on log landings). This comes as a surprise to our organizations. The impacts of machine piling on soil resources, and hence on long-term forest productivity, are significant and avoidable.

Please note that the impacts of additional machine piling in logging units located in forest stands currently protected (under the NWFP) as Riparian Reserves or as known Survey and Manage sites is not disclosed or analyzed in the DEIS.

Machine piling increases the disturbance to groundcover and soil. Soil displacement results from the ground-based machine use when the heavy equipment turns and pushes the slash throughout logging units. This displacement has many impacts. First, it removes the organic debris and exposes the soil. This in turn can cause surface sealing and crusting. Erosion and decreased infiltration can also result from this. Second, displacement results in the loss of important soil biota, like mycorrhizal fungi, which assists plant nutrient uptake. It is not an unreasonable request to ask for the BLM to consider the other methods of slash treatment. Most project planners on public lands in the Klamath Siskiyous tend to avoid post-harvest machine piling because of the known impacts and availability of other slash reduction practices.

Please note that recently federal timber planners in the Six Rivers National Forest concluded:

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[344] *DEIS at 615.*

"Machine piling/burn piles would increase ground disturbance and soil displacement when the machine turns."[345]

Please note how the Medford BLM recently responded to requests from the timber industry to authorize machine piling on federal lands:

> *Comment 4: We asked that BLM provide some flexibility in how fuels would be treated by focusing on the desired goals. The BLM has restricted fuels treatments to handpiling and burning. Contractors could use lightweight equipment to treat fuels without detrimentally compacting soils.*
>
> *Response: The commenter has not provided details on methodology or supporting science that would support the claim that machine piling could be done without detrimentally compacting soils in excess of RMP standards for percent area compacted by current activities.*
>
> *Resource management plans call for limiting compaction in harvested areas in order to minimize soil productivity losses. Therefore, no additional use of mechanical equipment for fuels reduction was proposed, as ground-based logging would compact up to 12 percent of the harvest units. This is particularly important in the Cottonwood planning area as the majority of soils contain high rock content. It was identified that ripping the soils in this area would bring rocks and cobbles to the surface. The priority was given to minimizing the soil area compacted instead of trying to mitigate the effects. Additionally, the harvest prescription resulting in relatively few trees per acre being cut minimizes the slash, and consequently, also reduces the need for mechanical fuel treatment.*[346]

Mechanical piling is universally recognized as an outdated practice that has disproportionately harmful significant impacts on watershed and soil resources.

Please see:

> *Evelyn Bull et al. Trees and Logs Important to Wildlife in the Interior Columbia River Basin PNW-GTR-391 (1977).*
>
> *BLM, USGS, Biological Soil Crusts: Ecology and Management (Technical Reference 1730-2 (2001) (Available from BLM Publication Management Distribution Service, Bldg 41, E-16 (BC-650B) Denver, CO 80255*

Please note that machine slash piling will condense soil and decrease its porosity. This leads to a decrease in the productivity of that soil which affects the plant life. This can reduce root growth, timber volume, and tree height.[347] These impacts can come as a result of as little as one pass by

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[345] *Little Doe and Low Gulch Timber Sale DEIS p 110.*

[346] Medford BLM Cottonwood Project EA Appendix A, Response to Comments Page 3-2: http://www.blm.gov/or/districts/medford/plans/files/Revised_EA_Final.pdf

[347] Greacen and Sands 1980; Froehlich and McNabb 1984.

the logging equipment across a site.[348] This loss in productivity can impact individual trees (Froehlich 1979,[349] Helms and Hipkin 1986)[350] or whole sites (West and Thomas 1981)[351]. Even the microbial population in the soil can be adversely impacted (Amaranthus et al. 1996)[352].

BLM should examine the monitoring reports on soil compaction from 1985 through 1997, on the Payette National Forest. The study area in that planning effort contains different soil and ecotypes than those covered by the BLM RMP, but the documented long-lasting effects are still relevant to the DEIS at hand.

We also encourage the agency to review the findings of Geppert, R.R., Lorenz, C.W., and Larson, A.G., 1984. Cumulative Effects of Forest Practices on the Environment: A State of the Knowledge. Wash. For. Practices Board Proj. No. 0130, Dept. of Natural Resources, Olympia, Wash.

Manual piling or underburning is far preferable to tractor piling. Manual piling and underburning have none of the negative impacts to soils associated with tractor piling, and they provide an increased opportunity for local employment while significantly reducing long-term damage to soil health and productivity. Hence manual piling or underburning would better achieve the stated purpose and need for the RMP revisions. Given that these practices can reduce fuels without the negative impacts associated with machine piling, they are reasonable to implement and reasonable to consider and analyze as an action alternative.

MODELING CONCERNS

Several recent scientific publications and government reports refute some of the important but controversial modeling assumptions in the DEIS. The BLM fails to identify existing scientific information that answer the stated questions. The BLM must use the best available science for managing fish and wildlife on public lands.

The BLM examined several existing models for analyzing timber growth and harvest and selected a proven model for use (Woodstock). But for most other ecologically important issues, simplistic and untested models (often lifted from failed 2008 WOPR) when sophisticated and tested peer reviewed models already exist. For example, the BLM identifies a novel and untested model for large wood recruitment to streams when a sophisticated wood recruitment model developed by regional government scientists already exists[353]. Similarly, the untested and simplistic model for analyzing fine sediment delivery to fish streams is not an appropriate

[348] Wronski 1984.
[349] Froehlich, HA. 1979. Soil compaction from logging equipment: effects on growth of young ponderosa pine. *Journal of Soil and Water Conservation* 34:276-278.
[350] Helms, JA, and C Hipkin. 1986. Effects of soil compaction on tree volume in California ponderosa pine plantation. *Western Journal of Applied Forestry.* 1:121-124.
[351] West, S and BR Thomas. 1981. Effects of skid roads on diameter, height, and volume growth in Douglas-fir. *Soil Science Society of America Journal* 45:629-632.
[352] Amaranthus, MP, and DA Perry. 1989. Rapid root tip and mycorrhizal formation and increased survival of Douglas-fir seedlings after soil transfer. *New Forests* 3:77-82.
[353]Spies et al. 2013.

starting point when many more sophisticated and tested models exist for modeling sediment delivery to streams[354].

In the RMP Planning Criteria at 76, the BLM reports that "[Northern spotted owl] Conservation Need 3 includes "a monitoring program to clarify whether these risk reduction methods are effective and to determine how owls use habitat treated to reduce fuels However, *the creation of such a monitoring program is not a BLM responsibility and will not be included in the BLM evaluation."* (emphasis added) It is not appropriate for BLM to ignore FLPMA, NEPA and Congress, which also call for the stated effectiveness monitoring. Why is BLM spending millions on reducing fire risk if it does not work or is harmful to spotted owl recovery? In the absence of monitoring, it would at least seem logical and prudent for BLM to employ modeling to determine the trade-offs between logging impacts to owl habitat, when reducing fuels, and loss of spotted owl habitat to fires. Two independent studies (i.e. new information) have found that the BLM's commonly asserted assumption (that logging to reduce fuels in fire prone spotted owl habitat is beneficial) have found that fuels reduction at a landscape scale is actually harmful to spotted owl habitat[355]. Each of these studies is relevant to dry forests in the Medford and Lakeview Districts. Thus, the science finds that thinning resulted in much larger losses to owl habitat over a 40 and 100 year period than living with more fire killed habitat. Several other studies soon to be published are also finding that the spotted owls are better off with fire and no pre-emptive fuels reduction logging. Add to this the need for large patches of fire killed snag forests for "status review" black-backed woodpeckers in these same districts and logging to reduce fires is not a win-win technique as once thought. Large scale fuels reduction projects have now been shown to be lose-lose for the wildlife on at least the Medford and Lakeview Districts.

SPECIAL DESIGNATIONS

We support the Illinois Valley as a "salmon and botanical area" because this unique area has extraordinary potential for wilderness recreation, Wild and Scenic River recreation, botanical recreation, unmatched steelhead fishing opportunities, and high value conservation of rare and endangered wildlife, rare plants, and native fishes. The free flowing Illinois River basin hosts one of the largest remaining Coho salmon populations of the SONCC. The BLM needs to initiate cooperative and coordinated management of the Eight Dollar Mt. complex with the Forest Service, Oregon parks and recreation and nature conservancy similar to management agreements in place at Table Rock complex.

The Illinois Valley is a large interior valley of the Rogue River basin in the Klamath-Siskiyou ecoregion of southwestern Oregon/northwestern California. The BLM managed lands have exceptional plant and animal diversity because of elevation gradients, a hierarchy of perennial streams, and complex serpentine geology. A large number of the endemic plant species of the Klamath Siskiyou ecoregion are found in the Illinois Valley. Some of these plants are found nowhere else in the world and two are federally listed due to limited range. Plant protection is the focus of three existing ACECs, two Research Natural Areas, and two proposed ACECs. ACEC's and RNA's often abut similar Forest Service botanical area designations and require

[354] See BLM Timber Rock Final EIS.
[355] See Hanson et al. 2009 and Raphael et al. 2013.

close coordination to prevent damage from off road vehicles, mining, and undesirable introductions of alien species such as Alyssum. The Eight Dollar Mountain Area is a complex of BLM ACEC, Forest Service Botanical Areas, Oregon State Parks Lands, and Nature Conservancy lands with numerous Darlingtonia fens, associated rare plants and recreational facilities. The BLM manages a boardwalk that provides handicapped access to a Darlingtonia fen at the base of Eight Dollar Mountain. Coordinated management is needed to protect fragile ecosystems and provide appropriate recreational opportunities for plant areas and the Wild and Scenic Illinois River. Additional recreational areas are identified along the West Fork Illinois and for the 80 acre BLM parcel within Forks State Park.

In addition to the exceptional plant diversity of the Serpentine Siskiyous, large areas of oak woodlands and mixed evergreen forests provide high tree and shrub diversity in the Oak Savanna Foothills and Inland Siskiyous ecoregions of the Illinois Valley. Neotropical and resident bird species diversity is high. The endemic Del Norte salamander occupies talus areas. Rare Pacific fishers and federally listed northern spotted owls inhabit these forested areas. Beaver create ponds for declining western pond turtles (e.g. a beaver dam occupied by pond turtles is at proposed Logan Cut recreation area)

Illinois Valley streams and rivers support robust runs of native winter steelhead, Chinook salmon, coho salmon, cutthroat trout, and Pacific lamprey. Anadromous fishes can access nearly all historical habitat because the mainstem Illinois River and its major tributaries have no high dams. All fish species sustain themselves with natural production and with no hatchery fish supplementation, thus assuring a high degree of genetic integrity. The Illinois Valley is a major stronghold for the federally listed coho salmon because several tributaries have viable populations. High elevation headwater areas have dependable snowpacks that provide cool perennial water through the long hot summers. Winter Steelhead that spawn and rear in BLM streams are caught in a recreational fishery as adults in the mainstem Illinois. Selmac Lake, an artificial impoundment, near Selma provides year round fishing for primarily non-native fishes such as bass and perch.

Timber harvest is primarily directed at upland forests that have been categorized as “dry” forests where thinning young trees is the principal silvicultural technique. High priority for harvest are densely stocked plantations and encroaching Douglas-fir trees that have invaded oak woodlands and are a threat to plant biodiversity because they shade out understory shade intolerant species. Fuels treatments to break up dense shrub patches and remove flammable small trees are augmented with controlled fires.

ACECS

We hereby incorporate by reference KS Wild et al. comments on ACECs submitted on the DEIS.

WILD AND SCENIC RIVERS

The BLM should identify streams being considered by congress for inclusion in the national wild and scenic rivers system and also seek out candidate streams with mixed BLM and Forest Service management.

The BLM cannot pre-empt the will of Congress by failing to protect streams currently being considered in federal legislation. Specifically the streams identified for Wild and Scenic designation in Senator Wyden's O&C Bill must be treated as candidate wild and scenic rivers. The O&C Bill identifies the Nestucca River, Walker Creek, North Fork Silver Creek, Jenny Creek, Spring Creek, Lobster Creek, Wasson Creek and Franklin Creek. These streams and adjacent ¼ mile must be reserved from timber harvest modeling and any management actions that would damage wild and scenic characteristics. These streams and adjacent lands would also need to be identified for mineral withdrawal in the RMP. Additionally the BLM must coordinate with the Forest Service to conduct a geospatially explicit analysis to identify potential BLM wild and scenic streams that are adjacent existing Forest Service candidate wild and scenic streams. Some examples are Rough and Ready Creek, West Fork Illinois River, Sucker Creek, and Althouse Creek in the Medford District.

CARBON AND CLIMATE CHANGE

Global climate change is a new and significant threat to humanity and forests. We have a moral and legal obligation to minimize and mitigate this threat.[356] Climate change is caused by excess CO_2 and other greenhouse gases transferred to the atmosphere from other pools. All temperate and tropical forests, including those in this project area, are an important part of the global carbon cycle. Since all forests are an important part of the global carbon cycle, the agency must do its part by managing forest to maintain and increase carbon storage. Global warming is caused by the *cumulative* build-up of greenhouse gases, especially carbon, in the atmosphere. Logging will add to the cumulative total carbon emissions so it is clearly part of the problem and must be minimized and mitigated. Logging will not only transfer carbon from storage to the atmosphere but future regrowth is unlikely to ever make up for the effects of logging, because carbon storage in logged forests will lag carbon storage unlogged forests for decades or centuries. Since the time the resource management plan was written, there is significant new information reinforcing the need to conserve all existing large stores of carbon in mature & old-growth forests in order to keep carbon in forests and out of the atmosphere in order to mitigate climate change. Please review the report on "Forests, Carbon & Global Warming" prepared by Oregon Wild. The report explains how climate change is likely to affect Pacific Northwest forests as well as how forest conservation and restoration (including sensible changes to this project) may help mitigate climate change.[357] And see this related slideshow that helps debunk some of the flawed arguments used by logging advocates: http://www.slideshare.net/dougoh/forest-carbon-climate-myths-presentation/.

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[356] See 2015 Oslo Principles on Global Climate Change Obligations. http://www.osloprinciples.org/.

[357] https://dl.dropboxusercontent.com/u/47741/Oregon%20Wild%20Report%20on%20forests%2C%20carbon%2C%20and%20global%20warming%2C%20ver.%201.4.pdf.

On June 25, 2013, President Obama released his Climate Action Plan which includes forest conservation among the "first pillar"[358] of efforts to reduce emissions, saying: "**Preserving the Role of Forests in Mitigating Climate Change:** *America's forests play a critical role in addressing carbon pollution, removing nearly 12 percent of total U.S. greenhouse gas emissions each year. … Conservation and sustainable management can help to ensure our forests continue to remove carbon from the atmosphere …* " [359] "[A]dvancing efforts to protect our forests" is also mentioned in the 6th U.S. Climate Action Report under the United Nations Framework Convention on Climate Change (UNFCCC). The agency should advance this national climate goal by conserving public forests. Carbon emissions from logging public lands directly conflict with this important national goal and indicate potential significant impacts requiring an EIS.

The Copenhagen Accord recognizes the need to avoid dangerous climate change and the role of forests in climate mitigation. *"…To achieve the ultimate objective of the Convention to stabilize greenhouse gas concentration in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system, we shall, recognizing the scientific view that the increase in global temperature should be below 2 degrees Celsius… We recognize the crucial role of reducing emission from deforestation and forest degradation and the need to enhance removals of greenhouse gas emission by forests and agree on the need to provide positive incentives to such actions*"[360] This likely requires reducing atmospheric CO_2 concentrations below 350 ppm[361] and avoiding logging that would increase atmospheric carbon emissions.

In the DEIS, "key points" described under "climate change" include: "*Carbon storage would increase under all alternatives. … Greenhouse gas emissions associated with BLM-administered lands would increase under all Alternatives…*" This is misleading. It is more useful to provide the public and the decision-maker with information on what distinguishes the alternatives. Which alternative would store the most carbon in the forest? Which alternatives would cause the most GHG emissions? How does carbon storage compare to the baseline of natural forests growing without being logged? These are the key points that need to be disclosed. We applaud BLM for preparing a "No Timber Harvest Reference Analysis" and this should have been reflected in the "key points" to highlight the fact that logging sacrifices carbon storage.

The DEIS (p 136) says "*harvesting removes carbon and shifts stand characteristics, such as mean diameters and heights, in more of the landscape to smaller trees and younger age classes that store less carbon*." This is good, but the EIS analysis needs to clearly disclose the carbon consequences of the various discrete policy choices that the decision-maker is facing. For instance, the EIS needs to disclose that:

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[358] U.S. Dept of State 2013. draft 6th Climate Action Report http://www.state.gov/e/oes/climate/ccreport2014/index.htm (page 12).
[359] http://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf
[360] http://www.climatesciencewatch.org/file-uploads/Copenhagen_Accord.pdf.
[361] Rockström, J., W. Steffen, K. Noone, Å. Persson, F. S. Chapin, III, E. Lambin, T. M. Lenton, M. Scheffer, C. Folke, H. Schellnhuber, B. Nykvist, C. A. De Wit, T. Hughes, S. van der Leeuw, H. Rodhe, S. Sörlin, P. K. Snyder, R. Costanza, U. Svedin, M. Falkenmark, L. Karlberg, R. W. Corell, V. J. Fabry, J. Hansen, B. Walker, D. Liverman, K. Richardson, P. Crutzen, and J. Foley. 2009. Planetary boundaries:exploring the safe operating space for humanity. *Ecology and Society* **14**(2): 32. [online] URL: http://www.ecologyandsociety.org/vol14/iss2/art32/. http://www.stockholmresilience.org/download/18.1fe8f33123572b59ab800012568/pb_longversion_170909.pdf. http://www.ecologyandsociety.org/vol14/iss2/art32/figure6.html.

- Wider stream buffers store more carbon than narrow stream buffers;
- Forest reserves store more carbon that timber management areas;
- Large reserves store more carbon than smaller reserves;
- Reserves with strict limits on logging store more carbon than reserves that allow logging;
- Thinning stores more carbon that regeneration harvest;
- Regeneration harvest with ≥30% retention stores more carbon than regeneration with little of no retention;
- Logging to try to limit carbon emissions from fire will likely emit more carbon from logging than will be prevented via fire control. Law, B. & M.E. Harmon 2011. Forest sector carbon management, measurement and verification, and discussion of policy related to mitigation and adaptation of forests to climate change. Carbon Management 2011 2(1). [362]
- Meeting RA 32 by protecting all forests over 80 years old will store more carbon than meeting RA 32 by conserving forests 150 years and older.

Similarly, wider stream buffers and large, well-protected reserves, will better prepare forests for the extremes of climate change. In most cases, logging will reduce forest resilience, not increase it. The DEIS (p 132) says "*Active management would provide opportunities to implement climate change adaptive strategies*." However, there is strong evidence that unmanaged forests have great capacity for self-correction and self-organization. BLM should look carefully at all the evidence, including competing experts viewpoints before concluding that logging is beneficial. Complex native forests are more resilient to climate change than logged forests and simplified plantations. The IPCC recognizes that –

> *... [R]educing emissions from deforestation and degradation may also yield co-benefits for adaptation by maintaining biodiversity and other ecosystem goods and services, while plantations, if they reduce biological diversity may diminish adaptive capacity to climate change (e.g., (Chum et al., 2011). Primary forests tend to be more resilient to climate change and other human-induced environmental changes than secondary forests and plantations (Thompson et al., 2009).*[363]

BLM should maintain the existing Aquatic Conservation Strategy and its wider riparian buffers because it will help make hydrologic systems and aquatic ecosystems more resilient to climate change by moderating cumulative watershed effects, reducing the extent of the road system, emphasizing maintenance of riparian areas, shade, floodplain processes, recruitment of large wood from both near stream areas and unstable slopes, and connectivity and fish passage.

DEIS (p 133) says "*the potential error in the estimate for any one alternative likely exceeds the amount of variance between the alternatives*." This should be clarified to say that in spite of these uncertainties, confidence the relative effects of alternatives remains strong, i.e., alternatives

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[362] http://terraweb.forestry.oregonstate.edu/pubs/lawharmon2011.pdf;

[363] IPCC AR5, Working Group III, Mitigation of Climate Change, Chapter 11 Agriculture, Forestry and Other Land Use (AFOLU) (Final Draft 2014) pp 46-47.http://report.mitigation2014.org/drafts/final-draft-postplenary/ipcc_wg3_ar5_final-draft_postplenary_chapter11.pdf

with less logging and larger reserves will result in relatively greater carbon store, while alternatives with more logging and small reserves will result in greater GHG emissions.

The DEIS does not explain how BLM arrived at the conclusions presented in Figure 3-24, the pie chart showing that fire emits more carbon than "harvest operations." The DIES does not say what kinds of emissions are include in harvest operations. Is it just the fuel used for machinery and transport? Does it include carbon removed from the forest via logging and slash fires? Does it account of the decay of wood products removed from the forest in current and prior years? Etc.

The "affected environment section" of the climate change section of the DEIS needs to describe the forest carbon cycle (pools and flows), how carbon flows into and out of the forest, the fate of carbon removed via logging, processes that control the net gain/loss of carbon,

The effects analysis needs to disclose the different consequences of carbon emissions in different time periods (e.g., near-term emissions are not compensated by delayed carbon uptake because global climate change and ocean acidification were made worse during the timber that extra carbon was in the atmosphere and future uptake cannot effectively mitigate for that). BLM should incorporate the concept of "carbon debt" and lag time associated with logging related carbon emissions in the near terms, and carbon recapture via forest regrowth over the long-term.

DEIS Figure 3-26 shows that all alternatives will increase carbon emissions but Alt. D will emit much less than the other alternatives. This makes sense based on the fact that Alt D allows more forests to continue growing and storing carbon, but this result requires further explanation in light of the DEIS assertion that carbon emissions are dominated by by wildfire, rather than logging. Does this result imply that forest growth dominates the net carbon balance of BLM forests regardless of wildfire effects, or that Alt D is expected to maintain more forests that are resistant to wildfire and therefore cause less carbon emissions from both logging and fire? If so, this should be made more explicit.

DEIS (p 145) describes a pattern of increased tree mortality related to climate change. The EIS should explain that this is a beneficial system-level adaptation to increasing climate stress. Trees that die free up resources so that surviving trees have a better chance of survival. This is an example of forests' self-correcting, self-organizing behavior common to many complex systems that are far from equilibrium.

DEIS (p 149) says "*analysis of Oregon large fires using data from the Monitoring Trends in Burn Severity site (http://mtbs.gov/index.html) indicates that the proportion of high-severity fire in forests generally has increased by 11 percent since 1984, with much of the increase since 2000.*" This appears to be contradicted in DEIS Appendix D which

> *… examined the MTBS data for any obvious temporal trends in wildfire severity, but did not detect a strong signal (Figure D-6). Over the course of 25 years, there appears to be a slight increase in the percentage of area burned by low and moderate severity wildfire, and a slight decrease in the percent of area burned in high severity wildfire, although these trends are not statistically significant. … While several studies have indicated that high severity fires are increasing across the western United States (Westerling et al.*

2006, Dillon et al. 2011a, Miller et al. 2012), no such trends were apparent in the observed record within the range of the northern spotted owl (Figure D-6).[364]

DEIS (pp 149-150) describes increasing stream temperatures as a result of climate change. The DEIS does not fully disclose the likely consequences on cold-water fish and other temperature-sensitive aquatic organism. For instance, stream temperatures are increasing most during summer when fish are most vulnerable. BLM should attempt to mitigate this by avoiding any shade loss caused by logging, and by reducing other anthropogenic stresses such as sediment from logging and roads and grazing.

DEIS Figure 3-28 shows that climate change seems to be causing an increase precipitation during spring. This is a significant concern for spotted owl nest success, which is inversely related to spring precipitation. DEIS (p 150) has a brief discussion of climate change and spotted owl declines, but the DEIS effects analysis (p 157) needs to consider alternative ways of mitigating the likely effects of climate change, such as by maintaining more suitable habitat which will support a larger owl population that is less vulnerable to stochastic variation and uncertainty caused by climate change and other factors.

DEIS (p 156) says "in the Northwest, warming air temperatures and declining summer base flows are strongly associated with warming stream temperatures" BLM needs to disclose how this trend intersects with the proposed reduction in stream protection and increases sin logging near streams. BLM should maintain wide stream buffers to maintain maximum shade and mitigate for global warming.

DEIS (p 157) says climate change will result in "*changes in disturbance regimes [that] could disfavor species associated with old-growth forests, by shifting more of the landscape into earlier seral stages, altering species compositions to ones less preferred, reducing the extent of large trees and structurally-complex forest, and decreasing patch sizes preferred for different life stages, such as nesting…*" The NWFP assumed that eventually 80% of the reserves would grow old and provide late successional habitat, while at any given time approximately 20% of the reserves might be affected by disturbance. As a result of climate change these proportions are likely to shift toward greater disturbance and more younger forests. BLM should mitigate for this by adopting a final alternative that protects all suitable owl habitat, not just a subset of high quality habitat, and by protecting larger LSRs and riparian reserves so that there is a larger part of the landscape given a chance to grow old and provide complex habitat.

To meet legal requirements including those under the O&C Act related to watersheds and community stability, BLM should adjust the purpose and need for this plan revision to include carbon storage and climate change adaptation. BLM should therefore strive to maintain and increase carbon storage and maintain biodiversity, not just focus on recovery of ESA-listed species. Maintaining biodiversity is an important way to prepare for global climate change, because the diversity of organisms and genes represent the complete range of evolutionary adaptations to past (and near future) climate change.

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[364] Ray Davis et al 2015. RMP Revisions for Western Oregon BLM DEIS. Appendix D – Modeling Wildfires and Fire Severity. http://www.blm.gov/or/plans/rmpswesternoregon/files/draft/RMP_EIS_Volume3_appd.pdf

I. THE FEDERAL LAND POLICY & MANAGEMENT ACT REQUIRES BLM TO TAKE ACTION ON CLIMATE CHANGE

BLM has a duty to prepare a current and up-to-date inventory of public lands and their new and emerging resource values.[365] This requires BLM to carefully inventory all the carbon stored in forests and soils on western Oregon BLM lands and the value of BLM lands to store more carbon if managed appropriately to grow more mature & old-growth forest forests.

BLM must give priority to identifying ACECs where special management is needed to prevent irreparable damage and protect life and safety from safety from natural hazards. This requires BLM to identify all mature & old-growth forest forests as ACECs because they must be conserved in order to avoid and mitigate climate change which is a natural hazard predicted to cause irreparable harm to important natural systems that need protection.

BLM must consider "potential uses of public lands." [366] This requires BLM to consider an alternative that uses BLM lands for carbon storage and climate mitigation, arguably the highest and best use of the highly productive forest lands in western Oregon. The analysis will reveal significant complementary benefits for water quality, quality of life, fish & wildlife habitat, community stability, etc.

FLMPA requires BLM to consider scarcity of values and available alternatives.[367] This requires BLM to recognize that western Oregon BLM lands are capable of growing very high levels of biomass per acre and such places are relatively rare. This also requires BLM to consider and compare the carbon consequences of various alternative management schemes.

Some forests are far better at sequestering carbon than others. And BLM has some great ones — low elevation forests with long growing seasons and mild winters and disturbance regimes that allow longer periods of growth and carbon accumulation. Forests on the westside of the PNW (where BLM's western Oregon holding are located) are twice as productive as forests in other parts of the country. Western Oregon forests can grow 100 cubic feet of wood per acre per year, while forests of the NE, SE, and mid-west generally produce half or less than that.[368] In addition to prodigious growth, westside forests are able to store that carbon for long periods. The "carbon density" of Westside forests exceed that of any forests in North American[369], possibly the world. This means that BLM lands are uniquely suited for sequestering carbon.[370] These highly

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[365] 43 USC § 1711.
[366] 43 USC § 1712.
[367] Id.
[368] Powell, Douglas S.; Faulkner, Joanne L.; Darr, David R.; Zhu, Zhiliang; MacCleery,l Douglas W. 1993. Forest resources of the United States, 1992 Gen. Tech. Rep. RM-234. Fort Collins, CO: U.S. Department of Agriculture, Rocky Mountain Forest and Range Experiment Station. 132 p. + map. [Revised, June 1994]. http://www.fs.fed.us/rm/pubs_rm/rm_gtr234.html
[369] Carbon density is a measure of the carbon in live and dead vegetation plus soil carbon measured on a per-acre basis. The westside of the Pacific Northwest is uniquely suited to growing and storing carbon in forests. See Figure 6 in Ingerson, Ann L. 2007. U.S. Forest Carbon and Climate Change. Washington, D.C.:The Wilderness Society. http://www.wilderness.org/Library/Documents/upload/ForestCarbon-ClimateChange.pdf

[370] See Christine L. Goodale, Michael J. Apps, Richard A. Birdsey, Christopher B. Field, Linda S. Heath, Richard A. Houghton, Jennifer C. Jenkins, Gundolf H. Kohlmaier,

productive forests of the northwest are losing carbon due to short-rotation forestry. From 1990 to 2010 western Oregon and western Washington are expected to lose 97.4 million tons of carbon under business-as-usual forest management.[371] There is a great potential to adopt new forest practices to reverse this trend. In fact, the Northwest Forest Plan reserves are already recognized as a step toward wise management of forest carbon. "Federal forest management policies are already contributing significantly to this goal with the extensive series of forest reserves established in the Northwest Forest Plan. Tens of thousands of acres of cutover federal forest land are being managed for restoration of late-successional forest conditions and, coincidentally, much higher levels of carbon stocks." [372] If BLM reduces the extent of the reserves and reduces protection of the carbon in large trees, and reduces the goals for restoration of previously logged sites, then these recognized carbon storage values will be lost. The EIS must address the impacts of this on climate, ecology, and social systems.

Recent studies show that northern forests are experiencing "A trend toward hotter and drier conditions is likely to exacerbate the effects of fire by increasing the frequency, intensity, and size of burns."[373] Some northern forests are also facing unprecedented mortality from insects, which could cause large-scale changes in boreal forest systems. These changes point to the very real possibility that boreal forests may be entering a positive feedback that shifts the northern forests from net carbon sinks to net carbon sources. This highlights the "scarcity" of forest sites with high potential to store carbon and the dwindling alternatives to storing carbon on BLM lands.

Scientists and policy-makers recognize that forests can play a significant role in mitigating climate change by storing more carbon. The UN says that 35% of the global opportunity to store carbon in forests is outside the tropics. Scientists have estimated that compared to other forest types, temperate conifer forests are likely to be one of the most persistent forest types in the face of climate change.[374] This makes old-growth on BLM land a potentially very rare and valuable reserve in terms of carbon storage.

Compared to other sectors, the forestry sector has a high benefit/cost ratio for carbon mitigation actions. That means that carbon storage in forests is a relatively efficient way to mitigate climate change. BLM must consider this in the EIS.

Werner Kurz, Shirong Liu, Gert-Jan Nabuurs, Sten Nilsson, And Anatoly Z. Shvidenko. 2002. Forest Carbon Sinks In The Northern Hemisphere. Ecological Applications, 12(3), 2002, pp. 891–899q 2002. http://www.whrc.org/resources/published_literature/pdf/GoodaleEcolAppl.02.pdf
("Over 80% of the estimated sink occurred in one-third of the forest area …")

[371] Haynes, Richard W.; Adams, Darius M.; Mills, John R. 1995. The 1993 RPA timber assessment update General Technical Report RM-259. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 66 pp. http://www.treesearch.fs.fed.us/pubs/20058

[372] LAURIE A. WAYBURN, JERRY F. FRANKLIN, JOHN C. GORDON, CLARK S. BINKLEY, DAVID J. MLADENOFF, NORMAN L. CHRISTENSEN, JR. 2007. Forest Carbon in the United States: Opportunities & Options for Private Lands. Pacific Forest Trust. http://www.pacificforest.org/publications/pubpdfs/ForestCarbonReport-07Update.pdf

[373] Jill Sakai. 2007. Wildfire drives carbon levels in northern forests. University of Wisconsin News. Oct. 31, 2007. http://www.news.wisc.edu/14399 *citing* work by Dr. Tom Gower and others.

[374] Staley, TNC Climate Conference 2007.

BLM must consider long-term vs short-term benefits.[375] This requires BLM to recognize that the benefits of logging are very short-term, while the benefits of climate mitigation through conserving and restoring mature & old-growth forests are both short-and long-term.

II. BLM MUST MANAGE FOR COMPLEMENTARY MULTIPLE USES

The O&C Act's mandate to correct market failures and sell timber only at "reasonable prices on a normal market" is an implicit acknowledgement of the multiple use concepts in the Federal Land Policy and Management Act. The O&C Act does not conflict with multiple use or FLPMA because Congress sought to further the public interest by normalizing markets. FLPMA requires that BLM produce appropriate amounts of public goods like watersheds, fish & wildlife, scenery, and scientific values. FLPMA's multiple use mandates require consideration of future generations and harmonious management of the multiple values, without any one use impairing the others.[376] This is accomplished in part by correcting market failures so that appropriate amounts of public goods are produced and prices reflect the full costs of production (including the cost of mitigating climate change and impaired water quality, and the cost of replacing old growth habitat where it has been lost).

III. O&C ACT REQUIRES BLM TO TAKE ACTION ON CLIMATE CHANGE

BLM views the forest as just trees and they view the O&C Act as a simple mandate to cut them down as fast as they grow. This grossly over-simplified view of the forest is inconsistent with the current understanding of forests and inconsistent with the O&C Act itself.

The O&C Act of 1937 provides: *"[T]imberlands … shall be managed … for permanent forest production, and the timber thereon shall be sold, cut, and removed in conformity with the principal of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities … [T]imber from said lands … shall be sold annually, or so much thereof as can be sold at reasonable prices on a normal market."* [377]

> *Forests are not just trees, but part of ecosystems that underpin life, economies and societies. …[A]ll forests provide a wide range of ecosystem services. These services include prevention of soil erosion, maintenance of soil fertility, and fixing carbon from the atmosphere as biomass and soil organic carbon. Forests host a large proportion of terrestrial biodiversity, protect water catchments and moderate climate change. Forests also support local livelihoods, provide fuel, traditional medicines and foods to local communities, and underpin many cultures. The harvesting of forest products is putting severe stress on the world's forests. … {Ecosystem] services have been reduced by the decline in total forest area and by continued forest degradation, especially in production and multipurpose forests … Greater emphasis on conservation of biodiversity may lead*

[375] 43 USC § 1712.
[376] 43 USC § 1702(c).
[377] http://www.blm.gov/or/plans/wopr/files/OCAct.pdf

to increased benefits in terms of resilience, social relations, health, and freedom of choice and action.[378]

The best way to safely store carbon and mitigate climate change to achieve permanent forest production, sustained yield, regular water flow, protect watersheds, and community economic stability is to protect all mature & old-growth forest forests and allow young forests to grow while increasing their diversity through variable density thinning, while maintaining forests that are prone to drought stress below their water-limited carrying capacity through thinning small trees and prescribed fire. This should have been considered as an alternative.

IV. BLM MUST HELP MITIGATE CLIMATE CHANGE TO REGULATE WATER FLOW AND TO PROTECT WATERSHEDS

"*Forest ecosystem services are threatened by increasing human demands. Exploitation of forests has been at the expense of biodiversity and natural regulation of water and climate…* "[379]

Logging mature & old-growth forests will exacerbate climate change and cause altered precipitation patterns, reduced snow pack, and increased evaporative demand which will violate the O&C Act's mandate to regulate water flow and protect watersheds. Logging mature and old-growth forest will tend to make water flow less regular and watersheds less protected from hydrologic extreme hydrologic events. If BLM protects mature & old-growth forest forests and grows more, water flow will be more regular and watersheds will be more protected.

Climate change is expected to increase winter precipitation and more of that precipitation will fall as rain instead of snow. This will increase peak flows in the winter and spring. Peak flows that exceed the natural pattern are harmful to watershed values. Peak flows cause erosion of stream banks and bottoms and cause landslides by undercutting slopes.

The forests and watersheds have had 2 million years to adapt to the climatic swings between glacial and interglacial periods, but now climate change threatens to push the pendulum beyond the normal interglacial into new territory that is warmer than the earth has experienced for millions of years. Both the rate and magnitude of climate change are unprecedented.

Warming will increase evaporative water demand and soil water deficit ,which will decrease late summer stream flow. Low stream flow harms not only fish but also agriculture, communities, and industries that rely on summer water supply.

There has been progressively more information highlighting the hydrologic consequences of climate change:

- The IPCC Second Assessment Report in 1995 predicted that "Warmer temperatures will lead to a more vigorous hydrological cycle; this translates into prospects for more severe

[378] Dent, David. Chapter 3 – Land *in* Global Environment Outlook (GEO4). http://www.unep.org/geo/geo4/report/03_Land.pdf
[379] Dent, David. Chapter 3 – Land *in* Global Environment Outlook (GEO4). http://www.unep.org/geo/geo4/report/03_Land.pdf

droughts and/or floods in some places and less severe droughts and/or floods in other places. … Potential North American climate change impacts include increased winter/spring runoff and decreased summer soil moisture and runoff."[380]

- IPCC's 2001 Third Assessment Report found "It is likely that summer continental drying and associated risk of drought will increase over most mid-latitude continental interiors [leading to] decreased crop yields, increase forest fire risk, decreased water quality/quantity."[381]
- An analysis of water run-off using the climate models in the IPCC Fourth Assessment Report projected a 10-30% decreases in runoff in western North America by the year 2050 "Such changes in sustainable water availability would have considerable regional-scale consequences for economies as well as ecosystems" C. Milly et al. 2005 Global pattern of trends in streamflow and water availability in a changing climate. Nature.
- In summary, "Air temperatures are virtually certain to warm further [and] Warmer air temperatures would probably severely reduce the quantity of water resources." Martin Hoerling and Jon Eischeid. Emerging Issues for Water in the West: 21st Century Drought. Climate Action Panel. 20 Nov 2006. [382]

"*[M]odel results indicate that severe droughts (5% frequency today) will occur about 50% of the time by the 2050…..due primarily to temperature increase".* [383]

Small changes in stream flow can have large impacts on water storage and power generation. *"A 20% reduction in natural runoff would cause mean annual reductions in storage of 60 to 70% reductions in power generation of 60%…"* [384]

V. BLM MUST HELP MITIGATE CLIMATE CHANGE TO STABILIZE COMMUNITIES AND INDUSTRIES

The economic and social impacts of climate change are widely recognized. "Global warming could have impacts right here in the Rogue Valley, boosting the number and size of wildfires, harming salmon and reducing the snowpack people rely on for drinking water and irrigation." [385]

The Oregon Legislature passed a bill in 2007 with the following findings[386]:

> *(3) Global warming poses a serious threat to the economic well-being, public health, natural resources and environment of Oregon.*
> *(4) Oregon relies on snowpack for summer stream flows to provide energy, municipal*

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[380] IPCC. 1995. The Regional Impacts of Climate Change: An Assessment of Vulnerability.
[381] IPCC Third Assessment Report, Climate Change 2001
[382] http://www.resourcesaver.com/ewebeditpro/items/O14F10014.pdf
[383] David Rind, Jim Hansen et al. 1990. Potential Evapotranspiration and the Likelihood of Future Drought. Journal of Geophysical Research.
[384] L. Nash and P. Gleick. The Colorado River Basin and Climate Change: The sensitivity of streamflow & water supply to variations in temperature & precipitation. EPA Report, Policy, Planning and Evaluation 1993.

[385] Vickie Aldous. 2007. Global warming could alter Valley life. Ashland Daily Tidings. October 29, 2007. http://www.dailytidings.com/2007/1029/stories/1029_climate1.php.
[386] Oregon Legislature - House Bill 3543 http://www.leg.state.or.us/07reg/measpdf/hb3500.dir/hb3543.en.pdf

water, watershed health and irrigation. Also, a potential rise in sea levels threatens Oregon's coastal communities. Reduced snowpack, changes in the timing of stream flows, extreme or unusual weather events, rising sea levels, increased occurrences of vector-borne diseases and impacts on forest health could significantly impact the economy, environment and quality of life in Oregon.
(5) Oregon forests play a significant role in sequestering atmospheric carbon, and losing this potential to sequester carbon will have a significant negative effect on the reduction of carbon levels in the atmosphere.
(6) Global warming will have detrimental effects on many of Oregon's largest industries, including agriculture, wine making, tourism, skiing, recreational and commercial fishing, forestry and hydropower generation, and will therefore negatively impact the state's workers, consumers and residents.
(7) There is a need to ... take necessary action to begin reducing greenhouse gas emissions in order to prevent disruption of Oregon's economy and quality of life and to meet Oregon's responsibility to reduce the impacts and the pace of global warming.

Governor Kulongoski's Advisory Group On Global Warming says:

Absent decisive actions across the globe of the sort proposed in this report, the warming already underway is expected to lead to changes in the earth's physical and biological systems that would be extremely adverse to human beings, their communities, economies and cultures. ... The impacts of such changes on Oregon citizens, businesses and environmental values are likely to be extensive and destructive." The Governor of Oregon is being urged by a broad cross-section of advisors to think of the economic costs of addressing climate change as "investments" that result in net gains relative to the economic costs of failing to make those investments, or the costs of addressing climate change can be thought of as buying an insurance policy that reduces future expenses related to coping with climate change. Forest conservation is among the committee's recommendations for addressing the climate problem: "The Advisory Group recommends actions to increase the amount of carbon that can be captured and fixed in new or restored forest and field growth and in the soil beneath. ... While we will continue to work the lands that must feed, clothe and shelter us, there are still land management choices that will restore much of this natural sequestration capability.[387]

The West Coast Governors' Global Warming Initiative Report says:

The world's scientists are clear: Global warming is happening, and the world must act now to reduce greenhouse gas emissions. Global warming will have serious adverse consequences on the economy, health and environment of the West Coast states. While these consequences are not entirely predictable, the effects of global warming are already evident in the form of higher temperatures, reduced snow pack, insect infestation and increased fire danger in our forests, and rising sea levels on our ocean shores. These

[387] Oregon Strategy for Greenhouse Gas Reductions - Governor's Advisory Group On Global Warming. State of Oregon, December 2004. http://www.oregon.gov/ENERGY/GBLWRM/docs/GWReport-Final.pdf

impacts will grow significantly in coming years if we do nothing to reduce greenhouse gas emissions.

VI. THE COSTS AND IMPACTS OF INACTION

In addition to the direct economic benefits of investing in low-carbon energy sources, acting against global warming hedges against the risks posed by global warming itself. The economic costs of unchecked global warming are projected to be immense.

Sea level rise, coupled with more frequent and severe storm events, would threaten beaches, ports, low-lying towns and cities, and other coastal resources, causing severe disruption for people and ecosystems. The increased frequency and severity of storm surges may be more significant for low-lying areas than sea level rise alone. Increased storms and wave height could lead to saturated ground, increased erosion, and more slope failure in the coastal bluffs and hills.

A reduction in the mountain snowpack will exacerbate already tight water supplies, restrict agricultural production, and alter the pattern of power generation. For example, in California, the $30 billion agriculture industry is one of the sectors most vulnerable to changes in climate and water supply.

With an increased proportion of winter precipitation falling as rain, winter flooding is more likely. Ski areas at lower elevations will likely disappear. Scenarios of future climate change in the Northwest from the University of Washington Climate Impacts Group show a snow pack decline by 2090 that could reach 72 percent below the base period of 1960 to 1990.4

Energy generation, salmon recovery, and infrastructure operations, including roads, bridges, and dams, are likely to be directly affected by climate change impacts, according to the Climate Impacts Group. Many of these changes may be felt within 20 years. (See Appendix D.)

Forest fires, smog, and extreme weather events, along with the attendant costs of fighting fires and protecting public health, will worsen. There have been high fluctuations in wet-dry climate cycles for the last 30 years in the Northwest. Climate change may increase the annual and decadal variability of precipitation. Climate variability, far more than fire suppression, has led to the sudden rise and severity of wildfires in recent years. In fact, climate variability is the primary determinant of fire occurrence, location, and timing.[388]

Logging that exacerbates climate change will violate the O&C Act's mandate to foster stability of industries and communities in other ways.

- Climate change will likely lead to social unrest and economic upheaval at a global scale that will reverberate at a local level in western Oregon. Extreme weather events and rising sea levels will displace millions of people who will seek refuge in new lands. Our borders are only marginally effective in controlling economic refugees from the south today. This could become must worse in the future. "Climate change is the largest environmental change expected this century. It is likely to intensify droughts, storms and floods, which will undoubtedly lead to environmental migrations and potential conflicts in the areas migrated to. … People facing environmental disasters have no choice but to leave the affected area.

[388] West Coast Governors' Global Warming Initiative; Staff Recommendations to the Governors; November, 2004. http://www.oregon.gov/ENERGY/GBLWRM/docs/WCGGWINov04Report.pdf

The larger the migration and the shorter the period over which it occurs, the harder it is to absorb the migrants, raising the likelihood of conflict. For instance, migrants clash over jobs, resources and way of life, and violent interactions such as theft, beating, armed scuffles, seizure of resources and property, murders and insurgencies are likely." Springer (2007, November 28)[389]

- Climate change will alter growing conditions and displace agricultural and forest industries. Climate change will increase forest disturbance and impair seedling establishment and harm the timber industry.
- Warming is expected to lead to denser vegetation, higher fuel loads, as well as more frequent and intense droughts which is a recipe for more wildfire.[390] Increasing wildland fires will threaten the stability homes and communities located within or adjacent to fuel-rich wildlands. Climate change is expected to increase the length of fire seasons. Communities will have to spend more money preparing for and fighting fires. Wildfire in the urban interface is disruptive to communities and climate change will increase fire hazard in the community zone. U.S. Forest Service Chief Gail Kimbell said that warming globe and urban sprawl are making fires increasingly dangerous. "Fires are burning hotter and bigger, becoming more damaging and dangerous to people and to property," she said. "Each year the fire season comes earlier and lasts longer." Nation's Forest Chief warns of 'hotter and bigger' fires[391], BLM must store more carbon in mature & old-growth forest forests in order to reduce this hazard to communities and industries.
- Climate change will increase competition for limited water resources, which will adversely impact community and economic stability in western Oregon. Increasing frequency and duration of droughts caused by climate change will limit water supply for electricity generation, as well as municipal, industrial, and agricultural uses causing a destabilizing influence on communities and industries that rely on snow, water, energy, and a stable climate. Reduced snow pack will destabilize the agricultural industry, the winter recreation industry, the reservoir recreation industry, and municipal and industrial water supply. "Human well-being and ecosystem health in many places are being seriously affected by changes in the global water cycle, caused largely by human pressures. … The warming of the ocean, in particular its surface waters, and the feedback of heat to the atmosphere are changing rainfall patterns, affecting the availability of freshwater and food security, and health. Due to the ocean's great heat storage capacity and slow circulation, the consequences of its warming for human well-being will be widespread." [392] "The 2000 report by the Global Water Partnership calls upon the international community to work towards 'Water Security'

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[389] Climate Change Likely To Result In Eco-migration: What Can Be Done?. ScienceDaily. Retrieved November 29, 2007, from http://www.sciencedaily.com- /releases/2007/11/071126134703.htm *citing* Reuveny R (2007). Ecomigration and violent conflict: case studies and public policy implications. Human Ecology (DOI 10.1007/s10745-007-9142-5)

[390] Joint Fire Science Program. The Fire-Climate Connection. Fire Science Digest Issue 1, October 2007. http://www.firescience.gov/Digest/Fire_Science_Digest_1.pdf

[391] Thursday, October 25, 2007. By Erik Robinson, Columbian staff writer. http://www.columbian.com/news/localNews/2007/10/10252007_Nations-forest-chief-warns-of-hotter-and-bigger-fires.cfm

[392] Russell Arthurton, Sabrina Barker, Walter Rast, and Michael Huber. Chapter 4 – Water *in* Global Environment Outlook (GEO4). http://www.unep.org/geo/geo4/report/04_Water.pdf

as an overarching goal at all levels from local through to global."[393] This will require urgent action to avoid and mitigate climate change.

- The agricultural sector is particularly vulnerable to water supply constraints caused by climate change. For instance, "In most areas of the Willamette Basin, surface water supplies have been fully allocated — no further water is available for new surface water rights and in dry years more junior water rights are not satisfied."[394] Climate change will only make this situation worse. Warming is expected to raise temperatures, increase evaporative demand, reduce water stored as snowpack, and reduce water availability during summer periods when water supplies are already in short supply and over appropriated. Summers are expected to get warmer and dryer. The irrigation season in western Oregon overlaps with periods of expected increasing water scarcity.[395] Water availability is also a major factor in the value of farm land, so climate change is likely to decrease land values where water supply is limited.[396] BLM should analyze the expected impact of climate change on agricultural water supply[397] and use that information to inform its decision whether it is wise to make climate change worse by logging more mature and old-growth forest.
- Climate change will alter the incidence of diseases affecting humans, crops, and forests potentially impacting community health and stability.

Consider the following maps showing the examples of watersheds that are expected to suffer from low summer streamflows (even without considering climate warming).[398] These areas are likely to become even more water stressed under a warmer climate. What happens to the farmers, community water supplies, and fish if BLM does not stop logging mature and old-growth forests?

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[393] Motoyuki Suzuki. Water in Our Future, Chapter 11, Global Water Crisis. http://202.253.138.71/ENV/Files/Global%20Water%20Crisis%20Suzuki.doc

[394] J. Baker J. Van Sickle D. White. Water Sources and Allocation. *in* Willamette River Basin Atlas 2nd Edition. Chapter 3 - Water Resources. http://www.fsl.orst.edu/pnwerc/wrb/Atlas_web_compressed/3.Water_Resources/3h.water_sources_alloc_web.pdf

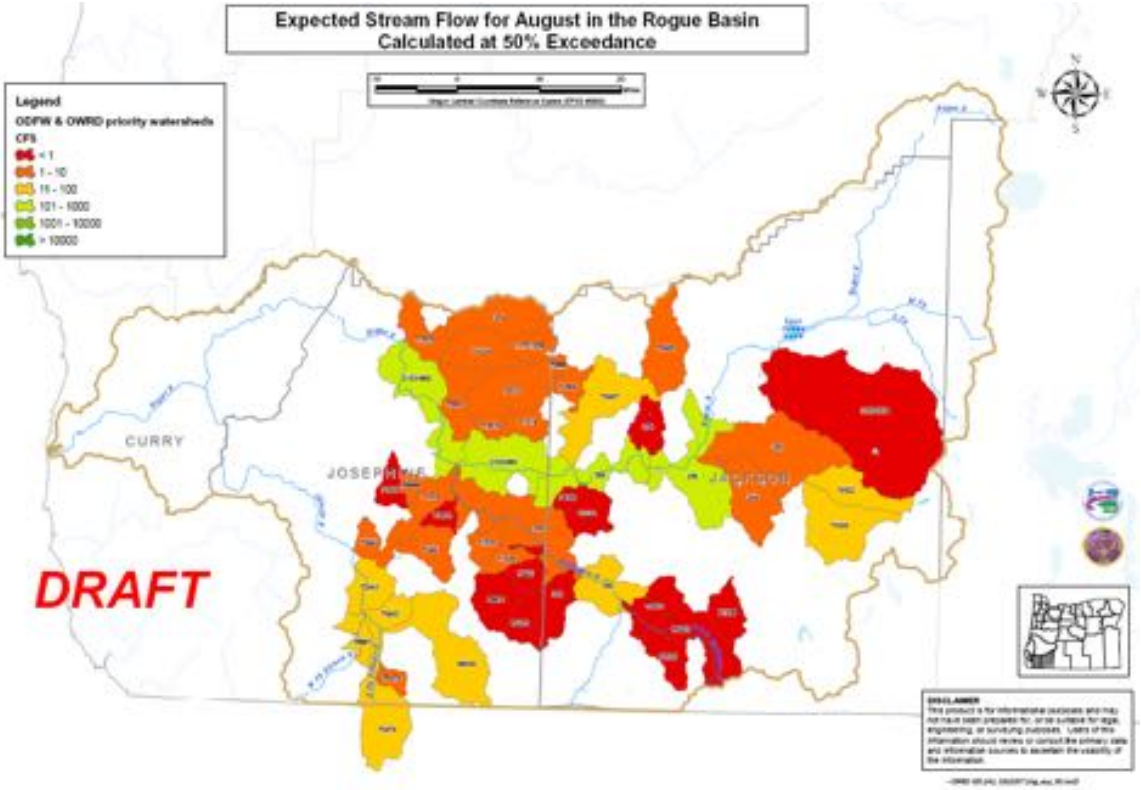
[395] Richard M. Cooper, PE. Determining Surface Water Availability in Oregon. State of Oregon Water Resources Department. Open File Report SW 02-002. Appendix E http://www1.wrd.state.or.us/pdfs/reports/SW02-002.pdf

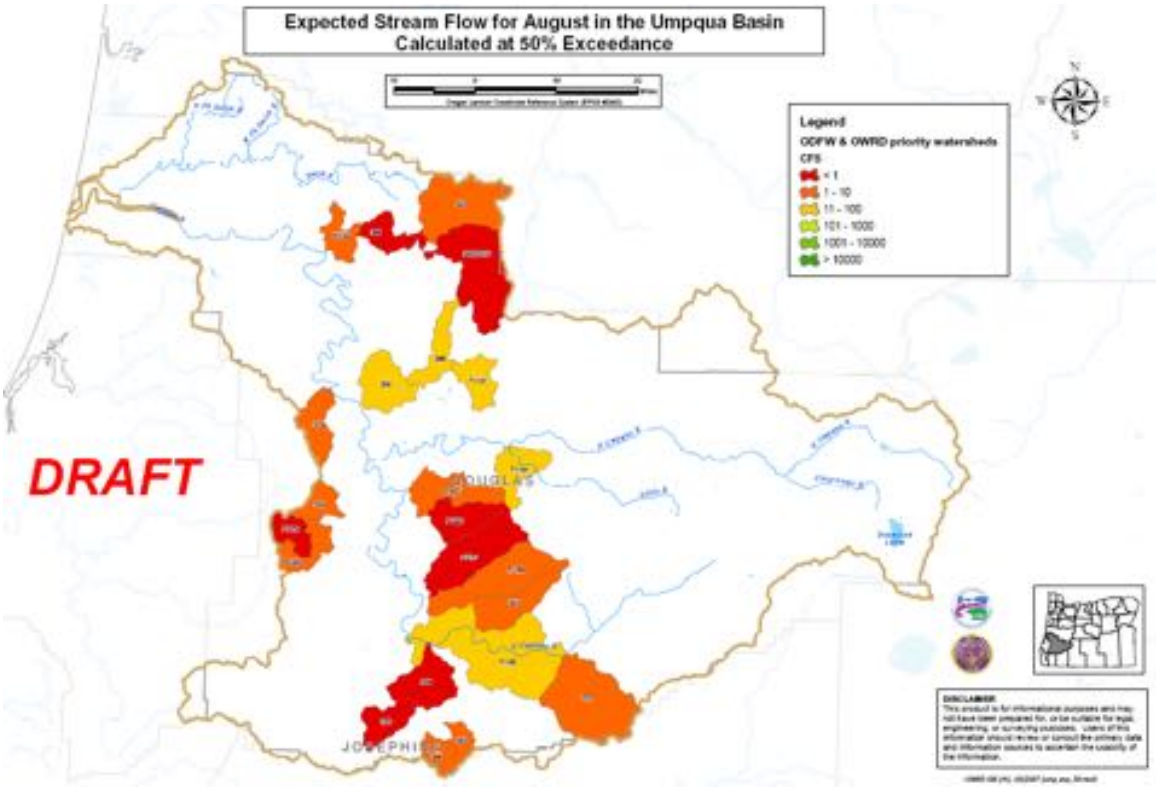
[396] Wolfram Schlenker, W. Michael Hanemann, and Anthony C. Fisher. 2005. Water Availability, Degree Days, and the Potential Impact of Climate Change on Irrigated Agriculture in California. April 2005. http://are.berkeley.edu/~fisher/ClimateChange.pdf

[397] Here are some tools that may be useful to conduct this analysis:

- Wolfram Schlenker, W. Michael Hanemann, and Anthony C. Fisher. 2005. Water Availability, Degree Days, and the Potential Impact of Climate Change on Irrigated Agriculture in California. April 2005. http://are.berkeley.edu/~fisher/ClimateChange.pdf,
- Guobin Fu 2005. Modeling Water Availability And Its Response To Climatic Change For The Spokane River Watershed. PhD Dissertation Washington State University. December 2005. https://research.wsulibs.wsu.edu:8443/dspace/bitstream/2376/413/1/g_fu_120605.pdf

[398] Oregon Water Resources Department. 2007. Strategic Measurement Plan Approved by Water Resources Commission 2000-2001. Information Provided by OWRD March 8, 2007 http://www1.wrd.state.or.us/pdfs/reports/Priority_WAB_Report03-2007.pdf


Expected Stream Flow for August in the Rogue Basin
Calculated at 50% Exceedance
Legend
ODFW & OWRD priority watersheds
CFS
< 1
1 - 10
11 - 100
101 - 1000
1001 - 10000
> 10000
CURRY
JOSEPHINE
JACKSON
DRAFT


Expected Stream Flow for August in the Umpqua Basin
Calculated at 50% Exceedance
Legend
ODFW & OWRD priority watersheds
CFS
< 1
1 - 10
11 - 100
101 - 1000
1001 - 10000
> 10000
DRAFT
DOUGLAS
JOSEPHINE

Maps showing "summer stream flow restoration priorities" established by the Oregon Water Resources Department for all watersheds in Oregon are available here: http://nrimp.dfw.state.or.us/nrimp/default.aspx?p=297. BLM must disclose that climate change that is exacerbated by continued logging of mature & old-growth forests will spread and intensify water shortages in these watersheds and destabilize communities and industries that rely on plentiful clean water.

The IPCC 4th Assessment Report Synthesis described a variety of highly relevant social and economic impacts from climate change. See IPCC Table SPM.3 below which shows just a sample of the relevant impacts. These impacts would clearly tend to destabilize local communities and industries in violation of the O&C Act and the EIS must disclose that continued loss of older forests on BLM lands will exacerbate climate change and contribute to causing these destabilizing impacts.

Table SPM.3. Examples of possible impacts of climate change due to changes in extreme weather and climate events, based on projections to the mid- to late 21st century. These do not take into account any changes or developments in adaptive capacity. The likelihood estimates in column two relate to the phenomena listed in column one. (Table 3.2)

Phenomenon[a] and direction of trend	Likelihood of future trends based on projections for 21st century using SRES scenarios	Examples of major projected impacts by sector			
		Agriculture, forestry and ecosystems	Water resources	Human health	Industry, settlement and society
Over most land areas, warmer and fewer cold days and nights, warmer and more frequent hot days and nights	*Virtually certain*[b]	Increased yields in colder environments; decreased yields in warmer environments; increased insect outbreaks	Effects on water resources relying on snowmelt; effects on some water supplies	Reduced human mortality from decreased cold exposure	Reduced energy demand for heating; increased demand for cooling; declining air quality in cities; reduced disruption to transport due to snow, ice; effects on winter tourism
Warm spells/heat waves. Frequency increases over most land areas	*Very likely*	Reduced yields in warmer regions due to heat stress; increased danger of wildfire	Increased water demand; water quality problems, e.g. algal blooms	Increased risk of heat-related mortality, especially for the elderly, chronically sick, very young and socially isolated	Reduction in quality of life for people in warm areas without appropriate housing; impacts on the elderly, very young and poor
Heavy precipitation events. Frequency increases over most areas	*Very likely*	Damage to crops; soil erosion, inability to cultivate land due to waterlogging of soils	Adverse effects on quality of surface and groundwater; contamination of water supply; water scarcity may be relieved	Increased risk of deaths, injuries and infectious, respiratory and skin diseases	Disruption of settlements, commerce, transport and societies due to flooding; pressures on urban and rural infrastructures; loss of property
Area affected by drought increases	*Likely*	Land degradation; lower yields/crop damage and failure; increased livestock deaths; increased risk of wildfire	More widespread water stress	Increased risk of food and water shortage; increased risk of malnutrition; increased risk of water-and food-borne diseases	Water shortage for settlements, industry and societies; reduced hydropower generation potentials; potential for population migration
Intense tropical cyclone activity increases	*Likely*	Damage to crops; windthrow (uprooting) of trees; damage to coral reefs	Power outages causing disruption of public water supply	Increased risk of deaths, injuries, water- and food-borne diseases; post-traumatic stress disorders	Disruption by flood and high winds; withdrawal of risk coverage in vulnerable areas by private insurers, potential for population migrations, loss of property
Increased incidence of extreme high sea level (excludes tsunamis)[c]	*Likely*[d]	Salinisation of irrigation water, estuaries and freshwater systems	Decreased freshwater availability due to saltwater intrusion	Increased risk of deaths and injuries by drowning in floods; migration-related health effects	Costs of coastal protection versus costs of land-use relocation; potential for movement of populations and infrastructure; also see tropical cyclones above

Notes:

a) See WGI Table 3.7 for further details regarding definitions.

b) Warming of the most extreme days and nights each year.

c) Extreme high sea level depends on average sea level and on regional weather systems. It is defined as the highest 1% of hourly values of observed sea level at a station for a given reference period.

d) In all scenarios, the projected global average sea level at 2100 is higher than in the reference period. The effect of changes in regional weather systems on sea level extremes has not been assessed.

Table SPM.3 IPCC 2007. 4th Assessment Report Synthesis. [399]

[399] http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf

The uncertain effects of climate change is not a valid excuse for inaction because: (a) uncertainty itself has a cost, making it more difficult and expensive to plan for the future and make rational investments. For instance, the cost of insurance will likely increase; and (b) change itself has adverse impacts; in many cases the likelihood of change is fairly certain. it is only the direction and/or magnitude of change that is uncertain.

VII. O&C ACT – BLM MUST HELP MITIGATE CLIMATE CHANGE TO ENSURE PERMANENT FOREST PRODUCTION AND SUSTAINED YIELD

Logging that exacerbates climate change will cause increases in insects, fire, possibly wind, and will make some marginal sites potentially incapable of maintaining permanent forest cover thereby violating the O&C Act's requirement to maintain permanent forest production.

The Northwest Forest Plan, 10-Year Monitoring Program Synthesis Report (Haynes 2006) says "[*C]limate change effects within the Plan area are most likely to be at lower elevations, in drier provinces at ecotones between forest and nonforest areas. Many of these effects would be manifest as increases in disturbance frequency and severity of fires, wind, disease, and insect outbreaks*."[400] Because BLM's western Oregon forest lands are relatively low-elevation and include eco-tones between forest and non-forest habitats, Haynes' summary descriptions of climate change impacts have direct relevance to BLM's legal obligations under the O&C Act. Even small changes in BLM's ability to maintain forest cover at the margins of ecotones, implicates BLM's obligation to maintain "permanent forest production."

BLM must take seriously the O&C Act mandate to maintain permanent forest production. Marginal sites that are currently on the biological edge between forest and other vegetation types are particularly vulnerable to climate change. Increased disturbance and increased drought stress will push some sites over the edge from forest to shrub or grassland.

Scientists predict that seedling establishment will become more difficult under a warmer climate. After fire (and logging) some sites will simply not be able to re-establish forest cover. To the extent that BLM continues to log mature and old-growth forests they will be exacerbating climate change and contributing to the root cause of the forest establishment problem thus violating the "permanent forest production" mandate of the O&C Act.

Well-established forests are generally more resilient to drought and disturbance than young forests. Clearcutting reduces fire resiliency, which sets the stage for forest establishment problems described above. BLM must not conduct activities that increase the risk that the site will be unable to re-establish forest cover in the future. In simple terms, clearcutting and climate change are incompatible because it is uncertain that forest can be re-established after any loss of forest cover. Existing forests have a much better chance of maintaining permanent forest production than non-forested sites.

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[400] Haynes, Richard W.; Bormann, Bernard T.; Lee, Danny C.; Martin, Jon R., tech. eds. 2006. Northwest Forest Plan—the first 10 years (1994-2003): synthesis of monitoring and research results. Gen. Tech. Rep. PNW-GTR-651. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 292 p. http://www.fs.fed.us/pnw/publications/gtr651/

After tracking 21,000 trees over 22 years USGS researchers found - "*Mortality rates increased in both of two dominant taxonomic groups (Abies and Pinus) and in different forest types (different elevational zones). The increase in overall mortality rate resulted from an increase in tree deaths attributed to stress and biotic causes, and coincided with a temperature-driven increase in an index of drought. Our findings suggest that these forests (and by implication, other water-limited forests) may be sensitive to temperature-driven drought stress, and may be poised for die-back if future climates continue to feature rising temperatures without compensating increases in precipitation.*"[401] Apparent climatically induced increase of mortality rates in a temperate forest.[402] "*This study is important because ... modeling studies suggest that, over a period of decades, even small changes in mortality rates can profoundly change a forest*," said USGS scientist Dr. Nate Stephenson, the study coauthor.[403] Even with no discernible trend in precipitation levels, increasing temperatures will increase evaporative demand and increase annual water deficit, which leads to stress, mortality, and reduced tree establishment. This study showed a very close correlation between average annual rate of tree mortality in undisturbed old forests and the three-year running average of the water deficit index.

VIII. O&C ACT – BLM MUST HELP MITIGATE CLIMATE CHANGE TO ACHIEVE "REASONABLE PRICES ON A NORMAL MARKET" FOR ITS TIMBER SALES

The O&C Act requires sale of timber at reasonable prices in a reasonable market. BLM cannot argue that O&C Act requires them to cut and sell trees in today's market because doing so would be adverse to the other goals of the O&C Act (permanent forest production, regulate water flow, protect watersheds, and community economic stability). The way the O&C Act is structured, BLM may only sell timber sales if they take steps to correct market failures by among other things internalizing market externalities. Unfortunately, the market has many imperfections that remain unaddressed.

Due to various economic externalities, prices are not reasonable and markets are not normal. A normal market requires that all costs and benefits involved in the transaction are internal to the buyer and seller. If costs of the transaction are externalized and born by someone other than the buyer and seller (such as CO_2 emissions and water pollution that are borne by the public), then the price will not reflect the full costs of production and consequently the price will be artificially low. Prices are supposed to reflect all costs and benefits because we rely on prices to send accurate signals to the market about rational investments in capacity and how much of any given product to produce or consume relative to substitutes.

Since the price of wood products derived from mature & old-growth forests is artificially low, then investors are receiving bad signals form the market and are maintaining excess capacity which produces an irrationally high level of wood products from mature & old-growth forests relative to market substitutes such as wood products from thinned young stands. In other words, externalities lead to market failure, unreasonably low prices, and abnormal markets. This is elementary college economics.

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[401] Van Mantgem, P.J., and N.L. Stephenson. 2007.
[402] Ecology Letters 10:909–916.
[403] http://www.usgs.gov/newsroom/article.asp?ID=1716

The UK's Stern Report said *"When people don't pay for the consequences of their actions we have market failure. [Climate change] is the greatest market failure the world has seen*."[404] The Stern Report states, "*human-induced climate change is at its most basic level an externality. Those who produce greenhouse-gas emissions are bringing about climate change, thereby imposing costs on the world and on future generations, but they do not face directly, neither via markets nor in other ways, the full consequences of the costs of their actions. ... [GHG] emitters do not have to compensate those who lose out because of climate change. In this sense, human-induced climate change is an externality, one that is not 'corrected' through any institution or market, unless policy intervenes*."[405] Stern warns that the externalities of climate change are unique because the consequences of climate change are long-term and potentially irreversible.

Other externalities that contribute to market failure and unreasonably low prices for large logs include: degraded water quality, loss of wildlife habitat, loss of ecosystem services like pollination, nutrient cycling, etc. The economic costs of addressing climate change due to the release of carbon caused by logging mature & old-growth forests are not reflected in the prices of BLM timber sales, and the costs of addressing the climate change caused by such logging are not born by the buyers and sellers of those logs but rather they are born by the public at large and by other industries that are harmed by climate change. *"[Climate change] is the greatest and widest-ranging market failure ever seen. ... policy must promote sound market signals, overcome market failures and have equity and risk mitigation at its core."*[406]

The ecosystem services provided by BLM's western Oregon forest lands are "public goods" that present another economic problem that leads to unreasonable prices and abnormal markets for BLM timber sales. Water quality, livable climate, and wildlife habitat are public goods which have undisputed value to people and communities, but because no one can be excluded from enjoying those resources when they fail to pay, the market fails to provide investors with incentives to produce rational and necessary quantities of those services. As a result the market provides too little of those ecosystem services.

The climate is a public good: those who fail to pay for it cannot be excluded from enjoying its benefits and one person's enjoyment of the climate does not diminish the capacity of others to enjoy it too. Markets do not automatically provide the right type and quantity of public goods, because in the absence of public policy there are limited or no returns to private investors for doing so: in this case, markets for relevant goods and services (energy, land use, innovation, etc) do not reflect the consequences of different consumption and investment choices for the climate. Thus, climate change is an example of market failure involving externalities and public goods.

> *... The impacts [of climate change] are likely to have a significant effect on the global economy if action is not taken to prevent climate change, so the analysis has to consider*

[404] http://www.hm-treasury.gov.uk/media/A/8/stern_speakingnotes.pdf
[405] Stern Report, Chapter 2. http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm
[406] Stern Report http://www.hm-treasury.gov.uk/media/4/3/Executive_Summary.pdf

potentially non-marginal changes to societies, not merely small changes amenable to ordinary project appraisal.[407]

The total social and economic return on carbon storage in mature & old-growth forests is higher than the total social and economic return on logging those forests, but the abnormal market does not reflect this reality. BLM's plans to increase logging of older forest represents rational behavior only from the perspective of the internal returns to BLM and the timber industry, but BLM is not behaving rationally when one considers total social welfare. In a normal market the interests of the timber industry, the public and the BLM would converge. The market failures described above (externalities and public goods) cause the interests of the public and the BLM to diverge. The O&C Act requires BLM to intervene to correct market failures and sell timber only when the market is normalized, when prices are reasonable, and when the market sends accurate price signals that further the public interest.

The IPCC 4th AR Synthesis finds that "A wide array of tools exist, or will soon be available, to adapt to climate change and reduce its potential effects. One is to put a price on carbon emissions." This is another means of internalizing externalities, normalizing markets, and making prices reasonable.

IX. ESA – BLM MUST HELP MITIGATE CLIMATE CHANGE TO CONSERVE LISTED SPECIES

Climate change is a threat to listed species because all the cascading effects of warming: drought, peak flows, low flows, fire, insects, disease, etc. will alter the quality and quantity of habitat, predator prey interactions, plant/pollinator relations, plant/herbivore interactions, etc. The stress of these cascading impacts is added to the existing stresses that lead each species to be listed. The cumulative impacts will be significant and must be fully disclosed and considered in the FEIS.

The Marbled Murrelet Recovery Plan recommends conserving stands over 80 years old because climate change may increase forest disturbance placing habitat at risk and because it may not be possible to replicate suitable habitat for the murrelet under the climate of the future.

Oregon Wild and others raised several issues during scoping related to the effect of climate change on spotted owls:

Spotted Owl new information includes the potential effect of climate change on regional vegetation patterns; **Implications**: Under a new climate regime, we may not be able to regrow new owl habitat in the reserves as assumed in the NW Forest Plan. Existing old forests are relatively resilient to climate change. It is risky to be conducting regeneration harvest and expect to be able grow new owl habitat in the reserves under an uncertain climate regime.

The FWS 5- Year Review of the Status of the Northern Spotted Owl says:

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[407] Stern Report, Chapter 2. http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm

The Northwest Forest Plan was adopted in 1994, and significantly altered management of Federal lands. The substantial increase in reserved areas and associated reduced harvest (approximately 1 percent per year to 0.24 percent per year) has substantially reduced this threat to northern spotted owls. However, the plan allows some loss of habitat and assumed some unspecified level of continued decline in northern spotted owls. The SEI panel noted that many, but not all of the scientific building-blocks of the Northwest Forest Plan have been confirmed or validated in the decade since adoption, though one major limitation appears to be the inability of a reserve strategy to deal with invasive species. Reserves provide no protection against viruses, fungi or invasive owls. ***Climate change is an additional threat to northern spotted owls that was not explicitly addressed in the Northwest Forest Plan*** *and, more generally, is not readily addressed by a reserve-based conservation strategy. Neither of these issues reduces the important contribution of the Northwest Forest Plan to northern spotted owl conservation"*[408]

Jerry Franklin's summarized the "findings" of the Northern Spotted Owl Status Review scientific review panel as follows:

... in view of current uncertainties, such as the eventual outcome of the Spotted Owl/Barred Owl competition, West Nile Virus, and Sudden Oak Death, and whatever else comes along -- such as global change and other kinds of introductions -- existing suitable habitat could be important to the persistence of the Northern Spotted Owl. [repeated with emphasis] Existing suitable habitat could be important to the persistence of the Northern Spotted Owl, i.e., risk to Northern Spotted Owl may increase if additional suitable habitat is removed. It is not clear where the Spotted Owl may find the refuge or refuges from new threats within existing suitable habitat. Barred Owl intrusions do not negate the need for structurally complex forest habitat to sustain Northern Spotted Owl based on existing knowledge.[409]

X. ESA – BLM MUST HELP MITIGATE CLIMATE CHANGE TO TAKE STEPS TO AVOID FUTURE LISTINGS

Scientists predict that a large fraction of species are potentially imperiled by climate change. BLM must consider not only the species within western Oregon, but those all over the world that could be adversely impacted by climate change. The IPCC's 4th Assessment Report synthesis says that "Climate change is likely to lead to some irreversible impacts. There is medium confidence that approximately 20- 30% of species assessed so far are likely to be at increased risk of extinction if increases in global average warming exceed 1.5-2.5oC (relative to 1980-1999). As global average temperature increase exceeds about 3.5oC, model projections suggest significant extinctions (40-70% of species assessed) around the globe. {3.4}"[410]

Climate change may even threaten the survival of many species. Detailed research into the possibility of species extinctions due to climate change, published in the respected American

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[408] FWS Status Review p 43 [http://pacific.fws.gov/ecoservices/endangered/recovery/pdf/NSO_5-yr_Summary.pdf].

[409] U.S. Fish & Wildlife Service Scientific Review Panel for the Northern Spotted Owl. June 22, 2004 Public Hearing. Washington State University, Vancouver campus. Transcript of proceedings at 121. http://www.sei.org/owl/meetings/minutes/june-meeting-transcripts.pdf

[410] IPCC 2007. 4th Assessment Report Synthesis. http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf

journal Nature in 2004, used climatic modelling to examine possible impacts on a total of 1,103 terrestrial plant and animal species found in many different regions of the world.

Precise predictions could not be made, since the climatic models contain many uncertain factors, but the resultant scenarios nevertheless indicated that global warming would have clear impacts on biodiversity. The more temperatures rise, the more species will be driven into extinction. Some species may become extinct due to the disappearance of their natural habitats, while others could vanish because they are unable to move rapidly enough into new regions where conditions would still meet their requirements.

The research results also indicated that 15– 21% of the species endangered by climate change could be saved if we are able to limit the extent and impacts of climate change through rapid reductions in greenhouse gas emissions combined with improvements in the sequestration of carbon.

The more average global temperatures rise, the more species will be threatened with extinction.[411]

[411] Thomas, C.D., et al. 2004

Rise in average global temperature by 2050	Proportion of the studied 1,103 species facing extinction	
	mean value	range values
0,8– 1,7°C	18%	9– 31%
1,8– 2,0°C	24%	15– 37%
>2,0°C	35%	21– 52%

[412]

XI. CLEAN AIR ACT — BLM MUST PREVENT AND CONTROL CO_2 AIR POLLUTION.

Logging mature and old-growth forests causes the emission of CO_2 pollution to the atmosphere. The Clean Air Act supersedes the O&C Act and requires BLM to control CO2 emissions through on-site carbon storage and management. Since this RMP Revision is a long-term plan, BLM should anticipate changes in water pollution regulations. DEQ is currently taking public comment on reporting requirements for GHG emissions. 42 USC § 7402(b) requires all federal agencies to use their authorities to further the goals of the Clean Air Act. Sections 7401(b)(1) and 7470(1) set forth clear goals to protect the public welfare by limiting air pollution such as CO_2.

XII. CLEAN WATER ACT — BLM MUST PREVENT AND CONTROL CO_2 WATER POLLUTION.

Logging mature and old-growth forests causes the emission of CO_2 pollution to the atmosphere with is ultimately absorbed by the ocean where it is converted to carbonic acid. Slight alterations of the pH of the ocean alters mineralization processes like calcification which can have serious adverse consequences on marine ecosystems. Since this RMP Revision is a long-term plan, BLM should anticipate changes in water pollution regulations.

[412] Finnish Environment Institute. 2005. The impacts of climate change on biodiversity. 9/21/2005 (Updated).

http://www.ymparisto.fi/default.asp?node=17418&lan=en#a3 *citing* Thomas, C.D. et al. 2004. Extinction risk from climate change. Nature 427, p.145-148. http://www.ymparisto.fi/download.asp?contentid=32647&lan=fi

In August 2007 the Center for Biological Diversity officially requested that the ocean waters off Oregon be declared impaired under the Clean Water Act due to ocean acidification caused by the absorption of human-produced carbon dioxide. Listing a water body as "impaired" allows states to limit the discharge of pollutants that are contributing to impairment.

The atmosphere and ocean freely exchange carbon dioxide, and as atmospheric levels of carbon dioxide increase, so does the absorption of carbon dioxide by the ocean. The ocean takes up about 22 million tons of carbon dioxide each day and has absorbed about half of the carbon dioxide released into the atmosphere by human activities. This excess carbon dioxide changes the chemistry of seawater, making it more acidic: Ocean acidity, measured in pH, has already changed 0.11 pH on average due to human-generated carbon dioxide since preindustrial times — a significant, approximately 30-percent rise in acidity. If current emissions trajectories continue, an additional change of 0.5 units is predicted by the end of the century. These changes will be irreversible on human timescales.

Already, ocean acidification is damaging surface waters and having an impact on marine ecosystems. It makes unavailable the compounds necessary for marine organisms to build shells and skeletons, thus impeding the growth of plankton, starfish, urchins, oysters and other shelled organisms as well as coral. Due to ocean acidification, coral reefs will begin to erode more quickly than they can rebuild. And these changes are occurring so quickly that marine life will have great difficulty adapting to changing seawater chemistry.[413]

XIII. LOGGING TO REDUCE FIRE-INDUCED GREENHOUSE GAS EMISSIONS WILL BACKFIRE

The DEIS claims that logging provides climate benefits but this is not supported (in fact refuted) by the best available science. DEIS (158-159) says

Many studies have found that active management, particularly in forests adversely affected by fire suppression, could reduce both carbon losses and increases in greenhouse gas emissions from wildfires. Results from various thinning and burning prescriptions indicate that the short-term reductions in carbon result in long-term benefits to carbon storage and greenhouse gas emissions by reducing fire-induced mortality, maintaining a higher fraction of carbon in live trees, increasing drought resistance, and reducing competition for water, nutrients, and light.[414]

This is an incomplete, erroneous, and misleading description of the carbon consequences of logging and the interaction of logging with fire. BLM needs to critically review the sources cited. Do these studies really support what BLM is suggesting? Are there distinguishing features? Are the study designs sound? Are the study conclusions really supported by the study results?

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[413] Center for Biological Diversity. "Seven Coastal States Petitioned to Address Ocean Acidification: Clean Water Act Requires Regulation of Carbon Dioxide That Could Drive Ocean Species Extinct." August 15, 2007 Press Release.

[414] Stephens et al. 2009, Hurteau and North 2010, North and Hurteau 2011, Stephens et al. 2012, Hurteau et al. 2014, Loudermilk et al. 2014, Volkova et al. 2014.

Some of the studies cited by the DEIS (158-159) directly contradict BLM's assertion that logging has climate benefits. Many of these studies are generally not applicable to western Oregon because they are from different biophysical settings, and they generally fail to properly account for the low probability that fuel reduction logging will interact with wildfire --

- Volkova et al (2014)[415] This study does not support BLM's assertion that logging provides climate benefits. This study looked at forest carbon after fire occurred, so it selected for areas where there was 100% overlap between treatments and fire. This fails to account for the real world (low) probability of fuel treatments interacting with fire, and all the GHG emissions caused by fuel treatments that did not subsequently burn. Also, this study was in a completely different (eucalyptus) forest type.
- Stephens et al (2009)[416] This study does not support BLM's assertion that logging provides climate benefits. This study appears to assume a 100% chance that fire will interact with treatments, which is not a real world probability that treatments will interact with wildfire. Drawing conclusions about the carbon benefits of fuel reduction logging requires consideration of the relative extent and probability of emissions from logging and wildfire. Also, the study cautions readers to limit conclusions to young stands in the Sierra Nevada that are recovering from past timber harvest.
- Hurteau & North (2010)[417] This study does not support BLM's assertion that logging provides climate benefits, saying -
  In the absence of wildfire or if wildfire emissions are lower than the carbon stock reduction necessary to mitigate high-severity fire risk, fuels treatments could have a net negative impact on carbon stocks and thus reduce the forest's potential to mitigate climate change (Mitchell et al., 2009). … . The higher intensity overstory thinning treatments will require longer periods of time before they sequester the carbon removed and emitted during treatment. By removing large overstory trees that often contain >65% of the aboveground carbon, these treatments incur a substantial immediate carbon stock reduction and require a much longer recovery period. While large tree percent changes in C were high in these treatments (Table 1), there are simply fewer large trees ha−1 to store C. In earlier research we also found overstory thinning did not substantially decrease the risk of high-severity fire compared to understory thinning treatments (North et al., 2009).

This study made no attempt to quantify the probability that fire would interact with fuel treatments. Other studies that have attempted to estimate these probabilities show that fuel reduction logging results in greater GHG emissions than doing nothing. See below. This study also failed to account for the climate consequences of the extra carbon in the atmosphere while the forest is recovering from logging related carbon loses. Even if the carbon is later recaptured by the forest as a result of regrowth after logging, that does not neutralize the adverse climate effects suffered during the lag time.

Loehman et al (2014) have criticized Hurteau and North (2008) (and others) saying:

Recent studies (Hurteau and North, 2008, 2010; Hurteau et al., 2008a; North et al., 2009; *Reinhardt and Holsinger, 2010) have focused on carbon responses to fire in individual forest*

[415] http://www.publish.csiro.au/nid/114/paper/WF14009.htm
[416] http://nature.berkeley.edu/stephenslab/wp-content/uploads/2015/04/Stephens-et-al.-FFS-Carbon-CJFR-8-09.pdf
[417] http://www.fs.fed.us/psw/publications/north/psw_2010_north(hurteau)002.pdf

stands as a basis for gaining insight into terrestrial-atmospheric carbon fluxes. Suggested management treatments to protect, maintain, or enhance forest carbon stocks forest carbon stores include mechanical fuels treatments, prescribed fire, and suppression of wildfires (Canadell and Raupach, 2008; Hurteau and North, 2008, 2010; Hurteau et al., 2008b; McKinley et al., 2011; Stephens et al., 2012). Results from these studies suggest that fuel treatments can reduce wildfire severity and protect forest carbon stocks from future loss from severe wildfires (Hurteau and North, 2008; Hurteau et al., 2008b; Stephens et al., 2009b), but management of carbon in fire-prone and fire-adapted forests is more complex than simply minimizing wildfire carbon emissions and maximizing stored carbon in individual stands. The stochastic and variable nature of fires, the relatively fine scale over which fuels treatments are implemented, and potentially high carbon costs to implement them suggest that fuel treatments are not an effective method for protecting carbon stocks at a stand level (Reinhardt et al., 2008; Reinhardt and Holsinger, 2010).

Rachel A. Loehman, Elizabeth Reinhardt, Karin L. Riley 2014. Wildland fire emissions, carbon, and climate: Seeing the forest and the trees – A cross-scale assessment of wildfire and carbon dynamics in fire-prone, forested ecosystems. Forest Ecology and Management 317 (2014) 9–19.[418]

- Hurteau et al (2014)[419] This study does not support BLM's assertions that logging provides climate benefits, saying –
  Fire effects on the forest can be managed by altering forest structure and fuel loads, thereby reducing the risk of carbon loss due to wildfire (Hurteau et al., 2009). However, this risk reduction measure carries a carbon stock reduction cost and the carbon balance of a specific treatment is dependent upon a wildfire burning in the treated area, the end-use of the trees harvested during treatment, among other factors … Generally, the probability of a fire event occurring at most forest locations in any given year is quite low."

This study speculated about how trees in the Sierra Nevada Mountains of California may become mal-adapted as a result of global warming, but this study found wide variation in the effects on forest carbon depending on various future climate scenarios for the Sierra Nevada. ("The large influence of GCM on carbon storage suggests that reducing uncertainty in modeling forest growth response to wildfire mitigation treatments will require further refinement of climate projections") Refinement of climate scenarios should of course be region-specific. BLM should not be using wild speculations from dry/open forests of California to set policy for moist/dense forests of western Oregon. ("our findings highlight the need to overcome the scale mismatch between GCMs and the typical forest management unit. Recent research suggests the substantial influence of local terrain on mediating climate (Dobrowski, 2011) making even downscaled climate projections too coarse to capture the fine scale climate variability that can influence tree growth.") Finally, this study highlights uncertainty. It does not make concrete recommendations to conduct logging to help store carbon or help forests adapt to climate change. ("[T]he current variability in downscaled global climate projections adds considerable uncertainty to projecting how management actions to alter forest structure and composition and climate will interact in the future.")

[418] http://www.fs.fed.us/rm/pubs_other/rmrs_2014_loehman_r001.pdf
[419] http://www.fs.fed.us/psw/partnerships/tahoescience/documents/p029_Hurteau2014Tahoe.pdf

- Loudermilk et al (2014)[420] This study does not support BLM's assertion that logging provides climate benefits. Figures 4 and 5 in this publication clearly show that not logging results in greater forest carbon storage than any of the fuel reduction scenarios.
  Over the near future, more forest C would be removed from the system than would be released without treatment (i.e., from ecosystem respiration); creating a net C 'cost' … . Eventually, reduced fire severity and enhanced forest re-growth would lead to a net gain in C storage at the management area and landscape level. … Our simulated fuel treatments … controlled wildfire C emissions, and in the long run resulted in a net C gain. These positive outcomes far outweigh the intermediary loss in forest C from biomass removal,…

However, this conclusion is not supported by the study results or any other evidence. While the carbon density of the treatment and no treatment scenarios appear to converge in the year 2100, the study fails to account of the climate consequences associated with the excess carbon in the atmosphere in the decades prior to 2100. This is sloppy accounting that does not meet NEPA standards. The near-term climate effects caused by logging-related carbon emissions are not neutralized by carbon uptake that occurs decades in the future. This study also recognized that carbon benefits depend on the probability of future fire but made no attempt to quantify that probability.

Achievement of a net C gain … depended on wildfire activity: Fuel treatments were more effective in a more active fire environment, where the interface between wildfires and treatment areas increased and caused net C gain earlier than as compared to our scenarios with less wildfire activity … regulation of C emissions may force forest managers to balance the use of fuel treatments for reducing wildfire risk against goals to maintain or increase C sequestration (Hurteau et al., 2008). This will require consideration of the net balance between the immediate loss of C from live and detrital matter during fuels management (e.g., mechanical thinning and prescribed burning) against the long-term C sequestration potential associated with reduced C emissions from lower intensity wildfires.

This study also assumed that wildfire activity would increase thus increasing the probability that treatments would interact with fire. This assumption may or may not hold on BLM lands where aggressive fire suppression remains the norm. Furthermore, this study looked at fuel reduction targeted close to homes and communities, not across the landscape as BLM proposes.

BLM should then conduct a much more thorough review of credible opposing viewpoints. In virtually all cases, commercial logging will increase GHG emissions relative to not logging, even after accounting for emissions related to wildfire. Numerous experts have carefully studied the issue and conclude that logging to reduce fire and reduce carbon emission will actually make matters worse, not better.

Law & Harmon conducted a thorough literature review and concluded …

Thinning forests to reduce potential carbon losses due to wildfire is in direct conflict with carbon sequestration goals, and, if implemented, would result in a net emission of CO2 to the atmosphere because the amount of carbon removed to change fire behavior is often far larger

[420] http://www.fs.fed.us/psw/partnerships/tahoescience/documents/p049_Loudermilk2014.pdf

than that saved by changing fire behavior, and more area has to be harvested than will ultimately burn over the period of effectiveness of the thinning treatment.[421]

XIV. BLM NEEDS TO ACCURATELY DESCRIBE THE PROBABILISTIC NATURE OF THIS ISSUE

- Premises:
  - Fire and logging both emit GHG;
  - No one can predict where or when fire will occur, therefore logging to modify fire behavior must be spatially extensive;
  - Fuels regrow after logging, so treatments will have to be repeated;
  - Fire is relatively infrequent, so fire will rarely interact with fuel reduction treatments during the period they are presumed effective. Many acres will be treated and few acres will actually interact with fire, so fuel treatments and associated GHG emissions will occur "unnecessarily" (i.e., without any fire benefits to offset the GHG emissions caused by logging);
  - Fire is mostly controlled by weather (e.g., temperature, humidity, wind), not by fuel conditions.
  - Logging has complex effects of fire behavior. Logging might make fire worse in some cases.
  - Logging will have only marginal effects on fire in most cases – slightly reducing fire intensity and fire size.
  - Logging will very rarely be perfectly timed, perfectly located, perfectly scaled, and perfectly implemented to result in meaningful fire control and significant GHG benefits.
- Conclusion: Logging to control fire does not provide climate benefits, because, the combined GHG emissions associated with logging plus emissions associated with wildfire are highly likely to be far greater than the GHG emissions associated with fire alone.
- Note: The limited exception to this conclusions involve cases where three conditions are met: (i) smallest fuels are removed (ii) from forests with the most frequent fire return interval, and (iii) where fire suppression is not being practiced. These conditions do not occur on BLM lands in western Oregon. "Smallest fuels" means non-commercial thinning, not removal commercial-sized logs that store a lot of carbon. BLM emphasizes commercial logging. Forests in western Oregon have an intermediate-to-long fire return interval, and BLM cooperates with the state to aggressively suppress every fire.

Logging proponents often claim that logging will increase carbon storage controlling carbon emissions caused by natural processes such as fire and insect-induced mortality. This is simply counter-factual. In most cases, managing forests in an effort to control natural processes that release carbon will only make things worse by releasing MORE carbon. This is mostly because no one can predict where fire or insects will occur, so the treatments must be applied to broad landscapes, yet the probability of fire or insects at any given location remains low, and only a

[421] Law, B. & M.E. Harmon 2011. Forest sector carbon management, measurement and verification, and discussion of policy related to mitigation and adaptation of forests to climate change. Carbon Management 2011 2(1). http://terraweb.forestry.oregonstate.edu/pubs/lawharmon2011.pdf.

small fraction of the treated areas will actually experience fire or insects. As a result, many acres will be treated "unnecessarily" and therefore the cumulative carbon emissions from logging to control fire and insects (plus the carbon emissions from fire and insects that occur in spite of control efforts) are greater than emissions from fire and insects alone.
Before attributing carbon benefits to fuel reduction logging please consider numerous credible opposing viewpoints, including:

- John L Campbell, Mark E Harmon, and Stephen R Mitchell. 2011. Can fuel-reduction treatments really increase forest carbon storage in the western US by reducing future fire emissions? Front Ecol Environ 2011; doi:10.1890/110057[422] (Results suggest that the protection of one unit of C from wildfire combustion comes at the cost of removing three units of C in fuel treatments.)
- Mitchell, Harmon, O'Connell. 2009. Forest fuel reduction alters fire severity and long-term carbon storage in three Pacific Northwest ecosystems. Ecological Applications. 19(3), 2009, pp. 643–655. [423]
- Reinhardt, Elizabeth, and Lisa Holsinger 2010. Effects of fuel treatments on carbon-disturbance relationships in forests of the northern Rocky Mountains. Forest Ecology and Management 259 (2010) 1427–1435.[424] ("Although wildfire emissions were reduced by fuel treatment, the fuel treatments themselves produced [carbon] emissions, and the untreated stands stored more carbon than the treated stands even after wildfire. … Our results show generally long recovery times …")
- Jim Cathcart, Alan A. Ager, Andrew McMahan, Mark Finney, and Brian Watt 2009. Carbon Benefits from Fuel Treatments. USDA Forest Service Proceedings RMRS-P-61. 2010.
- Law, B. & M.E. Harmon 2011. Forest sector carbon management, measurement and verification, and discussion of policy related to mitigation and adaptation of forests to climate change. Carbon Management 2011 2(1).
- Dina Fine Maron 2010. FORESTS: Researchers find carbon offsets aren't justified for removing understory (E&E Report 08/19/2010, reporting on the WESTCARB Project)[425]
- Restaino, Joseph C.; Peterson, David L. 2013. Wildfire and fuel treatment effects on forest carbon dynamics in the western United States. Forest Ecology and Management 303:46-60.[426] ("… C costs associated with fuel treatments have can exceed the magnitude of C reduction in wildfire emissions, because a large percentage of biomass stored in forests (i.e., stem wood, branches, coarse woody debris) remains unconsumed, even in high-severity fires (Campbell et al., 2007; Mitchell et al., 2009). … Wildfire occurrence in a given area is uncertain and may never interact with treated stands with reduced fire hazard, ostensibly negating expected C benefits from fuel treatments. Burn probabilities in treated stands in southern Oregon are less than 2%, so the probability that a treated stand encounters wildfire and creates C benefits is low (Ager et al., 2010).)"

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[422] http://nnrg.org/files/CampbellJohn-65945.pdf; http://scholarsarchive.library.oregonstate.edu/xmlui/bitstream/handle/1957/26174/CampbellJohn.Forestry.CanFuelReductionTreatments.pdf.
[423] http://www.fs.fed.us/pnw/pubs/journals/pnw_2009_mitchell001.pdf.
[424] http://www.fs.fed.us/rm/pubs_other/rmrs_2010_reinhardt_e002.pdf
[425] https://pacificforest.org/pft-in-the-media-2010-climatewire-8-19-10.html.

[426] http://www.fs.fed.us/pnw/pubs/journals/pnw_2013_restiano001.pdf

- Goslee, K., Pearson, T., Grimland, S., Petrova, S., Walls, J., Brown, S., 2010. Final Report on WESTCARB Fuels Management Pilot Activities in Lake County, Oregon. California Energy Commission, PIER. CEC-500-XXXX-XXX; AND Pearson, T.R.H., Goslee, K., Brown, S., 2010. Emissions and Potential Emission Reductions from Hazardous Fuel Treatments in the WESTCARB Region. California Energy Commission, PIER. CEC-500-XXXX-XXX. (Summarized by Restaino & Peterson (2013) as follows: "Pearson et al. (2010) and Goslee et al. (2010) developed methodologies to evaluate C dynamics associated with fuel treatment projects in low to mid-elevation forest in northern California and Oregon. The authors, with consultation from teams of scientists, quantify C storage and release within the context of a six-point conceptual framework: annual fire risk, treatment emissions, fire emissions, forest growth and re-growth, re-treatment, and the shadow effect (i.e., treatment effect outside the treated area). Results indicate that the mean annual probability of wildfire for the study region is less than 0.76%/year, and treatments reduce C stocks by an average of 19%. Where timber is removed, 30% of extracted biomass is stored in long-lasting wood products. Wildfire emissions in treated stands, quantified with the Fuel Characteristic Classification System, are reduced by 6% relative to untreated stands. Growth estimates for a 60-year simulation horizon, derived from FVS, indicate that in the absence of wildfire, untreated stands sequester 17% more C than treated stands. However, in simulations that include wildfire, treated stands sequester 63% more C than untreated stands. The shadow effect is unlikely to be large enough to affect net GHG emissions. In summary, initial reductions in C stocks (e.g., thinning), combined with low annual probability of wildfire, preclude C benefits associated with fuel treatments, even if harvest residues are used for biomass energy.")
- Chiono, Lindsay 2011. Balancing the Carbon Costs and Benefits of Fuels Management. Research Synthesis for Resource Managers. Joint Fire Science Program Knowledge Exchange.[427] ("[T]he net carbon impact of fuel treatments is further complicated by the probabilistic nature of wildfire occurrence and the impermanence of post-treatment stand conditions … [T]reatment activities produce an immediate carbon emission while future wildfire emissions are uncertain … Depending on the intensity of treatment, the quantity of carbon removed may be substantial enough to negate gains from avoided wildfire emissions. … cumulative emissions from fuels reduction activities repeated in order to maintain low hazard conditions over time can overwhelm avoided wildfire emissions, resulting in a net carbon loss.")

Mitchell, Harmon, O'Connell. 2009. Forest fuel reduction alters fire severity and long-term carbon storage in three Pacific Northwest ecosystems. Ecological Applications. 19(3), 2009, pp. 643–655 [428]

ABSTRACT:... *Our simulations indicate that fuel reduction treatments in these ecosystems consistently reduced fire severity. However, reducing the fraction by which C is lost in a wildfire requires the removal of a much greater amount of C, since most of the C stored in forest biomass (stem wood, branches, coarse woody debris) remains unconsumed even by high-severity wildfires. For this reason, all of the fuel reduction treatments simulated for the west Cascades*

[427] https://static.squarespace.com/static/50083efce4b0c6fedbca9def/t/51632bf8e4b00b25a8fa21d3/1365453816037/CFSC_Chiono_Carbon_and_Fuel_Mngmt.pdf
[428] http://www.fs.fed.us/pnw/pubs/journals/pnw_2009_mitchell001.pdf

and Coast Range ecosystems as well as most of the treatments simulated for the east Cascades resulted in a reduced mean stand C storage. One suggested method of compensating for such losses in C storage is to utilize C harvested in fuel reduction treatments as biofuels. Our analysis indicates that this will not be an effective strategy in the west Cascades and Coast Range over the next 100 years. We suggest that forest management plans aimed solely at ameliorating increases in atmospheric CO2 should forego fuel reduction treatments in these ecosystems, with the possible exception of some east Cascades Ponderosa pine stands with uncharacteristic levels of understory fuel accumulation. Balancing a demand for maximal landscape C storage with the demand for reduced wildfire severity will likely require treatments to be applied strategically throughout the landscape rather than indiscriminately treating all stands.

Notes on Mitchell & Harmon:

- The authors assumed that fire severity was determined exclusively by fuel variables but not weather. This may over-estimate the efficacy of fuel treatments on fire severity. The conclusion that fuel manipulation leads to reduced fire behavior may be an unavoidable result of the assumptions, rather than a reflection of reality.

- The only treatment that showed some promise was understory removal (not canopy removal) in fire-suppressed dry pine stands, but the carbon storage benefit from reduced fire severity in this best case scenario was minuscule, only about 0.6-1.2%. The modeled treatments on the eastside of the Cascades failed to include canopy removal which is a common practice in fuel reduction efforts and one that removes more carbon than understory treatments. Also, this analysis might give too much credit to fuel treatments because they excluded climatic variation from the analysis (meaning that in their analysis the treated stands never burned uncharacteristically <u>in spite</u> of the treatments.

Similar results were found at the stand scale by Reinhardt and Holsinger (2010):

> *We simulated effects of fuel treatments on 140 stands representing seven major habitat type groups of the northern Rocky Mountains using the Fire and Fuels Extension to the Forest Vegetation Simulator (FFE-FVS). Changes in forest carbon due to mechanical fuel treatment (thinning from below to reduce ladder fuels) and prescribed fire were explored, as well as changes in expected fire behavior and effects of subsequent wildfire. Results indicated that fuel treatments decreased fire severity and crown fire occurrence and reduced subsequent wildfire emissions, but did not increase post-wildfire carbon stored on-site. Conversely, untreated stands had greater wildfire emissions but stored more carbon. ... The results do not support the use of fuel treatments soley to protect carbon stocks or reduce emissions. Although wildfire emissions were reduced by fuel treatments, the fuel treatments themselves produced emissions, and the untreated stands stored more carbon than the untreated stands even after wildfire. [and even considering carbon stored in wood products derived from treated stands.]*[429]

And by Campbell, Harmon & Mitchell 2011:

[429] Reinhardt, Elizabeth, and Lisa Holsinger 2010. Effects of fuel treatments on carbon-disturbance relationships in forests of the northern Rocky Mountains. Forest Ecology and Management 259 (2010) 1427–1435.

Abstract: *It has been suggested that thinning trees and other fuel-reduction practices aimed at reducing the probability of high-severity forest fire are consistent with efforts to keep carbon (C) sequestered in terrestrial pools, and that such practices should therefore be rewarded rather than penalized in C-accounting schemes. By evaluating how fuel treatments, wildfire, and their interactions affect forest C stocks across a wide range of spatial and temporal scales, we conclude that this is extremely unlikely. Our review reveals high C losses associated with fuel treatment, only modest differences in the combustive losses associated with high-severity fire and the low-severity fire that fuel treatment is meant to encourage, and a low likelihood that treated forests will be exposed to fire. Although fuel-reduction treatments may be necessary to restore historical functionality to firesuppressed ecosystems, we found little credible evidence that such efforts have the added benefit of increasing terrestrial C stocks.*

Summary:

• Carbon (C) losses incurred with fuel removal generally exceed what is protected from combustion should the treated area burn

• Even among fire-prone forests, one must treat about ten locations to influence future fire behavior in a single location

• Over multiple fire cycles, forests that burn less often store more C than forests that burn more often

• Only when treatments change the equilibrium between growth and mortality can they alter long-term C storage

Conclusions

Across a range of treatment intensities, the amount of C removed in treatment was typically three times that saved by altering fire behavior.

the protection of one hectare of forest from wildfire required the treatment of 10 hectares, owing not to the low efficacy of treatment but rather to the rarity of severe wildfire event.

Long-term simulations of forest growth, decomposition, and combustion illustrate how, despite a negative feedback between fire frequency and fuel-driven severity, a regime of low-frequency, high-severity fire stores more C over time than a regime of high-frequency, low-severity fire.

John L Campbell, Mark E Harmon, and Stephen R Mitchell. 2011. Can fuel-reduction treatments really increase forest carbon storage in the western US by reducing future fire emissions? [430] It is important to recognize that "the equilibrium between growth and mortality" must consider all forms of mortality, not just that caused by fire, but also mortality caused by logging.

Restaino & Peterson (2013) conducted a literature review of this issue and reported:

[430] Front Ecol Environ 2011; doi:10.1890/110057
http://scholarsarchive.library.oregonstate.edu/xmlui/bitstream/handle/1957/26174/CampbellJohn.Forestry.CanFuelReductionTreatments.pdf

All studies agree unequivocally that untreated stands release more emissions to the atmosphere during wildfire than treated stands…. However, most studies in this review include assumptions of future wildfire frequency and probability that skew long-term trade-off analyses by overestimating the ability of fuel treatments to reduce wildfire emissions over long time scales. For example, fuel treatments have a finite life expectancy, and fire hazard increases over time as fuels accumulate in treated areas. Repetition and maintenance of fuel treatments are necessary in order to effectively maintain reduced fire hazard over time (Peterson et al., 2005; Johnson et al., 2007, 2011) and thus must be included in analyses of long-term C storage. Although Rhodes and Baker (2008) suggest that 2.0–4.2% of areas treated to reduce surface fuels are likely to encounter wildfires that would otherwise be high or moderate-high severity without treatment, most studies assume future wildfire probability of 100%, reporting inferences that essentially detail a ''best-case scenario'' for wildfire missions mitigation. Annual probability of wildfire in dry temperate forests for a given stand is approximately 1% (Ager et al., 2010; Pearson et al., 2010; Campbell et al., 2011). … To benefit total ecosystem C storage, the removal and release of C through fuel treatments must not exceed the expected reductions in wildfire emissions. Substantial treatment costs through timber harvest, prescribed fire, and milling waste exceed observed and simulated reductions in wildfire emissions. … The ability of fuel treatments to mitigate future fire behavior and move forest structure to a more fire-resistant condition is well documented. However, C costs associated with fuel treatments have can exceed the magnitude of C reduction in wildfire emissions, because a large percentage of biomass stored in forests (i.e., stem wood, branches, coarse woody debris) remains unconsumed, even in high-severity fires (Campbell et al., 2007; Mitchell et al., 2009). … Wildfire occurrence in a given area is uncertain and may never interact with treated stands with reduced fire hazard, ostensibly negating expected C benefits from fuel treatments. Burn probabilities in treated stands in southern Oregon are less than 2%, so the probability that a treated stand encounters wildfire and creates C benefits is low (Ager et al., 2010).)[431]

Lindsay Chiono (2011) of the Wildland Fire Science Laboratory at UC Berkeley prepared a synthesis of the research for resource managers and said:

[T]he net carbon impact of fuel treatments is further complicated by the probabilistic nature of wildfire occurrence and the impermanence of post-treatment stand conditions … [T]reatment activities produce an immediate carbon emission while future wildfire emissions are uncertain … Depending on the intensity of treatment, the quantity of carbon removed may be substantial enough to negate gains from avoided wildfire emissions. East of the Cascade crest in Oregon, a modeling study of carbon dynamics that included modeled wildfires found that while understory removal treatments slightly enhanced carbon storage over the long term, higher levels of biomass removal reduced mean ecosystem carbon (Mitchell et al., 2009)." … [W]hen treatments must be repeated in the interim between wildfires in order to maintain low hazard conditions. Similarly,

[431] Restaino, Joseph C.; Peterson, David L. 2013. Wildfire and fuel treatment effects on forest carbon dynamics in the western United States. Forest Ecology and Management 303:46-60. http://www.fs.fed.us/pnw/pubs/journals/pnw_2013_restiano001.pdf

> *when wildfire frequency is low, the quantity of carbon removed in treatments over time can overwhelm likely wildfire losses. Net emissions were most pronounced in the west Cascades where historical fire return intervals were very long… [I]n southern Oregon and northern California, Goslee and others (2010) took an approach that incorporates the stochastic nature of wildfire occurrence. Rather than scheduling a wildfire event soon after fuel treatment, a calculation that maximizes treatment benefits, they used an estimate of the local fire return interval for the period of 2001 to 2008 -- an annual burn probability of 0.6% -- to assess carbon emissions. Partly owing to this low wildfire risk, they found that fuel treatments, which included commercial timber harvest and pile burning of noncommercial biomass, produced an effective immediate net emission of 10-20.8 tons of carbon per acre. … [S]ome general principles have begun to emerge. Achieving a net carbon gain appears more likely when the quantity of carbon removed during treatment is minimized, when harvested biomass is converted to long-lived wood products, and where the risk of wildfire occurrence is high… Conversely, cumulative emissions from fuels reduction activities repeated in order to maintain low hazard conditions over time can overwhelm avoided wildfire emissions, resulting in a net carbon loss.*[432]

Even the Chief of the Forest Service recognizes these trade-offs. "[M]anagement practices, designed to restore ecosystem health, may in the near-term reduce total stored carbon below current levels."[433]

Hudiburg et al (2001 state:

> *Strategies for reducing carbon dioxide emissions include substitution of fossil fuel with bioenergy from forests, where carbon emitted is expected to be recaptured in the growth of new biomass to achieve zero net emissions, and forest thinning to reduce wildfire emissions3. Here, we use forest inventory data to show that fire prevention measures and large-scale bioenergy harvest in US West Coast forests*
>
> *Lead to 2–14% (46–405 Tg C) higher emissions compared with current management practices over the next 20 years.*
>
> *In our study region, we found that thinning reduced NBP under all three treatment scenarios for 13 of the 19 ecoregions, representing 90% of the region's forest area. The exceptions where NBP was not reduced were primarily due to high initial fire emissions*

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[432] Chiono, Lindsay 2011. Balancing the Carbon Costs and Benefits of Fuels Management. Research Synthesis for Resource Managers. Joint Fire Science Program Knowledge Exchange. https://static.squarespace.com/static/50083efce4b0c6fedbca9def/t/51632bf8e4b00b25a8fa21d3/1365453816037/CFSC_Chiono_Carbon_and_Fuel_Mngmt.pdf

[433] Gail Kimball, March 2009 Testimony before House Committee On Natural Resources, Subcommittee On National Parks, Forests, And Public Lands. http://www.fs.fed.us/congress/111thCongress/Documents/CY%202009%20Hearings/HNRC%202009-03-03%20Climate%20Change/2009-03-03A.Kimbell.pdf.

compared to NEP (for example, Northern Basin and North Cascades; Supplementary Fig. S2). The dominant trend at the ecoregion level was mirrored at the regional level, with the bioenergy production scenario (highest thinning level) resulting in the region becoming a net carbon source (Supplementary Table S2 and discussion of state-level estimates). Regionally, forest biomass removals exceeded the potential losses from forest fires, reducing the in situ forest carbon sink even after accounting for regrowth, as found in previous studies with different approaches or areas of inference8,18.

Because we have assumed high reductions in fire emissions for the areas treated in each scenario, it is unlikely we are underestimating the benefit of preventive thinning on NBP.[434]

North and Hurteau (2009) note that the carbon costs of fuel reduction may be mitigated by focusing on small fuels -

When evaluating carbon released by different fuels treatments, managers will need to weigh tradeoffs between immediate prescribed burn emissions, increased fuel reduction with thinning and an increase in milling waste, and potential future wildfire emissions. … Previous Teakettle studies (Innes et al. 2006, North et al. 2007, Hurteau and North 2009) coupled with this research suggest treatments could be modified to more effectively minimize carbon stock reductions while still significantly reducing fuels and promoting large tree development. Significant increases in wildfire resistance can be achieved by thinning only smaller ladder fuels and fire-sensitive intermediate trees without reducing the majority of the live-tree carbon pool in intermediate pines and large trees of all species. … Thinning and prescribed fire treatments that reduce small tree densities may influence stand development by redirecting growth resources and carbon storage into more stable stocks such as large, long-lived fire-resistant pines (Hurteau and North 2009). … Our research suggests most of the benefits of increased stand-level fire resistance can be achieved with small reductions in carbon pools.[435]

XV. THE DEIS UNDERESTIMATES THE SOCIAL COST OF CARBON

NEPA's requirement to take a "hard look" requires BLM to consider the effects of logging-related GHG emissions. This includes disclosing the social cost of carbon (SCC) as a proxy for the impacts of GHG emissions. GHG emissions from logging (and other land management activities) impose significant costs on society, such as the cost of damage caused by climate

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[434] Tara W. Hudiburg, Beverly E. Law, Christian Wirth, and Sebastiaan Luyssaert. 2011. Regional carbon dioxide implications of forest bioenergy production. Nature - Climate Change. Letters. 23 OCTOBER 2011 | DOI: 10.1038/NCLIMATE1264.
http://www.dnr.wa.gov/Publications/em_fp_biomass_regional_carbon_dioxide_implications_of_forest_bioenergy_production.pdf

[435] North, Hurteau, Innes. 2009. Fire suppression and fuels treatment effects on mixed-conifer carbon stocks and emissions. Ecological Applications, 19(6), 2009, pp. 1385–1396.
http://www.plantsciences.ucdavis.edu/affiliates/north/Publications/Eco%20Apps%20article%20North%20et%20al%20Fuel%20treatments%20forest%20carbon.pdf

change and ocean acidification, the costs of adapting to climate change, and the cost of sequestering carbon to mitigate emissions. CEQ's draft guidance on NEPA and Climate Change recognizes that the social cost of carbon ("SCC") is a "harmonized, interagency metric that can provide decision-makers and the public with some context for meaningful NEPA review." 79 Fed. Reg. 77802, 77827. "The SCC estimates the benefit to be achieved, expressed in monetary value, by avoiding the damage caused by each additional metric ton (tonne) of carbon dioxide (CO2) put into the atmosphere. Ruth Greenspan and Dianne Callan, World Resources Institute, More than Meets the Eye: The Social Cost of Carbon in U.S Climate Policy, in Plain English (July 2011) at 1. The EIS should carefully disclose these social costs. The express purpose of SCC analysis is to provide an apples-to-apples basis for comparing a project's economic benefits (e.g. timber receipts) with GHG pollution impacts (Social Cost of Carbon). Where SCC is not analyzed and disclosed, these impacts (costs) are hidden from the public and, in fact, often "paid for" by the broader environment and public in the form of degraded ecological resiliency, public health impacts, and more.

The DEIS (p 483) made two estimates of the Social Cost of Carbon Dioxide ($37/tonne and $109/tonne based on the expected *average* SCC and the *95th percentile* case) and concludes "Of the two estimates presented, the BLM considers the "average" scenario to be more likely." BLM needs to explain why they think the average case is more likely. There is a lot of evidence that the average case vastly under-estimates the true social cost of carbon pollution. The Interagency Working Group that developed these estimates admits that they did not include all the costs of greenhouse gases emissions in their estimates, (e.g. ocean acidification). Furthermore, the IPCC report-writing process tends to be conservative in estimating the effects of climate change. Extreme outcomes tend to be discounted until the evidence supporting them is highly compelling. Nevertheless, there is a real and significant possibility that extreme climate outcomes will occur and high social costs will manifest. Several sources support this:

- Glenn Scherer and DailyClimate.org 2012. Climate Science Predictions Prove Too Conservative - Checking 20 years worth of projections shows that the Intergovernmental Panel on Climate Change has consistently underestimated the pace and impacts of global warming. December 6, 2012. http://www.scientificamerican.com/article/climate-science-predictions-prove-too-conservative/ ("Across two decades and thousands of pages of reports, the world's most authoritative voice on climate science has consistently understated the rate and intensity of climate change and the danger those impacts represent, say a growing number of studies on the topic.").

- Chris Mooney 2014. The world's climate change watchdog may be underestimating global warming. October 30, 2014. http://www.washingtonpost.com/blogs/wonkblog/wp/2014/10/30/climate-scientists-arent-too-alarmist-theyre-too-conservative/ ("According to a number of scientific critics, the scientific consensus represented by the IPCC is a very conservative consensus. IPCC's reports, they say, often underestimate the severity of global warming, in a way that may actually confuse policymakers (or worse). The IPCC, one scientific group charged last year, has a tendency to "err on the side of least drama." And now, in a new study just out in the Bulletin of the American Meteorological Society, another group of researchers echoes that point. In scientific parlance, they charge that the IPCC is focused on avoiding what are called "type 1" errors -- claiming something is happening when it really is not (a "false positive") --

rather than on avoiding "type 2" errors -- not claiming something is happening when it really is (a "false negative"). The consequence is that we do not always hear directly from the IPCC about how bad things could be.”).

- SkepticalScience.com. How the IPCC is more likely to underestimate the climate response http://www.skepticalscience.com/ipcc-scientific-consensus.htm (“A recent study (Freudenburg 2010) investigated what it calls 'the Asymmetry of Scientific Challenge', the phenomenon in which reports on science fail to evaluate all outcomes, favoring certain probabilities while ignoring others. In the case of the IPCC, the researchers found that the media steadfastly challenge the predictions on the basis that they are exaggerated, worst-case scenarios. What they fail to speculate on is whether the opposite is true; that it may be equally correct to suggest that things might be far worse.

Niemi (2015) prepared a critique showing that BLM under-estimated the Social Cost of Carbon and explained how the analysis can be improved:

> **Summary**
> *Actions that reduce the amount of carbon stored in federal forests contribute to disruption of the global climate by increasing atmospheric concentrations of carbon dioxide. The climate disruption raises the risk of economic harm—locally, nationally, and globally—from extreme weather events, higher temperatures, changes in precipitation, rising sea levels, acidification of oceans, and changes in ecosystems. Laws and executive orders require managers of federal forests to account for these risks. This paper describes the recent failure of the Bureau of Land Management (BLM), to satisfy the requirements. It also describes the steps the BLM must take to meet its obligations, and illustrates the method the BLM and other federal forest management agencies should use to account for carbon-related risks in the future.*
>
> *The BLM failed to account for climate-related risks when it selected its Preferred Alternative for managing federal forests in western Oregon. If implemented, this alternative would yield more timber but less forest carbon than another alternative. Using old data and a conservative view of risk, the BLM provided information that indicates the additional climate-related costs may:*
> *• Outweigh the additional timber-related benefits by 2-to-1.*
> *• Equal $91,000 per additional timber-related job.*
> *• Equal $4 for every $1 of additional timber-related payments to local counties.*
> *Current data, plus a widely accepted view of risk indicates the additional climate-related costs may:*
> *• Outweigh the additional timber-related benefits by more than 30-to-1.*
> *• Equal $1.6 million per additional timber-related job.*
> *• Equal $68 for every $1 of additional timber-related payments to local counties.*
> *The BLM disregarded this information when choosing its Preferred Alternative. To satisfy its legal and administrative requirements, the BLM should fully and clearly describe the climate related risks that accompany the Preferred Alternative, and explain its justification for imposing these risks on the individuals, households, businesses, and communities that would bear them. This justification should address both the reduction in overall economic wellbeing that would result from implementing the Preferred*

Alternative and the moral issues that arise from imposing climate-related risk on those that would not enjoy the timber benefits.[436]

Niemi (2015) explained that, "Moore and Diaz (2015) found that accounting for the impacts of climate on economic growth increases the Interagency Working Group's estimates of the social cost of carbon by a factor of six." [437]

One way that economists deal with uncertain outcomes with high social costs is to account for uncertainty itself as a cost. The DEIS (p 502) says the analysis "addresses the value of carbon storage from a social perspective, where the value of carbon storage is derived from nonmarket valuation techniques such as avoided cost and avoided risk." However, the EIS does not fully account for uncertainty so it underestimates the value of conserving forests to avoid risk.

The agency must recognize that the federal estimate of SCC likely underestimates—perhaps significantly—the climate impacts of GHG pollution. As the U.S. Environmental Protection Agency has concluded:

> *Given current modeling and data limitations, [the federal SCC values] do[] not include all important damages. As noted by the IPCC Fourth Assessment Report, it is "very likely that [SCC] underestimates" the damages. The models used to develop SCC estimates, known as integrated assessment models, do not currently include all of the important physical, ecological, and economic impacts of climate change recognized in the climate change literature because of a lack of precise information on the nature of damages and because the science incorporated into these models naturally lags behind the most recent research.*[438]

Ackerman & Stanton (2010) do not support using the average or "central estimate":

> *Agencies seeking to incorporate climate change considerations in rules and regulations often rely on a cost-benefit analysis, weighing the cost of curbing emissions against the expected damages from every ton of carbon dioxide (CO2) that goes into the atmosphere*

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[436] Niemi, E. 2015. Accounting for Climate-Related Risks In Federal Forest-Management Decision, 10 May 2015 [draft]. Federal Forest Carbon Coalition Background Paper 2015–2. http://static1.1.sqspcdn.com/static/f/551504/26259333/1432605642583/SocialCostsOfCarbonOClandsNiemiMay2015.pdf?token=wDqoa5RkP8EoBLlsRWIPPRuahzg%3D

[437] c*iting* Moore, F.C., and D.B. Diaz. 2015. "Temperature Impacts on Economic Growth Warrant Stringent Mitigation Policy." Nature Climate Change. 12 January. http://www.eenews.net/assets/2015/01/13/document_cw_01.pdf ("Optimal climate policy in this model stabilizes global temperature change below 2 ◦C by eliminating emissions in the near future and implies a social cost of carbon several times larger than previous estimates. A sensitivity analysis shows that the magnitude of climate change impacts on economic growth, the rate of adaptation, and the dynamic interaction between damages and GDP are three critical uncertainties requiring further research. In particular, optimal mitigation rates are much lower if countries become less sensitive to climate change impacts as they develop, making this a major source of uncertainty and an important subject for future research.")

[438] EPA, The Social Cost of Carbon, http://www.epa.gov/climatechange/EPAactivities/economics/scc.html.

— a value known as the "social cost of carbon" (SCC). … While no definite SCC has been set so far, an interagency working group has endorsed a "central" estimate of $21 per ton of CO2 in 2010, or roughly 20 cents per gallon of gasoline — far too small a price incentive to prompt substantive mitigation measures.

In the United Kingdom, which started estimating prices for carbon emissions several years ago, the government's latest calculation is a range of $41 – $124 per ton of CO2, with a central case of $83. An expanded calculation of carbon prices for the United States should at least explore prices in this range …[439]

The 2006 "Stern Review" from the UK Treasury concluded that each ton of carbon dioxide emitted will cause $85 worth of damage to the world's economy.[440] According to the Congressional Research Service, capturing and storing most of the carbon from coal as it is combusted costs between $43-89/ton of CO_2, and this price will likely increase after the many safety, environmental, and efficiency problems with carbon capture and storage (CCS) are fully accounted for. [441] That's another good indication of the value of a storing a ton of carbon in forests.

ABSTRACT: The 2013 Interagency Working Group on the Social Cost of Carbon (IWG) updated the U.S. social cost of carbon (SCC) for 2015 from a central value of $24 to $37 using three integrated assessment models (IAMs): DICE-2010, FUND 3.8, and PAGE09. The SCC is the additional economic damage caused by one ton of carbon dioxide. While some have questioned the increase in the SCC as too high, a thorough examination of the latest scientific and economic research shows that $37 should be viewed as a lower bound. This is because the studies available to estimate the SCC omit many climate impacts—effectively valuing them at zero. Where estimates are available for a given type of impact, they tend to include only a portion of potential harms. This paper represents the first attempt to systematically examine and document these omissions for the latest versions of the three IAMs used by the IWG, as well as earlier versions when they are used in calibrating the updated models. … [H]ot spot damages include[e] increases in forced migration, social and political conflict, and violence; weather variability and extreme weather events; and declining growth rates. A better accounting of catastrophic damages is also needed, as well as many other impacts.[442]

We reestimate the values from the models (1) using a range of discount rates and methodologies considered more appropriate for the very long time horizons associated with climate change and (2) using a methodology that assigns "equity weights" to

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[439] Frank Ackerman, Elizabeth A. Stanton. 2010. The Social Cost of Carbon - A Report for the Economics for Equity and the Environment Network. April 1, 2010. http://www.e3network.org/papers/SocialCostOfCarbon_SEI_20100401.pdf.

[440] http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_index.cfm.

[441] Parker, Folger & Stine. 2008. Capturing CO2 from Coal-Fired Power Plants: Challenges for a Comprehensive Strategy. CRS Report for Congress. http://www.fas.org/sgp/crs/misc/RL34621.pdf *citing* S. Julio Friedmann, Carbon Capture and Sequestration As a Major Greenhouse Gas Abatement Option (November 2007), p. 11.

[442] Howard, P. 2014. OMITTED DAMAGES: What's Missing From the Social Cost of Carbon. http://costofcarbon.org/files/Omitted_Damages_Whats_Missing_From_the_Social_Cost_of_Carbon.pdf

damages based upon relative income levels between regions—i.e., a dollar's worth of damages occurring in a poor region is given more weight than one occurring in a wealthy region. Under our alternative discount rate specifications, we find an SCC [social cost of carbon] 2.6 to over 12 times larger than the Working Group's central estimate of $21"…[443] [444]*, If the agency chooses to disclose the economic and other benefits of logging, they must also disclose the social costs.* [445]

ENVIRONMENTAL JUSTICE

In spite of the DIES admission that the timber industry is inherently volatile and increased timber harvest may have an adverse effect on community stability, as well as the high social cost of carbon, the DEIS (p 472) still concludes that alternatives with more logging (e.g., alternatives B and C) will provide greater benefits in terms of "community capacity and resiliency" and environmental justice. BLM chose 13 metrics of community capacity and resiliency, but these were chosen among a larger set of metrics. We are concerned that the subset of metrics chosen failed to accurately reflect the community benefits of forest conservation. BLM's analysis of these issues need to better reflect the adverse effects of timber industry volatility and the fact that the cost of climate change will fall disproportionately on the poor and disadvantaged communities. BLM also limited it's analysis to communities in the planning area even though the adverse effects of climate change and ocean acidification will be felt far beyond that limited geographic scope.

University of California-Berkeley environmental health scientist Rachel Morello-Frosch studied low-income communities in the U.S. and found something she calls a "climate gap" -

> *The effects of climate change would likely hit hardest in places with the fewest resources to adapt. And we're not just talking about the developing world or tiny island nations. …*
>
> *… the climate gap describes a hidden pattern that we have found that indicates that communities of color and poor households within the United States are gonna be suffering more from the economic and health consequences of climate change than other Americans. In other words the climate gap is not only an international question, which has been the focus of a lot of climate change debates over the years, it's also very much an acute domestic problem within the United States.*[446]

Morello-Frosch's reports includes:

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[443] Laurie T. Johnson & Chris Hope, 2012. The social cost of carbon in U.S. regulatory impact analyses: an introduction and critique, J Environ Stud Sci. DOI 10.1007/s13412-012-0087-7. http://www.springerlink.com/content/863287021p06m441/fulltext.pdf?MUD=MP

[444] See *High Country Conservation Advocates v. U.S. Forest Service*, — F.Supp.3d —, 2014 WL 2922751 (D. Colo. June 27, 2014) (holding that BLM's NEPA analysis of climate change impacts was inadequate, and that the EIS must provide a justification for not using the social cost of carbon as a protocol to evaluate impacts).

[445] See *Sierra Club v. Sigler*, 695 F.2d 957, 979 (5th Cir. 1983), *Hughes River Watershed Conservancy v. Glickman*, 81 F.3d 437, 448 (4th Cir. 1996); *Columbia Basin Land Prot. Assn v. Schlesinger*, 643 F.2d 585, 594 (9th Cir. 1981).

[446] Climate Change and America's Poor. Living on Earth Radio Transcript. Air Date: Week of June 12, 2009.

http://loe.org/shows/segments.html?programID=09-P13-00024&segmentID=2.

Key Findings

> *There is a climate gap. The health consequences of climate change will harm all Americans—but the poor and people of color will be hit the worst.*
>
> ***What hasn't made headlines—yet—is the climate gap: the disproportionate and unequal impact the climate crisis has on people of color and the poor.*** *Unless something is done, the consequences of America's climate crisis will harm all Americans—especially those who are least able to anticipate, cope with, resist and recover from the worst consequences. This analysis is of California, which in many ways is a microcosm of the entire United States.*
>
> *Climate change is an issue of great importance for human rights, public health, and social fairness because of its profound consequences overall and the very real danger that poor neighborhoods and people of color will suffer even worse harms and hazards than the rest of Americans. This "climate gap" is of special concern for California, home to one of the most ethnically and economically diverse populations in the country.*
>
> ***The climate gap means that communities of color and the poor will suffer more during extreme heat waves.*** *For instance, African Americans in Los Angeles are nearly twice as likely to die from a heat wave than other Los Angeles residents, and families living below the poverty line are unlikely to have access to air conditioning or cars that allow them to escape the heat.*
>
> ***The climate gap means that communities of color and the poor will breathe even dirtier air.*** *For example, five of the smoggiest cities in California also have the highest densities of people of color and low-income residents. These communities are projected to suffer from the largest increase in smog associated with climate change.*
>
> ***The climate gap means that communities of color and the poor will pay more for basic necessities.*** *Low-income and minority families already spend as much as 25 percent of their entire income on just food, electricity and water—much more than most Americans.*
>
> ***The climate gap is likely to mean fewer job opportunities for communities of color and the poor.*** *The climate crisis may dramatically reduce or shift job opportunities in sectors such as agriculture and tourism, which predominantly employ low-income Americans and people of color.* [447]

California's Office of the Attorney General prepared a report on the "unequal impacts" of global climate change, saying -

> *Global warming will not affect everyone equally. As the Office of Environmental Health Hazard Assessment stated in its 2010 report, the adverse impacts of climate change are expected disproportionately to affect those who are socially and economically*

[447] Rachel Morello-Frosch, Ph.D., MPH | Manuel Pastor, Ph.D. | James Sadd, Ph.D. | Seth B. Shonkoff, MPH. The Climate Gap - Inequalities in How Climate Change Hurts Americans & How to Close the Gap. http://loe.org/images/content/090612/ClimateGapReport_full_report_web.pdf (emphasis in original).

disadvantaged, including the urban poor, the elderly, children, traditional societies, agricultural workers and rural populations. Disproportionate impacts can occur where certain groups lack the social and economic resources necessary to relocate to avoid impacts, or to purchase the technology necessary to adapt to our changing climate. According to a 2009 report by California's Climate Change Center, "[w]ithout proactive policies to address these equity concerns, climate change will likely reinforce and amplify current as well as future socioeconomic disparities, leaving low-income, minority, and politically marginalized groups with fewer economic opportunities and more environmental and health burdens."[448]

Lynn et al (2011) state:

The effects of climate change are expected to be more severe for some segments of society than others because of geographic location, the degree of association with climate-sensitive environments, and unique cultural, economic, or political characteristics of particular landscapes and human populations. Social vulnerability and equity in the context of climate change are important because some populations may have less capacity to prepare for, respond to, and recover from climate-related hazards and effects. Such populations may be disproportionately affected by climate change. … [C]onsiderations that pertain to the effects of climate change on socially vulnerable populations are identified.[449]

BLM's analysis of environmental justice must include the full geographic scope of the impacts of climate change. Many of the adverse social impacts of climate change will occur elsewhere in the U.S. and the world.

One important way to avoid unequal distribution of the costs of climate change is to avoid those costs in the first place. EPA just released a report on the impacts of climate change and the value of mitigation. They only looked at environmental justice in one section of the report dealing with coastal property impacts such as sea level rise, but they found that many disadvantaged communities along the west coast are especially vulnerable and would benefit from mitigation efforts (such as optimizing carbon storage in BLM forests). "Areas of higher social vulnerability are more likely to be abandoned than protected in response to unmitigated sea level rise and storm surge." The basic message is that taking action to store carbon today helps avoid imposition of high costs of adaptation on communities least able to afford those costs.[450] The example of coastal property damage is just a small part of the environmental justice implications of climate change. As another example, the cost of any adverse health impact associated with

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[448] State of California Department of Justice - Office of the Attorney General. https://oag.ca.gov/environment/climate-change/unequal-impacts *referencing* Linda Mazur, Carmen Milanes, Karen Randles, David Siegel, 2010. INDICATORS OF CLIMATE CHANGE IN CALIFORNIA: ENVIRONMENTAL JUSTICE IMPACTS December 2010. http://oehha.ca.gov/multimedia/epic/pdf/ClimateChangeEJ123110.pdf

[449] Kathy Lynn, Katharine MacKendrick, and Ellen M. Donoghue. 2011. Social Vulnerability and Climate Change: Synthesis of Literature. General Technical Report, PNW-GTR-838, August 2011. http://www.fs.fed.us/pnw/pubs/pnw_gtr838.pdf

[450] EPA 2015. Climate Change in the United States: Benefits of Global Action. http://www2.epa.gov/cira/downloads-cira-report; http://www2.epa.gov/sites/production/files/2015-06/documents/coastalproperty.pdf

climate change will fall disproportionally on poor people with limited access to health care. In fact, nearly all future adaptation costs caused by global climate change will fall unfairly on those least able to pay.

BLM should adopt an alternative that minimizes carbon emissions and timber harvest and maximizes forest carbon store and other non-consumptive ecosystem services.

I. BLM SHOULD OPTIMIZE FOREST CARBON STORAGE TO HELP MEET CLIMATE MITIGATION GOALS

The DEIS should disclose whether the cumulative effects of logging-related GHG emissions are consistent with emissions reduction goals established by state and federal government and international agreements.

In 2007, the Oregon legislature passed HB 3543 that codifies greenhouse gas reduction goals for the state: namely, by 2010 to begin to reduce greenhouse gas emissions, by 2020 to achieve greenhouse gas levels 10% less than 1990 levels and by 2050 to achieve greenhouse gas levels 75% below 1990 levels. ORS § 468A.205. Logging-related GHG emissions will conflict with attainment of these goals. Greater conservation of BLM forests will help meet these goals.

BLM should also strive to harmonize with State of Oregon statewide land-use planning goals (adopted in administrative rules) that prohibit land use activities that exceed the "carrying capacity" of air and water resources. OAR 660-015-0000(5) - (6). The Department of Land Conservation and Development (DLCD) defines "carrying capacity" as a "Level of use which can be accommodated and continued without irreversible impairment of natural resources productivity, the ecosystem and the quality of air, land, and water resources." There is a large body of science indicating that we are already beyond the level of CO2 in our atmosphere that can be described as safe or reversible.

> *In November 2014, in a historic joint announcement with China, President Obama laid out an ambitious but achievable target to reduce greenhouse gas emissions in the United States in the range of 26 to 28 percent below 2005 levels by 2025.* [451]

On June 25, 2013, President Obama released his Climate Action Plan, which includes forest conservation among the "first pillar"[452] of efforts to reduce emissions, saying:

> *Preserving the Role of Forests in Mitigating Climate Change: America's forests play a critical role in addressing carbon pollution, removing nearly 12 percent of total U.S. greenhouse gas emissions each year. … Conservation and sustainable management can help to ensure our forests continue to remove carbon from the atmosphere…* [453]

Advancing efforts to protect our forests" is also mentioned in the 6th U.S. Climate Action Report under the United Nations Framework Convention on Climate Change (UNFCCC). The agency should advance this national climate goal by conserving public forests. Carbon emissions from

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[451] https://www.whitehouse.gov/climate-change; https://www.whitehouse.gov/the-press-office/2014/11/11/fact-sheet-us-china-joint-announcement-climate-change-and-clean-energy-c

[452] U.S. Dept of State 2013. draft 6th Climate Action Report http://www.state.gov/e/oes/climate/ccreport2014/index.htm (page 12).

[453] http://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf

logging public lands directly conflict with this important national goal and indicate potential significant impacts requiring an EIS.

Logging related GHG emissions (and forgone opportunities for increased storage of carbon in forests) will conflict with these state, federal and international GHG reduction goals.

COMMUNITY STABILITY AND PROSPERITY

BLM appears to be emphasizing "sustained yield" for its own sake, while sacrificing opportunities to increase carbon storage and recreation, even though the DEIS clearly shows that the economic value of recreation and carbon storage on BLM lands greatly exceed the value of wood products. This makes no sense. BLM needs to consider alternatives that do more to optimize carbon storage, provide more low-impact recreation opportunities, and produce other ecosystem services and non-commodities. Sustained yield should not be a goal unto itself, but an outcome of sound forest conservation.

Goals related to timber production and carbon storage are in direct conflict with each other. Alternatives that increase logging and increase timber revenue, sacrifice economic benefits of carbon storage that vastly exceed the value of wood products. Furthermore, increased logging tends to be destabilizing to local communities, while emphasizing non-consumptive ecosystem services will tend to have a stabilizing economic influence. All these economic factors should play an important role in BLM's final choice among alternatives. BLM should maximize economic benefits for public lands management by minimizing logging and emphasizing non-consumptive values like clean water, carbon storage, biodiversity conservation, and low impact recreation.

The DEIS creates the appearance of a false dichotomy: timber jobs vs recreation jobs, e.g., Table 3-177 (DEIS p 536). The EIS needs to reflect the fact that "recreation" is far too narrow view of the economic alternative to logging, because forest conservation provides economic benefits across virtually every sector of the economy. It is more accurate to recognize that Oregon's greatest economic asset is our quality of life which offers a "second paycheck" to every Oregonian and attracts high quality workers and diverse new businesses that want to hire those people. The DEIS needs to accurately reflect the fact that conserving BLM forest contributes to Oregon's quality of life, while timber harvest degrades habitat, water quality, climate stability, scenic views, and harms Oregon's quality of life. The choice is not timber versus recreation, but rather, timber versus every other economic sector in the state that depends very much on the flow of these ecosystem services to support its diversified economy.

The DEIS (p 545) says "Changes in timber harvest are the primary influences on projected future BLM-based employment and earnings in local economies in the planning area. This is because changes by alternative for other resources are either unavailable or very small." There are several problems with this analysis:

- The conclusion that BLM can positively influence the local timber economy is brought into question by the fact that the timber industry is volatile, declining, and subject to a wide range of forces beyond BLM's control, e.g., "commodity-based industries are subject to the highs

and lows of business cycles not only in the United States, but also internationally." DEIS (p 568).

- BLM assumes inappropriately that recreation and other economic sectors are insensitive to logging on BLM lands. This ignores the fact that logging degrades not only the recreation experience, but also degrades a wide variety of ecosystem services and amenity values that must be carefully conserved in order to sustain and grow other sectors of the economy. BLM needs to disclose the fact that the overall economy is likely to thrive, not just "in spite" of reductions in federal log supply caused by increased emphasis on conservation, but "because" of greater conservation of public lands.[454]
- This conclusion also ignores the adverse effects of volatility in the wood products sectors, which diminishes the social value of jobs in those sectors and adds to a variety of social problems related to job insecurity. "If industries increase that exhibit historic instability, they may inject greater economic instability into their host communities." DEIS (p 568).

DEIS (p 569) says "Industrial specialization can be beneficial to an area, though it may, at the same time, subject the area to greater volatility. Growth and stability are both important though sometimes competing concepts in a portfolio of economic growth and development considerations." This seems to imply that BLM can stimulate increased rates of economic growth by increasing federal timber supply. The DEIS fails to recognize that this is highly unlikely given the fact that the timber industry is a mature industry that is stagnant and declining relative to other sectors that are growing much faster.

The DEIS failed to adequately consider trends. For instance, timber jobs are trending down; recreation (and other) jobs are trending up.

> *Between 1990 and 2000, employment grew by 29 percent in the 72 counties in the Plan area. During the same period, manufacturing grew by 3 percent, compared to 56 percent employment growth in the services sector. Most of the other major industries grew at rates varying between 23 and 32 percent (fig. 3-1). [p 37]*
>
> *Federal forests were becoming highly valued for recreation, visual quality, and the protection of water, wildlife, and fish. The regional economy was also maturing. Agriculture and industries based on the extraction of forest resources showed little growth. The percentage of people in the region whose livelihood was based on the extraction of goods and services from federal lands shrank. [p 38]*
>
> *The total decline of 30,000 jobs in the primary processing industries (SIC 24 and SIC 26) [during the 1990s] is contrasted to changes in total employment across all industries in the Plan area. During the 1990s, there was an increase in total employment of 1.4 million jobs. Primary wood-products processing accounted for 2 percent of all jobs in the Plan area in 1990 and dropped to 1 percent by 2000. [p 41]*[455]

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[454] See Neimi, Whitelaw, & Johnston 1999. The Sky Did NOT Fall. ECONorthwest. http://pages.uoregon.edu/whitelaw/432/articles/SkyDidNotFallFull.pdf

[455] USDA/USDI. 5-volume Northwest Forest Plan, 10-Year Socioeconomic Monitoring Report, http://www.fs.fed.us/pnw/publications/gtr649/pnw-gtr649_vol3_pt5.pdf.

Other notable economic trends include:

- Declining real wages in the timber industry, especially when compared to other industries. It does not makes sense to encourage growth in an industry that is systematically trying to break-up unions, reduce wages, reduce benefits, etc.
- Declining jobs per million board feet of timber harvest. If the goal is to create jobs, it does not make much sense to feed more public wood to an industry that uses more machines and computers and fewer people.
- Shrinking share of total employment in the timber industry relative to the economy as a whole. It is unwise economic policy to prop up declining/polluting industries like timber. It is better to focus limited public resources on clean, growing industries.
- Increasing consolidation in the industry. Jobs are becoming concentrated in areas near the I-5 corridor, where communities have more options for economic growth and diversification. BLM cannot stop this trend by increasing the wood supply.
- "Areas with high levels of natural amenities have enjoyed growing populations and income levels in the past decade. Much of this growth has come from the immigration of people with income from self-employment or investments. These new migrants are usually well-educated and often work as executives or professionals or in such industries as finance, insurance, and real estate or business services. Communities may find that policies that enhance the quality of life (better schools, environmental protection, etc) can attract more of these people who are in a financial position to act upon their residential preferences. This in turn can stimulate economic development." [456]

Many of the tables in the socio-economic section of the DEIS are labelled "total jobs" even though the DEIS really only looked at timber jobs and recreation jobs, and failed to disclose amenity-induced job creation. "Total jobs" should not be used to describe jobs in just two sectors of the economy.

The DEIS makes several statements about conservation alternatives causing "disproportionately negative economic effect" for certain counties, but these conclusions do not consider all of the economic factors or even all of the job creation factors.

The DIES implicitly recognizes that lands close to communities are disproportionately valuable for recreation. DEIS (p 489) says that BLM manages about 50% of the land located within 30-minute driving time of the 12 largest communities in western Oregon, and 34% within 60-minute driving time. However, the DEIS also implies that the economic value of recreation is similar across alternatives. DEIS (p 526) says that the economic value of $250 million for recreation is "consistent across all alternatives." This fails to recognize that logged over lands are far less desirable for recreation. Logged areas are unsightly and tend to have a lot of trip-hazards from brush and logging debris, plus a lot of thistles and blackberries which are barriers to recreation. The EIS should disclose how much of the BLM land within 30 and 60-minute driving time is in timber harvest land allocation versus reserve land allocations. The EIS must disclose the adverse

[456] Peter B. Nelson. 1999. Quality of Life, Nontraditional Income, and Economic Growth New Development Opportunities for the Rural West. Rural Development Perspectives, vol. 14, no. 2. http://www.ers.usda.gov/publications/rdp/rdpsept99/rdpsept99e.pdf

economic impact of increased timber harvest within a 60 minute drive of communities large and small.

The DEIS uses economic multipliers from OFRI which tend to inflate the economic importance of the timber industry.

To understand local communities, the ID Team interviewed elected officials. These people have a clear economic conflict of interest, so they are unlikely to provide unbiased information about the overall wants and needs of the county with respect to public lands.

The DEIS does not accurately represent the relationship between big cities/small cities. Money flows from big cities to small, so small cities will enjoy trickle down benefits if BLM emphasizes conservation and amenity-based economic growth, even if those effects are felt first in larger cities.

BLM's attempt to switch from thinning back toward regeneration might gain some economic efficiency in terms of sale preparation and logging implementation, but it also creates uncertainty in terms of social acceptability of clearcutting and risk of litigation. The DEIS did not account for this.

The analysis assumes that BLM is a "price taker." This means that BLM has such a minor effect on supply that the market does not notice if they supply more or less timber and prices do not change. This has a variety of implications in terms of "leakage" in the carbon storage analysis, etc.

I. DEIS ANALYSIS OF NON-MARKET ECONOMIC VALUES NEEDS IMPROVEMENT

DEIS Tables 3-159 and 3-173 provides some information on non-consumptive and non-market economic values but this analysis is inadequate:

- The DEIS failed to quantify many economic benefits of conservation even though there are tools available to do so, such as surveys inquiring about people's "willingness to pay" for endangered species recovery, old growth restoration, biodiversity, etc...
- The DEIS failed to recognize variation among alternatives, and thus failed to recognize the value of conservation. The DEIS (P 480) says "it is not possible to calculate how BLM actions could affect the values of these goods and services using market prices." For instance, Table 3-173 seems to indicate that all the alternatives have similar economic values for recreation, which ignores the fact that logged lands are far less desirable for recreation. (See recreation comments) BLM can provide quantitative estimate of these economic impacts or at least predict the relative economic values based on each alternative's relative emphasis on logging versus conservation. The EIS must clearly reflect that fact that alternatives with greater conservation will tend to provide greater non-market economic benefits.
- The DEIS failed to integrate the extensive analysis of timber economics with these non-consumptive and non-market economic values. It is critical that the EIS provide some way of comparing the economic value of conservation versus logging. If the EIS puts a dollar value on timber, but leaves non-market values unquantified, the unavoidable effect will be to artificially elevate the importance of timber and devalue non-market economic benefits of conservation.

- The value of water quality protection is likely underestimated. The DEIS focused on source water protection for drinking watersheds. High quality water is valuable for many purposes other than drinking water, including: swimming, fishing, supporting biodiversity, diluting downstream pollution, etc. The DEIS needs to disclose the value of providing water quality that goes beyond the bare minimum necessary to meet legal requirements. The law allows some pollution, and BLM timber sales often contribute sediment to streams, but BLM can provide social and economic benefits by preventing any degradation of water quality.
- The DEIS fails to quantify and underestimates the economic value of conserving biodiversity. Maintaining biodiversity is critical for climate change mitigation, maintaining the genetic resources for developing future crops sources of medicine, preserving genes and proteins that could be useful in future technology, conserving pollination services, hunting/fishing/wildlife-watching, etc. The DEIS needs to disclose the value of providing biodiversity that goes beyond the bare minimum necessary to meet legal requirements. Instead of just striving to conserve threatened and endangered species, BLM should strive to prevent other species from being listed, and should strive to maintain and restore healthy populations of native wildlife. The law may allow some degradation of wildlife resources, and BLM regeneration timber sales often degrade habitat, but BLM can provide social and economic benefits by preventing degradation of biodiversity.

Table 3-159. Summary of economic value of goods and services derived from BLM-administered lands in western Oregon, 2012.

Good or Service	Type of Valuation	Economic Value in 2012
Biodiversity and Sensitive Species	Qualitative	Not Monetized
Carbon Storage	Non-Market	$99 million
Cultural Meaning	Qualitative	Not Monetized
Energy Production	Market	$0.032 million
Grazing	Market	$0.022 million
Minerals	Market	$0.015 million
Recreation	Non-Market	$222.8 million
Scenic Amenities	Qualitative	Not Monetized
Source Water Protection	Qualitative	Not Monetized
Special Forest Products	Market	BLM Revenue: $0.2 million; Market Value Low $0.4 million, Market Value High $6.5 million
Timber	Market	$20.8 million (Harvest Value)

[DEIS p 508]

Table 3-173. Table summary of effects on economic value of goods and services derived from BLM-administered lands in Western Oregon.

Good/Service	Type of Valuation	Economic Value in 2012	Impact by Alternative				
			No Action	Alt. A	Alt. B	Alt. C	Alt. D
Biodiversity and Sensitive Species	Qualitative	Not Monetized	-	Lower valueless increase associated with less increase in structurally-complex forest.	Higher increase associated with more increase in structurally-complex forest.	Less increase associated with less increase in structurally-complex forest.	Higher increase associated with more increase in structurally-complex forest.
			-	Diminished economic well-being associated with less butterfly habitat. Economic values associated with species generally protected or enhanced in the long run.			
Carbon Storage	Non-Market ($ millions)	$99	$131.4	$179.3	$165.0	$54.6	$232.8
			Average per year 2013 - 2022				
Cultural Meaning	Qualitative	Not Monetized	Value of cultural sites and artifacts protected across all alternatives. Overall effect on cultural meaning impossible to assess at the present scale of analysis.				
Energy Production	Market	$0.032 million	Value of energy production across all alternatives limited by lack of demand. Supply of biomass would increase; Supply of land available for wind/ROW development would decrease.				
Grazing	Market	$0.022 million	No change in supply or value of grazing.				No grazing would reduce value to $0.
Minerals	Market	$0.015 million	Small change in acres available for quarry development would not likely be large enough to change quantity or value of minerals produced. No change in value of locatable or leasable minerals.				
Recreation	Non-Market ($ millions)	$222.8	$250.1 (Consistent under all alternatives)				
Scenic Amenities	Qualitative	Not Monetized	Potential 77% reduction in VRI Class II could reduce value of aesthetic resources	Potential 75% reduction in VRI Class II could reduce value of aesthetic resources	Potential 82% reduction in VRI Class II could reduce value of aesthetic resources	Potential 82% reduction in VRI Class II could reduce value of aesthetic resources	Potential 90% reduction in VRI Class II could reduce value of aesthetic resources
Source Water Protection	Qualitative	Not Monetized	No change under any alternative.				
Special Forest Products	Market	BLM Revenue: $0.2 million; Market Value Low $0.4 million, High $6.5 million	Changes in supply of lands suitable for the production of Category 1 and Category 2 species produce relatively small changes and would likely have a small effect on the overall supply, and thus the value, of each category of special forest product in the planning area.				
Timber	Market ($ millions)	$20.8	$93.0	$56.2	$72.9	$134.9	$37.4
			Average per year 2013 - 2022				

[DEIS p 526]

Several sources support our recommendation to take a broader view of the economic value of biodiversity, and the need for BLM to strive to do much more than just conserve species that are already listed:

> *Preserving biodiversity also means preserving a reservoir of as-yet-undiscovered medical treatments and cures. … Ecological policies that seek to preserve biodiversity and limit human influences on ecosystem organization may thus be in the best interest of public health, both because biodiversity can yield treatments for existing diseases and*

provide a buffer against exposure to emergent ones. … Conservation makes good sense in just the same way that preventive medicine does.[457]

[B]iodiversity is positively related to the ecological functions that underpin the provision of ecosystem services. … [E]cological restoration is likely to lead to large increases in biodiversity and provision of ecosystem services, offering the potential of a win-win solution in terms of combining biodiversity conservation with socio-economic development objectives.[458]

Recently, some scientists have expressed renewed interest in natural products research following the failure of alternative drug discovery methods to deliver lead compounds in key therapeutic areas such as immunosuppression, anti-infectives and metabolic diseases.

"Natural products research remains invaluable when it comes to providing that initial lead," Wani said. "Before we explored the Pacific Yew tree we had no idea that we could treat cancer and other diseases through microtubule overproduction."

Wani said such discoveries support his contention that "nature is the best chemist."

Another proponent of natural products research at RTI, Dr. David Kroll researches milk thistle compounds as a possible way to treat prostate cancer.

"The natural world has 10 times more chemical diversity than synthetic compounds," said Kroll, a senior research pharmacologist. "We just have to get to it in time." [459]

It is also important to conserve biodiversity because it could prove useful to humans in was that have not yet been investigated. Only a fraction of plant species have been tested for activity against cancer, AIDS, Alzheimer's, infectious bacteria, etc. For example, Research Triangle Institute International (RTI.org) is funded by a grant from the American Cancer Society, to test more than 10,000 mushroom extracts for the presence of chemicals that have potential as chemotherapy drugs. BLM forests harbor tremendous fungal diversity, much of which remains unsurveyed and unrecognized when logging projects are proposed.

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[457] American Council on Science and Health. Why Biodiversity Is a Public Health Issue. November 2, 2005. http://www.acsh.org/factsfears/newsID.658/news_detail.asp.

[458] José M. Rey Benayas, Adrian C. Newton, Anita Diaz, and James M. Bullock. 2009. Enhancement of Biodiversity and Ecosystem Services by Ecological Restoration: A Meta-Analysis. Science 28 August 2009: 1121-1124.

[459] Taxol Pioneer Calls for Greater Emphasis on Natural Products Research , Feb 18, 2005.

http://www.rti.org/newsroom/news.cfm?obj=9BB6E900-3E77-4CEC-9EB6321166A3E61C.

THE COQUILLE LANDS

Reading the DEIS, we do not see clearly what BLM is proposing to do with the lands surrounding the Coquille Tribal Forest, but we do know that the BLM has been trying to decouple tribal management from BLM management standards.

In 1995, Congress granted the Coquille Tribe approximately 5,400 BLM lands with explicit conditions on forest management. It is Congress's intent, as written in law, that management of the Coquille Tribal Forest shall be managed "subject to the standards and guidelines of Federal forest plans on adjacent or nearby Federal lands, now and in the future." [460] BLM says it's purpose is to coordinate with the Coquille Tribe on management of "adjacent and nearby" BLM lands. This purpose will undermine Congressional intent by weakening standards on adjacent federal lands, for the express purpose of ensuring the Tribal forest is managed different than the rest of BLM lands. Congress' intent was to manage lands *similarly*, but the purpose of BLM's effort here is to ensure that tribal trust lands are managed *different* than most of BLM lands in western Oregon.

DEIS at 582 expressly states that, "The Tribe specifically wants to decouple management of the Coquille Forest from BLM management practices." BLM must not accommodate this decoupling because it very clearly violates Congressional intent that management of the tribal forest be coupled to management of BLM lands. Congress explicitly said management of the tribal forest shall be managed "subject to the standards and guidelines of Federal forest plans on adjacent or nearby Federal lands, now and in the future."[461] The phrase "subject to" makes clear that BLM management standards lead, and tribal forest management must follow.

We encourage BLM to coordinate with the Coquille Tribe (and others), especially developing and considering alternatives that will lead to meaningful advances in conservation and community stability.

DEAD AND DOWN WOOD STANDARDS

Dead wood habitat is associated with the abundance or presence of approximately one quarter to one third of vertebrate wildlife in Northwest forests. At least 47 species deemed sensitive or special-status have associations with dead wood such as downed logs and snags, and at least 20% of birds in the western Oregon Doug-fir forests depend on snags for feeding or nesting.[462] Pileated woodpeckers play a crucial keystone species role in Oregon's forests, and are directly affected by snag habitat availability. Over two dozen bird species have been shown to use cavities that have been previously excavated by Pileated woodpeckers. Species which subsequently use pileated-created cavities to nest or roost include the flammulated owl, the bufflehead, and Vaux's swifts, which are on sensitive species lists or are considered priority species in Oregon or Washington. Other vertebrate species include the northern flying squirrel,

[460] 25 U.S.C. 715c(d).
[461] Id.
[462] Hagar 2007, Cline et al. 1980.

which is the primary prey of the northern spotted owl, as well as the common merganser, silver haired bat, and fisher, and American marten.[463]

Many BLM special status bat species are also dependent on standing dead trees. These bats are associated with decadent live trees and large snags with sloughing bark, which are used variously as solitary roosts, maternity roosts, and hibernacula by bat species associated with Douglas-fir forests.

Over the past 100 years, most of Oregon's native old-growth forests have been logged, taking with them their potential to grow large, die naturally and become snags that provide essential wildlife habitat, and many parts of the management area are currently in a deficit of large snags. To protect this essential wildlife habitat, the Northwest Forest Plan establishes mandatory minimum snag retention standards for timber sales on federal public lands, which has been incorporated in to the existing BLM District RMPs: Retain snags in a timber harvest unit at levels sufficient to support species of cavity nesting birds at 40% of potential population levels. This 40% requirement must be met throughout the Matrix with per acre requirements met on areas averaging no larger than forty acres. *See e.g., Salem BLM RMP at 21*

The BLM's draft RMP for Western Oregon does away with this biologically-driven snag retention standard, replacing it with draft standards that treat existing and newly created snags as interchangeable, and averages the snag density standards across the "scale of the harvest unit" which could be hundreds, if not thousands, of acres.

While each alternative offers a slightly different quantification for snags, both existing and created, the approach is essentially the same: no specific snag retention standards – just a vague direction to "retain existing snags and existing down woody material during silivicultural treatments except for safety or operational reasons." This is coupled with the direction to create new snags at the time of harvest. *See RMP EIS at 962, 974, 984*. The lack of quantified retention standards coupled with a reliance on human-created snags poses the threat of significant habitat loss for snag-dependent species.

As large snags are required for the habitat requirements of many species but are in short supply due to past and present management the Western Oregon RMP should exclude stands with high snag densities from harvest, or utilize buffers in order to protect snags, particularly legacy snags.[464]

Ease of human access, along with timber harvest, has a significant negative impact on snag density.[465] Forest stands which are thinned retain snag densities approximately three times lower than in stands with no history of logging, and snag densities in forest stands adjacent to roads are approximately three times lower than those not adjacent to roads. [466]

None of the draft RMP EIS alternatives take the necessary steps to protect or retain existing snags, and so will exacerbates the current deficit of legacy snags. Since all alternatives allow for

[463] Aubrey & Raley 2002.
[464] Cline et al. 1980, Windom and Bates 2008.
[465] Windom and Bates, 2008.
[466] Id.

snags to be cut as needed for "safety or operational reasons" and do not include any protective buffers for legacy snags, the alternatives do not ensure that essential snag habitat will be protected. Most snags could be considered a safety hazard if logging takes place nearby, or they could simply be knocked over during logging. This draft RMP fails does not explain how the BLM will maintain adequate snag density to provide for even minimum wildlife habitat needs. This is especially crucial because many of the management areas already exist in a state of insufficient snag density due to past management practices and numerous recent timber sales. A general statement of 'trying' to retain snags, which lacks any numeric standards or actual accountability, is insufficient to address the current snag deficiency crisis, or to ensure that existing snags are protected and retained.

I. CREATED SNAGS CANNOT BE RELIED ON TO PROVIDE QUALITY HABITAT

All the alternatives rely on the creation of new snags, rather than the specific retention of existing snags, to provide adequate wildlife habitat. There are two key problems with the approach that the draft RMP EIS did not adequately address. First, while snag density may be augmented by killing live trees, the range of diameters of the trees available in young stands from which to create snags may not be adequate for many cavity-using species. Snags < 50cm dbh are infrequently used as nest or roost sites by cavity-using wildlife in western Oregon (Mellen et al.: DecAID).

Second, there is a significant time lag between the creation of snags and their utility as habitat. A study that monitored 1,267 created snags in Willamette National Forest found trees killed within the last 10 years had little decay and had neither ant colonies nor adequate nesting roosting cavities. (Boleyn, et. al., 2002). Regarding the keystone snag species pileated woodpeckers, the study found foraging use in only 1.5% of created snags after 10 years. *Id.* A created snag is *not* interchangeable with an already existing snag as regards wildlife habitat needs and the RMP EIS should reflect this time lag and its impacts on species distribution after management actions that remove existing snags.

II. DEADWOOD RETENTION STANDARDS ARE NECESSARY IN RIPARIAN RESERVES

The draft RMP EIS does not seem to include snag and deadwood retention standards specific to Riparian Reserves. In fact, removing dead trees as needed for safety or operational reasons is explicitly allowed in Riparian Reserves, without any limitations on size of the tree or proximity to the waterbody.[467] A recently published peer-reviewed study by two research scientists from the National Oceanic and Atmospheric Administration (NOAA) directly addressed the need to retain large dead wood in Riparian Reserves, as it is the key driver of attaining riparian biodiversity.[468] The final management guidelines of the RMP should require a specific numeric standard for retention of large dead wood, both standing and downed, in Riparian Reserves.

[467] Draft RMP EIS at 917.
[468] Pollack & Beechie, 2014.

III. ADEQUATE SOURCES OF DEADWOOD ARE ESSENTIAL FOR SOIL PRODUCTIVITY

Retaining adequate sources of deadwood is also essential for long term soil health – an issue not addressed in the draft RMP's Management Direction for Soil, which focus primarily on limiting soil compaction and disturbance and does not include protecting the sources of long-term soil productivity.[469]

Soil and soil productivity are fundamental aspects of forested ecosystems that influence the composition and condition of vegetation, rates of vegetative recovery after disturbance, sediment flux, and the quantity, timing, and quality of water produced by watersheds, which, in turn, affect aquatic populations and habitats. [470]Large woody debris (LWD) provides important sources of organic matter and nutrients in soils, which are vital to the long-term maintenance and protection of soil productivity.[471]

Despite these the well-known importance of LWD to soil productivity the draft RMP EIS fails to disclose that scientific information has repeatedly noted that one of the most effective, efficient and important ways to restore degraded soil productivity is to retain all sources of LWD and organic matter and prevent additional soil disturbances in degraded areas. (Kattlemann, 1996; Beschta et al., 2004). The final RMP EIS should include specific numeric standards for retention of existing LWD in all management areas sufficient to provide for both habitat and long-term soil productivity.

LANDS WITH WILDERNESS CHARACTERISTICS

Pursuant to the Federal Land Policy and Management Act (FLPMA), "The Secretary shall prepare and maintain on a continuing basis an inventory of all public lands and their resource and other values (including, but not limited to, outdoor recreation and scenic values), giving priority to areas of critical environmental concern. This inventory shall be kept current so as to reflect changes in conditions and to identify new and emerging resource and other values." 43 U.S.C. §1711(a). Wilderness character is a resource for which BLM must keep a current inventory. As the U.S. Court of Appeals for the Ninth Circuit recently held: "wilderness characteristics are among the 'resource and other values' of the public lands to be inventoried under § 1711. BLM's land use plans, which provide for the management of these resources and values, are, again, to 'rely, to the extent it is available, on the inventory of the public lands, their resources, and other values.' 43 U.S.C. § 1712(c)(4)." *Oregon Natural Desert Ass'n v. Bureau of Land Management*, 531 F.3d 1114, 1119 (9th Cir. 2008). Therefore, BLM is required to consider "whether, and to what extent, wilderness values are now present in the planning area outside of existing WSAs and, if so, how the Plan should treat land with such values." *Id*. at 1143.

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[469] RMP EIS 929-30.
[470] Beschta et al., 2004.
[471] Beschta et al., 2004; Karr et al., 2004.

BLM now has current guidance requiring updating its inventory of lands with wilderness characteristics and considering protection of those values. Instruction Memorandum (IM) 2011-154 and Manuals 6310 and 6320 contain mandatory guidance on implementing that requirement. The IM directs BLM to "conduct and maintain inventories regarding the presence or absence of wilderness characteristics, and to consider identified lands with wilderness characteristics in land use plans and when analyzing projects under the National Environmental Policy Act (NEPA)." BLM must update its inventory of lands with wilderness characteristics as part of this land use planning process. Manual 6310 provides detailed guidance on conducting inventories of lands with wilderness characteristics. The manual identifies situations when BLM must update its inventory:

1. The public or the BLM identifies wilderness characteristics as an issue during the National Environmental Policy Act (NEPA) process.
2. The BLM is undertaking a land use planning process.
3. The BLM has new information concerning resource conditions, including wilderness characteristics information submitted by the public that meets the BLM's minimum standard described in the Wilderness Characteristics Inventory Process section of this policy.
4. A project that may impact wilderness characteristics is undergoing NEPA analysis.
5. The BLM acquires additional lands. (6310.06.A).

Many of these conditions apply to lands under consideration, which have not been actively re-inventoried by the BLM using the detailed standards and procedures set out in the current guidance. Once there is new information that meets the general submission standards, then "as soon as practicable, the BLM shall evaluate the information," including field checking as needed and comparing with existing data to see if previous conclusions remain valid. BLM is also required to document its rationale and *make it available to the public*. 6310.06.B.2 (emphasis added).

Further, BLM Manual 6310 also sets out detailed guidance on how to identify wilderness characteristics, including how to define "naturalness," "roads," "outstanding opportunities for solitude or primitive and unconfined recreation," and "supplemental values." The guidance explicitly cautions that, "undeveloped possessory interests (e.g., mineral leases) are not treated as impacts to wilderness characteristics because these rights may never be developed." 6310.06.C.3.d. Furthermore, the BLM is supposed to consider "existing conditions as opposed to potential future conditions" when evaluating lands for wilderness characteristics. 6310.06.B. Thus, BLM should not rule out lands as having wilderness characteristics (or for management to protect those characteristics) either because there are valid existing rights or the lands are in proximity to an area with other development or rights-of-way.

The current guidance was not available during BLM's previous evaluation of potential lands with wilderness characteristics and requires that the BLM update its inventory to comply with the agency's official interpretation of FLPMA.

BLM needs to identify wilderness areas being considered by congress, unroaded areas adjacent to forest service wilderness, and unroaded areas adjacent to forest service inventoried roadless areas.

The BLM cannot pre-empt the will of Congress by damaging areas currently being considered in wilderness legislation. Specifically the areas identified as "Wild Rogue Wilderness" and "Devils Staircase Wilderness" in Senator Wyden's O&C legislation must be reserved from timber harvest modeling and any management actions that would damage wilderness characteristics. These areas would also need to be identified for mineral withdrawal in the RMP. Additionally the BLM must conduct a geospatially explicit analysis to identify potential BLM wilderness adjacent to existing Forest Service wilderness and large inventoried roadless areas such as the South Kalmiopsis Roadless Area. For example, lands adjacent Forest Service lands in the Rough and Ready Creek drainage need to be evaluated for wilderness and mineral withdrawal. Other ultramafic lands on the west side of the Illinois Valley also need to be considered for eventual wilderness designation as a combined unit with Forest Service roadless areas.

BEST MANAGEMENT PRACTICES

Use of Best Management Practices traces its origins to the Clean Water Act as an approach to minimize impacts from nonpoint sources of water pollution. As defined by the CWA: Best Management Practices (BMPs), are methods, measures or practices selected by an agency to help minimize its nonpoint source control needs. BMPs include but are not limited to structural and nonstructural controls and operation and maintenance procedures. BMPs can be applied before, during and after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters. 40 CFR §130.2(m).

Environmental advocacy group Bark has surveyed many timber sales for compliance with Best Management Practices and found several violations. For example, in the Salem BLM's Missouri Ridge Timber Sale, the BMPs limit "ground based operations to relatively dry soil conditions". Based on what we saw on the ground we are confident in highlighting that soils were not dry while operations were taking place. The degree of soil damage on the roads, skid trails and landings, including deep ruts and compacted mud are good indicators that this BMP was not followed. A local resident also reported that logging and hauling occurred during rainy conditions when he visited the unit in fall 2013.

Similarly, when Bark staff and volunteers surveyed the Annie's Cabin Timber Sale after logging, they found that BMPs were not followed, specifically regarding erosion control measures were to be placed on the roads post-implementation. Bark found that the only such measures included shallow earthen waterbars, which were not effective in preventing channelization along the roads, carrying sediment down the roadbed (pictured at right). This road is obviously NOT fully stabilized.

These findings point to both the inability of the BLM timber sale administrators to ensure BMPs and timber contract specifications are fully complied with, and the insufficiencies of BMPs in preventing environmental harm. Thus, when the BLM asserts that resource extraction projects

will not have significant environmental impacts because of the BMPs, it can offer no assurance that these BMPs will be fully implemented, or will be effective at minimizing or mitigating the known environmental impacts.

Not only is the BLM unable to assure that the BMPs will, in fact, be followed and/or mitigate the adverse impacts, recent studies disclose that even if followed, BMPs do not consistently reduce adverse environmental effects. In the context of road construction BMPs, there is reliable data indicating that BMPs cannot always reduce the adverse impacts of road building on aquatic resources to ecologically negligible levels, especially within the context of currently pervasive watershed and aquatic degradation.[472] The nationwide assessment of BMP effectiveness commissioned by the USEPA performed by the Great Lakes Environmental Center (GLEC) specifically noted that BMPs aimed at reducing road impacts are not 100% effective, and, in particular, that efforts to prevent road drainage to streams have considerable potential for failure, especially in the Pacific Northwest. [473]

In its report, GLEC found that in the Pacific Northwest, "conventional BMPs for road construction may not be sufficient to prevent adverse effects on stream channels and fish habitat."[474] Activities implemented with somewhat effective BMPs still often contribute to negative cumulative effects on aquatic systems.[475] Espinosa et al. (1997) documented that aquatic habitats were severely damaged by roads and logging in several watersheds despite BMP application, and that blind reliance on BMPs in lieu of limiting or avoiding activities that cause aquatic damage serves to increase aquatic damage.

Not only is the effectiveness of the BMPs included unsupported by field data, the draft BLM RMP fails to include the most effective BMPs:

- avoidance of implementing damaging logging, landing, and road activities in high hazard, sensitive, or degraded areas, such as stream crossings, Riparian Reserves, and unstable terrain, such as earthflows; and
- full protection of an adequate width of riparian areas to prevent or reduce the transmission of upslope impacts to streams.

The management practice of avoiding high impact activities in sensitive terrain has long been recognized to be far more effective than attempting to reduce such impacts via other BMPs with limited effectiveness. Avoidance of sensitive areas is critical, because as GLEC (2008) noted with respect to road impacts, "in some cases, however, control of the problem may not be feasible: location 'trumps' management practice." It has long been recognized that full protection of the area of vegetation within 200 to >300 ft of the edge of all stream types is one of the most important and effective ways to limit the impacts from upslope logging-related disturbances, as numerous independent scientific assessments have repeatedly concluded.

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[472] Ziemer and Lisle, 1993; Espinosa et al., 1997; Beschta et al., 2004; GLEC, 2008
[473] GLEC, 2008.
[474] Id.
[475] Ziemer et al., 1993; Rhodes et al., 1994; Espinosa et al. 1997; Beschta et al., 2004; GLEC, 2008.

3P FALL BUCK AND SCALE

Page 39 of the DEIS indicates that the BLM intends to conduct pre-decisional falling of trees in proposed logging units as a timber cruising mechanism. The impacts of this proposed practice are not disclosed or analyzed in the document. Federal courts have already rejected pre-decisional falling as an irretrievable commitment of resources. No other state or federal land management agency finds it necessary to rely upon pre-decisional timber felling to achieve accurate timber cruise data. The proposal to revive 3P Fall Buck and Scale is arbitrary and capricious.

SUDDEN OAK DEATH

The DEIS analysis of the no action alternative is inaccurate because it assumes no treatment of SOD, even though it is routinely conducted under the no action alternative. This makes the effects analysis unrealistic and inaccurate.

BLM should consider the fact that SOD treatments have limited effectiveness because SOD continues to expand in spite of ongoing treatments. Does BLM know how much (if any) SOD treatments slow the spread of the disease? The pathogen has survived eradication treatments in many sites and 8 of the previously know sites expanded in spite of aggressive eradication efforts. The size of the Curry County quarantine area expanded from 9 to 11 square miles.[476]

DEIS at 746 indicates that BLM did not consider the effects of Sudden Oak Death (SOD) on spotted owls. ("The BLM analysis did not address these conservation needs because they are habitat-independent and would be unaffected by RMP decisions. ") This is inadequate. BLM specifically says they intend to adopt a RMP Revision that minimizes the spread of SOD (DEIS p 76). SOD treatment involves aggressive logging and burning of infected sites. This is a habitat effect that must be considered in the FEIS.

SOD eradication efforts pose their own threat to spotted owl habitat, because eradication means cutting all vegetation in infested sites (plus a buffer) and burning it in place. Thus eradication removes potential owl habitat and the burn intensity harms soils and retards the future growth of owl habitat. We are not suggesting that eradication should not be done, only that before the "SOD war" is over, lots of owl habitat may be lost to the cause.

Whether or not BLM adopts an alternative that does not aggressively treat SOD with logging, BLM should still consider the cumulative habitat effects of logging plus SOD-induced mortality among tree species that provide habitat for spotted owls and their prey. SOD adds to the cumulative uncertainty faced by the spotted owl and reinforces the need to conserve all suitable owl habitat. Jerry Franklin's summarized the "findings" of the Northern Spotted Owl Status Review scientific review panel as follows:

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[476] See ODF, Forest Log, Summer 2004. http://web.archive.org/web/20041109114540/http://www.odf.state.or.us/Portal/forestlogs04/ForestLogSum2004.pdf.pdf

The implications of the scientific findings with regards to conservation strategies. … … in view of current uncertainties, such as the eventual outcome of the Spotted Owl/Barred Owl competition, West Nile Virus, and Sudden Oak Death, and whatever else comes along -- such as global change and other kinds of introductions -- existing suitable habitat could be important to the persistence of the Northern Spotted Owl. [repeated with emphasis] Existing suitable habitat could be important to the persistence of the Northern Spotted Owl, i.e., risk to Northern Spotted Owl may increase if additional suitable habitat is removed. It is not clear where the Spotted Owl may find the refuge or refuges from new threats within existing suitable habitat. Barred Owl intrusions do not negate the need for structurally complex forest habitat to sustain Northern Spotted Owl based on existing knowledge.[477]

CONCLUSION

The proposal to abandon the unified cohesive forest, watershed and wildlife strategy of the NWFP is unwise and undermines many of the assumptions relied upon to facilitate recovery plans, habitat conservation plans, critical habitat designations, and ESA listing determinations throughout Oregon and the Northwest. A forest plan that increases riparian reserve logging, clearcutting, and the logging of known survey and manage habitat will create less certainty, not more, concerning timber harvest on BLM managed public forestlands.

[477] U.S. Fish & Wildlife Service Scientific Review Panel For The Northern Spotted Owl. June 22, 2004 Public Hearing. Washington State University, Vancouver Campus. Transcript Of Proceedings, page 121. http://www.sei.org/owl/meetings/minutes/june-meeting-transcripts.pdf.

Note: If any of web links in this document are broken, they may be resurrected using the Wayback Machine at Archive.org. http://wayback.archive.org/web/

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1. Anthony, R. G. 2013. Effects of Riparian Thinning on Marbled Murrelets and Northern Spotted Owls. Science Review Team.
2. Benda, Lee Use of Geospatial Data and Models in Natural Resource Management 20 July 2012.
3. BLM/FS/FWS/NOAA Fisheries-Memorandum dated June 6, 2013 concerning riparian reserve thinning.
4. Department of the Interior Fish and Wildlife Service 50 CFR Part 17 Endangered and Threatened Wildlife and Plants; Threatened Status for Oregon Spotted Frog; Proposed Rule
5. DEPARTMENT OF THE INTERIOR Fish and Wildlife Service 50 CFR Part 17 Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition To List a Distinct Population Segment of the Red Tree Vole as Endangered or Threatened.
6. Department of the Interior Fish and Wildlife Service 50 CFR Part 17 Endangered and Threatened Wildlife and Plants; Review of Native Species That Are Candidates for Listing as Endangered or Threatened; Annual Notice of Findings on Resubmitted Petitions; Annual Description of Progress on Listing Actions; Proposed Rule (fisher, red tree vole)
7. DEPARTMENT OF THE INTERIOR Fish and Wildlife Service50 CFR Part 17Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition to List Two Populations of Black-Backed Woodpecker as Endangered or Threatened
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10. Illinois Valley Salmon and Botanical Area Map
11. Illinois Valley Salmon and Botanical Area management recommendations
12. Illinois Valley Salmon strongholds map
13. Leinenbach et al. 2013. Effects of Riparian Management Strategies on Stream Temperature Science Review Team;
14. Appendix A – Synopsis of Literature Describing the Effects of Riparian Management on Stream Shade and Stream
15. Appendix B – Consolidated Summary of Literature Describing the Effects of Riparian Management on Stream Shade and Stream Temperature
16. Appendix C – Annotated Bibliography of Literature Describing the Effects of Riparian Management on Stream Shade and Stream Temperature
17. Nawa, R.K. Sixteen page letter dated December 20,2011 from R. Nawa (KS Wild) to K. Symons (BLM) concerning suction dredging and placer mining impacts to coho critical habitat on Sucker Creek, Medford District.

18. Nawa, R.K. Six page letter dated August 25,201 from R. Nawa (Siskiyou Project) to A. Jossie (BLM) concerning placer mining pit impacts to coho critical habitat on Sucker Creek, Medford District.
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20. Pollock, M., M. Heim, and D. Werner. 2003 Hydrologic and Geomorphic Effects of Beaver Dams and Their Influence on Fishes. American Fisheries Society Symposium 37

Jasmine Benjamin

From: m1allen@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Friday, August 21, 2015 1:10 PM
To: RMP-Comments@heg-inc.com
Subject: Fwd: American Bird Conservancy Comment
Attachments: wopr 2015.pdf

---------- Forwarded message ----------
From: **RMPs_WesternOregon, BLM_OR** <blm_or_rmps_westernoregon@blm.gov>
Date: Fri, Aug 21, 2015 at 8:32 AM
Subject: Fwd: American Bird Conservancy Comment
To: BLM_OR RMPWO_Comments <blm_or_rmpwo_comments@blm.gov>

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Resource Management Plans for Western Oregon
Bureau of Land Management
web: www.blm.gov/or/plans/rmpswesternoregon

FACEBOOK: www.facebook.com/blmoregon
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Before including address, phone number, email-address, or any other personal identifying information in your comments, be advised that your entire comment, including personal identifying information, may be made publicly available at any time. If you wish us to withhold your personal information you must state this prominently at the beginning of your comment. While individuals may request that the BLM withhold personal identifying information from public view, the BLM cannot guarantee it will be able to do so.

You have received this email because you have previously submitted a request to be on the mailing list, stakeholder list, submitted a comment, feedback or survey response and/or indicated interest in the RMPs for Western Oregon.

---------- Forwarded message ----------
From: **Steve Holmer** <sholmer@abcbirds.org>
Date: Fri, Aug 14, 2015 at 12:08 PM
Subject: American Bird Conservancy Comment
To: "BLM_OR_RMPs_WesternOregon@blm.gov" <BLM_OR_RMPs_WesternOregon@blm.gov>

Steve Holmer

Senior Policy Advisor

American Bird Conservancy &

Director, Bird Conservation Alliance

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AMERICAN BIRD CONSERVANCY

Shaping the future for birds

August 14, 2015

Janice Schneider
Assistant Secretary
Land and Minerals Management
U.S. Department of the Interior
Washington, D.C. 20540

Re: RMPs for Western Oregon Bureau of Land Management

Dear Assistant Secretary Schneider,

Thank you for this opportunity to comment on the draft Resource Management Plan/Environmental Impact Statement for federal forests in Western Oregon managed by the Bureau of Land Management.

As an initial amendment to President Clinton's Northwest Forest Plan, American Bird Conservancy is viewing this draft both in terms of its specific impacts to forests and wildlife in western Oregon, and how it changes the Northwest Forest Plan's regional restoration framework to provide additional habitat for and to conserve wide-ranging listed species including the Northern Spotted Owl and Marbled Murrelet.

Following a meeting with Forest Service regional foresters Jim Pena and Randy Moore in October 2014, conservation groups developed a set of consensus principles to help guide the Northwest Forest Plan revision process which are pasted below and attached. This document was broadly circulated among administration and agency staff, and discussed in follow up meetings with Interior and Agriculture Department officials, Council on Environmental Quality and Office of Management Budget staff, and BLM and Forest Service leaders and planning staff.

A key principle we now reiterate is that the regional conservation framework of the Northwest Forest Plan needs to be retained and that the BLM and Forest Service need to work together to ensure forest plans comply with the best available science and legal obligations to protect endangered species, and to provide the public a fair and complete understanding of the changes being proposed to the Northwest Forest Plan. This fundamental principle appears to have been ignored by BLM.

We are concerned that the draft alternatives reflect 1) an abandonment of the Northwest Forest Plan and the consistent regional management and restoration framework that it provides, 2) a significant weakening of protections for listed species, and water quality, by reducing riparian reserves and promoting clearcutting of mature forests including in Northern Spotted Owl critical habitat, and Marbled Murrelet nesting areas, and 3) an incomplete economic analysis that fails to recognize that recreation, clean water, carbon storage and other amenities provided by these federal forests are worth more in terms of jobs and overall economic contribution to society than an emphasis on increased timber production in endangered species habitat.

Many of these same concerns were raised in a January 22, 2015 letter to BLM Oregon State Director Jerome Perez. That letter is also pasted below and attached and it is of great concern that substantial concerns raised about the planning criteria being used for this plan revision appear to have been completely disregarded.

Northern Spotted Owl Requires Additional Habitat Protection, Not Less

A root problem is the use of the Northern Spotted Owl recovery plan and critical habitat rule to justify clearcutting currently occupied Spotted Owl habitat, including the take of large numbers of owls. All of the Northern Spotted Owl comment letters below should be considered as being part of our comments on the Draft RMPs/EIS.

Recent studies show that Spotted Owls are well-adapted to fire, and that post-fire logging, and mechanical thinning in owl habitat pose a significant threat and are contributing to population declines. Comments supporting uplisting the Northern Spotted Owl are below, as are comments on the draft Northern Spotted Owl Critical Habitat rule and an analysis of the final rule.

These include discussion on the need to protect all suitable Northern Spotted Owl habitat, not just high quality habitat, concerns about ecoforestry which would further fragment habitat and likely facilitate Barred Owl invasion, and the lack of adequate scientific justification for creating early seral habitats by logging mature forests. The Coos Bay BLM Wagon Road Pilot project was justified based on the need for more early-seral habitat in moist-forests, in this case, in exchange for the "take" of four Northern Spotted Owls. Some recent pictures are here: https://picasaweb.google.com/112037980213765028264/WagonRoadPilotProjectCut?authuser=0&feat=directlink

A key piece of new information is now available, the 20-year monitoring reports of the Northwest Forest Plan, is now available and should be considered. The reports indicate that the plan is working as intended, creating additional habitat for listed species, improving water quality, guiding needed restoration, and providing a stable supply of timber. We urge that the reports be included in the comment record in their entirety.

ABC comments below address the issue of timber volume, and in brief, our review indicates that the BLM and Forest Service are producing as much timber as Congress is funding. Approximately 757 million board is the estimated volume that can be produced in the Northwest Forest Plan area, and the agencies have been consistently producing over 600 million board feet. Any perceived shortfall is related to funding levels set by Congress and the administration, and not the result of litigation by conservation groups.

A Faulty and Fictional No Action Alternative

The No Action Alternative is based on the Northwest Forest Plan is written, as opposed to how it actually being implemented in 2015. As a result, it does not offer a useful baseline for analysis, particularly for the 50-year projections, or for comparison with the proposed draft alternatives.

Even worse, it appears that the draft seeks to purposefully mislead the public by claiming expected timber outputs under the Northwest Forest Plan as written despite the fact that old growth logging projects in matrix were typically found by federal courts to be illegal. As a result, it is not possible for the interested public to determine if the drafts provide comparable levels of conservation to the requirements of the Northwest Forest Plan plus the adaptive management changes made since 1994 during implementation of the plan.

Timber Harvest & Value
The annual timber harvest value from 2012 was $23 million. Under all alternatives it would increase; for alternative D it would increase to $37 million, and under Alternative C to $135 million, a 586% increase (p. 472). This assumes both an increase in total harvest volume, and the logging of larger, higher values trees than the current average.

Recreation Value
The 2012 value of recreation is estimated at $223 million, and annual recreation value is expected to increase over the next decade to $250 million annually in each alternative. BLM administers approximately 50 percent of all public land within 30-minute driving time of the 12 largest communities in western Oregon, and 34 percent within 60-minute driving time. There were 10.8 million participants in recreation, with wildlife/nature viewing, scenic driving, camping and picknicking, non-motorized trail use, and hunting all experiencing over one million participants (p. 489). BLM projects 16.5 million annual participants by 2060 (p. 491). It is estimated that hunting, including Migratory Game Birds generates $26 million annually, and that wildlife viewing adds another $31.5 million.

Employment
In 2012, BLM management contributed 7,900 jobs and $355 million in earnings to the planning area, about .4 percent of total jobs and earnings. Under the alternatives this ranges from 6,900 jobs (Alt D) to 12,419 jobs (Alt C) (p. 472). Roseburg and Coos Bay Districts may experience losses under Alts A, B and D.

Special Forest Products
In 2012, BLM issued 4,029 special forest product permits. The market value was estimated at a minimum of $4 million, but largely depending on the value of gathered mushrooms, could be as high as $45 million (p. 496).

Carbon Storage Value
In 2012, the forests in the decision area fixed and stored a net total of about 673,000 metric tons of carbon (p. 501). While there are market that exist to provide payments for carbon storage, there is currently no such market operating in western Oregon, and BLM does not participate. Absent a market value, BLM has analyzed the social cost of carbon which attempts to put a monetary value on the likely costs of climate change. There is considerable debate about these costs, so BLM has provided a range of values. At the low end, is an estimate of $99 million dollars a year resulting from carbon storage on BLM managed lands. At the high end, $291 million (p. 502).

Source Water Protection
BLM-administered public lands capture, filter and convey water that people in western Oregon drink. Approximately 80 percent of Oregonians depend on drinking water from public water systems. There are approximately 80 source water watersheds in the planning area and 73 percent of BLM-administered lands are in areas the Oregon DEQ identifies as drinking water protection areas (TNC and WSC 2012) (p. 502-503).

Here there appears to be some missing analysis because there is no estimate provided for the value of the water coming off of the forests, or of the replacement cost if that water not available, or possible filtration costs if currently clean water supplies were to become degraded. The analysis notes that the economics literature on water-treatment costs includes studies that show a relationship between the quality of forest cover and treatment costs. However, no value estimates are provided for water.

We urge a more complete analysis that puts a the value on water, its replacement cost, as well increased costs to local communities and water consumers in Oregon if filtration were needed from currently clean sources.

Biodiversity Value

Markets do not yet exist for biodiversity, but there are a number of ways to estimate values for ecosystems services provided by biodiversity, and the value to people of having wildlife in the environment. Food crops, clean water, clean air, and aesthetic pleasures depend in biodiversity as do the persistence, stability and productivity of natural systems (Millennial Ecosystem Assessment, 2005 p. 79). Biodiversity also supports basic ecosystem services including waste disposal, soil formation, nitrogen fixation, bioremediation of chemicals, crop and livestock breeding, biological control of pests, and pollination (Pimentel et al 1997, Krieger 2001) (p. 504). The economic value of these services is currently beyond accurate estimation, and the replacement cost likely is far beyond our ability to pay.

Scenic Amenities

While BLM divides lands into of one of four classes based on the quality of visual resources, no economic estimate is provided for the value to private property owners with views of BLM-administered lands. Studies do show that properties with pleasing views, increase in value from 1 to 89 percent depending on locations. Here the issue of regeneration harvest becomes particularly relevant. The amount and spacing of clearcuts will have a significant impact on the resulting views from private property.

In this instance, the Northwest Forest Plan as implemented, where regeneration harvest is relatively rare, may provide for a much more pleasing view than the clearcuts allowed for under all draft alternatives. However, there is no comparative analysis provided for the likely impact of these management activities on private land scenery values (p. 506).

Summary of Economic Values and the Need for Further Analysis

Table 3-159 on page 508 summarizes the economic value of goods and services. Resource uses on BLM-administration lands including energy production, grazing, minerals, and timber generated approximately $21 million of direct economic value in 2012. Carbon storage, recreation, and special forest products are valued at between $326 and $569 million. Other important values including water production, biodiversity, and scenery are not monetized in the report, but are likely beneficiaries of forest conservation and preservation.

In addition, an attached analysis by economist John Talberth indicates that BLM is misreading the O & C Act of 1937, when it fails to account for all costs, including decreased water quality, carbon storage, and recreational opportunities if logging of mature forests is increased. We urge a complete accounting of all costs related to timber production and that those costs be disclosed to the public and fairly included in bid prices to ensure that citizens receive fair value for publicly owned timber.

Conclusion

For these reasons, we request that the draft RMP/EIS be withdrawn, and that the BLM be directed to work with the Forest Service to develop a consistent regional strategy to protect, restore and manage the federal forests under the Northwest Forest Plan.

Thank you for considering these comments. I would be interested in meeting with you to discuss this further and can be reached at 202 888-7490 or sholmer@abcbirds.org to respond to this request.

Sincerely,

Northwest Forest Plan Revision Principles

The undersigned conservation organizations would like to follow up on a recent meeting with Forest Service regional foresters Randy Moore and Jim Peña and planning staff. Outlined below we express our concerns and offer a vision for the proposed revision to President Bill Clinton's Northwest Forest Plan (NWFP).

Our organizations are concerned by the proposed forest by forest revision process which lacks the overarching standards and guidelines of the NWFP, and past and current agency actions to weaken the NWFP, including the offering of projects inconsistent with conserving the Northwest's late-successional ecosystem and the birds, fish and other wildlife it sustains. We encourage the administration to consider a better course of action than the currently proposed NWFP revisions. We are confident one exists, and that it is consistent with the best available science and our collective efforts to combat climate change.

We urge the Obama Administration to keep the NWFP as a consistent, regional, interagency plan and continue the ecosystem management approach that accounts for the needs of multiple listed species which depend on the preservation and restoration of large blocks of mature and old-growth forests and intact watersheds that remain in short supply on the landscape. Recent science has reaffirmed the importance of the NWFP as a global model for ecosystem management and biodiversity conservation, particularly the reserve network[i]. We urge the administration to abide by the founding principles of the NWFP, particularly with respect to its emphasis on scientific credibility and legal defensibility as also outlined herein.

The NWFP is a success and an example of strong presidential leadership that provided the Northwest's old-growth forest ecosystem a needed breather from decades of intensive logging that all but eliminated a functional old forest ecosystem in the Pacific Northwest[ii] and the resulting national public controversy. Due to forest growth provided for by the NWFP, what was once a significant annual source of CO_2 due to logging of old forests is now a significant net carbon sink.[iii] Additionally, water quality has significantly improved due to the plan's watershed restoration emphasis and constraints on logging in riparian buffers[iv].

The NWFP as implemented (i.e., emphasizing commercial thinning in young plantations and de-emphasizing regeneration harvest (e.g. clearcutting) and preservation of mature and old growth forests) remains a solid foundation upon which to build and offers the best model to address numerous new stressors to this late-successional ecosystem. For example, radio-tracking studies demonstrate that Northern Spotted Owls have a higher likelihood of survival against Barred Owl invasion when larger blocks of late successional habitat are available[v].

Based upon the latest information about wildlife population declines, the influx of the Barred Owl, rising carbon dioxide levels in the atmosphere and the likely impacts of climate change, additional protective measures for wildlife habitat, preservation of high biomass forests, and increased protection of stream buffers should be implemented by this plan revision.

We recommend that plan revisions build on the protective standards and guidelines and reserve allocations of the NWFP by incorporating new policy recommendations such as ecological integrity (as specified in the 2012 planning rule), climate resilience, connectivity, and especially carbon storage (as specified by the Council on Climate Preparedness and Resilience Climate and Natural Resources Working Group). Below are the following principles we believe are consistent with these new policies and best science.

Strengthening and Expanding Reserves

- Expand the late successional reserve and riparian reserve systems to provide refugia for late-successional species and to ameliorate new stressors, including Barred Owls and climate change.

- Prohibit post-disturbance logging in reserves to protect carbon sequestration of post-fire landscapes, provide habitat for threatened species and prey, and to provide complex early seral forests that are as rich as old-growth forests[vi] and increasingly rare due to post-fire logging.

- Designate additional reserves and larger no-logging buffers within the range of the threatened Marbled Murrelet to reduce habitat fragmentation effects.

- Designate all mature and old-growth forest, all high-carbon forests, all reserves, all critical habitat, all key watersheds, and all roadless areas larger than 1,000 acres, as "not suitable for timber production" to ensure that timber production does not take priority over ecological and restoration goals.

- Withdraw reserves and all administratively protected classifications from mining.

Protecting Watersheds, Aquatic Species

- Retain existing Aquatic Conservation Strategy (ACS) objectives and riparian reserve boundaries, and the standards and guidelines that emphasize restoration, and avoid actions that would retard or prevent achievement of the ACS objectives for all watersheds, over time.

- Preserve requirements that projects maintain and restore the aquatic functions and processes of streams and watersheds by demonstrating consistency with the nine Aquatic Conservation Strategy Objectives at scales relevant to those functions and processes.

- Prohibit grazing in riparian reserves and key watersheds and provide for voluntary federal grazing permit vacation to reduce cumulative effects of grazing[vii].

Reducing Stressors by Addressing Roads

- Rationalize the road system by reducing road densities and road-related impacts to listed aquatic and terrestrial species, improving all standards for road decommissioning and removal, and restoring connections to inventoried roadless areas.

- Accelerate implementation of Travel Analysis Report recommendations and Watershed Restoration Action Plan projects to implement a minimum road system.

Advancing Forest Restoration

- Promote variable density thinning in plantations to accelerate development of late-seral conditions and reduce fire risks. Limit tree thinning to 20 inch dbh to restore older tree characteristics to dry and moist forests.

Protecting High Biomass Forest Carbon Stores and Reducing CO_2 Emissions

- Conduct baseline inventory of carbon stocks and fluxes to identify and protect all high biomass forests[viii] for their carbon storage value.

- Analyze and mitigate for carbon dioxide emissions resulting from regeneration logging, forest thinning, post-fire logging, and biomass utilization[ix].

Re-Establishing Connectivity

- Establish and protect redundant habitat linkages for wolves and other wildlife along elevation gradients and north-south gradients and microrefugia (mainly low elevation and north-facing mature forests) for species movements and persistence in a changing climate[x].

- Protect all native (unmanaged) forest in all land allocations from logging to add connectivity and increased functionality of late-seral ecosystem needed to arrest declines in listed salmon populations and late-seral species such as Northern Spotted Owl, Marbled Murrelet, Pacific Fisher, Humboldt marten, and Red-tree Vole.

Protecting Drinking Water Sources

- Protect drinking water source areas for municipal water supplies from degrading activities including commercial logging, grazing, mining and off-road vehicle use.

Recommending Wilderness, Wild and Scenic and other Protected Areas

- Recommend new Wilderness Areas and Wild and Scenic Rivers, including tributary additions to existing Wild and Scenic Rivers.

- Complete the Research Natural Area System, designate additional Special Interest Areas and designate and protect National Recreational Trails.

Allowing for Appropriate Wildland Fire Management

- When appropriate, allow fires to burn safely in the backcountry and provide for un-salvaged early seral habitat for fire-dependent species. Focus thinning on the home ignition zone and flammable tree plantations.

Conversely, conservation groups are opposed to dissolution of the regionally integrated NWFP with each National Forest and BLM District Office adopting inconsistent and weaker standards that do not take a comprehensive ecosystem protection and restoration approach. Judge William Dwyer concluded that the BLM and Forest Service had to do an ecosystem-wide plan as opposed to forest-by-forest plans and ruled that the agencies could not, given the current conditions of the forests, meet their obligations under NEPA and the ESA "without planning on an ecosystem basis." *Seattle Audubon Society v. Lyons,* 871 F. Supp. 1291, 1311 (W.D. Wash. 1994) (emphasis in original).

The best available science does not support eliminating or shrinking the late-successional or riparian reserves or weakening of other protective management standards. As noted above, scientific studies indicate that Northern Spotted Owls have a better chance of coexisting with Barred Owls when there are more large blocks of habitat available. Logging in suitable or high quality Critical Habitat of the Northern Spotted Owl is inconsistent with recommendations to preserve existing habitat, and should be avoided. Clearcuts, including modified clearcuts (ecoforestry) on federal forests will hasten owl decline[xi] and degrade water quality and should therefore be opposed.

Past and recent agency actions to weaken protections of the Northwest Forest Plan and to offer extensive post-fire timber sales and other projects in the NWFP region that are inconsistent with the best available science or current understandings of climate adaptation and resilience have eroded public and scientific trust. We are greatly concerned the land management agencies are leading NWFP revision process in what appears to be a piecemeal and uncoordinated fashion. Specifically, we are concerned by:

- The BLM's Western Oregon Plan Revision and the Okanogan/Wenatchee National Forest draft plan revision that propose to eliminate or reduce reserves and weaken management standards in the Northwest Forest Plan.

- Proposals to replace the NWFP Aquatic Conservation Strategy with a modified Aquatic Conservation and Restoration Strategy that has weaker protection standards[xii], and to eliminate Survey and Manage Requirements.

- Large-scale post-fire logging in mature and old-growth forests and Key watersheds such as the proposed Westside post-fire logging project on the Klamath National Forest in California despite extensive science that indicates this type of logging is not consistent with ecological integrity or climate resilience[xiii].

- Raising the age of logging in late-successional reserves in California from 80 years to 120.

- Allowing for logging that downgrades or degrades suitable Northern Spotted Owl habitat in designated critical habitat.

- Not re-designating late-successional stands in the matrix as reserves or updating the current 800 million board foot Probably Sale Quantity to reflect the additional protections required by the Northern Spotted Owl critical habitat designation and the need to conserve forest carbon.

- Continuing to propose damaging logging despite lack of up to date regional population numbers for Northern Spotted Owl, Marbled Murrelet, Red Tree Vole, and Pacific fisher and the impact of these projects on these imperiled species.

- Lack of analysis of impact of large-scale thinning effects in Northern Spotted Owl and Marbled Murrelet critical habitat and suitable nesting, roosting and foraging owl habitat.

In conclusion, we urge the land management and wildlife protection agencies under your purview to address these specific recommendations listed above as part of the upcoming planning process and build upon the protections of the historic NWFP. This will ensure that the plan continues to be a leading example of large-landscape conservation and ecosystem restoration. Thank you for your consideration.

We look forward to working with the administration and federal agencies on the NWFP, and are interested in meeting with you at your convenience to discuss these issues in more detail.

Sincerely,

Kristen Boyles
Staff Attorney
Earthjustice

Rhett Lawrence
Conservation Director
Oregon Chapter, Sierra Club

Randi Spivak
Director of Public Lands
Center for Biological Diversity

Steve Holmer
Senior Policy Advisor
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Tara Thornton
Conservation Director

Endangered Species Coalition

Francis Eatherington
Conservation Director
Cascadia Wildlands

Chuck Willer
Executive Director
Coast Range Association

Dominick DellaSala, Ph.D.
Chief Scientist
Geos Institute

Diana Wales
President
Umpqua Valley Audubon Society

Joseph Patrick Quinn
Conservation Chair
Umpqua Watersheds, Inc.

Barbara Ullian
Coordinator
Friends of the Kalmiopsis

Russ Plaeger
Restoration Coordinator
Bark

Kimberly Baker
Executive Director
Klamath Forest Alliance

Thomas Wheeler
Legal Coordinator
Epic-Environmental Protection Information Center

Larry Glass
President of the Board
SAFE (Safe alternatives for our Forest Environment)

Laurele Fulkerson
Policy Director
Gifford Pinchot Task Force

Letter to State Director Perez

January 22, 2015
Jerome E Perez, State Director
Bureau of Land Management
Oregon/Washington
United States Department of Interior
P.O. Box 2965 Portland, OR 97208
BLM_OR_RMPs_WesternOregon@blm.gov

Re: Northwest Forest Plan Revisions

Dear Director Perez,
American Bird Conservancy and partner conservation groups are very interested in management plan revisions within the Northwest Forest Plan area and have developed an attached set of recommendations to help guide the process and policy considerations.

We are concerned that BLM is currently advancing an inadequate range of draft alternatives based on the draft preliminary alternatives and planning criteria, and that the agency has not fully considered the relevant scientific literature regarding wildlife conservation and the role forests can play to mitigate climate change. Further, there is a lack of coordination with the U.S. Forest Service necessary to ensure an effective regional conservation and restoration strategy for the late-successional ecosystem and wide-ranging listed species.

We therefore respectfully request that the BLM:

1. Work with the Forest Service on a science synthesis now in development to help guide plan revisions under the Northwest Forest Plan.
2. Develop and include a conservation alternative based on the science synthesis and the attached conservation recommendations.

We would be interested in meeting with you, or holding a conference call at your convenience to discuss these requests and recommendations. I can be reached at 202-888-7490 or sholmer@abcbirds.org to respond to this meeting request.

Sincerely,

Steve Holmer

Cc: Janice Schneider, Assistant Secretary, Department of the Interior
Jim Lyons, Deputy Assistant Secretary, Department of the Interior
Michael Bean, Principal Deputy, Department of the Interior

Neil Kornze, Director, Bureau of Land Management
Ali Zaidi, Program Associate Director, Office of Management and Budget
Tim Male, Council on Environmental Quality
Robert Bonnie, Undersecretary, Department of Agriculture
Tom Tidwell, Chief, U.S.D.A. Forest Service

American Bird Conservancy Comments on the Western Oregon Resource Management Plans

BLM forests in Oregon support listed populations of Northern Spotted Owl and Marbled Murrelet that provide outstanding sightseeing, fishing, hunting, camping, hiking and wild river boating opportunities for all Americans.

These public land forests purify drinking water for thousands of Oregonians, sequester large amounts of carbon thereby mitigating climate change, and provide a proven ecological defense against wildfire due to their older stand age. We want these important amenities and environmental services to continue on all BLM lands in western Oregon and not become degraded as a result of timber dominant management.

We appreciate the inclusion of threatened and endangered species recovery as a part of the BLM's Purpose and Need statement. However, we are troubled by aspects of the Planning Criteria, including the shrinking the riparian buffers and old growth reserves, proposing clearcut logging, proposing logging in older forest stands and logging in critical habitat for endangered species. The BLM is emphasizing the timber primacy of the O&C Act and ignoring other court opinions that require the BLM to recover endangered species and promote clean water and older forest habitats.

In addition, we object to your lumping of all BLM lands. The O&C Lands Act does not apply to the Public Domain, acquired and other BLM lands. The non-O&C lands do not suffer from BLM's interpretation of the O&C Act that calls for timber maximization constrained only by other federal law.

The range of alternatives is unduly narrow. Of the four draft alternatives, none appear to be sufficiently protective of listed species. Instead, we recommend you develop an alternative that builds upon the Northwest Forest Plan as implemented (exclude matrix regeneration of mature and old growth stands from the analysis).

BLM Checkerboard. Photo by Steve Holmer.

At Least One Alternative Should Build on the Northwest Forest Plan

The Northwest Forest Plan provides the best model for managing forests on BLM lands in Oregon. The Aquatic Conservation Strategy, Late-Successional Reserves and the Survey and Manage program are essential elements of the plan. The range of alternatives should be expanded to include an alternative that builds upon the Northwest Forest Plan. All the core science and rationale supporting adoption of the Northwest Forest Plan remains sound.

New information since the plan was adopted 20 years ago indicates a need for more forest conservation, not more logging. Global climate change is a new and significant issue that requires BLM to consider an alternative that emphasizes carbon storage by protecting all mature & old-growth forests and allow young forests more time to grow. Increased logging will accelerate the transfer of carbon from the forest to the atmosphere, while increased conservation will keep carbon out of the atmosphere and help mitigate global warming and ocean acidification.

In addition, the recent invasion and expansion of the range of the Barred Owl, which competes with northern spotted owls for both territory and food, requires that BLM consider an alternative that protects all suitable nesting, roosting, foraging habitat. This will increase the chances that the two owls can co-exist instead of competitively exclude each other, and contribute to meeting the conservation requirements of the Endangered Species Act.
The conservation alternative should also analyze the benefits of expanding habitat conservation for the threatened Marbled Murrelet. The existing network of late-successional reserves on federal lands in the Pacific Northwest that was designated in 1994 are insufficient to maintain the Marbled Murrelet population – the current 5-year status review is predicting extinction for the population outside of the Puget Sound area within 100 years. There is also inadequate mitigation of the apparent negative effects of fragmentation and human disturbance to nest survival.

Late-successional forest, BLM checkerboard, Mohawk drainage near Eugene, Oregon. Photo by Steve Holmer

To supplement recovery efforts we urge the Administration analyze protection of all mature and old-growth forests throughout the Oregon range of the murrelet. This conservation alternative should analyze protecting existing suitable habitat, both occupied and unoccupied, from logging and other harms; recruiting additional suitable nesting habitat, by letting mature and younger forests grow; preventing fragmentation (including clearcutting or commercial

thinning) of the land around suitable habitat, maintaining protective cover from nest predators; and increasing the size of and strengthening the standards for buffers surrounding the nesting sites.

Comments on Preliminary Alternatives

"A" offers the highest degree of protection of the preliminary alternatives, but it is weaker than the current Northwest Forest Plan as implemented, and reduces riparian buffers. Proposed regeneration harvest (AKA clearcuts) would further fragment the landscape and thereby harm listed species including Northern Spotted Owl and Marbled Murrelet. Forests now protected by the Northwest Forest Plan in the 80-120 age class could be subject to logging.

"B" significantly reduces existing protected acres than the current Northwest Forest Plan by not providing as robust a network of large block reserves, reducing riparian reserves, and reducing protection for older forests to as high as 160 years for low productivity sites, and 140 years for moderate productivity sites. Managing for fire resilience within the reserves would allow clearcut logging of critical habitat which is likely to jeopardize the Northern Spotted Owl.

"C" fails to provide for sufficient protected reserve acres to provide for Northern Spotted Owl or Marbled Murrelet recovery, and the protection provided the reserves is also unclear; it should be dropped from any further consideration. Again, riparian reserves are reduced, and regeneration harvest broadly applied, major steps backward from the current Northwest Forest Plan as now implemented. Critical habitat outside of reserves would be subject to clearcutting which is likely to jeopardize the Northern Spotted Owl.

"D" is inadequate for the protection of listed species and should dropped from any further consideration. This alternative does not provide for sufficient protected acres and the proposed targeting of critical habitat for logging is likely to jeopardize the Northern Spotted Owl by eliminating and fragmenting habitat.

ABC Comments on the BLM Planning Criteria

On p. 8 of the Planning Criteria document BLM reiterates that sustained yield timber production is the primary or dominant use of the O & C Lands. We believe this is a misreading of the law. Attached are documents detailing arguments for a more balanced reading of the law that also recognizes multiple-use and water quality standards, and the need to assist in the protection and recovery of listed species.

In any case, the agency fails to make a logic case for why this interpretation of the law and timber dominant management should also apply to 19% of the planning area that are not subject to the O & C Act of 1937. Of particular concern are the Public Domain lands near the Pacific Coast within the range of the threatened Marbled Murrelet. These Public Domain lands should be managed specifically to assist in the maintenance and recovery of murrelet populations and to serve as carbon reserves.

On p. 13, BLM notes that "Contributing to the conservation and recovery of listed species is essential to delivering a predictable supply of timber…providing large, contiguous blocks of late-successional forests and maintaining older and more structurally complex multi-layered conifer forests are necessary components of the conservation and recovery of the Northern Spotted Owl…These purposes require the BLM to exercise its discretion to determine how best to achieve sustained yield timber production over the long term and avoid future limitation on timber production." This is helpful and appreciated, but it remains unclear if BLM can successfully argue the O & C Act requires that timber management should be the dominant use, while also retaining discretion on how to define sustained yield.

On p. 19 BLM states that the No Action Alternative will be based on the 1995 RMP as written and that it is not possible to analyze the plan as implemented but the arguments presented are not convincing. Public opposition to regeneration harvest on public lands is due to concerns about potential harm to water quality and wildlife habitat, as well as the resulting increased risk of landslides, and the overabundance of clearcuts on private and state lands. This opposition and application of federal environmental laws have altered the Northwest Forest Plan as written to exclude clearcutting of mature and old growth forests in the matrix. We urge that the No Action Alternative analyze the 1995 RMP as implemented by excluding clearcutting of mature and old growth forests in the matrix.

Regarding the framework for evaluating effects to the Northern Spotted Owl we are concerned about Conservation Need 3 which proposes a coordinated effort to reduce the loss of habitat due to catastrophic wildfire, and a monitoring program to clarify whether these risk reduction methods are effective and to determine how owls use habitat treated to reduce fuels. A recent peer-reviewed modeling study (Raphael et al.) on thinning indicate that habitat losses to the owl are likely greater from thinning, than from wildfire. A second paper with the same result is now under review.

Additional review of the available literature is recommended before embarking on an aggressive thinning program in owl habitat. We are further concerned by the statement on p. 176 that "…the creation of such a monitoring program is not a BLM responsibility and will not be included in the BLM evaluation." This is of great concern because the U.S. Fish and Wildlife Service has repeatedly refused to carry out this work stating it is the responsibility of the land management agencies to do it. We recommend FWS conduct the monitoring and develop an Environmental Impact Statement prior to any significant logging of owl critical habitat.
Issue 7 on p. 179 focuses on Recovery Action 12 and post-fire logging. However, none of the preliminary alternatives provide any indication of the range of management actions being considered. We urge that post-fire treatments be prohibited in reserve areas to conserve and restore habitat elements that take a long time to develop such as large trees, medium and large snags, and downed wood. Please see attached letter regarding implementation of Recovery Action 12.

The direction on p. 182 to consider applying ecological forestry to Northern Spotted Owl critical habitat that is not currently late seral forest or high-value habitat is not consistent with the best available science and may jeopardize the subspecies. Attached are American Bird Conservancy's comment on the draft Northern Spotted Owl critical habitat rule and critique of the final rule.

Regarding the threatened Marbled Murrelet we are concerned that the preliminary alternatives do not provide sufficient habitat protection to maintain or recover the species. On p. 186 the agency notes that "Higher amounts of habitat, greater patch cohesion, and larger mean patch size are indicative of better habitat conditions for the Marbled Murrelet at a landscape scale." And on p. 187 that each alternative would rank the amount of high suitability habitat, patch diversity, connectivity, and future, occupied sites lost.

However, the alternatives are not being crafted to provide varying degrees of increased habitat protection and more protective management in buffer areas as is needed to recover the species. In addition, the proposed regeneration of late successional forest would be detrimental to Murrelet habitat and could jeopardize the Marbled Murrelet.

We are therefore asking that a Marbled Murrelet conservation alternative be developed. In addition to benefits to the Murrelet and water quality from increase forest protection in the Murrelet zone, that there will also be a very strong correlation to forests with the highest carbon storage potential. Attached are recent letters to the administration from a coalition of conservation groups, and a second from the Pacific Seabird Group outlining the conservation needs of the Marbled Murrelet.

We look forward to working with the BLM on this planning effort. Thank you for your consideration.

Sincerely,

Steve Holmer
Senior Policy Advisor
American Bird Conservancy

ABC Letter in Support of Uplisting the Northern Spotted Owl to Endangered Status

AMERICAN BIRD CONSERVANCY

Shaping the future for birds

June 9, 2015

Douglas Krofta
Chief, ESA Listing
U.S. Fish and Wildlife Service
Washington, D.C. 20540
Re: FWS–R1–ES–2014–0061

Dear Chief Krofta,

Thank you very much for this opportunity to comment on the status of the Northern Spotted Owl. Due to continued population declines across all demographic study areas, the lack of breeding success, past and ongoing habitat loss, lack of adequate regulatory mechanisms to conserve the subspecies on federal lands, and the Barred Owl invasion, American Bird Conservancy (ABC) urges that the Service propose to uplist the subspecies to endangered status and that additional conservation measures promptly be developed and implemented to help prevent extinction. Enclosed in this comment letter are past comments from ABC and others that underscore some of the reasons endangered status is warranted and identify critical issues that need to be addressed to stabilize owl populations and eventually recover the subspecies.

Briefly, some of these issues include decisions within the 2012 Northern Spotted Owl Critical Habitat rule to protect only high quality owl habitat versus all suitable owl habitat, and the promotion of active management and fire risk reduction in owl habitat. Recent population declines and a significant number of new published studies indicate these issues should be reexamined and new policies developed to augment habitat protection, and to reduce habitat loss and the risk of Barred Owl invasion from management activities.

The best available science and the continuing decline of Northern Spotted Owl populations indicate that the agency should protect all suitable owl habitat, not just high-quality owl habitat. The definition of high quality owl habitat needs to be made more inclusive to ensure sufficient habitat will be conserved to allow for recovery.

In its review of the draft Northern Spotted Owl recovery plan The Wildlife Society raised concern about the Service's narrow definition of high quality owl habitat. The Society notes that the proposed definition is only a subset of suitable habitat. Their analysis then states:

"…by limiting the definition of high quality habitat to a fairly narrow range of habitat conditions, management agencies will be able to justify thinning or commercial harvest in a broad range of naturally regenerated stands. Most of these naturally regenerating stands originated from fire and usually are suitable spotted owl habitat; therefore, they are not likely to be greatly "improved" by management. In western Oregon and Washington such stands are typically comprised of large trees that are 80-160 years old, and include scattered (i.e., residual) old-growth trees that survived wildfires. These stands may not meet the strict definition of high quality habitat, but they are often the best remaining habitat in the heavily harvested or burned landscapes that are managed by the Bureau of Land Management and Forest Service. They often occur in small patches, isolated among large areas of young forest within these disturbed landscapes, and they often serve as nest sites for spotted owls as well as refugia for species such as flying squirrels and tree voles, which are important prey of northern spotted owls. Because of the high timber volume in these stands there is intense pressure to log them. Commercial thinning is often recommended as a prescription to reduce risk of fire or improve forest conditions for owls in these stands, despite the fact that it is usually unclear if thinning will either improve these forests as habitat for owls or accelerate their transition from suitable to high quality habitat."

This uncertainty was one of the reasons that the Northwest Forest Plan included recommendations to restrict thinning in naturally regenerated stands over 80 years old in western Oregon and Washington. Another concern is the continued use of the rule's adverse modification standard to justify owl take and the elimination of mature forests eight years and older that are used by Northern Spotted Owls and prey. Please see the attached ruling on the White Castle Secretarial Pilot Project that proposed to log in mature forests utilized by owls. The ruling found this was a controversial practice likely to impact owls and therefore in need of a complete environmental analysis.

Another notable project that is an example of the current lack of adequate regulatory mechanisms on federal lands is the Westside Fire Recovery Project on the Klamath National Forest. The project is inconsistent with the Northwest Forest Plan and Northern Spotted Owl conservation due to proposed extensive post-fire logging in a late-successional reserve. Dr. Jerry Franklin submitted comments on the project which is attached.

ABC drafted a comment letter of support for the California Spotted Owl petition for listing pasted below summarizes key points that should be considered for the Northern Spotted Owl. Recently published studies indicate California Spotted Owls are well adapted to fire, that logging practices are contributing to population declines, and that post-fire logging in particular threatens owls and eliminates otherwise suitable owl habitat. ABC urges that these scientific findings also be applied to the Northern Spotted Owl.

Proposed and planned revisions to the Northwest Forest Plan are raising concern that existing regulatory mechanisms will be replaced with new standards that do not provide an equivalent level of protection of Northern Spotted Owls in the near term, and fail to provide for adequate protection of mature forests needed to replace and augment old-growth forests and restore the late-successional ecosystem.

Complete analysis of the draft BLM RMP is underway, but an initial review indicates that it weakens existing protections for mature forests and riparian reserves. It is of great concern that the no-action alternative in the BLM's draft RMP is based on the Northwest Forest Plan as written, as opposed to the Plan as currently implemented. As a result, there is not an accurate baseline upon which to compare the action alternatives.

The Forest Service is on a slower timetable and is currently developing a science synthesis to guide their Northwest Forest Plan revisions. Several recent letters to the administration and agency are enclosed to detail our concerns

about the plan revisions and reiterate our view that additional habitat protection is urgently needed for the Northern Spotted Owl and that proposals to weaken existing standards are not based on the best available science.

It is important to consider that the backdrop of these plan revisions is a precipitous drop in owl numbers and a general lack of breeding success in many areas. A brief review of the 2013 reports finds a disturbing downward population trend.

Southern Oregon Cascades
http://www.reo.gov/monitoring/reports/nso/CAS%20nso%20demog%20annual%20report%202014.pdf

The percentage of sites where spotted owls were detected on the study area (31%) represented a 4.0% decrease from 2013. Overall, the mean percentage of sites with owls detected has remained similar for the Wilderness and LSR, although a gradual decline is evident on both areas. In 2014 the decline in sites where spotted owls were detected in the Matrix was greater than for most years. In 2014 there were 92 non-juvenile owls detected ($\bar{x}$= 160.1, SE = 7.4, n = 25 years), with 50 males, 41 females and 1 sex unknown; this was the fewest number of owls detected during the study (Appendix 5). However, despite our more extensive night time survey effort in the spring, the number of sites where spotted owls were detected in the last two years has been the lowest ever recorded. In 2014 productivity increased relative to 2013 and was greater than in most years. The total number of spotted owls detected and the number of previously banded owls identified in 2014 were the lowest recorded for the study. Spotted owl detections at historic territories were unchanged from 2013-2014 at LSR sites, whereas, the double digit decrease in spotted owl detections in the Matrix LUA well exceeded the slight decrease in detections recorded for the Wilderness sites. Overall this has been the long-term trend across the study area as detections of spotted owls has gradually declined.

East slope of the Cascade Range, Washington
http://www.reo.gov/monitoring/reports/nso/CLE%20nso%20demog%20annual%20report%202014.pdf

In 2014 we banded 5 juvenile owls and 2 adult owls, bringing the total number of owls banded during 1989-2014 to 857 (161 adults , 69 subadults, and 627 juveniles, Table 1). Our monitoring effort has remained relatively consistent after 1992, except for 8-10 territories we began monitoring with only 1 visit per year beginning in 2002. None of these “minimum-protocol” territories contained owls in 2014. We confirmed the bands of 14 Spotted Owls, and detected another 4 Spotted Owls on 11 territories. This compares to a high of 120 owls on 64 territories in the same area in 1992 (a decline of 85%,Figures 3,4 Table 2). Four of the 5 females for which we determined nesting status in 2014 nested. We found young at an additional territory after the incubation and rearing period. Of these 5 nesting females, all produced young. Thus, the reproductive potential of the Spotted Owl population on the Cle Elum Study Area has declined over time. At the current population size, the total number of young produced in an above-average reproductive year (e.g. 2014) is only slightly greater than the worst reproductive years when the population was much larger (e.g. 1993, 1997, Figure 10). The small number of reproductive females remaining on the study area is clearly a cause for concern should this situation persist, given recent analyses that suggest there is a genetic bottleneck in this region (Funk et al. 2009).

Oregon Coast Ranges
http://www.reo.gov/monitoring/reports/nso/COA%20nso%20demog%20annual%20report%202014.pdf

In 2014, we detected owls at 48 of the 172 sites surveyed (Fig. 2, Appendix A). Owls were detected at 56 sites in 2013 (Fig. 2, Appendix A). The percent of sites in which a spotted owl was detected has gradually declined over the course of the study from a high of 88 percent in 1991 to a low of 28 percent in 2014. This was a decrease in

2014, from 33 percent in 2012 and 2013 (Fig. 3, Appendix A). In 2014, pairs were observed at 17 percent of the sites, down from 20 percent in 2013. Single owls were observed at 9 percent of the sites surveyed. In 2014, there were 2 sites (1% of total) where both a male and female were detected, but pair status was not established (Fig. 3, Appendix A). Of 33 females that met protocols for determination of nesting status in 2014, 22 (67%) attempted to nest and 12 (55%) successfully fledged young.(Appendix D, F). Of 34 females that met protocols for reproductive status, 12 (35%) produced young (Appendix E). The total number of young produced by the 12 females that produced young was 20 and the mean brood size for those 12 females was 1.67 (SE= 0.14; Appendix H).

Willamette National Forest
http://www.reo.gov/monitoring/reports/nso/HJA%20nso%20demog%20annual%20report%202014.pdf

The number of sites surveyed in 2014 was similar to the number reported in past years (171 sites; Figure 1, Table 1). Most of the non-juvenile spotted owls detections in 2014 were pairs (68%) with substantially fewer resident single owls (12%) or single owls with unknown residency status (20%; Table 1). The proportion of sites where either a pair or a single owl was detected decreased by 11% (Table 1) and the proportion of sites where pairs were detected increased by 1% between 2013 and 2014 (Figure 1). This is the second lowest proportion of territories where we detected pairs of spotted owls to date (Figure 1). We were able to survey 35 spotted owl pairs to determine nesting status prior to 1 June 2014 (Forsman 1995). Twenty-nine of these pairs (83%) initiated nesting prior to 1 June 2014; all but one (97%) successfully produced at least one young (Figure 4). The Final Revised Recovery Plan released in 2011 (U.S. Fish and Wildlife Service 2011) has withdrawn the MOCA network and recommended that managers continue to consider the LSR land use allocation under the NWFP as the current reserve network. The Fall Creek LSR has supported as many as 25 pairs of spotted owls, but currently supports only 11. Continued loss of spotted owl pairs in that LSR may render that area ineffective as a reserve. The South Santiam, Horse Creek, and Hagan LSRs have never supported more than 11, 8, and 3 pairs, respectively. These LSRs were not likely to support more than 20 pairs of spotted owls but may provide connectivity within the reserve network.

Klamath Mountain Province of Oregon
http://www.reo.gov/monitoring/reports/nso/KLA%20nso%20demog%20annual%20report%202014.pdf

In recent years there has been a steady decline in the number of non-juveniles detected (Appendix B) and an even larger decrease in the number of pairs detected (Appendix A). The number of non-juveniles detected in 2014 (102) was the lowest ever documented on the study area (Appendix B). The number of individual spotted owls during 2014 was 54.3% fewer than the high of 223 during 2002. The number of pairs detected on the study area has declined every year since 2005. The 38 pairs detected during 2014 was the lowest number documented during the study period. Although the number of sites surveyed during this period has remained relatively constant, the number of pairs detected at sites has declined and the number of unoccupied sites has increased (Appendix A). While the recent meta-analysis (Forsman et al, 2011a) indicated that survival on the KSA was stable through 2006, the most recent data regarding occupancy has shown a steady and rapid decline, which suggests the stability of the population may be in question. The decrease in the number of subadults is even more pronounced than the decrease within all non-juvenile age classes. The highest proportion of subadults ever documented in the KSA (25.1%) occurred during 2003 and has declined to under 10% during each of the past eight years (Appendix B). The nest success rate for 2014 (80.0%) was higher than the 1990-2014 average of 74.4%.

Barred Owl Impacting Spotted Owl Population

There is mounting evidence that barred owls may be negatively impacting the spotted owl population within the KSA. This is illustrated by several apparent population trends: (1) spotted owl detections have been steadily decreasing (Figure 6) and reached the lowest point in 2014, when barred owl detections reached their highest level; (2) fecundity rates appear to be declining (Figure 8) and in only 2 of the previous 10 years was the rate above the 25 year average; and (3) the fecundity rate for sites with known barred owl presence was lower than at other sites and is continuing to decline. Forsman et al. (2011a) noted that the consistency of the negative associations between spotted owl demographic rates and the presence of barred owls supports the conclusion that barred owls are having a negative effect on spotted owl populations. The recent KSA data, with the combination of decreasing occupancy and reduced fecundity, appears to reinforce this conclusion.

Northwestern California

http://www.reo.gov/monitoring/reports/nso/NWC%20nso%20demog%20annual%20report%202014.pdf

Reproductive patterns in northern spotted owls on our study area continues to follow a pattern of low reproductive output in "bad" years and average or, occasionally, high reproductive output in "good" years. In 2014, reproductive output by spotted owls was one of the highest observed (Table 6) during the 30 years of the study, only slightly less than reproductive output observed in 2001. In general, productivity and the proportion of nests that fledge young have remained relatively stable while the proportion of birds nesting each year is primarily responsible for variation in reproductive output. The average rate of population change for the WCSA population was 0.975, suggesting the WCSA population was declining at a rate of 2.5% per year. Based on 95% confidence interval, this estimate was different than a stationary population. However, this average rate of decline does not reflect the fairly dramatic loss in the population observed in 2011 and 2012 (Figure 4) although there was no apparent loss in 2013.

Olympic Peninsula

http://www.reo.gov/monitoring/reports/nso/OLY%20FS%20nso%20demog%20annual%20report%202014.pdf

During the 2014 field season, we conducted 231 visits to 40 historical survey areas (mean survey visits per site = 6.0 ± 0.38 SE). Spotted owl pairs were detected at 5 sites (Tables 1–2). We detected spotted owls at 3 other sites during night surveys. Follow-up visits at the latter sites indicated that the spotted owl detections were from paired individuals that had been previously documented at adjacent sites. Of the 10 adult spotted owls detected in 2014, 6 were previously banded and 4 (2 male, 2 females) were banded for the first time (Table 3). The total number of territorial owls detected in 2014 decreased slightly from 2013 and was still far below historical levels (Table 1). In contrast, the number of survey areas in which we detected barred owls remained high (Fig. 3). All 5 females located in 2014 attempted to nest (Table 4) and 4 of the 5 females that nested produced young (Table 5). We documented 7 juveniles that successfully left the nest and 1 juvenile that was found dead at the base of a nest tree. As the total number of territorial adults detected on the study area in 2014 decreased slightly from 2013, the number of owls detected on the study area remained far below historical levels. This was the first year in which significant numbers of spotted owls nested on the study area 2 since 2010. Although this is a positive sign, the generally low level of reproduction in most years since 2010 is resulting in an aging population.

Olympic National Park

http://www.reo.gov/monitoring/reports/nso/OLY%20NPS%20nso%20demog%20annual%20report%202014.pdf

In 2014, National Park Service personnel monitored and managed data on a sample of 52 spotted owl territories (hereafter "sites") to measure survival and reproductive rates, as well as site occupancy status. Crews made 233 visits to these sites, detecting spotted owl pairs at four and single spotted owls at six. This was the lowest proportion of sites with detections of spotted owls for any year of this study. At the ten sites where spotted owls responded, they were found on an average of 58% of monitoring visits. We documented four nest

attempts and all were successful, fledging a total of six young. ONP crews banded three new adult spotted owls, one subadult, and one juvenile.

Tyee Density Study Area, Roseburg, Oregon
http://www.reo.gov/monitoring/reports/nso/TYE%20nso%20demog%20annual%20report%202014.pdf

In 2014, we documented 65 non-juvenile spotted owls in the DSA, including 27 pairs and 11 unpaired individuals (Appendix 2). This represents approximately 46% of the number of individuals that were located during the first year of the study in 1990 and was the lowest number of owls detected since inception of the study (Fig. 2). It also represents the first year that the population of spotted owls has dipped below 50% of the original 1990 population level. A comparison of the proportions of known-age owls detected in the study area in 1996, 2005, and 2014 indicates an aging population, with low recruitment of young owls in recent years (Fig. 3). Within the DSA we documented only 3 individuals under the age of 5 years old in 2014 as compared to 34 individuals in 1996. Median age in 1996 was 6 years old for males and 7 years old for females. It was very similar in 2005 where the median age for males was 7 years old and for females it was 6 years old. By 2014, the median age had raised to 10 years old for both sexes. In 2014, the number of pairs and the total number of non-juvenile spotted owls detected was the lowest recorded for the 25 year survey period (Fig. 4). In 2014, approximately 81% of the pairs (N=27) and 64% of the nesting pairs (N=11) in the DSA were located on federal land and 36% were on private land. Although proportion of females nesting in 2014 was higher than the previous year, (0.40, 95% CI = 0.20- 0.60), the proportion of those that actually were successful (2 out of 10) was well below the 62.7% average. The number of females actually nesting has severely declined in the last 5 years and remained low as the population of spotted owls continued to decline (Fig. 2). For all years combined, the annual percentage of females that nested averaged 48.6% (N= 25 years, Table 1). The average number of young produced per female in 2014 was 0.172, which was considerably lower than the average of 0.506 for all years (N=25) (Appendix 3). The data continued to indicate that most measures of reproductive performance of spotted owls were lowest for 1-yr-old owls, intermediate for 2- yr-old owls, and highest for adults (Tables 2–3).

Hoopa Valley
Of 60 historic spotted owl territories within and adjacent to the DSA, All were surveyed using night calling while 54 received at least one day-time site visit with a total of 188 site visits during the 2014 season. Twenty four activity centers were confirmed occupied during the 2014 season with 15 pairs and 9 single males within the DSA and the 2 territories in the ANNEX portion of the reservation along the southeast boundary (Table 1). In addition, 1 territory outside the DSA was also surveyed, off the NE corner which supported a pair. Of the 15 pairs checked for nesting status, 5 were nesting (Tables 1 and 2). The five nesting pairs fledged 10 young and the number of young fledged (NYF) per female monitored was 0.67 owlets per female monitored (Table 2). The estimate of RJS for the period 1995-2013 was 0.972 (SE 0.01 and 95% CI 0.953-0.991). This point estimate of lambda indicates that the population is declining by 2.3% annually. The top random effects model included a quadratic time trend $\phi(t)$ $p(t)$ $\lambda(t)$: RE (T+TT) (Figure 3). The recent decline in survival, the point estimate of RJS and the actual number of birds detected this past season all point to a population that is in fact, declining. This apparent decline in spotted owls corresponds with an increase in total annual barred owl detections and proportion of spotted owl territories with barred owl detections (Figure 1).

The Northern Spotted Owl 2014 Demography Studies, **http://www.reo.gov/monitoring/reports/northen-spotted-owl-reports-publications.shtml** are now available and a regionwide synthesis that should be considered in this status review is awaiting publication in *Condor*.

We believe a 12-month finding for endangered status would offer the Service an opportunity to review and analyze recent scientific studies and assess current management practices. Meanwhile, we urge the Service to develop and

adopt interim protections for the Northern Spotted Owl. Specifically, we ask that the Service not allow for take of Northern Spotted Owls in connection with forest management activities on federal lands and to develop an outreach strategy to state and private landowners to adopt Habitat Conservation Plans or other measures to reduce take and to conserve suitable habitat.

Thank you for considering these comments on behalf of American Bird Conservancy. I can be contacted at sholmer@abcbirds.org, or 202-888-7490 if you have any questions or if I can be of further assistance.
Sincerely,

Steve Holmer
Senior Policy Advisor
American Bird Conservancy

American Bird Conservancy Comment Letter on Draft Northern Spotted Owl Critical Habitat Rule

July 6, 2012

Public Comments Processing
Attn: FWS-RI-ES-2011-0112
Division of Policy and Directives Management
U.S. Fish and Wildlife Service
4401 N. Fairfax Dr. MS 2042-PDM
Arlington, VA 22203

Thank you for this opportunity to comment. This letter and attached appendices on the proposed designation of Critical Habitat for the threatened Northern Spotted Owl are submitted on behalf of American Bird Conservancy (ABC).

Additional habitat protection is needed to stabilize and eventually recover the Northern Spotted Owl's population and ABC appreciates that the U.S. Fish and Wildlife Service (the Service) has identified nearly 14 million acres of potential Critical Habitat necessary to recover the threatened species and the old-growth ecosystem upon which it depends. With some modest additions, the Final Rule can provide a path towards eventual recovery and delisting of the species.

ABC supports designating as Critical Habitat all of the 13,961,684 identified acres, and adding all areas within the late-successional reserve network that were excluded, plus any occupied or suitable Northern Spotted Owl habitat that was not identified in the draft.

ABC is deeply concerned about the draft Rule's encouragement of active management in Northern Spotted Owl Critical Habitat, the changes it suggests to management plans and projects, and logging projects in suitable owl habitat that have already been initiated. The 2010 Final Northern Spotted Owl Recovery Plan is already influencing management changes on federal forests potentially detrimental to the restoration of large blocks of habitat needed to recover the Northern Spotted Owl such as regeneration of moist forests to create early-seral habitat. The draft Critical Habitat rule could expand this harmful policy and should be revised to instead to favor reducing forest fragmentation by maintaining the system of late-successional reserves to allow the continued formation of large blocks of suitable habitat.

A number of the Recovery Actions in the Final Recovery Plan appear to be contradictory, some calling for the protection of additional owl habitat, while others allowing, even encouraging increased adverse modification. This contradiction is also found in the draft Critical Habitat rule which proposes a significant increase in Critical Habitat acreage while at the same time green-lighting logging techniques proven harmful to owls and owl habitat, eliminating the proven late-successional reserves necessary to ensure large blocks of habitat, and recommending protection only for the very highest quality owl habitat.

The Environmental Assessment concluded that a wide degree of uncertainty would be created in regard to timber outputs, depending on how the Rule was implemented, and which of the advisory Recovery Actions were followed by the land management agencies. While the assessment did analyze different scenarios for timber production, it did not analyze a reserve-less strategy that could potentially allow for logging in currently-protected forests older than 80 years but not yet old enough to be considered high quality owl habitat. At the same time, the Service appears to endorse a policy of reserve-less management on page 94.

A more complete Environmental Assessment is needed for the public to be able to fully assess the potential consequences of this Rule. Similarly, the Economic Analysis is faulty and offers an incomplete look at the economic effects of the Rule by analyzing only the potential value of timber production, while ignoring the monetary benefits of other important values provided by maturing and old-growth forests such as stable stream flows, clean water supplies, and carbon storage.

Based on the available information in the draft Rule and Environmental Assessment, we must assume the elimination of late-successional reserves is a potential application of this Critical Habitat rule and Final Recovery Plan. Therefore the effects of eliminating the reserves should be fully analyzed by the Rule and companion Economic Analysis and Environmental Assessment. And because this analysis is notably absent, and because the Economic Analysis did not analyze the vast majority of economic activity on the forests affected, the public is currently unable to determine the full consequences of the pending rule.

We therefore urge the Service to make abundantly clear to the public and to the land managing agencies that elimination of the reserves is not an application of, or a recommendation of the final Rule, economic analysis, or environmental assessment.

The Service is promoting an unacceptably risky strategy in the Final Recovery Plan, Draft Rule and ESA consultations in regard to short-term losses of Northern Spotted Owl, a species that the evidence indicates merits endangered status. The draft Rule leaves many important questions unanswered. There is a lack of quantification of how many Northern Spotted Owls can be taken or habitat acres degraded, no thresholds are provided that land managers should not exceed, nor is there any indication how many additional owls may (or

may not) be gained by the claimed long-term habitat benefits of the projects, or how and where large blocks of habitat will be recovered absent the reserves. Given these uncertainties, a more cautious approach that maintains the reserves created by the Northwest Forest Plan is warranted.

Thank you for this opportunity to comment. In the pages that follow are additional comments on the proposed Critical Habitat rule, essential background, and supporting materials that we hope you will find useful as you develop the final Rule. We look forward to working with the Service to preserve and recover the Northern Spotted Owl.

Siskiyou National Forest, Oregon.

Comment Letter to President Barack Obama

Below is a comment letter concerning the Draft Critical Habitat rule from conservation groups and scientific organizations sent to President Barack Obama asking the mature and old-growth forests be protected and the Rule be changed to ensure the system of late-successional reserves created by the Northwest Forest Plan are maintained:

American Bird Conservancy ⁂ Natural Resources Defense Council

Sierra Club ⁂ Center for Biological Diversity ⁂ Friends of the Earth Endangered Species Coalition ⁂ Oregon Wild ⁂ Conservation Northwest WildEarth Guardians ⁂ Cornell Lab of Ornithology ⁂ Geos Institute

July 2, 2012

The Honorable Barack Obama
President of the United States of America
The White House
1600 Pennsylvania Ave NW
Washington D.C. 20500

Dear President Obama,

The undersigned organizations urge your support for the conservation of the mature and old-growth forests in the Pacific Northwest. These magnificent forests provide clean drinking water for millions of Americans, a world-class tourism destination, sustainable forestry, and habitat essential to the survival of hundreds of species of wildlife.

Conservation of the old-growth ecosystem as symbolized by the Northwest Forest Plan developed under the leadership of President Bill Clinton was a significant environmental advance that ended decades of unsustainable management practices in the region.

Studies show that the Northwest Forest Plan is working as intended to retain mature and old forests, and that the highly fragmented forest ecosystem is growing back into the large blocks of mature forest habitat needed to maintain water quality and recover threatened species such as the Northern Spotted Owl, Marbled Murrelet and Pacific salmon stocks.

Your administration recently released a draft Critical Habitat proposal for the Northern Spotted Owl that identifies sufficient habitat necessary to conserve the threatened species and the old-growth ecosystem upon which it depends. We commend the agency's use of modeling to identify the proposed acreage which we believe represents the best available science.

However, the draft plan and accompanying Presidential Memorandum raise concern because of the proposed active management in owl critical habitat that is not supported by the best available science. Three major scientific societies are advising the administration to conduct more research on the effects of active management on owl populations before treatments are applied more broadly. We agree with the scientists' call for caution.

The draft also includes provisions that could have the unintended consequence of weakening or eliminating habitat protections of the Northwest Forest Plan. We respectfully urge the administration to modify the proposed Critical Habitat rule to ensure that the protected reserves of the Northwest Forest Plan are maintained so that future generations of Americans will be assured they will have an opportunity to enjoy the splendor of these old-growth forests.

Sincerely,

George Fenwick, Ph.D.

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American Bird Conservancy
The Plains, Virginia

Debbie Sease
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Sierra Club
Washington, D.C.

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Erik Molvar, Executive Director
Biodiversity Conservation Alliance
Laramie, Wyoming

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APPENDICES

A. Petition to list the Northern Spotted Owl as Endangered prepared by the Geos Institute

B. Comments on the Draft Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl by Ernie Niemi

C. Email from David Iverson, Region 4, dated August 6, 1990, Goodbye Thoughts, and "Inside Out" by Steven P. Smith, a farewell commentary by a Willamette National Forest biologist.

D. Scientific Societies Request for Environmental Impact Statement of Proposed Active Forest Management in Spotted Owl Critical Habitat

E. Open Letter to President Barack Obama from 229 Scientists in Support of Northwest Forest Plan

F. The Wildlife Society Peer Review of the 2010 Draft Revised Recovery Plan for the Northern Spotted Owl

G. Summary of Key Findings, Northwest Forest Plan: The First 15 Years (1994-2008), (Davis et al 2011), R6-RPM-TP-03-2011

H. Watershed Condition Status and Trend (Laningan et al 2012), General Technical Report PNW-GTR-856, February 2012

I. Comment letter submitted by Earthjustice on behalf of plaintiff groups

J. Forest Service and BLM Volume Offered under Northwest Forest Plan (FY 1995 – FY 2010), Region 5 & 6 PTSAR Report, and BLM Timber Sale Information System.

K. What is Wrong with the Secretarial Pilot Projects by Francis Eatherington, Cascadia Wildlands

Executive Summary

Draft Critical Habitat Rule Weakens Habitat Protection for the Northern Spotted Owl

Studies show that the Northwest Forest Plan is working as intended to retain mature and old forests, and that the highly fragmented forest ecosystem is growing back into the large blocks of mature forest habitat needed to maintain water quality and recover threatened species such as the Northern Spotted Owl, and Marbled Murrelet.

With some modest additions the draft Critical Habitat proposal for the Northern Spotted Owl identifies sufficient habitat necessary to conserve the threatened species and the old-growth ecosystem upon which it depends. ABC commends the agency's use of modeling to identify a significant increase in proposed acreage which we believe represents the best available science. We support designating all of the identified acres, plus additional areas that warrant designation such areas in late-successional reserves, currently occupied and suitable owl habitat.

However, the draft plan and accompanying Presidential Memorandum raise concern because of the proposed active management in owl critical habitat that is not supported by the best available science. Three major scientific societies are advising the administration to conduct more research on the effects of active management on owl populations before treatments are applied more broadly. We agree with the scientists' call for caution.

The draft also includes provisions that could have the unintended consequence of weakening or eliminating habitat protections of the Northwest Forest Plan. In particular, the provisions in the draft plan encouraging unproven thinning and restoration logging, combined with the expansive definition of adverse modification that

allows degradation of owl habitat, have the potential to allow for logging of areas now protected by the Northwest Forest Plan, including mature forests that the Plan had intended to become old-growth.

These provisions, which were repeated numerous times in the draft, appear to intend a substantial increase of timber harvest in the region while providing a minimum of habitat protection, in terms of both total acreage by encouraging unwarranted exclusions, and weaker management standards than the standards and guidelines of the Northwest Forest Plan's late-successional reserves. This language has the potential to allow excessive logging to the detriment of the Northern Spotted Owl population and may foreclose owl recovery by not providing adequate late-successional forest necessary to ensure high quality owl habitat in the future.

There is also concern about changes to land management plans resulting from the Critical Habitat rule and Final Recovery Plan. The Service tacitly endorsed elimination of the owl reserves east of the Cascade Crest by including language favorable to that approach in the Owl Recovery Plan. The proposed Okanogan-Wenatchee Forest Plan revision would eliminate the existing owl reserves and in the Environmental Assessment (p. 94), it says that would be consistent with Recovery Plan and therefore compatible with owl recovery.

We strongly disagree. It should be noted that this portion of the Draft Recovery Plan was strongly criticized by peer reviewers, but in the Final Plan, their concerns were not addressed.

We respectfully urge the U.S. Fish and Wildlife Service to modify the proposed Critical Habitat rule to ensure that the protected reserves of the Northwest Forest Plan are maintained so that future generations of Americans will be assured they will have an opportunity to enjoy the splendor of these old-growth forests.

Recommended Changes

We urge that the Final Critical Habitat Rule make clear that eliminating the system of late-successional reserves would be detrimental to owl recovery and is not a recommended outcome of this rulemaking, or the Environmental Assessment and Economic Analysis.

The proposal encouraging adverse modification of habitat for ecoforestry purposes is not supported by the best available science. We recommend it be removed from the final rule.

We recommend that the determinations of adverse modification be at the appropriate fine scale to ensure ESA compliance.

We recommend that the standards and guidelines of the Northwest Forest Plan late-successional and riparian reserve systems be used to preclude inappropriate or unsustainable management practices. The Northwest Forest Plan allows for restoration and provides standards and guidelines that are more protective of owls and better suited to experiments in ecological restoration.

Prescriptive requirements to retain trees above a certain age or size to restore the deficiency in old forests, and mapping where large blocks of closed canopy forests will be retained and allowed to mature is necessary to ensure these values will be not become subject to mismanagement or overcutting.

Active management in owl habitat should be considered experimental, conducted on a small scale, and monitored to determine its impact on Northern Spotted Owls. The necessity and benefits of active management in owl habitat remains in dispute.

We recommend the Service develop an environmental impact statement to devise a research strategy that addresses this question.

American Bird Conservancy

American Bird Conservancy (ABC) is a 501(c)(3) non-profit organization whose mission is to conserve native birds and their habitats throughout the Americas. It achieves this by safeguarding the rarest bird species, restoring habitats, reducing threats to bird species, and building capacity to advance bird conservation.

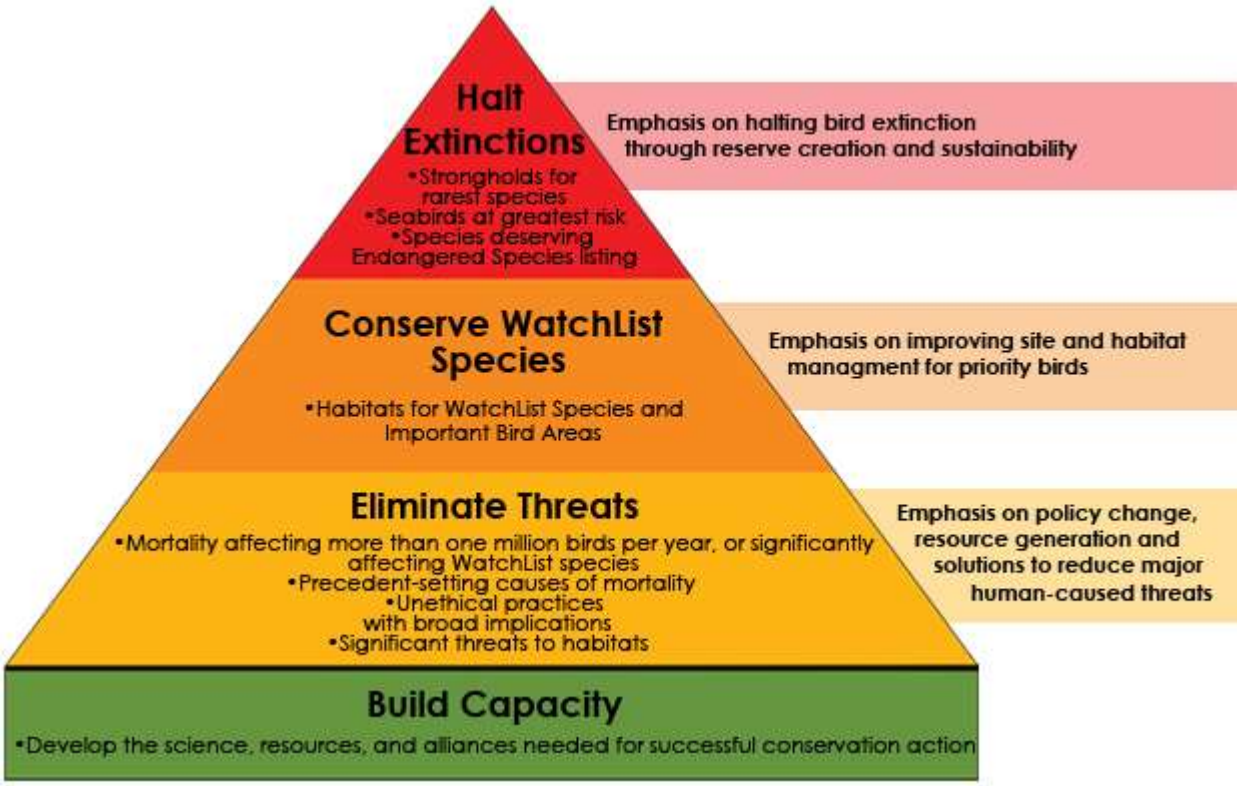
ABC is the only U.S.-based group with a major focus on bird habitat conservation throughout the entire Americas. ABC has more than 8,000 individual members and 30,000 constituents. ABC's members, supporters, and activists enjoy viewing, studying, and photographing migratory birds. Some of its members and constituents routinely observe the Northern Spotted Owl in California, Washington, and Oregon.

ABC is a leading organization working to reduce threats to birds from habitat destruction; from collisions with buildings, towers, and wind turbines; and from toxins such as hazardous pesticides and lead.

ABC uses a variety of mechanisms to achieve these objectives including scientific research and analysis; advocating for bird conservation at the local, state, regional, and federal levels; forming bird conservation partnerships; and pressing for meaningful regulatory changes to address such threats effectively through various means, including rulemaking petitions and litigation. See, e.g., ABC v Fed. Communications Commission, 516 F.3d 1027 (D.C. Cir. 2008) (in response to ABC's review petition seeking protection of migratory birds from collisions with communications towers, the court vacated a part of the order for violation of the National Environmental Policy Act ("NEPA"), 42 U.S.C. § 4321 et seq.).

ABC's staff includes more than 20 scientists with expertise in bird conservation. ABC's scientists have published in many reputed journals such as the Antarctic Journal of the United States, The Auk, Biodiversity Conservation, Biological Invasions, Biological Sciences, Bird Conservation International, Boletin SAO, Canadian Field Naturalist, Chelonion Research Monographs, Colonial Waterbirds, Condor, Cotinga, Ecological Applications, Ecology, Emu, Florida Field Naturalist, International Zoo Yearbook, Journal of Avian Medicine and Surgery, Journal of Field Ornithology, Journal of Raptor Research, Journal of Wildlife Diseases, Journal of Wildlife Management, Molecular Ecology, Neotropical Birding, North American Bird Bander, Oecologia, Ornitologiá Columbiana, Ornitologiá Neotropical, Oryx, Pacific Conservation Biology, Proceedings of the National Academy of Science, Proceedings of the Western Foundation of Vertebrate Zoology, Wilson Bulletin, Wilson Journal of Ornithology, and Zoo Biology.

The American Bird Conservancy Strategic Bird Conservation Framework



The problems facing birds today are myriad and complex, requiring a far-reaching, bold vision for conservation. ABC has developed a unique and successful strategy to preserve bird diversity and maintain or increase wild bird populations. This strategy is fully articulated in *The American Bird Conservancy Guide to Bird Conservation* published in 2010 by University of Chicago Press (ISBN-13:978-0-226-64727-2).

The highest bird conservation priority is halting extinctions, followed by conserving and restoring habitats. In the case of the Northern Spotted Owl draft Critical Habitat rule, the Service is proposing to place lower priority general habitat needs before the specific needs of an endangered species, even to the point of allowing large numbers of Northern Spotted Owls to be killed (taken) and significant habitat to be degraded or completely eliminated for decades. While the stated goal to improve future habitat conditions for the owl is well-intended, this activity is not supported by peer-reviewed studies showing owl populations will benefit, and it is, in fact, pushing an already extremely imperiled species closer to extinction and should be immediately halted.

Review Indicates Endangered Status Warranted for Northern Spotted Owl

A review of the extensive literature on the Northern Spotted Owl, forest ecology, and conservation biology published over the two decades since the subspecies was listed indicates Northern Spotted Owl populations have continued to decline and now meet the Endangered Species Act's definition of an *endangered* species, that is, it is *"…in danger of extinction throughout all or a significant portion of its range…"*. As a result, stronger conservation measures are needed than the Service is currently considering.

On federal lands, Northern Spotted Owl populations not only continue to decline despite the Northwest Forest Plan, the decline is accelerating and vital rates are deteriorating (Forsman *et al*. 2010). In study areas not managed under the Northwest Forest Plan owl declines are significantly greater (Anthony *et al*. 2006). A recently published large-scale demographic study (Forsman *et al*. 2010) found that the species is declining on seven of eleven active demographic study areas at about 3% annually range-wide, and concluded that the Northern Spotted Owl clearly is on a trajectory towards extinction. Funk *et al*. (2010) provides evidence for recent genetic bottlenecks in northern spotted owls that increase the vulnerability of the Northern Spotted Owl to extinction.

Currently, the subspecies is already nearly extirpated in much of its range. In British Columbia, as far as we know, all remaining birds are in captivity; few remain on the Olympic Peninsula, Southwest Washington, and the northern portion of the Oregon Coast Range. Populations are very small and isolated in most of Washington where rates of decline are highest. Areas that have little federal land support few or no owls, and Forsman *et al*. (2010) state that as a result, too few Northern Spotted Owls exist in four regions (southwestern Washington, the Coast Range of northwest Oregon, the California Cascades, and much of Washington's Olympic Peninsula) to conduct a demographic study with their methods. Further, the literature suggests these declines are not likely to lessen even with the latest owl recovery plan in place due to the un-quantified and unmitigated risks accepted in the plan.

Considering that the best available science has documented an ongoing, range-wide decline of the Northern Spotted Owl and its extirpation in many regions that historically were occupied, we are requesting that the Service upgrade the Northern Spotted Owl's Endangered Species Act listing status from *threatened* to *endangered* and take decisive action to stop the further deterioration of the Northern Spotted Owl's population and degradation of its habitat.

The Northern Spotted Owl meets the Endangered Species Act's definition of an *endangered* species because of impacts under four of five criteria established under the Endangered Species Act for determining the status of a species. A brief summary is provided here and the full analysis developed by the Geos Institute is available in the appendix.

1. **The present or threatened destruction, modification, or curtailment of the owl's habitat or range**

The Northern Spotted Owl is endangered by loss and modification of habitat, due especially to historic and ongoing logging and fire associated management. Over a century of logging has removed much of the Northern

Spotted Owls' habitat. In 1990, habitat loss was estimated at 60-88% since the early part of the 19th Century. Since the owl was listed in 1990, habitat loss has continued throughout the owls' range. While much of this loss has slowed on federal lands due to the Northwest Forest Plan, habitat loss continues at relatively high rates on nonfederal lands. Additionally, it appears that the effects of past logging still are occurring on both federal and nonfederal lands as increased fragmentation and habitat loss propagate through the ecosystem.

The Northwest Forest Plan assumed a period of decades would be necessary before habitat in many of the late-successional reserves became suitable for owls; only about 36% of the reserves currently are functioning as old-growth forests, with most of the reserves still in various stages of recovery from logging. Additionally, other human actions, including post-disturbance logging and extensive fuel treatments, urban development, livestock grazing, mining, recreation, and road construction, have contributed to past and continue to contribute to present cumulative losses and degradation of Northern Spotted Owl habitat and their prey.

2. Disease or predation

The Northern Spotted Owl is subject to disease and predation pressures that have increased substantially since its listing. Changes in habitat that result in more open areas (e.g., from forest thinning) and increased fragmentation of older forests likely cause an increase in predation by Great Horned Owls, Northern Goshawks, and Red-Tailed Hawks that either increase mortality on adult Spotted Owls or on dispersing juveniles. In addition, Leskiw and Gutiérrez (1998) present evidence of predation on Spotted Owls by Barred Owls, a risk that is growing with increasing overlap in distribution of Spotted and Barred Owls.

3. Inadequacy of existing regulations to protect the owl and its habitat

The Northern Spotted Owl is endangered and its habitat is subject to adverse modification due to the inadequacy of existing state and federal regulations. Existing regulations have failed to truly protect the Northern Spotted Owl and its habitat on private, state, or federal lands. This failure is evidenced by the continued loss and degradation of owl habitat, the failure to restore habitat damaged by past management practices, and by a demonstrated failure to reverse the decline of the Northern Spotted Owl over the last two decades.

4. Other natural or human caused factors

The Northern Spotted Owl is endangered by threats associated with the continued increase in Barred Owl populations. These detrimental impacts may be interacting with habitat loss and fragmentation to accelerate the decline of Northern Spotted Owl populations. Barred Owls compete with Northern Spotted Owls and are considered a major threat to Spotted Owls. Collapse of Northern Spotted Owl populations has followed the north to south invasion of the Barred Owl and areas that recently have been invaded by Barred Owls are beginning to show signs of population declines.

A Conservation History of the Northern Spotted Owl

The conservation history of the Northern Spotted Owl offers important lessons that should advise the options developed by policymakers. The consequences of past active management and agency misconduct have engendered mistrust with the public, and are a reason for caution whenever new proposals for active management in owl habitat are considered.

The damage caused to the National Forests by overcutting during the 1960s, 1970s, 1980s, and 1990s has yet to be addressed by the land management agencies. For example, there remains an excess of logging roads on the National Forests and an estimated $10 billion backlog of road maintenance. The impacts to publicly owned

Aerial view of fragmentation and road impacts in Oregon's Coast Range.

forests are reduced water quality, increased water filtration costs for downstream communities, and diminished fisheries and aquatic ecosystems.

Agency scientists first confirmed the Northern Spotted Owl's decline and connection to old-growth forest habitat in 1983. But instead of taking steps to moderate habitat loss, a series of legislative riders allowed for record logging levels in owl habitat from 1983 – 1990 and listing of the species as threatened was delayed until 1990.

In 1990, Congress passed an old-growth logging rider (section 318 of the FY 1990 Interior Appropriations bill) that overturned two court injunctions that had halted over 140 old-growth timber sales, and orders the Forest Service and Bureau of Land Management (BLM) to offer a fixed volume of timber in Washington and Oregon during that year, about 9.6 billion board feet. It also includes sufficiency language saying citizens could not challenge these projects if they violate environmental laws except for the Endangered Species Act. Many of these projects did not have stream buffers to protect water quality or other minimal environmental safeguards.

Defeat of the next legislative amendment offered in 1991 to prevent environmental review of timber sales in owl habitat, opened the court house door to legal challenges against timber sales proposed in owl habitat. In 1991, Federal Judge William Dwyer then ruled the agency had systematically and deliberately failed to abide by wildlife protection laws.

Regeneration harvest fragments habitat which is detrimental to the Northern Spotted Owl. Mt. Hood National Forest, Oregon.

Judge Dwyer's scathing ruling and resulting injunctions shut down the region's timber sales program on federal lands. In Congress, public pressure was building for permanent protection of the ancient forests. Only the intervention of Speaker of the House Thomas Foley prevented a House vote on the Ancient Forest Protection Act, a bill that had been championed by Rep. Jim Jontz.

The injunctions and political gridlock prompted intervention by incoming President Bill Clinton. A forest summit was held in Portland, Oregon in 1993, and agencies were directed to develop the Northwest Forest Plan. This was a first of its kind, multispecies and ecosystem conservation plan intended to protect late-successional forests and riparian areas, as well as the Northern Spotted Owl, Marbled Murrelet, Pacific Salmon stocks, and 600 other old-growth-dependent species. The Plan went into effect in 1994 and it remains today the best available conservation framework of its kind.

The Emergency Rescissions Act of 1995, better known as the "salvage logging rider" or "lawless logging", suspended most environmental laws from June 1995 until December 1996 to allow the Forest Service to address forest health emergencies. Instead of legitimate restoration, the public witnessed hundreds of old-growth and roadless area timber sales offered for sale, including dozens in the Pacific Northwest that had been previously ruled illegal by federal courts.

Strong public opposition and hundreds of protests ensued. Pressure on the Clinton Administration led then Secretary of Agriculture Dan Glickman to cancel over 150 of the roadless area projects that had been offered under the Rider, but many of the old-growth sales were logged.

Agency budgeting and the system of incentives created by Congress to boost logging played a role in the management abuses that occurred under the rider. In 1976, the Forest Service Salvage Fund was created to

expedite the removal of insect-infested, dead, damaged, or down timber. Salvage sale revenues are deposited in the Salvage Fund to pay for additional projects. The Fund created an incentive for managers to promote salvage sales, because forest managers keep the sales receipts instead of returning the funds to the Treasury.

The Interagency Review on the Salvage Program of 1996 found that the fund creates a financial incentive for agency managers to choose salvage logging when other restoration activities that do not return receipts to the agency would be more appropriate. Other incentives such as the KV fund were found to create a similar problem. By allowing the Forest Service to keep all timber sale receipts instead of returning the proceeds of selling the public's timber to the Treasury, a powerful incentive has been created for the agency to overcut the forest to maintain their own budgets and staffing levels.

In the aftermath of the Salvage Logging Rider, multiple attempts were made in Congress and by the subsequent Bush Administration to expedite logging by weakening or eliminating environmental protection and public involvement for timber sales nationwide. Most of these efforts, such as Rep. Bob Smith's Forest Health Bill of 1997, were unsuccessful, but the Healthy Forests Restoration Act of 2003 did pass and was signed into law by President Bush, although only after significant changes were made to target projects towards thinning around homes and communities.

Repeated attempts were also made to reduce or eliminate key protections of the Northwest Forest Plan, including agency proposals to eliminate the survey and manage requirement, and the aquatic conservation strategy protecting streams and degraded watersheds. The Northern Spotted Owl Critical Habitat designation and Owl Recovery Plan offered by the Bush Administration were heavily criticized as scientifically flawed and biased against the Northwest Forest Plan.

A later investigation by the Department of Interior's Inspector General confirmed that political interference had prevented the Service from preparing a scientifically sound Recovery Plan. This contributed to the Recovery Plan being remanded and the Critical Habitat designation being thrown out.

In addition, BLM developed and publicly promoted the Western Oregon Plan Revisions (WOPR), a scientifically flawed plan that would have eliminated the late-successional reserves or allowed logging in reserve to increase logging of federal mature and old-growth forests managed by BLM in Oregon by 400%. Independent scientific reviews, including those by the U.S. Environmental Protection Agency and National Marine Fisheries Service, found the plan would likely cause significant harm to the forests, water quality, and threatened species. A review of the draft plan by BLM's own science assessment team found numerous deficiencies.

The WOPR planned for the elimination of 680 known nesting sites of the threatened Northern Spotted Owl, and another 600 known nesting sites of the Marbled Murrelet, a threatened sea bird that also depends on old-growth forests. The BLM's flawed WOPR analysis concluded that owl and murrelet populations would not be harmed by increased logging, but BLM refused to consult with Service wildlife experts on its plan. A federal judge rule the WOPR illegal in March 2012.

Administration Proposes another Western Oregon Plan Revision

The Administration has announced a new planning process for BLM-managed lands in Oregon. Based on the Notice of Intent (NOI) and the Administration's press statements, the plan shows a bias towards active management and proposes a significant departure from the Northwest Forest Plan by encouraging regeneration in moist mature forests. This is harmful to the Northern Spotted Owl by risking take of individual birds and

habitat, increasing forest fragmentation, and setting back the needed expansion of the old-growth forest ecosystem over time to provide for owl recovery.

For example, the NOI states:

"The revisions to the existing RMPs will determine how the BLM will actively manage BLM-administered lands in western Oregon to further recovery of threatened and endangered species, provide clean water, restore fire-adapted ecosystems, produce a sustained yield of timber products, and provide for recreation opportunities."

The statement shows a high degree of bias because it falsely assumes active management can accomplish all of those things. In fact, past active management that resulted in excessive logging and road building is the reason we have threatened and endangered species in the region. Active management, while producing timber volume, also harms water quality and diminishes recreational opportunity. Active management has also been shown to increase, rather than decrease fire risk if expensive follow up treatments to remove or burn slash piles and to conduct managed burns are not carried out.

The Northwest Forest Plan is working to restore degraded watersheds and protect clean drinking water supplies. Willamette National Forest, Oregon.

It also ignores the benefits of preservation. The Wilderness Society has released a report Wilderness and Water Mix Well on the relationship between healthy watersheds and protected lands in the National Forest System. The report found that only 38% of watersheds where active management is greatest were functioning properly, 58% were at risk, and 5% were impaired. In contrast, protected lands scored much higher; 80% of Wilderness is functioning properly and only 18% at risk and 1% impaired. Roadless areas scored in second place with 64% functioning properly, 34% at risk and 2% impaired.

This new WOPR planning effort is essentially BLM pulling out of the Northwest Forest Plan. This undermines the integrity of the Plan, which provides an adequate regulatory mechanism to conserve the Northern Spotted Owl and other wide-ranging species. The importance of consistent management across the owl's range has been cited in past court cases.

Two key assumptions behind the biological analysis of the Northwest Forest Plan were that (1) "[r]iparian and Late-Successional Reserves (LSRs) will retain reserve status and will not be available for timber production other than as provided in Alternative 9" and (2) "[a]lternative 9 applies to Forest Service and BLM lands; all future actions on these lands would be consistent with Alternative 9, as adopted in the Record-of-Decision (ROD)." See FEIS at 2-33 to 2-34. (Earthjustice comment letter).

BLM's indicated management direction as expressed by the NOI, violates both of these assumptions.

Okanogan-Wenatchee National Forest Plan Revision

The Okanogan-Wenatchee National Forest Plan Revision has also raised great concern by proposing the elimination of the existing system of late-successional reserves. A Region 6 Forest Service Assessment found that late-successional forests are generally below their historic range of variability, and the availability of snags larger than 20 inches, and snag habitat is generally lacking in some forest types because of past management practices.

While the notice of intent proposes that a designated percentage of the forest will be managed for the owl's benefit, there will no longer be areas where the species' protection is guaranteed. This proposal is not consistent with the Northwest Forest Plan, which provides reserves with guaranteed protections that cannot be ignored at the discretion of the local land managers.

The Forest Service claims that static reserves are no longer a viable strategy for conserving the owl, but to date has not produced credible evidence to support that contention. Portions of the now discredited Northern Spotted Owl Recovery Plan of 2008 reached the same unfounded conclusion, and inclusion of similar language in the 2010 Draft Recovery Plan spawned strong opposition from the scientific societies that peer-reviewed the plan.

The Final Owl Recovery Plan calls for conserving older stands that have occupied or high-value spotted owl habitat, and to "Continue to manage for large, continuous block of late-successional forest." Without the system of late-successional reserves remaining in place, the agency has not provided any mechanism to ensure that the land management agencies will provide for large, continuous blocks. In fact, given the management history, and continued proposals to further fragment the forest, the importance of maintaining the reserve system should be that much more apparent.

The reviewers found that the science included in the draft was incomplete because numerous studies to the contrary had not been considered. In the final draft, a greater effort was made to reference the omitted studies, but the conclusions remained the same. For example, evidence presented in Hanson *et al*. (2009) on fire risk was cited but not used.

Several new studies have been published that also analyze satellite images of the forest, and have found that high intensity, "catastrophic" fires have not been increasing in Northern California, or on the Eastside. As a result, we believe the plan overestimates fire risk. Similarly, the Hanson study was also not used regarding the rates of

recruitment relative to rates of loss to stand-replacing fires, resulting in an overestimation of the amount of reserve likely to be lost.

In addition, the management standards proposed for portions of the former late-successional reserves could be potentially harmful to many species of wildlife, including the Northern Spotted Owl. The proposed Okanogan-Wenatchee forest plan would allow for significantly greater road densities (more than 15%) than allowed in the current six owl reserves and possibly eight others depending on agency interpretation changes in summer road use. Allowing greater fragmentation and road densities would reduce the amount of suitable owl habitat in those areas, not to mention increasing fire risks, and should not be allowed.

Volume Driven Restoration is Not Restoration

The Obama Administration has committed itself to a significant increase in logging on the National Forests as indicated by the February 2012 report "Increasing the Pace of Restoration and Job Creation on our National Forests." A March Forest Service memo to Region 6 calls for a 20% increase in volume this year, and that it is to fall under the rubric of restoration.

We question whether legitimate restoration can be accomplished when meeting timber volume targets is the primary management directive. Hard timber targets on the National Forests were ended because evidence emerged that it was causing harm to the forests, and to the Forest Service itself.

Included in the appendix is a farewell letter from Steven Smith, a wildlife biologist from Willamette National Forest detailing mistreatment of agency biologists at the hands of timber managers. Here's one excerpt:

"Even more disheartening is attending meetings where the spotted owl gets blamed for this internal crisis as well. A strange paradox since Forest Service managers are ultimately responsible for the spotted owl crisis as well."

A return to timber target driven management would mark a huge setback that threatens to undo the agency's progress towards professional integrity and stewardship. We urge the Service to oppose Forest Service and BLM plans to increase timber production under the guise of restoration. It threatens the Northern Spotted Owl and risks returning the Forest Service and BLM to the errant ways of their past as well as delegitimizing other much needed restoration work on federal lands.

Flawed Final Northern Spotted Owl Recovery Plan

Concern is being raised by scientists that active management in suitable owl habitat is not supported by the best available science. There are currently no peer-reviewed studies showing Spotted Owls benefit from the proposed logging treatments, while others show short-term harm to owl and prey base from thinning with declines lasting up to 30 years.

Northern Spotted Owl. Photo by the Service.

Estimates of owl habitat loss from fire are not based on defensible data sources and we remain concerned that the agency is operating on the unproven and unanalyzed assumption that Northern Spotted Owls are not resilient to fire. All three subspecies of Spotted Owl exist in fire adapted forests. At the same time, the agency fails to address the problem of post-fire logging which degrades and eliminates legacies, habitat for the owl's prey base, and owl foraging areas.

Given the 2.9% annual decline in owl population, it is not acceptable to allow for short-term losses of owls in the hope that improved habitat conditions might prove beneficial to the species someday in the distant future. But this is precisely what the draft Plan is calling for.

"While proposed Federal actions must comply with requirements of the Act, actions with some short-term adverse impacts to spotted owls and critical habitat, but whose effect is to conserve or restore natural ecological processes and enhance forest resilience in the long term, should generally be consistent with the goals of critical habitat management."

(Executive Summary p. 8)

The proposed Critical Habitat rule relies heavily on the Final Northern Spotted Owl Recovery Plan and cites it as if it were a peer reviewed document. However, the Final Owl Recovery Plan was never peer reviewed. In addition, peer reviewers identified many faults in the Draft Recovery Plan, particularly concerning active management and the need for maintaining owl reserves that were never corrected in the Final.

For example, the summary of The Wildlife Society (TWS) review states:

"Other aspects of the 2010 DRRP are flawed and many are not based on best available science.
The lack of a permanent proposal for a reserve system is a major problem that prevents full review of the 2010 DRRP. We believe this will necessitate further peer review prior to finalization of a recovery plan. The Service's strategy for no reserves in dry forests in the eastern Cascades is exacerbated by the proposals for aggressive management of these dry forests because the treatments will reduce the amount of closed canopy forests in the landscape and reduce the amount and suitability of habitat for the subspecies. These proposals are not based on a complete review of the available science and they rely on unpublished reports. In addition, there has been no formal accounting of how closed canopy forests can be maintained with the widespread treatments that are being proposed. Management actions, which are not based on good science, in dry forests with no reserves will likely lead to failure to achieve recovery criteria."

The TWS review also noted that in at least a dozen instances, important studies with bearing on these issues, and that often contradicted the intended management direction were excluded from the analysis. It can be concluded that the agency had cherry-picked studies supporting one view while actively ignoring opposing studies. The Society concluded in its typically diplomatic fashion that:

"In summary, we commend the Service for their intent to use the best available science in developing the 2010 DRRP for the Spotted Owl; however, we found strong evidence that this was not the case throughout much of the Plan. The Service should make a comprehensive effort to base their recommendations and guidelines on the best

available science so that they are in compliance with Secretarial Order #3305 issued by Interior Secretary Salazar on September 29, 2010 and the Presidential Memorandum of Scientific Integrity."

Unfortunately, no such effort was made to correct the scientific deficiencies identified in the TWS review. While some of the omitted studies were cited in the final recovery plan, the same unsubstantiated conclusions in support of logging in owl habitat and eliminating owl reserves on the Eastside were reached.

Another team of five scientists (Hansen, Bond, Odion, DellaSala, Baker) that reviewed the draft concluded, *"…there are considerable deficiencies in the 2010 draft recovery plan where the Fish and Wildlife Service did not make use of best science, untested assumptions regarding risks of active management vs. fire, and unpublished literature in assessing forest recruitment vs. late-successional "losses" post-fire."*

The group of scientists urged the Service to recommend retention of all existing late-successional reserves, additional new reserves to create greater connectedness across the landscape, and greater protections from logging, especially post-disturbance logging within late-successional reserves.

Old-growth forests in the Pacific Northwest and northern California store more carbon per acre than any other forests in the world.

Research on Effects of Logging on Owl Populations

The scientific societies are urging the agency to develop an Environmental Impact Statement on the effects of thinning and ecoforestry on Northern Spotted Owl populations. To date the agency has no evidence that thinning

or ecoforestry benefits owl populations, but we know that many of the projects will, in fact, cause short-term harm.

The need for this type of research was identified by Jack Ward Thomas in the 1990 Interagency Science Report, which also found that logging had not been found to be compatible maintaining suitable owl habitat, and the need for a precautionary approach that requires treatments be proven before broadly implemented.

"We propose a two-part conservation strategy. The first stage, prescribes and implements the steps needed to protect habitat in amounts and distribution that will adequately ensure the owl's long-term survival. The second stage calls for research and monitoring to test the adequacy of the strategy and to seek ways to produce and sustain suitable owl habitat in managed forests. Insights gained in this second stage can be used to alter or replace habitat conservation areas prescribed in the first stage, but only if the modified strategy can be clearly demonstrated to provide adequately for the long-term viability of the owl." (ISC p 2)

"The ability to harvest timber in currently suitable owl habitat and have that habitat remain suitable has not been clearly demonstrated." (ISC p 104)

"Allow silvicultural treatments that have been tested or demonstrated through experimentation to facilitate the development of suitable habitat, such as planting trees." (ISC p 325)

More recently the Forest Service Fifteen Year Monitoring Report on the Northwest Forest Plan states:

"First, there is very little research documenting the effect of wildfire on spotted owls and spotted owl demography. In light of losses of nesting/roosting habitat to wildfires as high as 10 percent in some provinces, we need to understand how fire severity, spatial patterns of wildfire, and fuel reduction management treatments might affect owl habitat use, prey populations, and owl demography. We recommend increased research and monitoring on this subject to better inform managers on how to manage habitat in fire-prone areas."

High Quality Habitat Is Insufficient

The best available science and the continuing decline of Northern Spotted Owl populations indicate that the agency should designate as Critical Habitat and protect all suitable owl habitat, not just high-quality owl habitat. The definition of high quality owl habitat needs to be made more inclusive to ensure sufficient habitat will be conserved to allow for recovery.

In its review of the draft recovery plan The Wildlife Society raised concern about the narrow definition of high quality owl habitat being proposed. The Society notes that the proposed definition is only a subset of suitable habitat. Their analysis then states:

"…by limiting the definition of high quality habitat to a fairly narrow range of habitat conditions, management agencies will be able to justify thinning or commercial harvest in a broad range of naturally regenerated stands. Most of these naturally regenerating stands originated from fire and usually are suitable spotted owl habitat; therefore, they are not likely to be greatly "improved" by management. In western Oregon and Washington such stands are typically comprised of large trees that are 80-160 years old, and include scattered (i.e., residual) old-growth trees that survived wildfires. These stands may not meet the strict definition of high quality habitat, but they are often the best remaining habitat in the heavily harvested or burned landscapes that are managed by the

Bureau of Land Management and Forest Service. They often occur in small patches, isolated among large areas of young forest within these disturbed landscapes, and they often serve as nest sites for spotted owls as well as refugia for species such as flying squirrels and tree voles, which are important prey of northern spotted owls. Because of the high timber volume in these stands there is intense pressure to log them. Commercial thinning is often recommended as a prescription to reduce risk of fire or improve forest conditions for owls in these stands, despite the fact that it is usually unclear if thinning will either improve these forests as habitat for owls or accelerate their transition from suitable to high quality habitat.

This uncertainty was one of the reasons that the Northwest Forest Plan included recommendations to restrict thinning in naturally regenerated stands over 80 years old in western Oregon and Washington. This restriction should be retained in the final Critical Habitat Rule.

Downed woody debris and legacy trees are important elements of quality habitat for the Northern Spotted Owl and its prey base.

Under the proposed Rule, it is likely that the issue of whether a particular habitat meets the high quality standard will become an area of ongoing controversy and dispute, and as the TWS analysis indicates, it has the potential to leave unprotected large acreage in the 80-160 year range. These forests are currently protected if they are in late-successional reserves, but if the reserves are eliminated, these areas become subject to logging that will set back the recovery of owl habitat by many decades.

TWS recommended changes to the draft that were not incorporated into the final:

"Therefore, we recommend that the Service use a more inclusive definition of high quality habitat that would encompass a variety of late-successional forest types (i.e. mature and old-growth forests) in which spotted owls nest, roost, and forage. We also recommend that the Service take a more conservative approach and not recommend thinning in naturally regenerated stands over approximately 80 years old, especially when those stands include remnant old-growth trees. These stands will be the spotted owl nesting habitat of the future (if they are not already), and thinning them will most likely represent habitat loss for spotted owls and their prey, both in the near and long term. Such habitat loss will be in conflict with the Service's recovery criteria and delisting objectives as stated in the recovery plan."

Timber Sales Harmful to the Northern Spotted Owl

Forest Service Region 5 and now the BLM with the Pilots are moving forward with the type of active management envisioned in the Final Recovery Plan and Draft Critical Habitat rule. The results are not encouraging. Projects are resulting in take of Northern Spotted Owls, loss of Critical Habitat, controversy, appeals and litigation. There are better policy alternatives.

<u>The Beaverslide Project</u>

The Beaverslide Project on the Six Rivers National Forest proposes to remove and degrade owl habitat claiming it will provide long-term benefits after causing short-term harm. The proposed active management will degrade 850 acres of "low to moderate quality" nesting and roosting habitat, and 2,162 acres of foraging habitat.

The project was approved only several months before the owl Recovery Plan was completed and is being challenged by Conservation Congress and Environmental Protection Information Center who argue that due to new information from the Recovery Plan and other studies, the Fish and Wildlife Service should reinitiate consultation.

The plaintiffs argue that the agency has violated the ESA for failing to consider new information and for failing to use the best available science; violated the National Environmental Policy Act for failing to consider direct, indirect, and cumulative effects for its action the owl, its habitat, and its prey; and that the Forest Service violated the National Forest Management Act by failing to comply with monitoring requirements of the Six Rivers National Forest plan.

The 2011 Recovery Plan requires that "active management" projects explicitly evaluate the short-term effects to Spotted Owls and their prey while considering the long-term benefits of such projects, especially in Spotted Owl core areas. There are significant adverse short-term direct impacts to owls and to the owl's prey from commercial thinning and other management activities (Forsman et al. 2004, Manning et al. 2012). The Forest Service failed to consider these studies in its Biological Assessment because it predated the Recovery Plan.

The 2011 Revised Northern Spotted Owl Recovery Plan states:

"Research directly evaluating spotted owl responses to vegetation management including thinning, fuels reduction, and management intended to restore ecosystem functions is needed to address...whether thinning operations designed to create future spotted owl habitat result in site abandonment during or after the operation and what types of vegetation management operations will spotted owl to persist in existing territories (2011 RP at III-46 to III-47)."

This lack of information should cause the Service to take a precautionary approach, but instead the agency appears to be moving ahead as though those questions have been answered. To date, we see no indication the agency is even attempting to answer these questions and its work on the Beaverslide project shows a remarkable abdication of the agency's responsibility to conserve and recover a threatened species.

In the project area, "twelve of the thirteen Northern Spotted Owl territories are currently below threshold within the 0.7 mile radius and all territories are below threshold within the 1.3 mile radius" below which reproduction is diminished. But, the Service failed to consider the 2011 Recovery Plan's discussion about direct effects of thinning on Northern Spotted Owl's, or several other studies concerning decreased use by Northern Spotted Owl of harvested areas and reduced forage in stands that have been thinned or selectively logged for one to five decades. Without an explicit evaluation of short-term impacts to Northern Spotted Owls, it appears that implementation of the project will likely adversely affect the Northern Spotted Owls in the project area.

In an expert declaration in the case, Dominick DellaSala, chief scientist of the Geos Institute states: "The fact that all of these owl territories are below the Services' thresholds is a significant factor in analyzing potential harm to the resident owls in this area because any further degradation of the owl's structural habitat, or the owl's prey habitat is likely to cause significant short-term adverse effects on the owls, which may disrupt essential behavior patterns, including breeding, feeding, or sheltering...there is no analysis in the Biological Assessment that describes the short-term effects on the spotted owls that reside in the remaining territories...and the Service only presents its conclusions about the long-term habitat needs of the owl. The Service ' fails to ensure that they meet the requirements of the 2011 Recovery Plan that the area, "retain sufficient nesting, roosting, and foraging habitat within the provincial core-use area and within the provincial home range to support, breeding, feeding, and sheltering."

DellaSala also notes the area is already heavily fragmented from past active management and that "any additional fragmentation from road building (even temporary roads) or logging is likely to adversely impact owl occupancy" and could facilitate invasion of the area by Barred Owls.

In addition, the Forest Service failed to take a hard look as required by the National Environmental Policy Act at the short-term effects on the owls and their prey. The agency analysis admits that "timber harvest and associated management activities may have a short-term negative effect on Northern Spotted Owl by modifying suitable owl habitat", but it never provides the necessary "hard look" to determine whether this short-term negative effect could cause additional reductions in "productivity and survivorship" in these below threshold activity centers, and it also failed to discuss the potential adverse indirect effects from the short-term reduction in the owl's prey base.

The Forest Service then makes numerous statements about the project benefits, but never provides any quantifiable or the required detailed hard look to substantiate those conclusions. For example, there is no disclosure that flying squirrels may not again use these areas for 20 years or that Northern Spotted Owls may not again forage in these areas for decades, or that this may lead to a loss of productivity and survivorship. The Forest Service' failure to take a hard look at the direct and indirect impacts of thinning and other management activities on the Northern Spotted Owls and their prey base in already degraded activity centers is unreasonable, arbitrary, capricious, and otherwise in violation of NEPA.

Because the project would reduce the amount of snags in the project area, it is important to look at the effect that would have on species that require snags such as the Western Screech Owl. There is essentially no Western Screech Owl population data for the project or planning area making Forest Service assertions that these species habitats are sufficient impossible to verify. Other species that may be negatively affected by snag removal in the

project area include the Red-breasted Sapsucker, White-headed Woodpecker, Downy Woodpecker, Hairy Woodpecker, Brown Creeper, Vaux's Swift, and Flammulated Owl.

Goose Logging Project

Conservation groups have filed a legal challenge against the 2,100 acre Goose timber sale in the Willamette National Forest, Oregon for the potential damage to streams and endangered species habitat it may cause if carried out unchanged. The project would remove large mature trees from riparian buffers, adversely modify 454 acres of suitable Northern Spotted Owl habitat, and the agency did not analyze or disclose the impacts the logging will have on competition with Barred Owls.

Rio Climax Timber Sale

Four conservation groups are protesting a BLM Medford District's plan to log trees larger than 30 inches in diameter and construct a new logging road because this will likely to adversely affect habitat of the Northern Spotted Owl.

Kelsey Peak Timber Sale, Six Rivers National Forest

The project proposes 1,521 acres of commercial thinning, 51 acres of late mature forest restoration and another 237 acres of low thinning considered as stand improvement (TSI). There are 13 owl activity centers in the project area. Fuel and thinning treatments within nesting-roosting habitat would amount to 327 and 85 acres respectively, for a total of 412 acres for all action alternatives. (DEIS p. 94) Within Northern Spotted Owl territories, Alternative 2A and 4 would thin 83 acres and Alternative 3 would thin 82 acres of nesting, roosting Northern Spotted Owl habitat that may cause short-term habitat degradation (DEIS 252).

Algoma EIS, Shasta-Trinity National Forest

The project area is in Northern Spotted Owl Critical Habitat and proposes to thin 5,600 acres of mixed conifer in natural stands and plantations, including 930 acres of sanitation treatments and 640 acres in Riparian Reserves, 1,100 acres of natural and activity generated fuels with mechanical and prescribed fire and an additional 200 acres with under burning. Including the future projects in the CHU from Table 14, there will be a 50 percent degradation of Northern Spotted Owl foraging habitat for 30 years, possibly longer. One stated purpose of the project is to produce LSR reserves to serve as habitat for the Northern Spotted Owl, yet the entire project area is in already suitable owl critical habitat. This logic would make sense if the FS were converting unsuitable habitat or plantation habitat to become nesting/foraging habitat. There is no need for forestry "improvements".

Mudflow EIS, Shasta-Trinity National Forest

The agency preferred Alternative 2 proposes 1626 acres of thinning of mixed conifer stands, 594 acres of plantations, 185 acres of ponderosa pine sanitation, 197 acres of regeneration, 189 acres of wet meadow logging, 121 acres of shaded fuel break, 45 acres of black oak restoration. 134 acres of regeneration is proposed for a plan amendment that would reduce the 15% retention guidelines. 88% of the project area is within designated Critical Habitat CA-2 for the Northern Spotted Owl.

Pettijohn HFRA LSR EIS, Shasta-Trinity National Forest

The project is within Clear Creek Late Successional Reserve (LSR) and Critical Northern Spotted Owl Habitat. Silvicultural methods include 802 acres (and 58 acres in Riparian Reserve (RR)) of Tractor thinning from below, 104 acres (and16 acres in RR) of Cable logging, 153 acres (and 22 acres in RR) of Helicopter logging and 1,995 acres of FMZs that include mastication and hand pile/burn concentrations. The Biological Assessment page 51 for the Pettijohn project determined that the proposed actions "may affect and likely adversely affect the northern spotted owl through the reduction of habitat quality". Existing NRF habitat would be degraded in about 1,793 acres due to FMZ and thinning prescriptions. Existing foraging habitat would be downgraded to connectivity habitat in about 288 acres due to thinning prescriptions.

Gemmill EIS, Shasta-Trinity National Forest

1,279 acres commercial logging, 10 Northern Spotted Owl Activity Center's - The project proposes to; commercial thin 1,279 acres of that 300 acres is within Riparian Reserves (RR), 751 acres of mature forests and 528 acres of old-growth forest, thin from below 268 acres to reconstruct a 30 year old ridge top fuel break, 44 acres of plantation thinning, reduce fuels on 27 acres adjacent to private property, reconstruct 23.6 miles of road, construct 0.5 miles of "temporary" road. In LSR and Northern Spotted Owl Critical Habitat.

Petersburg Pines HFRA EA, Klamath National Forest

The project area boundary encompasses 10,380 acres. The proposed action is comprised of five main treatment types comprised of 7,350 acres: Thinning 2,332 acres with variable density thinning followed by fuels reduction activities (935 acres Tractor, 1,147 acres Skyline Yarder and 250 acres Helicopter); prescribed burning on 2,753 acres; fuel reduction activity in shaded fuel breaks on 879 acres; roadside fuels reduction activities on 1,288 acres and fuels reduction activities immediately adjacent to private property on 98 acres. The Proposed Action would "modify" 164 acres of N/R habitat within 1.3 mile home ranges and 755 acres of F habitat. Within Northern Spotted Owl 1.3 mile home ranges the Proposed Action may downgrade or remove approximately 79 acres of N/R habitat and 80 acres of forage habitat. Within Core Areas 17 acres of N/R and 45 acres of F would be modified.

Alternative 3 would modify 141 acres of N/R habitat and 834 acres of forage habitat. Understory burning and Fuel breaks could be detrimental to Northern Spotted Owl habitat and have the potential to downgrade and remove habitat within the project area by removing or reducing the suitable habitat characteristics within units. Shaded fuel breaks could be detrimental to Northern Spotted Owl habitat by reducing the amount and/or types of snags, CWD, understory vegetation and prey. Combined treatments within 1.3-mile Northern Spotted Owl home ranges would modify 560 acres of N/R and 1247 acres of foraging habitat. The Proposed Action would remove/downgrade N/R habitat within home range for a reproductive pair.

Smokey HFRA, Mendocino National Forest

Approximately 80% of the project area is within the Buttermilk Late Successional Reserve (LSR). 933 of commercial "thinning" is proposed within 737 acres in LSR and 196 acres in the Matrix land allocation. Mechanical fuels treatments are proposed on 637 acres, prescribed fire on 2689 acres, pre-commercial thinning on 400 acres, understory thinning and meadow enhancement on 1763 acres.

What is Wrong with Secretarial Pilot Projects in Moist Forests

Secretary of the Interior Ken Salazar has initiated a series of Pilot Projects on lands managed by the Bureau of Land Management that seek to test new ideas in ecoforestry. Two moist forest Pilot Projects are being implemented to test the theories of Drs. Norm Johnson and Jerry Franklin using regeneration harvest to produce high-quality early-seral forests. These are the Roseburg BLM Pilot and the Coos Bay BLM Pilot.

After tracking the BLM's two moist forest pilot projects, Cascadia Wildlands, a partner of American Bird Conservancy has identified significant problems, detailed in full in the appendix.

In our view, these moist forests are already providing Spotted Owl habitat and therefore should be retained. We encourage the BLM to discontinue implementation this type of harvest, especially in the new proposed Resource Management Plans. In addition, the Coos Bay BLM Pilot proposes to log over 900 healthy, rare, Port Orford Cedars and jeopardizes hundreds more that are retained, even old-growth trees.

The BLM has argued there is a need to break through "gridlock", implying that environmentalists have stopped all logging. This is not true. The Coos Bay BLM has been selling 150% of their target volume over the past five years with virtually no controversy. Roseburg BLM has been close to their target volume. There is no gridlock in our forests, and there are better ways to promote high-quality early-seral habitat, such as not salvage logging after a natural disturbance.

The Siuslaw National Forest in Oregon has operated a successful and noncontroversial timber sale program for the past decade.

Lack of Service Oversight Allowing Owl Take on Private and State Lands

The U.S. Fish and Wildlife Service needs to do more to enforce the ESA against take of the Northern Spotted Owl

on private lands. When asked about this at a public open house concerning the draft Critical Habitat rule, Oregon State Director Paul Henson stated that the agency had tried to enforce ESA Section 9 against Boise Cascade in one case twenty years ago and was ruled against by the court, and therefore would not make another Section 9 enforcement attempt for take on private lands. We like to see federal agencies doing everything it can to conserve the rapidly declining owl.

During the last administration, a Service program to review California timber sale plans and provide technical assistance to landowners was discontinued. As a result, these sales, that were formerly were often modified to mitigate the most likely harm to owl or owl habitat, are now proceeding unchanged.

The Environmental Protection Information Center has been compiling owl take information gathered by analyzing Timber Harvest Plans of Sierra Pacific Industries, Inc. whose actions, including logging, road building and other disturbance in northern California that result in significant habitat degradation and destruction that is likely to actually kill and injure Northern Spotted Owls. Sierra Pacific's actions result in unlawful take of Northern Spotted Owl by significantly impairing the essential behavior patterns of nesting, roosting, and foraging in violation of Section 9(a) of the ESA.

A review of seventeen Timber Harvest Plans with at least one Northern Spotted Owl activity center in or near the THP boundary. In total these will destroy over 1,000 acres of nesting/roosting habitat, and over 3,500 acres of foraging habitat. This constitutes illegal take under the ESA. Additional habitat will be destroyed by Sierra Pacific in areas where occupancy and use by the Northern Spotted Owl is unknown, and because the company does not share all information about Northern Spotted Owl on its property, additional take can be assumed.

Sierra Pacific currently lacks an HCP for management of their lands. Conservations groups are requesting the company halt logging or disturbance of owl habitat and immediately begin working with the Service to develop an HCP. We further urge the Service to renew the program of review timber harvest plans in California.

Regarding management of state lands in Washington State, the Society for Conservation Biology review of the draft owl Recovery Plan states: “One reviewer who is familiar with the actions of state agencies in Washington suggests that the regulations seem designed to facilitate continued declines in, rather than recovery of, Northern Spotted Owl populations.”

Forest practices on state and private lands in Oregon such as this are detrimental to Northern Spotted Owls, Marbled Murrelet and water quality.

Benefits of the Northwest Forest Plan

The Northwest Forest Plan is a significant environmental achievement of the Clinton Administration that should be built upon and extended by the Obama Administration. We believe this would be the best policy from a forest and wildlife management perspective. It is also the only mechanism available to provide legal certainty and ensure that an adequate regulatory mechanism remains in place to conserve and recover wide-ranging threatened species in the region.

What follows are a series of summaries and excerpts from Northwest Forest Plan documents detailing the management philosophy, standards and guidelines, and results.

The Forest Service Ten Year Review of the Northwest Forest Plan found that, overall, the Plan's conservation strategy and reserve network appear to be working as designed. The total area of medium and large older forests on federal lands in the Plan increased by more than 1 million acres during the ten-year period, almost double the anticipated amount. The Plan's outcomes for Spotted Owls were expected to take at least a century. Spotted Owl population declines were expected for the first 40 to 50 years under the Plan, with owl populations stabilizing in the mid-21st Century and possibly increasing after that as owl habitat recovery exceeded loss.

FEMAT: Report of the Forest Ecosystem Management Assessment Team

Option 9: thinnings are allowed in any stand regardless of origin up to 80 years; salvage of areas larger than ten acres where trees have been killed by catastrophic events.

The requirements for the Matrix under Option 9 vary by area:

For most National Forests in Washington, Oregon, and California, 15 percent of trees would be retained following harvest; half of that volume would be left in small intact patches of late-successional forest and the rest dispersed throughout the harvest unit.

For National Forests in the Oregon Coast Range, and the Olympic and Mt. Baker-Snoqualmie National Forests, retention requirements would be reduced because of the extent of Riparian Reserves and Marbled Murrelet protection in those areas.

For Bureau of Land Management districts in Oregon, retention varies from 6 to 25 large green trees per acre depending on location, with 150-year rotations prescribed for some areas.

* For federal forests in northern California, long rotations are prescribed for conifer and mixed conifer/hardwood (180 years) and hardwood (100 years) forests.

Five options (1, 3, 4, 5, and 9) specifically require **protection of specified rare and locally endemic species** associated with late-successional forests within the Matrix. All options except 7 and 8 require surveys and protection of occupied marbled murrelet nesting sites. Other protective measures may be added to provide for at-risk species under each option.

Late-Successional Reserves

Under Option 9, Late-Successional Reserves are based on boundaries that represent an Integration of previous efforts (Johnson et al. 1991; USDI 1992c). They incorporate some portion of the reserves from each of those previous efforts and include new areas designated to protect Key Watersheds. Thinning or silvicultural treatments inside Reserves require review by an interagency oversight team to ensure that they are beneficial to the creation of late-successional forest conditions. Activities that would be permitted in the western and eastern portions of the range are described separately below. Salvage of dead trees would be based on guidelines adapted from the Final Draft Recovery Plan for the Northern Spotted Owl (USDI 1992c) and would be limited to areas where catastrophic loss exceeded ten acres.

West of the Cascades

There is no entry allowed in stands older than 80 years of age. Thinnings (pre-commercial and commercial) may occur in stands up to 80 years of age regardless of the origin of the stands (plantations planted after logging or stands naturally regenerated after fire or blow down). The purpose of these silvicultural treatments is to be neutral or beneficial to the creation and maintenance of late-successional forest conditions.

East of the Cascades and the eastern portion of the Klamath Province

Given the increased risk of fire in these areas due to more xeric conditions and the rapid accumulation of fuels as the aftermath of insect outbreaks and drought, there are additional management activities allowed in late-successional reserves. Guidelines to reduce risks to large-scale disturbance are adapted from the Final Draft Recovery Plan for the Northern Spotted Owl (USDI 1992c). These guidelines can be found at the end of the chapter.

Northwest Forest Plan Record of Decision & Standards and Guidelines

Late-successional reserves: Late-successional reserves are to be managed to protect and enhance old-growth forest conditions. For each late-successional reserve (or group of small reserves), managers should prepare an assessment of existing conditions and appropriate activities. No programmed timber harvest is allowed inside the reserves. However, thinning or other silvicultural treatments inside these reserves may occur in stands up to 80 years of age if the treatments are beneficial to the creation and maintenance of late-successional forest conditions.

In the reserves east of the Cascades and in Oregon and California Klamath Provinces, additional management activities are allowed to reduce risks of large-scale disturbance. Salvage guidelines are intended to prevent negative effects on late-successional habitat. Non-silvicultural activities within late-successional reserves are allowed where such activities are neutral or beneficial to the creation and maintenance of late-successional habitat. Thinning or other silvicultural activities must be reviewed by the Regional Ecosystem Office and the Regional Interagency Executive Committee.

Alternative 9, like all of the other action alternatives, applies the same criteria for management of habitat on both Forest Service and BLM lands. This was done in order to accomplish most efficiently the dual objectives discussed above -- that is, achieving the biological results required by law, while minimizing adverse impact on timber harvests and jobs. The inefficiencies involved in applying different criteria on Forest Service and BLM land have been noted in previous analyses. For example, in the Report of the Scientific Analysis Team ("SAT Report"), the team found that BLM's plans were relatively high-risk, when compared to the plans of the Forest Service, in terms of conserving the northern spotted owl. As a result, the SAT found that in order for the Forest Service to "make up for significantly increased risks," it would have to dramatically increase the size of protected areas on Forest Service land (SAT Report, pp. 12-13).

In addition, Alternative 9 offers one advantage that the other alternatives do not — its inclusion of adaptive management areas. Adaptive management involves experimentation, identifying new information, evaluating it, accounting for it in discretionary decisions, and determining whether to adjust plan direction. The object is to improve the implementation and achieve the goals of the selected alternative. Each of the alternatives incorporates the principles of adaptive management to some extent, but Alternative 9 is the only one that specifically allocates ten adaptive management areas, which may be used to develop and test new management approaches to achieve the desired ecological, economic, and other social objectives.

These AMAs offer the opportunity for creative, voluntary participation in forest management activities by willing participants. We recognize that this will take time, effort, and a good-faith commitment to the goal of improved forest management. Many of the potentially participating communities and agencies have different capabilities for joining this effort. Our approach to implementing this initiative will recognize and reflect these differences as we seek to encourage and support the broadest possible participation. Moreover, Alternative 9 allows silvicultural activities, such as thinning young monoculture stands, in late-successional reserves when those activities will enhance late-successional conditions.

Forest Service Ten Year Review (2003)

Overall, the Plan's conservation strategy and reserve network appear to be working as designed.

- The total area of medium and large older forests on federal lands in the Plan area gained more than 1 million acres during the ten-year period, almost double the anticipated amount.

- Spotted Owl populations declined about 7.5 percent per year across their northern range and 2 percent per year across their southern range. Declines may have resulted from habitat loss, Barred Owls, and other factors.

- The loss of habitat was less than expected, as less timber was harvested and less habitat was lost to wildfire than expected.

The Plan's outcomes for Spotted Owls were expected to take at least a century. Spotted Owl population declines were expected for the first 40 to 50 years under the Plan, with owl populations stabilizing in the mid-21st Century and possibly increasing after that as owl habitat recovery exceeded loss.

Forest Service Fifteen Year Review (2008)

The NWFP projected that over a time horizon of ten decades, LSOG forest could be restored and maintained at desired levels. In this second monitoring cycle….these analyses indicate a NWFP-wide decline in federal LSOG slightly less than what was anticipated (FEMAT 1993); however, losses in some provinces (e.g. Oregon Klamath) were higher than the projected 2.5 percent decadal rate of loss. Helping to offset these losses is the potential for future recruitment in the next few decades (fig. 1-7). Furthermore, the results support assumptions made in the NWFP that the primary role in maintaining or restoring LSOG and related habitats would fall to federal lands. Specifically, federal lands contain less than half of the total forest land, but the federal share of total LSOG increased from 65 to 67 percent over the monitoring period. Harvesting removed about 13 percent (approximately 491,000 ac) of LSOG on nonfederal lands. Loss of LSOG on federal land due to harvest was less than 0.5 percent (approximately 32,100 ac).

The study found that: "…the current analysis of habitat within and around the large reserve network validates the assumption that the repetitive design of large reserves can absorb losses without resulting in isolation of population segments. Not enough time has passed for us to accurately detect or estimate significant recruitment of nesting/roosting habitat, however increases were observed in "marginal" younger forests indicating that future recruitment of nesting/roosting habitat will occur as anticipated, within the next few decades."

The most recent estimate for Northern Spotted Owl population trends on federally administered lands is a 2.8 percent annual rate of decline, which is slightly lower than the 2.9 percent estimated by Forsman et al. (2011), which included two additional nonfederal study areas not managed under the NWFP. The rate of decline is highest in the northern portion of the range (Washington), where populations are estimated to have declined 40 to 60 percent since 1994. Populations remain stationary in the central portion of the owl's range, located in southwestern Oregon (fig. 2-4).

Marbled Murrelet Findings in 15-Year Report

Declining murrelet population trends and habitat losses underscore the need to minimize the loss of suitable habitat, especially in the relatively near term (next 40 to 50 years at least), until re-growing forests develop the structure needed for marbled murrelet nesting. The observed population decline, about four percent per year at the NWFP-area scale, was not unexpected, as population demographic models have predicted murrelet populations to be declining south of Canada in the range of three to seven percent per year (McShane et al. 2004, USFWS 1997).

In light of the observed population declines and habitat losses, continued management of federal NWFP lands to conserve existing potential nesting habitat and to promote development of new nesting habitat is essential. It is not clear what other actions could be taken on federal lands to help reverse the population decline. Management to reduce risk of losses to fire would be important if done so that the management action has minimal impact to nesting habitat. The possible causes of observed population decline will require further study, and likely involve several interacting factors. Timber harvest of higher suitability habitat on nonfederal lands is one factor that may contribute to these declines.

Watershed Condition Status and Trend 15-Year Report

A Forest Service analysis of watershed condition released in Feb. 2012 finds that the Northwest Forest Plan is working well to recover impaired watersheds across the region. Watershed Condition Status and Trend (Laningan et al 2012) published by the Pacific Northwest Research Station analyzed data from 1994-2008, the first fifteen years of the Northwest Forest Plan and found that 69% of the watersheds in the NWFP area had a positive change in condition as a result of road decommissioning and vegetation growth. The report summary notes: "Watershed condition was most positive for congressionally reserved lands, followed by late-successional reserves, and then matrix lands."

Northern Spotted Owl Critical Habitat Rule

After the Bush Administration's owl Critical Habitat rule and Recovery Plans were remanded by a federal court in 2010, new plans were initiated with a court-ordered Nov. 15, 2012 deadline for the Critical Habitat designation. The best science indicates any final critical habitat designation and management recommendations should exceed the protections of the Northwest Forest Plan, not minimize or ignore them.

Clean water coming from the Willamette National Forest, Oregon.

It is vitally important to note that this Critical Habitat designation will guide future management changes in the region. Following publication of the final rule, the land management agencies have indicated that forest and land management plans will be amended to conform to the Critical Habitat rule across the owl's range. Based on the available information, we must assume the elimination of late-successional reserves is a potential application of this Critical Habitat rule and therefore the effects of eliminating the reserves should be fully analyzed by both the rule and companion economic analysis and environmental assessment. And, because this analysis is notably absent, the public is currently unable to determine the full consequences of the pending rule. Redoing the analysis at this point is impossible given the court-ordered deadline.

We therefore urge the agency to make abundantly clear to the public and to the land managing agencies that elimination of the reserves is not an application of, or a recommendation of this rule.

The rule as drafted endorses a significant departure from the standards and guidelines of the Northwest Forest Plan by promoting active management in owl habitat, potentially weakens habitat protection for the threatened owl further by endorsing elimination of late-successional reserves, neither of which reflect the best available science.

The final Critical Habitat rule should instead provide for additional habitat protection needed to reverse the owl's decline and allow for its eventual recovery. Given past mismanagement, continuing pressure to utilize these forests to meet economic needs and to pay for local government services, and the influx of the Barred Owl, it is essential that firm protections, such as the system of late-successional reserves provided by the Northwest Forest Plan remain in place and that suitable owl habitat be preserved, not subjected to logging.

The Draft Critical Habitat Rule Undermines the Northwest Forest Plan

The draft critical habitat rule notes that the Northwest Forest Plan "…has been successful in the conservation and recruitment of late-successional forest and associated species on Federal lands (Thomas et al. 2006. P. 283) (p.52), but then proceeds to recommend its dismantling based on three main justifications, that commercial timber harvest from matrix lands was insufficient, the lack of active restoration in areas that may contain "uncharacteristically high risk of severe fire," and the a lack of early-seral habitats in moist forests. A careful review of these claims reveals that none of them hold up to scrutiny.

It should be noted the Service appears to be biased against the Northwest Forest Plan by ignoring information and studies in the scientific literature Courtney et al. (2004), Lint (2004), DellaSala and Williams (2006) that demonstrate the importance of reserves and others that show the effectiveness of the overall strategy such as the Forest Service' fifteen year reviews mentioned above. Most recently 229 scientists sent a letter to President Barack Obama urging the preservation of the reserve system created by the Northwest Forest Plan. The letter is included in the appendix. This appearance of bias is of particular concern because that was one aspect of the political interference undermining the 2008 Critical Habitat Rule and Recovery Plan due to demands by Bush administration officials to ignore the requirements of the Northwest Forest Plan.

The Service on page 53-54 of the draft rule sites and appears to be agreeing with Thomas et al concerning improvements to the Northwest Forest Plan. Missing from the list however, was any mention of maintenance of large blocks of habitat necessary for the owl survival and recovery.

Fragmented forests. Willamette National Forest, Oregon.

The bias against the late-successional reserves is heard once again on page 54 where it repeats that *"Critical Habitat for the northern spotted owl is not intended to be a "hands off" reserve in the traditional sense. Rather, it should be a hands-on ecosystem management landscape that should include a mix of active and passive actions to meet a variety of conservation goals that support long-term spotted owl conservation."*

However, on page 131 the draft contradictorily advises *"(3) Continue to manage for large, continuous blocks of late-successional forest."*

And on page 274 directs for the East Cascades *"In the interim, management actions are needed to protect current habitat, especially where it occurs in large blocks on areas areas of the landscape where it is more likely to be resistant or resilient to fires and other disturbance events."*

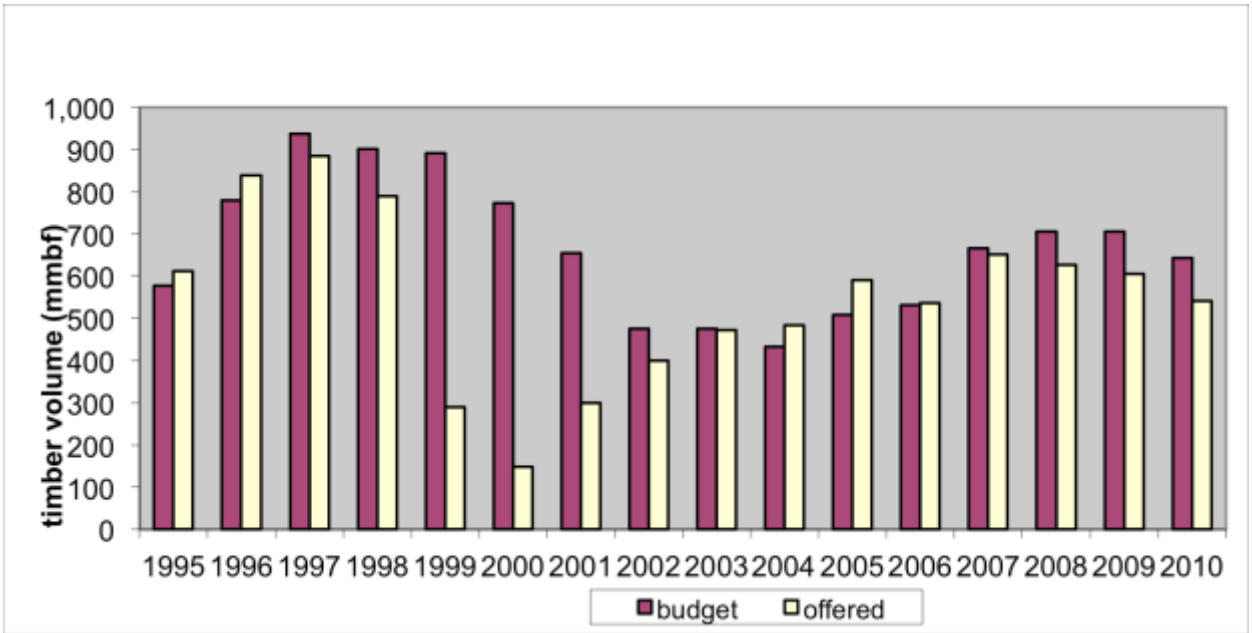
There is no indication how these requirements are to be accomplished under a reserve-less system. And nowhere is there any analysis showing that a reserve-less strategy allowing logging in owl habitat is going to be better for Northern Spotted Owl populations than the current system of protected reserves.

Timber Analysis: Agencies Meeting 96% of Funded Volume Target Since 2003

Timber sale data undermines the idea that the Northwest Forest Plan is not producing a stable flow of timber. The final Northwest Forest Plan was a political compromise that under-delivered on old-growth protection by placing 42% of the remaining acres in the matrix, and overpromised on timber volume. The plan's billion board foot estimate was never realistic because it is predicated on logging old-growth, which is not supported by the public and that in practical terms has generally been ruled in violation of wildlife protection laws. The estimate was also completed prior to the designation of the riparian reserve network which turned out larger than anticipated. The Bush Administration recognized these factors to a degree, and lowered the allowable sale quantify to 800 million board feet.

A look at timber sale output in the Northwest Forest Plan region reveals the agency is at a sustainable level and meeting the volume targets budgeted by Congress; see Forest Service and BLM Offered under the Northwest Forest Plan included in the appendix. Since 2003, the budget approved by Congress and the Administration has called for 4,668 million board feet from the Northwest Forest Plan area. The agencies have offered 4,507 board feet, or 96% of the planned budget.

In addition, exports from the region are skyrocketing. In 2010 over 2 billion board feet of logs and lumber were exported from the West Coast. In 2011 it topped 3 billion. There is no shortage of logging in the Pacific Northwest.



Source: Forest Service and BLM Volume Offered under Northwest Forest Plan (FY 1995 – FY 2010), Region 5 & 6, PTSAR Report, and BLM Timber Sale Information System.

The Probable Sale Quantity (PSQ) needs to be recalculated to offer a realistic assessment based on conservation needs. Here are some factors to consider:

Clearcutting and regeneration harvest are socially and scientifically unacceptable because removing the majority of the structure harms water quality and does not mimic natural processes. By increasing forest fragmentation it is particularly harmful to the threatened Northern Spotted Owl and Marlbed Murrelet.

The need to increase protection Northern Spotted Owls and meet Recovery Action 32 to protect all suitable nesting, roosting, foraging habitat indicates that all suitable nesting, roosting and foraging habitat should be removed from the timber base. Similarly, the need to protect Marbled Murrelet habitat, including both occupied stands, and mature forest to be recruited as high quality nesting habitat indicates that all the mature forests within the range of the marbled murrelet should be removed from the timber base.

The PSQ needs to be recalculated to mitigate for the increasing intensity of management on non-federal lands as a result of the current boom in raw log exports. Harvest rotations are getting shorter and ecological and watershed values are declining and habitat for the Northern Spotted Owl and Marbled Murrelet continue to be lost, so management of federal forest lands must be adjusted to compensate.

In addition, the Rule and accompanying Economic Analysis and Environmental Assessment fail to analyze a range of management options that could meet the objective of ecological restoration and forest resilience while also minimizing harm to the Northern Spotted Owl. For example, conservation groups have released a report Ecologically Appropriate Restoration Thinning in the Northwest Forest Plan Area identifying twenty-years of non-controversial thinning projects in Oregon and Washington that do not rely on removing owl habitat. We urge the Service consider this option as opposed to allowing regeneration of mature forests that are already providing suitable Northern Spotted Owl habitat.

Economic Analysis of the Draft Critical Habitat Designation

The *Draft Economic Analysis* has substantial flaws and fails to provide the Secretary with a sound basis for determining if the economic benefits of excluding any area from the Critical Habitat designation outweigh the economic benefits of including it. Instead, it provides a poorly informed, incomplete, and biased description of these benefits. Consequently, the *Draft Analysis* does not provide a reasonable basis for any determination by the Secretary to exclude any area from the final designation.

The *Draft Analysis* narrowly focuses on how the designation of critical habitat would affect the timber industry, disregarding its other effects on the economy. Extensive evidence confirms that timber constitutes a small percentage of the total value of goods and services provided by forests in this region. With its limited focus and pro-timber bias, the *Draft Analysis* cannot provide the Secretary with a solid foundation for weighing the full economic benefits of designating lands against the full economic benefits of excluding them.

The *Draft Analysis* misconstrues the designation's timber-related benefits. The *Draft Analysis* measures the benefits of increased timber production with one eye closed, looking only at the market value of the additional logs and ignoring the costs of producing them.

The *Draft Analysis* fails to comply with the requirements of Executive Order 12866. This executive order requires the Secretary, before adopting a final rule to designate critical habitat for the Northern Spotted Owl to describe for the public and base his decision on "the best reasonably available…economic…information concerning the need for and consequences of the intended regulation."[1] The *Draft Analysis* overlooks far too much of the best, readily available economic information to provide a full picture of the economic consequences of excluding areas from the designation. This conclusion is reinforced by comparing the *Draft Analysis* against the requirements of OMB Circular A-4, which provides guidance for complying with Executive Order 12866.

This guidance requires the Secretary to "consider any important ancillary benefits and countervailing risks" before making any decision to exclude areas from the designation, using "the same standards of information and analysis quality that apply to" the analysis of timber-related impacts.[2] In stark contrast, The *Draft Analysis* arbitrarily focuses on how the designation (or exclusion) of different areas would affect timber production, and applying dramatically different standards of information and analysis to describe the other important ancillary benefits of designation. Thus, the Secretary would violate Executive Order 12866 if he were to rely on the *Draft Analysis* as the basis for a decision to exclude any area from the designation.

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[1] xecutive Order 12866, Section 1 7 .

[2] OMB Circular A-4, p. 26.

Active management has economic and environmental costs not accounted for in the draft Rule and accompanying documents.

These are the findings of Dr. Ernie Niemi who has drafted "Comments on the Draft Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl." These comments are included in the appendix.

Active Management in Critical Habitat

The draft Critical Habitat rule includes extensive language supporting active management in all areas of owl Critical Habitat, including regeneration harvest in moist Westside forests. The draft goes so far as to suggest that forest management goals can take precedence over owl conservation, and that the conservation of this endangered species must be "compatible with broader landscape management goals":

We strongly encourage the application of ecosystem management principles and active forest management to ensure the long-term conservation of the Northern Spotted Owl and its habitat, as well as other species dependent on these shared ecosystems. (p. 13)

In conclusion, the designation and management of critical habitat for the spotted owl must be compatible with these broader landscape management goals if it is to conserve the spotted owl as required by the Act. It is therefore important to emphasize that spotted owl critical habitat should not be a "hands off" reserve in the traditional sense. Rather, it should be a "hands on" ecosystem management landscape that should include a mix of active and passive actions to meet a variety of forest conservation goals that support long-term spotted owl conservation. It would be inconsistent with the stated purposes of the Act, the Revised Recovery Plan (USFWS 2011), and the goals of the Northwest Forest Plan (NWFP) if spotted owl critical habitat was narrowly managed and, in so doing, discouraged land managers from implementing scientifically justified measures for conserving forest ecosystem functions and health.(p.15)

Likewise, in moist and some mixed forests, management of spotted owl critical habitat should be compatible with broader ecological goals, such as the retention of high-quality older forest, the continued treatment of young or homogenous forest plantations, and the conservation or restoration of complex early seral forest habitat (Spies et al. 2007b, pp. 57–63; Betts et al. 2010, pp. 2117, 2126–2127; Swanson at al. 2010, entire). In general, actions that promote ecological restoration and those that apply ecological forestry principles as described in the Revised Recovery Plan (USFWS 2011, pp. III-11 to III-41) are likely to be consistent with the conservation of the Northern Spotted Owl and the management of its critical habitat.

Recommendation for moist Westside forests:

"*Regeneration harvest, if carried out, should consider ecological forestry principles." (p.131)*

For example, some restoration treatments may have an immediate neutral or beneficial effect on existing Northern Spotted Owl habitat (e.g., roads management, some prescribed fire prescriptions). Other treatments, however, may involve reductions in stand densities, canopy closure, or ladder fuels (understory vegetation that has the potential to carry up into a crown fire)—and thus affect the physical or biological features needed by the species. At the stand scale, this can result in a level of conflict between conserving existing Northern Spotted Owl habitat and restoring dry-forest ecosystems. We typically cannot expect to meet both objectives on the same acre if that acre currently functions as suitable Northern Spotted Owl habitat. We can reconcile this conflict, however, by managing at the landscape scale.

This approach has raised the concern of Society for Conservation Biology, The Wildlife Society, and American Ornithologists' Union who wrote:

"These proposed policy changes have the potential to adversely impact federal lands in the Pacific Northwest to the detriment of spotted owls and other federally threatened and endangered species….we are especially concerned about the potential habitat impacts of adopting untested "active management" forestry technique."

The groups are asking the Department of the Interior to prepare and Environmental Impact Statement to prepare a scientific approach to test active management forestry's impact on spotted owl prior to being used at a commercial or landscape scale. We agree with this assessment and urge an end to owl take until the agency can offer an analysis showing what the acceptable limits to owl take and habitat loss are while still providing a high degree of certainty of owl recovery.

Adverse Modification of Habitat

The draft Critical Habitat rule further states that if projects have considered ecological forestry principles, that in general these activities would not be considered adverse modification of owl habitat by the Service. As a result of this provision, the normal protections provided by critical habitat to prevent adverse modification may not apply at the discretion of the Service.

In general, silviculture prescriptions that apply ecological forestry principles to address the conservation of broader ecological processes are compatible with maintaining the proposed critical habitat's essential features in the long term (USFWS 2011, p. III-14). (p. 14)

Landslides and erosion are potential impacts of active management on steep or unstable slopes. Oregon's Coast Range.

*We would anticipate that in most cases, restoration and thinning actions (see **Special Management Actions and Considerations**) at or below this size (500 acres) will likely not adversely affect a given critical habitat subunit; however, such a determination would have to be made on a case-by-case basis, after careful consideration of the specific conditions of the proposed action.*

The Service should evaluate adverse modification at the appropriate scale of individual owl home ranges as geographically defined for each proposed project action, particularly active management; determine jeopardy at the scale of the subunit (approximately 100,000 acres), and cumulative effects need to be evaluated to avoid a level of excessive loss that is currently not quantified.

The Northwest Forest Plan protects water quality, threatened salmon runs, and habitat for the Marbled Murrelet. Willamette National Forest, Oregon.

The 1993 Report of the Scientific Analysis Team (SAT) ironically, already thoroughly reviewed the risks associated with logging in suitable owl habitat, and concluded "intentions to selectively cut forest stands to create conditions favorable for spotted owls, represents increased risks to the viability of the spotted owl (SAT p. 145)."

The issue of short-term losses versus long-term habitat gains was also analyzed and the scientists concluded "*that the short-term effect of these actions on habitat loss may be much more significant than the long-term predicted habitat gains*."

The Scientific Analysis Team report said:

"Lacking experience with selective cutting designed to create spotted owl habitat, such practices must be considered as untested hypotheses requiring testing to determine their likelihood of success. ... Given the uncertainty of achieving such expectations, it is likely that some silvicultural treatments, which have been characterized as largely experimental, may well have an opposite effect from that expected. Consequently, such treatments may hinder the development of suitable habitat or they may only partially succeed, resulting in development of marginal habitat that may not fully provide for the needs of spotted owls. Results which fall short of the expected conditions could occur because of delay or failure to regenerate stands that have been cut, increased levels of wind throw of remaining trees, mechanical damage during logging to trees remaining in the logging unit, the spread of root rot and other diseases. Increased risk of wildfires associated with logging operations that increase fuels and usually employ broadcast burning to reduce the fuels also increase the risk of not attaining expected results. Such events may spread to areas adjacent to stands that are logged, thereby affecting even more acreage than those acres directly treated." [SAT p 147-148]

"The combined risks associated with treatment of spotted owl habitat or stands expected to develop into suitable habitat for spotted owls, as discussed above, will likely result in situations where either habitat development is inhibited or only marginal habitat for spotted owls is developed. The exact frequency of these partial successes or failures is unknown. Given the likely cumulative relationship among the risks for each factor, it appears to us that the overall risk of not meeting habitat objectives is high. … Members of the Interagency Scientific Committee indicated that, because a plan (the Interagency Scientific Committee's Strategy) was put forth which proposes to reduce the population of a threatened species by as much as 50 percent, providing the survivors with only marginal habitat would be extremely risky and certainly in their minds not 'scientifically credible' (USDA 1991:45)." [SAT p 151].

"The transition period (1-50 years) between implementation of the Interagency Scientific Committee's Strategy and achievement of an equilibrium of habitat and spotted owls is a critical consideration. … Given the existing risks that face owl populations and the sensitivity of the transition period, the short-term effect of these actions on habitat loss may be much more significant than the long-term predicted habitat gains. We further conclude that, although research and monitoring studies are presently being initiated, no significant new data exist which suggest that the degree of certainty that is expressed in the Bureau of Land Management Draft Resource Management Plans for developing owl habitat silvicultural treatments is justified. Therefore, it is our opinion that the course prescribed in the Interagency Scientific Committee's Strategy, pertaining to timber harvest in Habitat Conservation Areas, remains the most likely course to result in superior habitat conditions within reserves (i.e., Old-Growth Emphasis Areas). The approach prescribed by the Interagency Scientific Committee's Strategy preserves options for adjustments in the course of management under a philosophy of adaptive management." [SAT p 151-152].

Olympic National Park, Washington State

According to forest policy expert Doug Heiken of Oregon Wild, "The SAT indicates that these comments apply equally to density management and patch cutting, both of which are being promoted as tools to enhance owl habitat. The SAT also cited concerns about the effect of logging on snags and down woody debris which are essential features of owl habitat. The authors of the Northwest Forest Plan took all this into account and determined that 80 years is a useful place to draw the line between younger forests that are likely to benefit from careful thinning and older forests that are likely to experience net negative consequences. There is no new science to change that conclusion." ABC urges the Service to not allow for adverse modification of Northern Spotted Owl Habitat by active management or ecoforestry in stands greater than 80 years.

Lack of Scientific Evidence for Active Management

While early-seral habitats are desirable for some species, logging is not the best means to establish early-seral habitat within the range of the Northern Spotted Owl. We recommend that agency utilize natural disturbances and refrain from post-fire logging which has the potential to create abundant high-quality early-successional habitats.

In the draft Rule land managers are encouraged to develop early seral habitat to benefit a variety species but no evidence is presented showing the Northern Spotted Owl benefits from the creation of early seral habitat, nor is there analysis showing what potential harm may come to the threatened species if various levels of direct take and habitat loss or degradation were to occur.

Open meadows. Mt. Rainier National Park, Washington State.

The draft Environmental Assessment identified two endangered species, Fender's blue butterfly and Oregon silverspot butterfly whose open, early seral habitat such as grasslands, meadows, oak woodlands, or aspen woodlands may conflict with Northern Spotted Owl management intended to maintain closed canopy forests (p. 52). But the assessment notes that listed plant and butterfly species and their closely associated open habitats are explicitly not included in the proposed critical habitat revision (p.50). The Service concludes on page 62: *"that designation of critical habitat for the Northern Spotted Owl in this alternative would have a neutral effect on those species associated with open, early seral habitats."*

We see no justification to convert nesting, roosting, and foraging habitat of the Northern Spotted Owl to early-seral. Under the Northwest Forest Plan restoration of owl habitat, when it occurs, should hasten creation of owl habitat, not set it back by many decades. This provision is unrelated to owl recovery or sound forest management and should be removed from the final designation.

Other listed species may also be harmed by the proposed active management such as the Marbled Murrelet. The draft Environmental Assessment found that "Active forest management that is in the vicinity of murrelet nesting stands may be detrimental to the species survival and recovery." (p. 61) This results from increased fragmentation and opening the forests to crows, ravens, and jays, increasing predation pressure on nesting murrelets. Despite this, there is no prohibition in the draft Rule on the proposed active management to ensure murrelet nesting stands will not be disturbed.

The draft Rule on page 8 on the other hand states: *"Consistent with the best available science and the adaptive management principles outlined in the Revised Recovery Plan for the Northern Spotted Owl, we strongly*

encourage the application of ecosystem management principles and active forest management to ensure the long-term conservation of the northern spotted owl and its habitat, as well as other species dependent on these shared ecosystems."

In reality, active management, if conducted near nesting murrelets would be harmful. There is also indications the prey base of the Northern Spotted Owl could also be harmed by active management including thinning, but these factors appear to be glossed over by the draft Rule. And unlike the Northwest Forest Plan, there is no detailed analysis how other listed species will fair under the active management being proposed by the draft Rule.

Studies by Hanson (2009 and 2010) and Miller (2012) have found that dry forests on the Eastside and in Northern California have not seen an increase in severe, high-intensity fires. Most of the acreage burned has been low to moderate severity with generally beneficial ecological effects. The risk of fire to owls also appears to be exaggerated in the final Owl Recovery Plan and draft Critical Habitat rule.

The agency recommends conserving old-growth trees and forests on wherever they are found, including in the matrix lands. This is the most positive development stemming from the final Recovery Plan and draft Critical Habitat rule.

The Rule recommends that for the moist forests in the West Cascades/Coast Ranges of Oregon and Washington "*…to conserve stands that support northern spotted owl occupancy or contain high-value northern spotted owl habitat (USFWS 2011, p. III-17). Silvicultural treatments are generally not needed to accomplish this goal*."

However despite this clear statement that active management is not needed in these moist forests, the Draft recommends "dynamic management" in threatened forest types that conserves all stages of forest development where tradeoffs between short-term and long-term risks are better balanced, and recognize the Northwest Forest Plan is now an integrated conservation strategy that contributes to all components of sustainability.

In plain language that says the Service is approving a more discretionary management approach that reduces protections to increase the amount of logging in owl habitat.

Presidential Memorandum

President Barack Obama issued a memorandum to Secretary of the Interior Ken Salazar stating that logging should be allowed and considered an acceptable practice in Northern Spotted Owl Critical Habitat. The memo is of great concern because it is not based on the best available science and makes exaggerated claims about the evidence supporting the Service's position. It appears to prejudge the outcome and effects of a federal rulemaking and seek a predetermined outcome before the public had even been given a chance to review or comment on the draft Rule. The text of a portion of the memo signed by President Barack Obama follows:

Importantly, the proposed rule recommends, on the basis of extensive scientific analysis that areas identified as Critical Habitat should be subject to active management, including logging, in order to produce the variety of stands of trees required for healthy forests. The proposal rejects the traditional view that land managers should take a "hands off" approach to forest habitat in order to promote species health; on-going logging activity may be needed to enhance forest resilience.

In order to avoid unnecessary costs and burdens and to advance the principles of Executive Order 13563, consistent with the ESA, I hereby direct you to take the following actions:

(1) publish, within 90 days of the date of this memorandum, a full analysis of the economic impacts of the proposed rule, including job impacts, and make that analysis available for public comment;

(2) consider excluding private lands and State lands from the final revised critical habitat, consistent with applicable law and science;

(3) develop clear direction, as part of the final rule, for evaluating logging activity in areas of critical habitat, in accordance with the scientific principles of active forestry management and to the extent permitted by law;

(4) carefully consider all public comments on the relevant science and economics, including those comments that suggest potential methods for minimizing regulatory burdens;

(5) give careful consideration to providing the maximum exclusion from the final revised critical habitat, consistent with applicable law and science; and

(6) to the extent permitted by law, adopt the least burdensome means, including avoidance of unnecessary burdens on States, tribes, localities, and the private sector, of promoting compliance with the ESA, considering the range of innovative ecosystem management tools available to the Department and landowners.

The Society for Conservation Biology, The Wildlife Society, and American Ornithologists' Union raised the same concern about the President's memo stating:

"We are concerned that this memorandum overstates the quality and quantity of scientific research on the potential benefits of active forest management, especially in the Pacific Northwest on a federally threatened species. In particular, we are unaware of any substantial or significant scientific literature that demonstrates that active forest management enhances the recovery of spotted owls."

Additional Areas Where Critical Habitat Should Be Designated

ABC believes all occupied and suitable owl habitat should be designated Critical Habitat. Tribal lands important for the recovery of Northern Spotted Owl, such as the 5,400 acre Coquille forest have been excluded. Similarly, portions of the Coos Bay Wagon Road lands and the Cascade-Siskiyou National Monument area in Oregon have also been excluded with little explanation.

We urge the agency to allocate additional critical habitat in prime Northern Spotted Owl habitat adjacent and near to the Monument to include as much dispersal/connectivity habitat as possible. The Monument currently seems to be a functional island of designated Critical Habitat in its surrounding landscape.

Dave Willis, a local conservationist familiar with the area recommends some specific additions we believe beneficial to the Northern Spotted Owl and would urge their inclusion.

"Some of the best canopy in the area is located outside the Monument in and NNW of the Monument's "missing northwest quadrant" in the western half of T39S, R3E. This forest canopy and Northern Spotted Owl habitat is as good or better quality than anything in the Monument CHU itself north of Highway 66. Yet the document

designates only ~200 acres of CHU in the far extreme northwest Section 6 corner of the western half of T39S,R3E. The gap in CHU between northern CSNM CHU in ECS2 and the most southeastern CHU in Klamath East Subunit 5 is quite strange – skipping over and excluding some of the best forest canopy in the region. Likewise, in addition to the gap in CHU designation NNW of the Monument highlighted above, CHU designation on the Monument's east and west sides are also deficient.

Noting the inadequacy of the Monument's current boundaries, a group of scientists with much research and on-the-ground experience in the Cascade-Siskiyou National Monument area has recommended expansion of the Monument in exactly this outside-the-current-Monument area between the Green Springs Summit and Grizzly Peak. (See: Frost, Odion, Trail, Williams et al, *Interim Report – Cascade-Siskiyou National Monument Boundary Study: Identification of Priority Areas for Monument Expansion*, April 2011.) Rather than aid this needed biological bolstering outside current Monument boundaries, the current lack of CHU designation adjacent and near to the Monument undercuts the considered and informed recommendations of this site-specific scientific report – and degrades the habitat connectivity function of the existing Monument itself by further isolating it."

Coos Bay Wagon Road Lands

Similarly, here is a concern being raised by Francis Eatherington, a local expert regarding the lack of designation on federal lands with likely merit. We believe these lands should be reviewed and the occupied and suitable Northern Spotted Owl designated as Critical Habitat.

"Many of the sections of Coos Bay Wagon Road (CBWR) lands with mature and old growth forests were left out of proposed Critical Habitat, even though these lands had been designated in 1992. Out of 74,500 acres of Coos Bay Wagon Road in Coos Bay and Roseburg BLM Districts, only about 14,000 acres were proposed for critical habitat. The remaining 60,000 contain areas of significant old growth forests and mature forests over 120 years old. For instance, section 1, T28, R11, or section 1, T29, R10, or sections 5 and 19, T28, R7.

14,000 acres of critical habitat that was designated was in current LSR in Coos County. However, no CBWR lands in Douglas County were proposed for critical habitat, not even in the LSR or the ACEC lands managed by Roseburg BLM, where significant old growth forest exists.
In Coos County, and on Coos Bay BLM District lands, only some of the existing LSR was proposed a critical habitat. None of the existing matrix was proposed, even though these lands were critical habitat in 1992, and still contains significant stands of mature and old growth forests."

Exclusions

The draft has identified 13,962,449 acres of potential Critical Habitat, a significant increase in acreage above the 5.3 million acres currently designated. The Administration is recommending that some identified lands be exempted from Critical Habitat designation because they argue the lands are already being conserved or that conservation purposes can better be achieved through exclusion. Here's a brief summary of the proposed and potential exclusions:

Private lands with conservation agreements such as Habitat Conservation Plans (HCPs), and Safe Harbor agreements are proposed for exclusion 711,803 acres

State land with conservation agreements are proposed for exclusion 225,013 acres

State park lands are proposed for exclusion 164,776 acres

Congressionally reserved natural areas are proposed for exclusion	2,631,736 acres
Private lands without formal conservation agreements	555,901 acres
State lands without formal conservation agreements	281,247 acres

The draft includes language favoring the general exclusion of state and private lands, to exclude the proposed lands, and to strongly consider the exclusion of other state and private lands unless it is absolutely essential for owl conservation. Private and state lands without formal conservation agreements are also under consideration for exclusion. Private lands in Oregon were not included the modeling analysis.

If all exclusions were granted, a total of 9,391,973 acres would remain. ABC supports designating all 13,962,449 acres plus additional acres where occupied or suitable Northern Spotted Owl habitat is found.

Private and state land HCPs and Safe Harbor agreements are a means of encouraging landowner support and participation in species conservation. Providing an exemption in this case creates an incentive for landowners that have been cooperative and developed HCP or Safe Harbor Agreement. However, in regard to the Northern Spotted Owl stronger steps to ensure recovery are needed. This exemption should not be granted and all conservation agreements updated to include recovery goals in areas with proposed critical habitat.

Funding shortfalls have led to the potential closing of many California state parks. Some states have made severe cuts in environmental programs and public lands and their management have become increasingly politically polarized. Proposals to privatize public lands are being offered in many state legislatures. As a result, there is no assurance these state park lands will be managed for conservation purposes in the future.

Similarly, political polarization and ongoing efforts to boost logging in owl habitat, dispose of federal lands and to de-designate Wilderness and other conservation designations raise concern that these lands cannot assure the conservation benefits they currently provide. As a result of these threats, the owl should have the added assurance of all occupied and suitable habitat receiving the protection of critical habitat designation.

Private and state lands without conservation agreements should not be excluded. The Owl Recovery Plan states that an additional contribution to owl habitat protection is needed on private and state lands.

Oregon State Forests in particular are failing to comply with the owl recovery plan. On the Elliot State Forest, the Oregon Department of Forestry (ODF) has abandoned its HCP and its plans fail to comply with the recovery plan with sale proposals in violation of recovery actions 10, 19 and 32. The Elliott's Forest Management Plan says it will only "consider" the recovery plan, but to date, there is no indication it is being followed. ODF now claims forests as young as 51 years old can be suitable nesting habitat, while the agency is clearcutting forests 130-150 years old. In addition, any notion of adaptive management improvements over time is currently impossible. ODF admits that there is no budget for the monitoring necessary for adaptive management, and there is still not even a draft monitoring plan for the Elliott.

Legal Issues Related to Exemptions and Adverse Modification

A review of the draft Rule by Earthjustice found a number of concerns that also influenced ABC's decision to oppose the proposed exemptions. Here is a brief summary of their analysis which is included in full in the appendices.

The proposed critical habitat rule proposes exemptions and active management in designated critical habitat not supported by the law or the best available science. It is recommended that the Service designate all lands, both federal and non-federal, identified as suitable habitat exclusions, and to adopt a much more cautious approach toward logging in designated critical habitat by eliminating or modifying language related to active management in the draft rule. The scale at which adverse modification of critical habitat will be assessed must be clarified to be at the appropriate subunit scale to comply with the intent of the ESA and provide for owl recovery.

Analysis: Draft Rule Lowers the Bar for Habitat Protection

The provisions in the draft plan encouraging unproven thinning and restoration logging, combined with the expansive definition of adverse modification that allows degradation of owl habitat, have the potential to allow for logging of areas that should be conserved to provide the additional habitat needed to stabilize Northern Spotted Owl populations and provide for recovery. This Rule, combined with the elimination of late-successional reserves could allow logging in areas now protected by the Northwest Forest Plan, including mature forests that the Plan had intended to become old-growth.

These provisions, which were repeated numerous times in the draft, appear to allow an increase of timber harvest in the region while minimizing habitat protection, in terms of both total acreage by encouraging unwarranted exclusions, and lax management standards weaker than the standards and guidelines of the Northwest Forest Plan.

This language encouraging active management in Northern Spotted Owl Critical Habitat, particularly on combination with the elimination of reserves has the potential to allow excessive logging to the detriment of the Northern Spotted Owl population and may foreclose recovery by not providing adequate late-successional forest necessary to ensure high quality habitat in the future. Changes to land management plans such as the proposed Okanogan-Wenatchee Forest Plan are being influenced by the Final Recovery Plan, and Draft Critical Habitat rule's and Environmental Assessment's encouragement of a reserve-less strategy.

We urge the Service to reconsider. This approach of allowing the land management agencies broad discretion for active management across the landscape was tested in the decades prior to the Northwest Forest Plan and proved disastrous to the Northern Spotted Owl and Marbled Murrelet and left only fragments of the old-growth ecosystem remaining.

Recommended Changes

We urge that the Final Critical Habitat Rule make clear that eliminating the system of late-successional reserves would be detrimental to owl recovery and is not a recommended outcome of this rulemaking, or the Environmental Assessment and Economic Analysis.

The proposal encouraging adverse modification of habitat for ecoforestry purposes is not supported by the best available science. We recommend it be removed from the final rule.

We recommend that the determinations of adverse modification be at the appropriate fine scale to ensure ESA compliance.

We recommend that the standards and guidelines of the Northwest Forest Plan late-successional and riparian reserve systems be used to preclude inappropriate or unsustainable management practices. The Northwest Forest Plan allows for restoration and provides standards and guidelines that are more protective of owls and better suited to experiments in ecological restoration.

Prescriptive requirements to retain trees above a certain age or size to restore the deficiency in old forests, and mapping where large blocks of closed canopy forests will be retained and allowed to mature is necessary to ensure these values will be not become subject to mismanagement or overcutting.

Active management in owl habitat should be considered experimental, conducted on a small scale, and monitored to determine its impact on Northern Spotted Owls. The necessity and benefits of active management in owl habitat remains in dispute.

We recommend the Service develop an environmental impact statement to devise a research strategy that addresses this question.

Northern Spotted Owl Critical Habitat Final Rule Summary and Analysis

Protecting the old growth forests of the Pacific Northwest and northern California is a major challenge due to political and economic pressures to allow for a maximum timber harvest within wildlife protection legal constraints. In the case of the Northern Spotted Owl political interference preventing sustainable forest management was a primary factor in its' population decline and listing as a threatened species and it continues to be a major hurdle to recovery that has to be overcome by federal and state wildlife professionals and conservationists.

The Final Critical Habitat rule reflects the ongoing challenge to balance preservation with commerce due to the inclusion of additional habitat protection measures coupled with direction for increased active management. The ultimate impact of the final rule will be determined by the project-by-project Sec. 7 consultations required by the Endangered Species Act, and potential changes to federal forest management plans across the region that attempt to incorporate direction from the final Northern Spotted Owl Critical Habitat Rule and Final Recovery Plan.

Summary

The Northern Spotted Owl critical habitat final rule of 2012 designates 9,577,969 acres, an increase of 4,265,600 acres from the current designation. A total of 4.3 million acres determined to be important for the owl's recovery were exempted from the designation.

The rule also directs the land management agencies to conserve older forest, high-value habitat, and areas occupied by Northern Spotted Owls. An estimated 1.1 acres of occupied and high-quality owl habitat previously designated for timber harvest in the Matrix should now to be protected.

Another 1.1 million acres of designated critical habitat in the Matrix is not considered high quality or occupied owl habitat. For these areas of the Matrix, the rule promotes active forest management including application of "ecological forestry," which may result in an increase or decrease in timber harvest of approximately 25 million

board feet depending on the extent in which the proposed active management prescriptions or habitat protection measures are applied by the land management agencies.

The rule acknowledges the supremacy and importance of the Northwest Forest Plan, but then endorses pending changes to the region's forest management plans proposed by the land management agencies to adopt the active management principles espoused in the Rule and Recovery Plan. The Incremental Effects Memorandum concluded that the management standards of the Recovery Plan and proposed Rule are weaker that the standards and guidelines of the existing Northwest Forest plan.

This analysis, combined with the stated intentions of the land management agencies to increase harvest in the region by 20% or more, and the marked and continual decline of the Marbled Murrelet population, raises concern the proposed management changes to the Northwest Forest Plan are likely to have negative consequences for two listed bird species of highest conservation concern.

Presidential Memorandum

The draft 2012 Northern Spotted Owl critical habitat rule was accompanied by a Presidential Memorandum which was in keeping with the Obama Administration's recently announced deregulatory initiative to direct the agency to tailor regulations to "reduce burdens and maintain flexibility" based on the Jan. 18, 2011 Executive Order 13563.

The memo directed the agency to accomplish this in part by adhering to a new policy of "active management" including logging and to reject the "hands off" management approach of past critical habitat designations. The memorandum claimed there is "extensive scientific analysis" in support of active forest management in owl critical habitat. In fact, there are no peer-reviewed studies demonstrating that Northern Spotted owl populations benefit from the proposed logging. Dozens of other peer-reviewed studies show that if carried out in owl habitat, the proposed active management would likely be harmful to owl populations and their prey, and to the threatened Marbled Murrelet.

The memo further directed the agency to develop clear direction for logging in critical habitat. The final rule provides more detailed logging prescriptions than in the draft. The final rule also provides important clarifications narrowing the proposed the active management to younger stands in the Matrix not being utilized by the owl for nesting or roosting.

However, direction for Eastside forests raise concern due to the lack of adequate landscape scale protection, there is a lack of clear direction in the Klamath region, and standards for conserving high-quality owl habitat on BLM lands are lax. This will be discussed in more detail in the active management section.
The Presidential Memo appears to have influenced the modeling exercise which demonstrates a bias against inclusion of private and state lands. Appendix C of the draft rule provides a detailed sequential summary of the process that sought to limit acreage protected, and to restrict that protection to public lands. Private lands in Oregon were never included in any of the models.

Ultimately, the model chosen did not include the alternative with most acres (over 18 million), and it assumes that Barred Owl control will be taking place, thereby reducing the amount of needed habitat. There is considerable doubt that the shot-gunning of thousands of Barred Owls will happen on federal lands due to opposition from animal rights groups. Therefore, it possible the agency has underestimated the amount of acres needed for recovery.

The other main effect of the memo is the broad exclusions for private, state and congressionally designated lands. While some of these exclusions are consistent with other designations and agency policy in regard to private landowners with HCPs and other conservation agreements, other aspects of the decision exclude areas without adequate conservation agreements that account for recovery, or in the case of state lands, without adequate forest management standards being in place. The Society of Conservation Biology and Environmental Protection Information Center are developing detailed critiques of the exemptions, the need for recovery standards in HCPs, and exclusion of Critical Habitat in the Redwoods region.

FWS Response to Presidential Memorandum Finds No Substantial Regulatory Burden (*ABC Comments in italics*)

FWS responded to the Presidential Memorandum in the Final Rule that it had released an economic analysis, and provided a description of ecological forestry.

> "Consistency with Presidential Directive. On February 28, 2012, the President issued a memorandum to the Secretary of the Interior regarding the proposed revised critical habitat for the northern spotted owl, specifically on minimizing regulatory burdens." (p. 10)

The agency then notes it will be up the land management agencies to decide upon and implement ecological forestry:

> "We note, however, that this discussion of ecological forestry is provided to Federal, State, local and private land managers, as well as the public, for their consideration as they make decisions on the management of forest land under their jurisdictions and through their normal processes. This critical habitat rule itself does not take any action or adopt any policy, plan, or program in relation to active forest management." (p. 10-11)

FWS concludes that any concerns about the potential regulatory burden are unfounded and have been addressed in the final rule:

> "Our analysis indicated that the revision of critical habitat could have relatively little incremental effect above and beyond the conservation measures already required as a result of its threatened species status under the Act, and thus is not expected to impose substantial additional regulatory burdens." P. 11

FWS is committed to working closely with the land management agencies to implement active management and ecological forestry:

> "The Service is committed to working closely with the U.S. Forest Service and BLM to implement the active management and ecological forestry concepts discussed in the Revised Recovery Plan and this critical habitat rule. Both recommend that land managers use the best science to maintain and restore forest health and resilience in the face of climate change and other challenges.
>
> To meet this goal, we have prioritized the timely review of forestry projects that will be proposed in critical habitat. We have already completed section 7 conference opinions on the proposed rule with the agencies, and have recently held interagency coordination meetings with the section 7 Level 1 staff in Oregon, Washington, and California. In these meetings, we identified ways to streamline the section 7 process to ensure that potential projects can be implemented in a timely manner consistent with northern spotted owl conservation." (p. 271-272)

> "The Service has assured the BLM and FS that it is committed to working closely with them to evaluate and implement active management and ecological forestry concepts of the recovery plan and critical habitat rule into potential timber management projects." (p. 281)

FWS says the ecological forest management is compatible with owl recovery and may increase timber harvest. While we agree that timber harvest may increase for a variety of reasons, we do not see where FWS has demonstrated that ecological forestry is compatible with owl recovery. And while we appreciate the limitations prescribed in the final rule, we remain concerned that the rule inappropriately promotes logging in owl habitat.

> "In our proposed rule, we provided a description of ecological forestry management actions that are compatible with both northern spotted owl recovery and timber harvest, as recommended in the Revised Recovery Plan for the Northern Spotted Owl (76 FR 38575; July 1, 2011), which, in some areas, may actually increase harvest relative to recent realized levels (but not necessarily to planned levels under the NWFP). While it is outside the purview of the Service to direct forestry management, we will consult with Federal action agencies and make recommendations on the best measures to provide protections for the owl and have minimal negative economic impacts." (ECON p. ES-3)

Importance of Northwest Forest Plan

The final rule appropriately acknowledges the importance of the Northwest Forest Plan in conserving habitat and populations of the Northern Spotted Owl. In addition, it recognizes the need to recruit additional owl habitat, and confirms that the Northwest Forest Plan has been successful at retaining and expanding owl habitat.

> "In developing this critical habitat designation, we also recognize the importance of the Northwest Forest Plan (NWFP) and its land management strategy for conservation of native species associated with old-growth and late-successional forest, including the northern spotted owl. The designation of areas as critical habitat does not change land use allocations or Standards and Guidelines for management under the NWFP, nor does this rule establish any management plan or prescriptions for the management of critical habitat." (p. 7)

> "The Service believes the NWFP has functioned as intended for the retention and development of late-successional forest habitat (Thomas *et al*. 2006; Davis 2012). (p. 622)

> "We recently issued a Revised Recovery Plan for the Northern Spotted Owl (2011) that recommends more specific types of timber-harvest prescriptions in both areas managed for wildlife and areas managed for timber production, and also recommends extra protections for older habitat and spotted owl sites in non-reserved areas or areas managed for timber production. Currently, the guidelines for managing the large reserves of the NWFP are more restrictive than the recommendations for reserved lands in the Revised Recovery Plan or in the proposed revised critical habitat designation." (ECON p. B-4)

Misuse of Ecosystem Management

The Northwest Forest Plan is first and foremost, a multispecies management plan for listed species including the Northern Spotted Owl, Marbled Murrelet and salmon stocks that provides the land management agencies with an adequate regulatory mechanism to comply with the Endangered Species Act. The Northwest Forest Plan promotes an ecosystem management approach with the specific goal of protecting those listed species and perpetuating the late-successional forest ecosystem. The Final Rule misapplies the Northwest Forest Plan's

ecosystem management approach to promote ecological forestry which has not been adequately field tested or monitored, and is likely to be detrimental to Marbled Murrelets and listed salmon by increasing fragmentation.

American Bird Conservancy has developed a unique and successful strategy to preserve bird diversity and maintain or increase wild bird populations. This strategy is fully articulated in The American Bird Conservancy Guide to Bird Conservation published in 2010 by University of Chicago Press (ISBN-13:978-0-226-64727-2). The highest bird conservation priority is halting extinctions, followed by conserving and restoring habitats.

In the case of the Northern Spotted Owl draft Critical Habitat rule, the Service is proposing to place lower priority general habitat needs before the specific needs of an endangered species, even to the point of allowing large numbers of Northern Spotted Owls to be killed (taken) and significant habitat to be degraded or completely eliminated for decades. While the stated goal to improve future habitat conditions for the owl is well-intended, this activity is not supported by peer-reviewed studies showing owl populations will benefit, and it is, in fact, pushing an already extremely imperiled species closer to extinction and should be immediately halted.

> "Thus, to conserve the northern spotted owl as directed by the Act, one must also conserve the ecological processes that occur within the ecological landscape inhabited by the species. These processes—such as vegetation succession, forest fire regimes, and nutrient cycling—create and shape the physical or biological features that form the foundation of critical habitat." (p. 20-21)
>
> "A fundamental goal of critical habitat management should thus be to understand, describe, and conserve these processes, which in turn will maintain the physical or biological features essential to the conservation of the species. This ecosystem approach will ultimately have the highest likelihood of conserving listed species such as the northern spotted owl in the long term (Knight 1998, p. 43)." (p. 21)
>
> "Active adaptive forest management within critical habitat, as discussed herein for the consideration of land managers, may be fully compatible and consistent with these landscape-level ecosystems. Most importantly, this approach is compatible with the ecosystem-based approach of the Northwest Forest Plan." (p. 21)

Timber sale data undermines the idea that the Northwest Forest Plan is not producing a stable flow of timber. The final Northwest Forest Plan was a political compromise that under-delivered on old-growth protection by placing 42% of the remaining acres in the matrix, and overpromised on timber volume. The plan's billion board foot estimate was never realistic because it is predicated on logging old-growth, which is not supported by the public and that in practical terms has generally been ruled in violation of wildlife protection laws. The estimate was also completed prior to the designation of the riparian reserve network which turned out larger than anticipated. The Bush Administration recognized these factors to a degree, and lowered the allowable sale quantify to 800 million board feet.

A look at timber sale output in the Northwest Forest Plan region reveals the agency is at a sustainable level and meeting the volume targets budgeted by Congress; see Forest Service and BLM Offered under the Northwest Forest Plan included in the appendix. Since 2003, the budget approved by Congress and the Administration has called for 4,668 million board feet from the Northwest Forest Plan area. The agencies have offered 4,507 board feet, or 96% of the planned budget.

In addition, exports from the region are skyrocketing. In 2010 over 2 billion board feet of logs and lumber were exported from the West Coast. In 2011 it topped 3 billion. There is no shortage of logging in the Pacific Northwest.

"While the NWFP has been successful in conserving large blocks of late-successional forest (Thomas *et al.* 2006, p. 283, Davis *et al*. 2011, p. 38), concerns have been expressed that it provides less than the anticipated level of commercial timber harvest on matrix lands, does not promote active restoration in areas that may contain uncharacteristically high risk of severe fire (Spies *et al.* 2006, pg. 359; Thomas *et al.* 2006, p. 277), and does not promote development of complex early-seral forest in areas where regeneration harvest has been conducted (Betts et al. 2010, p. 2117; Hagar 2007, p. 109; Swanson et al. 2011, p. 124). (p. 24-25)

Need for Additional Habitat Conservation

The rule confirms that additional habitat is necessary to conserve the Northern Spotted Owl in light of continued populations decline and the growing presences of the Barred Owl.

"Although the rate of loss of habitat due to timber harvest has been reduced on Federal lands over the past two decades, both past and current habitat loss remain a threat to the northern spotted owl. Despite implementation of habitat conservation measures in the early 1990s, Thomas et al. (1990, p. 5) and USDI (1992, Appendix C) foresaw that owl populations would continue to decline for several decades, even with habitat conservation, as the consequence of lag effects at both individual and population levels." P. 13

"The development of a critical habitat network for the northern spotted owl must take into account current uncertainties, such as those associated with barred owl impacts and climate change predictions (USFWS 2011, p. III-10)." (p. 17)

"Given the continued decline of northern spotted owl populations, the apparent increase in severity of the threat from barred owls, and information indicating a recent loss of genetic diversity for the subspecies, retaining both occupied northern spotted owl sites and unoccupied, high-value northern spotted owl habitat across the subspecies' range are key components for recovery (USFWS 2011, p. I-9)." (p. 17-18)

"This revision of critical habitat represents an increase in the total land area identified from previous designations in 1992 and 2008. This increase in area is due, in part, to: (a) the unanticipated steep decline of the northern spotted owl and the impact of the barred owl, requiring larger areas of habitat to maintain sustainable spotted owl populations in the face of competition with the barred owl (e.g., Dugger *et al*. 2011, p. 2467); (b) the recommendation from the scientific community that the conservation of more occupied and high-quality habitat is essential to the conservation of the species (Forsman *et al.* 2011, p. 77); (c) the need to provide for redundancy in northern spotted owl populations, by maintaining sufficient suitable habitat for northern spotted owls on a landscape level in areas prone to frequent natural disturbances, such as the drier, fire-prone regions of its range (in other words, —back-up areas of habitat so that owls have someplace to go if their habitat burns or trees die due to insect infestation, etc.)" (p. 85)

"(3) It ensures that adequate amounts of current and future habitat is available for spotted owls to persist and recover by designating a habitat network consisting of approximately 50 percent of the available high-suitability spotted owl habitat rangewide. An additional 21 percent of high-qualitiy habitat is encompassed within Congressionally Reserved lands that are not designated, but will retain their value for spotted owls. This high-quality habitat, in addition to areas required for population connectivity, is

necessary to support rangewide populations with low extinction risk at both rangewide and regional scales.

(4) Compared to previous spotted owl conservation strategies, it provides increased redundancy in habitat to help buffer potential adverse impacts due to climate change and other stochastic (i.e., unpredictable) events by enlarging the total area of the final designation within the fire-prone portions of the northern spotted owl's range." (p. 175-176)

"In the development of habitat conservation networks, the intent of spatial redundancy is to increase the likelihood that the network and populations can sustain habitat losses by inclusion of multiple populations unlikely to be affected by a single disturbance event. This is essential to the conservation of the northern spotted owl because disturbance events such as fire can potentially remove large areas of habitat with negative consequences for northern spotted owls. Redundancy provides a type of —emergency back-up system to sustain populations in the wake of such events. While the modeling and evaluation process used by the Service did not formally analyze redundancy, we incorporated spatial redundancy at two scales: by (1) making critical habitat subunits large enough to support multiple groups of owl sites; and (2) distributing multiple critical habitat subunits within a single geographic region. This was particularly the case in the fire-prone Klamath and Eastern Cascades portions of the range." (P. 557)

"Likewise, in addition to our modeling results, peer review of both the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) as well as our proposed rule to revise critical habitat, suggested that retention of high quality habitat in the matrix is essential for the conservation of the species. Population performance based on reserves under the NWFP, for example, fared very poorly compared to this final designation of critical habitat. As described in the section **Changes from the Proposed Rule**, we tested possible habitat networks without many of these matrix lands, which resulted in a significant increase in the risk of extinction for the northern spotted owl." (p. 567-568)

"We recommend that habitats with high value to the conservation of the northern spotted owl be conserved. High-value habitat includes mid-seral forests as one component. Mid-seral forests that are generally not occupied by northern spotted owls, however, may be appropriate areas for land management agencies to consider for active forest management that may increase their rate of development into high-quality habitats." (p. 594)

"Rangewide, the proposed revised critical habitat is comprised of approximately 4.6% younger forests that are essential to the conservation of the species, and where individual timber harvests may occur. (For analysis purposes we used a 40-acre minimum patch size to determine such areas, because areas smaller than 40 acres are not likely to have individual planned timber harvests. Based on our experience, harvests in areas smaller than 40 acres would likely be incorporated within a larger planning and consultation process). In particular, of the 63 critical habitat subunits proposed for designation, four (NCO-5, ORC-3, WCC-1 and WCS-6) contain proportionally greater areas of younger forests that are essential to the conservation of the species (10.03%, 10.29%,12.58% and 10.42%, respectively) because they can develop additional habitat necessary to support viable spotted owl populations in the future. These areas of younger forest may or may not presently be occupied by spotted owls. These areas are important for the purposes of distinguishing potential effects of the designation, because they represent cases wherein section 7 consultations may not be necessary but for the designation of critical habitat. In other words, impacts and resulting costs associated with consultation in these areas may be solely an incremental effect of the designation." (ECON p. B-7)

Need for Additional Habitat Due to Barred Owl

> "The recovery of the northern spotted owl therefore requires both protection of habitat and management where necessary to provide sufficient high-quality habitat to allow for population growth and to provide a buffer against threats such as competition with the barred owl." (p. 139-140)

> "As the barred owl is present throughout the range of the northern spotted owl, special management considerations or protections may be required in all of the critical habitat units and subunits to ensure the northern spotted owl has sufficient habitat available to withstand competitive pressure from the barred owl (Dugger et al. 2011, pp. 2459, 2467). In particular, studies by Dugger et al. (2011, p. 2459) and Wiens (2012, entire) indicated that northern spotted owl demographic performance is better when additional high-quality habitat is available in areas where barred owls are present." (p. 140)

> "Including more habitat in critical habitat designation, as compared to the No Action Alternative, would provide increased conservation benefits for northern spotted owls in the face of predicted climate change and the threat from barred owls. Hotter, drier summers and wetter nesting seasons, as predicted for the Pacific Northwest, have the potential to negatively affect northern spotted owls. The presence of high quality habitat my buffer the negative effects of climate change (see section 3.4.3 Climate Change). In addition, maintaining additional habitat distribution across the range of the species may increase the likelihood that spotted owls will persist in areas where barred owls are also present (Dugger *et al.* 2011; Forsman *et al.* 2011; Wiens 2012)." (EA p. 107)

Importance of Northwest Forest Plan Reserves

The documents reaffirm other federal studies showing the effectiveness and importance of the Northwest Forest Plan reserves for maintaining and providing for additional old growth forests and to enhance water quality across the region:

> "The system of reserves within the NWFP is essential for the conservation and development of large areas of late-successional forest across the landscape; however, because the NWFP was designed to benefit multiple species not every acre of the late-successional reserves (LSRs) provide high-quality habitat for northern spotted owls. In addition, barred owls have become increasingly abundant in the Pacific Northwest and likely have a large effect on the continued decline of northern spotted owl populations. With barred owls now sharing the range of the northern spotted owl, conservation of northern spotted owls outside NWFP reserved areas is increasingly important for species recovery." (p. 24)

> "To conserve the northern spotted owl it is essential to have larger, connected areas that are managed for the development of their habitat even though some of those areas may not currently be occupied by the species. As habitat develops over time, both within occupied and unoccupied areas, we anticipate northern spotted owls will colonize the unoccupied habitat and positively contribute to population demographics which contribute to conservation of the species." (p. 619)

> "The Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011a) recommends restoration-focused management in reserve and non-reserve areas to accommodate climate change and dynamic ecosystem processes, with the goal of maintaining or restoring forest ecosystem structure, composition, and processes so they are sustainable and resilient under current and future climate conditions. In addition, the plan recommends extra protections for older habitat and spotted owls sites in non-reserved

areas (USFWS 2011a). Recovery actions recommended by recovery plans are not regulatory and are implemented at the land manager's discretion.

"The current guidelines for managing the large reserves of the NWFP are aimed at creating and maintaining the habitat characteristics required by late-successional species, including the northern spotted owl, and, thus, are consistent with the objectives of the proposed critical habitat designation (USDA and USDI 1994a, b)." (EA p. 47)

"The current guidelines for managing the large reserves of the NWFP may be more restrictive than the general recommendations provided by the Service in the proposed revised critical habitat designation. Therefore, reserved lands are already being managed to reduce impacts or for the benefit of the NSO, consistent with the objectives of proposed critical habitat designation." (ECON p. 4-4)

Eastside Reserves

The final rule doubts the viability of Eastside reserves as result of fires, a point that was strongly contested by The Wildlife Society and peer-reviewers. The Forest Service claims that static reserves on the Eastside are no longer a viable strategy for conserving the owl, but to date has not produced credible evidence to support that contention. Portions of the now discredited Northern Spotted Owl Recovery Plan of 2008 reached the same unfounded conclusion, and inclusion of similar language in the 2010 Draft Recovery Plan spawned strong opposition from the scientific societies that peer-reviewed the plan.

The Final Owl Recovery Plan calls for conserving older stands that have occupied or high-value spotted owl habitat, and to "Continue to manage for large, continuous block of late-successional forest." Without the system of late-successional reserves remaining in place, the agency has not provided any mechanism to ensure that the land management agencies will provide for large, continuous blocks. In fact, given the management history, and continued proposals to further fragment the forest, the importance of maintaining the reserve system should be that much more apparent.

The reviewers found that the science included in the draft was incomplete because numerous studies to the contrary had not been considered. In the final draft, a greater effort was made to reference the omitted studies, but the conclusions remained the same. For example, evidence presented in Hanson et al. (2009) on fire risk was cited but not used.

Several new studies have been published that also analyze satellite images of the forest, and have found that high intensity, "catastrophic" fires have not been increasing in Northern California, or on the Eastside. As a result, we believe the plan overestimates fire risk. Similarly, the Hanson study was also not used regarding the rates of recruitment relative to rates of loss to stand-replacing fires, resulting in an overestimation of the amount of reserve likely to be lost.

"Widespread management of large, fully contiguous blocks of habitat east of the Cascades is not ecologically sustainable in many places, due to the dynamic ecological processes and fire regimes that shape the distribution of forested habitats in this region (Williams 2012, entire). We do, however, recommend land managers consider the conservation of larger blocks of current habitat on areas of landscapes where it is more likely to be resistant or resilient to fire and other natural disturbance. We encourage the use of landscape assessments to identify areas important for ecological process restoration and areas that are valuable for northern spotted owl conservation and recovery (see, e.g., NWFP Standards and Guidelines p. C-13)." (p. 593-594)

Economic Impacts

The economic analysis concluded that the final rule is not likely to have a major economic impact. For example, the reduction of potential harvest from high-quality owl habitat in matrix lands may be offset by a slight increase in harvest from other matrix lands as a result of the active management provisions in the Rule.

> "It concludes that only a relatively small portion of the overall proposed revised designation may result in more than minor incremental administrative costs. It found that potential incremental changes in timber harvests on Bureau of Land Management and U.S. Forest Service lands may occur on approximately 1,449,534 ac (585,612 ha) proposed for designation, or 10 percent of the total lands included in the proposed designation and that there is the potential for 307,308 ac (123,364 ha) of private land to experience incremental changes in harvests, or approximately 2 percent of total lands proposed. No incremental changes in harvests are expected on State lands." (p.12)
>
> "Most potential economic impacts would occur, if at all, on Federal matrix lands managed by BLM and the Forest Service, although we note that the amount of Federal matrix lands has been reduced from the proposed rule, as described in **Changes from the Proposed Rule**, which would have the effect of reducing the range of potential economic impacts presented by the FEA." (p. 307)
>
> "As outlined in the economic analysis timber harvest may increase, decrease or stay substantially the same as recent timber harvest levels depending on how the Forest Service and BLM decide to manage their lands within the designation. Furthermore, timber industry employment is affected not only by harvest trends but also by fluctuations in national and international markets; changes in land ownership; and increasing mechanization and productivity in the industry." (p. 581)
>
> "Of the matrix lands, approximately 1.1 million acres are predominantly younger forests (considered to be unoccupied) and 1.6 million acres are northern spotted owl habitat. Furthermore, we estimate that approximately 6.5 percent of northern spotted owl habitat is likely to be unoccupied. We find that incremental economic impacts to USFS timber harvest are relatively more likely in unoccupied matrix lands or approximately 1,158,314 acres of 2,629,031 total acres of all USFS matrix lands." (p. 661)
>
> "The results of this assessment suggest that incremental changes in annual harvests are likely to be small, less than one percent of total harvests in the 56 counties overlapping the designation." (p. 676) "Importantly, we note that under the third scenario analyzed in the DEA, the potential decrease in harvest from BLM lands represents approximately 2 percent of total harvests from BLM lands in these counties (Based on BLM transaction data over the last four quarters (2011Q4–2012Q3) viewed at *http://www.blm.gov/or/resources/forests/blm-timber-data.php*). Thus, if affected, impacts to revenue payments resulting from the designation are likely to be small." (p. 681)
>
> "Finally, the designation is likely to reduce or increase annual timber harvests from Federal lands by less than one percent." (p. 682)
>
> "These scenarios include: (1) administrative costs only; (2) potential positive incremental impacts to timber harvest on Federal lands; and (3) potential negative incremental impacts to timber harvest on Federal lands. Furthermore, the economic analysis presents a potential low impact and high impact outcome for each of the three scenarios. Thus under the positive impact scenario, the estimated annualized *increase* in timber harvest revenue on Federal lands range from $1,230,000 to $3,070,000.

Under the negative impact scenario, the annualized *decrease* in timber harvest revenue on Federal lands ranges $2,460,000 to $614,000,000. In all three scenarios, the estimated annualized administrative costs on Federal lands are from $185,000 to $316,000." (p. 751)

"In addition, actual Federal timber harvests have not kept pace with the levels anticipated by the NWFP due in part to controversy over harvesting mature and old-growth stands, which were expected to be the primary harvest component in the first few decades of the plan. For example, planned annual harvest levels under the NWFP totaled over 800 million board feet from 1999 to the present, while actual harvest levels in recent years have been approximately 60 percent of this planned total (USFS, Pacific Northwest Region, Northwest Forest Plan—The First 15 Years (1994-2008): Socioeconomic Status and Trends, R6-RPM-TP-03-2011, 2011.). As the availability of Federal timber sales decreased, the relative importance of harvests from private lands increased." (ECON p. ES-6)

"Between 1990 and 2000, timber industry employment in the NWFP area declined by approximately 30,000 jobs. Meanwhile, there were increases in both population and total employment in the tri-state area of California, Oregon, and Washington; population increased by 15 percent and employment grew 18 percent, representing a total of 3.8 million jobs gained. Routman, K. 2007. Forest Communities and the Northwest Forest Plan: What Socioeconomic Monitoring Can Tell Us. *Science Findings* (95). Pacific Northwest Research Station, USDA Forest Service. (ECON p. ES 6-7)

"The 2012 Economic Analysis distinguishes the *incremental* costs of designation from *baseline* costs, and quantifies specific potential effects to timber harvest practices and volume along with administrative costs. As discussed in detail in this report, the annualized incremental impacts under the negative impact scenario range from a loss of approximately $2.65 to $6.48 million, while the positive impact scenario ranges from a gain of approximately $900,000 to $2.9 million. The analysis also contemplates an "administrative cost only" scenario, with annualized losses of $196,000 to $335,000." (ECON p. ES-10)

"Timber harvests between 2000 and 2010 did not keep pace with NWFP projections. The plan predicted that harvests from public lands within the NWFP area would be over 800 million board feet (MMBF) annually from 1999 to present.80 Predicted harvests have not been met within the NWFP area, in part due to controversy over harvesting mature and old-growth stands, which were expected to be the primary harvest component in the first few decades of the NWFP. (ECON p. 3-3)

Ecological Forestry and Increasing Timber Harvest

This section of the economic analysis attempts to analyze how much additional harvest could be expected if ecological forest was applied to non-high quality matrix. Approximately, a 10% increase above current volume levels can be expected.

"190. Compared to actual timber harvest levels in recent years, the Service and available literature suggest that there is the potential for increases in timber harvest on some Federal matrix lands if the USFS and BLM apply the considerations in the proposed critical habitat rule for active management in dry, mixed, and moist forests. The best opportunity for increases in Federal timber harvest, compared to the recent status quo, involve a mix of thinning and variable retention prescriptions in younger matrix forests consistent with existing standards and guidelines of the NWFP. The proposed critical habitat rule considers these methods and provides considerations for how to apply them in a manner consistent with NSO recovery and to avoid destruction and adverse modification of critical habitat.

191. Some published literature and reports exist that outline how these forestry practices might affect timber harvest practices and volumes. Ecological forestry methods are being applied in the Pacific Northwest, in part, in an effort to better reconcile competing economic and conservation goals.157 Specifically, we rely on research published by Dr. K. Norman Johnson and Dr. Jerry F. Franklin to support the analysis.158 This research contemplates that implementation of ecological forest practices, as envisioned by the Franklin/Johnson Moist Forest restoration strategy, could produce about two-thirds of the per-acre timber yields anticipated by the NWFP.159

192. We utilize this ratio, in combination with the ratio of historical actual harvest volumes relative to NWFP planned volumes, to derive an estimate of potential increases in harvest levels relative to the regulatory baseline. Historic timber harvest on Federal lands have equaled approximately 60 percent of the probable sale quantity (PSQ) envisioned under the NWFP.160 The two-thirds timber harvest yield resulting from ecological forestry practices as envisioned by Johnson and Franklin is also based on PSQ under the NWFP. Thus, for purposes of illustrating a potential increase in timber harvest resulting from critical habitat, we scale baseline projections up by 10 percent (0.66 ÷ 0.60 = 1.10)." (ECON p. 4-29)

Active Management

While we appreciate that the final Rule offers clarifications about where and under what conditions active management would be appropriate for owl recovery we remain concern that the benefits of active management are overstated and even under the more limited circumstance described in the final rule, could cause harm to owls and elimination of habitat.

The 1993 Report of the Scientific Analysis Team (SAT) thoroughly reviewed the risks associated with logging in suitable owl habitat, and concluded "intentions to selectively cut forest stands to create conditions favorable for spotted owls, represents increased risks to the viability of the spotted owl (SAT p. 145)."

The issue of short-term losses versus long-term habitat gains was also analyzed and the scientists concluded "that the short-term effect of these actions on habitat loss may be much more significant than the long-term predicted habitat gains."

"As stated above, many areas of critical habitat do not require active management, and active forest management within such areas could negatively impact northern spotted owls. We are not encouraging land managers to consider active management in areas of high-quality owl habitat or occupied owl sites; rather, we encourage management actions that will maintain and restore ecological function where appropriate. In some areas, forest stands are not on a trajectory to develop into high-value habitat, ecological processes have been disrupted by human actions, or projected climate change is expected to further disrupt or degrade desired forest conditions." (p. 26)

"In general, prescriptions (e.g., vegetation management, prescribed fire, etc.) that apply ecological forestry principles to address the restoration and conservation of broader ecological processes in areas where this is needed, while minimizing impacts to structurally diverse or mature and old forest that does not require such management can be compatible with maintaining the critical habitat's essential features in the long term at the landscape scale (USFWS 2011, p. III-14). The Service has recently consulted on these types of management actions in occupied northern spotted owl habitat on Bureau of Land Management (BLM) and U.S. Forest Service (USFS) lands." (p. 28)

In sum, vegetation and fuels management in dry and mixed-dry forests may be appropriate both within and outside designated critical habitat where the goal of such treatment is to conserve natural ecological processes or restore them (including fire) where they have been modified or suppressed (Allen *et al.* 2002, pp. 1429–1430; Spies *et al.* 2006, pp. 358–361; Fielder *et al.* 2007, entire; Prather *et al.* 2008, entire; Lindenmayer *et al.* 2009, p. 274; Tidwell 2011, entire; Stephens *et al.* 2009, pp. 316–318; Stephens *et al.* 2012a, p. 13; Stephens *et al.* 2012b, pp. 557–558; Franklin *et al.* 2008, p. 46; Miller *et al.* 2009, pp. 28–30; Fule *et al.* 2012, pp. 75–76).

"Likewise, in some moist and mixed forests, management of northern spotted owl critical habitat should be compatible with broader ecological goals, such as the retention of high-quality older forest, the continued treatment of young or homogenous forest plantations to enhance structural diversity, heterogeneity and late-successional forest conditions, and the conservation or restoration of complex early-seral forest habitat, where appropriate (Spies et al. 2007b, pp. 57–63; Betts et al. 2010, pp. 2117, 2126–2127; Swanson at al. 2011, entire).

In general, actions that promote ecological restoration and those that apply ecological forestry principles at appropriate scales as described above and in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011, pp. III-11 to III-41) may be, in the right circumstances, consistent with the conservation of the northern spotted owl and the management of its critical habitat. However, we emphasize that this rule does not take any action or adopt any policy, plan or program in relation to active forest management." (p. 30)

"The Service supports the goals of maintaining and restoring ecological function and development of future northern spotted owl habitat. We encourage land managers to consider a stronger focus on ecological forestry in areas where commercial harvest and restoration are planned. We recognize the need to balance both the conservation of current owl sites and the development of future owl habitat." (p. 31)

"…whereas other forest areas would likely benefit from more proactive forestry management. For example, in drier, more fire-prone regions of the owl's range, habitat conditions will likely be more dynamic, and more active management may be required to reduce the risk to the essential physical or biological features from fire, insects, disease, and climate change, as well as to promote regeneration following disturbance.

While we recommend conservation of high-quality and occupied northern spotted owl habitat, long-term northern spotted owl recovery could benefit from forest management where the basic goals are to restore or maintain ecological processes and resilience, as discussed in detail in the Revised Recovery Plan (USFWS 2011, pp. III-11 to III-39). (p. 141)

"The Service believes that application of these ecological forestry goals and principles, including those generally described in Johnson and Franklin (2009, entire; 2012, entire), may result, in some situations, in fewer adverse impacts to northern spotted owl critical habitat when compared to application of traditional silviculture as currently applied or permitted on private, State, and Federal matrix lands." (P. 546)

"This rule does not establish management prescriptions for lands designated as critical habitat. However, the Service has made considerable effort to discuss, for the benefit of land managers, potential approaches to active forest management in dry forests, including actions that manage fuels and restore

ecosystem health. We encourage land managers to consider active management of their forests that balances short-term impacts with long-term beneficial effects that ultimately support long-term conservation of the northern spotted owl. In dry forests, this could include using a landscape assessment approach to improve the estimation of effects of management actions on northern spotted owl habitat and to better identify and prioritize areas for treatments. The assessment may be used to provide support and rationale for treatment, especially in areas where active forest management actions appear to be in conflict with the conservation of high-value northern spotted owl habitat." (p. 586)

"Outside of LSRs, proposed timber sales may be designed to maximize timber extraction within the NWFP guidelines, including green-tree retention, coarse-wood retention, etc. Where spotted owl habitat would be harvested within proposed critical habitat in these land-use allocations, we would likely request a modification to the prescriptions in an effort to retain and improve spotted owl habitat to better meet critical habitat goals.

More recently, timber sales in all of these non-reserved areas that are occupied by spotted owls have been generally designed following the recommendations of the Revised Recovery Plan, which call for using ecological-forestry techniques to help create better spotted owl habitat more quickly than if the forest was left alone while retaining existing spotted owls at their nests. These ecological-forestry recommendations are consistent with the activities we also recommend within critical habitat in the proposed revised rule to help develop higher-quality spotted owl habitat. Therefore, we would not be likely to request significant changes in the project design due to critical habitat." (ECON p. B-11)

"On non-DOD Federal lands, we conclude that the highest potential for on-the-ground incremental effects due to the designation of spotted owl critical habitat is likely to be in unoccupied spotted owl habitat (1) in areas where regeneration-harvest timber sales were anticipated by the NWFP and (2) in post-fire salvage situations in non-LSR allocations." (ECON p. B-15)

Ecological Forestry

The sections below provide an honest assessment of the intent of ecological forestry which is to attempt to increase harvest while conserving the owl. In practice, ecological forestry is a more benign form of clearcutting than allowed by the letter of the Northwest Forest Plan. But it very important to note, clearcutting is currently only rarely allowed to happen by the courts on any significant scale as a result of impacts it has to wildlife habitat and water quality. So while not as bad as the clearcuts of old, ecological forestry is a step in the wrong direction because right now there is little or no clearcutting on heavily fragmented federal lands, while extensive clearcutting is taking place on private and state lands.

BACKGROUND ON ECOLOGICAL FORESTRY

132. As discussed above, the Pacific Northwest timber industry has faced challenges over the past decade. Likewise, the forests themselves have undergone changes due to past management practices, shifting disturbance patterns, and climate change.125 In an effort to address some of these challenges, land managers are contemplating a shift to ecological forestry practices. Johnson, N.K. and J.F. Franklin. 2009. Restoration of Federal Forests in the Pacific Northwest: Strategies and Management Implications. Unpublished manuscript. August 15, 2009. 120 pp. Accessed at http://www.cof.orst.edu/cof/fs/PDFs/JohnsonRestoration_Aug15_2009.pdf on April 5, 2012.

133. The main goal of ecological forestry-based management is to achieve ecological goals while simultaneously providing economic and social benefits.127 In general, the approach follows the principles of natural forest stand development; it values the role of natural disturbances in initiating, developing, and maintaining forest ecosystems, and encourages active restoration of spatial heterogeneity and conservation of older stands and trees.128 In addition, it recognizes that desirable ecological conditions are maintained through a program of active management that includes periodic timber harvest.129

134. The Proposed Rule states that, ¡§In general, actions that promote ecological restoration and those that apply ecological forestry principles as described in the Revised Recovery Plan (USFWS 2011, pp. III¡V11 to III¡V41)¡Kare likely to be consistent with the conservation of the northern spotted owl and the management of its critical habitat.¡¨130,131 It recommends that land managers consider managing NSO critical habitat according to the following basic management practices, which are consistent with ecological forestry and recommended in the Revised Recovery Plan:

Conserve the older growth, high quality and occupied forest habitat as necessary to meet recovery goals; Implement science-based active vegetation management to restore forest health, especially in drier forests in the eastern and southern portions of the species¡¦ range;

Encourage landscape-level planning and vegetation management that allow historical ecological processes, such as characteristic fire regimes and natural forest succession, to occur on these landscapes throughout the range of the NSO. This approach has the best chance of resulting in forests that are resilient to future changes that may arise due to climate change.132

135. Ideally, implementation of ecological forestry would allow Federal land managers to increase the overall amount of timber harvested from Federal lands while simultaneously improving habitat for the NSO and other listed species. Exactly how these practices would be implemented by the land management agencies is currently uncertain. Various pilot projects on BLM lands are ongoing to test alternatives and learn more about the challenges and opportunities associated with ecological forestry practices.133 In addition, the land managing agencies must make decisions consistent with their land use management plans, forestry programs, and other statutory and regulatory responsibilities.134 Thus, capturing the interface between ecological forestry and critical habitat concerns, and assessing related economic impacts, is an uncertain exercise." (ECON P. 3-23 – 3-25)

Early Seral Management

We appreciate the clarification that high-quality or areas on a trajectory to become high-quality habitat should not be removed to create early-seral habitats. We remain concerned about the potential effect of harvest to create early seral habitats and that passive restoration of post-fire environments be utilized instead of active management.

"The Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) suggests that management of early-seral habitats be considered where they are underrepresented and would improve landscape and biological diversity. Within that context, thinning and targeted variable-retention harvest in moist forests could be considered, where the conservation of complex early-seral forest habitat is a management goal. This approach provides a contrast to traditional clear-cutting that does not mimic natural disturbance or create viable early-seral communities that grow into high-quality habitat (Dodson *et al*. 2012, p. 353; Franklin *et al*. 2002, p. 419; Swanson *et al*. 2011, p. 123; Kane *et al*. 2011, pp. 2289–2290; Betts *et al*.

2010, p. 2127, Hagar 2007, pp. 117–118). Swanson (2012, entire) provides a good overview and some management considerations. The Revised Recovery Plan does not suggest that high-quality owl habitat or areas currently on a trajectory to become high-quality owl habitat be removed to create early-seral conditions. The Revised Recovery Plan recommends such treatments, if considered by the land management agencies, be applied in matrix areas consistent with the Standards and Guidelines of the NWFP." (p. 592)

Need for Additional Research

We appreciate the advisories calling for additional research and concur that the Experimental Forests are an appropriate place for experimentation. We remain concerned that the land management agencies are not being required to provide evidence of the benefits of active management to owl populations prior to proposed removal of owl habitat.

"However, a better understanding of how ecological forestry approaches affect owls and their prey is needed. Studies have shown negative effects of commercial thinning and other conventional forestry practices on both northern spotted owls (Forsman *et al.* 1984, pp. 16-17; Meiman *et al.* 2003, p. 1261) and their prey (Waters *et al.* 1994, p. 1516; Luoma *et al.* 2003, pp. 343-373; Wilson 2010, entire).This need was recognized in Recovery Action 11 of the Revised Recovery Plan, which states —When vegetation management treatments are proposed to restore or enhance habitat for northern spotted owls (e.g., thinnings, restoration projects, prescribed fire, etc.), consider designing and conducting experiments to better understand how these different actions influence the development of northern spotted owl habitat, northern spotted owl prey abundance and distribution, and northern spotted owl demographic performance at local and regional scales. Furthermore, the recovery strategy outlined in the Revised Recovery Plan (USFWS 2011) identifies monitoring and research, as well as active adaptive forest management, as important steps in achieving recovery goals." (p. 31)

"Towards this objective of learning critical new scientific insights from research and adaptive management, we especially encourage research and active adaptive forest management on the seven Forest Service Experimental Forests." (p. 32)

"Five peer reviewers and numerous public commenters indicated that active forest management should be conducted in areas that are not currently high value for northern spotted owls and in an adaptive management framework given the uncertainties regarding how such management practices will impact northern spotted owls and their prey.

The Service expects to support and design, in concert with the BLM, USFS, and researchers, scientific studies on the effects of ecological forestry projects in northern spotted owl critical habitat, to gain a better understanding of the short-term and long-term impacts of these silvicultural treatments on northern spotted owls, their prey and forest vegetative structure. We are currently designing and funding just such a study through Oregon State University for the pilot project in the Middle Applegate Watershed." (P. 544).

Limitations on Active Management

We appreciate the limitations and clarifications on active management detailed in the following sections, particularly the Westside, but we remain concerned that adequate direction has not been provided for the Eastside or Klamath:

“Given these concerns, and recognizing that appropriate management actions will vary depending upon site-specific conditions, we provide the following suggestions regarding active forest management for consideration by land managers within critical habitat as consistent with the recommendations of the Revised Recovery Plan for the Northern Spotted Owl:

1. Focus active management in younger forest, lower quality owl habitat, or where ecological conditions are most departed from the natural or desired range of variability.

2. In moist forests on Federal lands, follow NWFP guidelines as informed by the Revised Recovery Plan and focus on areas outside of LSRs (i.e., matrix). In dry forests, follow NWFP guidelines and focus on lands in or outside of reserves that are most —at-risk of experiencing uncharacteristic disturbance and where the landscape management goal is to restore more natural or resilient forest ecosystems (see, *e.g.,* Davis *et al*. 2012, entire; Franklin *et al*. 2008, p. 46).

3. Avoid or minimize activities in active northern spotted owl territories (or the high-quality habitat within these territories).” (p. 32)

Determinations of Adverse Effects and Application of the Adverse Modification Standard.

“We have clarified that our discussion of ecological forestry and active management is intended for land managers to consider when developing management plans or planning projects, as in many areas this approach may be consistent with critical habitat for the northern spotted owl, but that such management is not mandated by the Service and is not required as the result of this rulemaking. We have also clarified this issue in the final rule language by stating that we have made the 16 U.S.C. 1532(5)(A)(i) determination that essential biological and physical features in occupied areas may require special management considerations or protection, but that the rule does not require land managers to implement, or preclude land managers from implementing, such measures.” (p. 59)

“We have clarified language regarding development of diverse, early-seral forest to indicate that: (1) We do not recommend these actions in older forest stands or areas that currently function as owl habitat; and (2) this type of management is most appropriate where more traditional forestry methods have typically been conducted on matrix lands.” (p. 59)

“Some areas of northern spotted owl habitat, particularly in wetter forest types, are unlikely to be enhanced by active management activities, but instead need protection of the essential features;” (p. 141)

“In moist forests that are currently providing mature and late-successional forest that functions as habitat for northern spotted owls, active management is generally unnecessary to conserve older growth forests (Johnson and Franklin 2009, p. 3).” (p. 142)

“If land managers are actively managing forests, we recommend that these activities be focused on lower quality owl habitat (lower relative habitat sustainability (RHS)); that these activities focus on ecological restoration, or apply principles of ecological forestry; and, where possible, evaluate the effects of these treatments on northern spotted owls and other species of concern using an active adaptive forest management framework.” (p. 143-144)

“Within dry forests, the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) emphasizes active forest management that could meet overlapping goals of northern spotted owl conservation, climate change response, and restoration of dry forest ecological structure, composition, and process, including wildfire and other disturbances (USFWS 2011, pp. III-20). For the rest of the northern spotted owl‘s range that is not fire-prone, the Revised Recovery Plan emphasizes habitat management that accelerates the development of future habitat, restores larger habitat blocks, and reduces habitat fragmentation.” (p. 282)

“Second, we continue to encourage forest land managers to consider the application of ecological forestry principles to their commercial timber harvest (see response to peer review question 4a-c, above), and we believe that application of these principles in many instances may result in better long-term ecological conditions for northern spotted owls and other forest wildlife when compared to the application of traditional silviculture methods.” (P. 549-550)

“Commercial thinning has been shown to negatively affect northern spotted owls and their prey, and we have included a more detailed discussion of this issue in the final rule. In areas where active management may be appropriate for consideration, the goal is to conserve and restore ecological function; however, we recognize that management agencies may have multiple management goals. In areas where actions such as commercial thinning may be considered (e.g., the matrix land use allocation), we are not encouraging them in areas of high-quality owl habitat.” (p. 593)

“We have identified the major threats to owl recovery in this rule, including traditional timber harvest that resulted in the removal of large areas of old forest. Active management, in general, may affect water quality and recreational opportunities, but it may also restore habitat conditions or reduce fire risk if implemented properly. We encourage land managers to be mindful of these concerns and to protect important areas from long-term adverse impacts wherever possible.” (p. 595)

“We emphasize that careful consideration should be given to any forest management activities occurring within northern spotted owl critical habitat… Further, we recommend that the focus of these treatments be outside of high-value habitat for northern spotted owls wherever possible and that high-quality habitats be conserved and recruited. Work inside of LSRs should be in accordance with the NWFP Standards and Guidelines.” (p. 596)

“In the final rule, we have refined and expanded our discussion of ways land managers might implement active management to minimize potential risks to northern spotted owls and their habitat, and provide appropriate safeguards in the face of scientific uncertainties surrounding disturbance dynamics in dry forests and northern spotted owl responses to management.” (p. 597)

“The Revised Recovery Plan for the Northern Spotted Owl also recommends the application of active forest management to restore forest ecosystem structure, composition, and processes. processes. In response to public comment regarding the appropriateness of this activity in critical habitat, we have clarified the relationship between this revised recovery plan recommendation and its application within spotted owl critical habitat. Its discussion in the revised critical habitat rule is provided primarily for consideration by Federal, State, local, and private land managers, as they make decisions on the management of forest land under their jurisdictions and through their normal processes. This critical habitat rule does not take any action or adopt any policy, plan or program in relation to active forest management. Many areas of critical habitat do not require active management, and active forest management within such areas could negatively impact northern spotted owls. We are not encouraging

land managers to consider active management in areas of high-quality owl habitat or occupied owl sites; rather, we encourage management actions that will maintain and restore ecological function where appropriate." (EA p. 55-56)

"Public commenters and peer reviewers were divided on the ecological effects of active forest management and forest restoration as described in the proposed revised rule. Much of the concern from those opposed to active management within critical habitat units derived from a false assumption that critical habitat designation would require these activities and would allow or encourage activities inconsistent with the objectives and standards and guidelines of the late-successional reserves of the NWFP. We did not propose any change to the NWFP in the proposed rule, nor does the Service have the authority to change the land management plans of other agencies. We have clarified this in the final rule, stating that actions within critical habitat would also need to be consistent with the objectives and standards and guidelines of all relevant agency management plans. In addition, although the proposed critical habitat rule refers to the active management recommendations of the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011), the critical habitat rule itself does not mandate or require any specific type of management by any agency or entity. It discusses the concept of active forest management only for future consideration by land managers as they make their own land management decisions. Finally, because all federal activities in designated critical habitat, regardless of objective, must avoid its destruction or adverse modification, the discussion of active forest management and restoration does not override the necessity to meet section 7(a)(2) requirements of the ESA. The only statutory requirement resulting from the designation of critical habitat is that Federal agencies ensure that their actions are not likely to result in the "destruction or adverse modification" of critical habitat, as that term is used in its statutory context, after consultation with the Service. Based on these clarifications regarding the discussion of active forest management in the preamble to the rule, we do not consider the impacts of the rule to be significant or highly controversial for this reason." (EA p. 151)

Limitations on Active Management – West Cascades/Coast Ranges of Oregon and Washington

"Special management considerations or protection may be required in areas of moist forests to conserve or protect older stands that contain the conditions to support northern spotted owl occupancy (RA10: USFWS 2011, p. 43) or contain high-value northern spotted owl habitat (RA32: USFWS 2011, p. 67). Silvicultural treatments are generally not needed to maintain existing old-growth forests and high-quality habitat on moist sites (Wimberly et al. 2004, p. 155; Johnson and Franklin 2009, pp. 3, 39).
Efforts to alter either fuel loading or potential fire behavior in these sites could have undesirable ecological consequences as well (Johnson and Franklin 2009, p. 39; Mitchell et al. 2009, pp. 653–654; USFWS 2011, p. III-17). Furthermore, commercial thinning has been shown to have negative consequences for northern spotted owls (Forsman et al. 1984, Meiman et al. 2003) and their prey (Waters et al. 1994, Luoma et al. 2003, Wilson 2010). Active management may be more appropriate in younger plantations that are not currently on a trajectory to develop old-growth structure." (p. 145)
"(1) Conserve older stands that contain the conditions to support northern spotted owl occupancy or high-value northern spotted owl habitat as described in Recovery Actions 10 and 32 (USFWS 2011, pp. III-43, III-67). On Federal lands this recommendation applies to all land-use allocations (see also Thomas et al. 2006, pp. 284–285).

(2) Management emphasis needs to be placed on meeting northern spotted owl recovery goals and long-term ecosystem restoration and conservation. When there is a conflict between these goals, actions that would disturb or remove the essential physical or biological features of northern spotted owl critical habitat need to be minimized and reconciled with long-term ecosystem restoration goals.

(3) Continue to manage for large, continuous blocks of late-successional forest.

(4) In areas that are not currently late-seral forest or high-value habitat and where more traditional forest management might be conducted (e.g. matrix), these activities should consider applying ecological forestry prescriptions." (p. 146)

"Ideally, proposed actions within critical habitat should occur on relatively small patches of younger, mid-seral forest stands that do not cause reductions in higher quality northern spotted owl habitat. They should also be planned in such a way that their net occurrence on the regional landscape is consistent with broader ecosystem-based planning targets (e.g., Spies *et al.* 2007a, entire) to provide the physical or biological features that are essential to the conservation of the northern spotted owl. Within that context, thinning and targeted variable-retention harvest in moist forests could be considered where the conservation of complex early-seral forest habitat is a management goal. This approach provides a contrast to traditional clearcutting that does not mimic natural disturbance or create viable early-seral communities that grow into high-quality habitat (Dodson *et al.* 2012, p. 353; Franklin *et al.* 2002, p. 419; Swanson *et al.* 2011, p. 123; Kane *et al*. 2011, pp. 2289–2290; Betts *et al*. 2010, p. 2127, Hagar 2007, pp. 117–118)." (p. 283-284)

"In other words, such treatments can be dispersed across the landscape and over time to both accommodate northern spotted owl habitat needs and conservation of diverse and complex early-seral habitat." (p. 284)

Limitations on Active Management – Eastside/Dry Forests

A key difference in the recommendations for Westside and Eastside is for the Westside the agency recommends managing for large, continuous blocks of late-successional forest, but the forest the Eastside this is absent. There continues to be scientific controversy and uncertainty regarding the likely survival of eastside reserves. The agency has overstated the likelihood they will be lost.

"In order to preserve the essential physical or biological features, these dynamic, disturbance-prone forests should be managed in a way that promotes northern spotted owl conservation, responds to climate change, and restores dry forest ecological structure, composition and processes, including wildfire and other disturbances (USFWS 2011, p. III-20). The following restoration principles apply to the management that may be required in this dry forest region (USFWS 2011, pp. III-34 to III-35):

(1) Conserve older stands that contain the conditions to support northern spotted owl occupancy or high-value northern spotted owl habitat as described in Recovery Actions 10 and 32 (USFWS 2011, pp. III-43, III-67). On Federal lands this recommendation applies to all land-use allocations (see also Thomas *et al.* 2006, pp. 284–285).

(2) Emphasize vegetation management treatments outside of northern spotted owl territories or highly suitable habitat;

(3) Design and implement restoration treatments at the landscape level;

(4) Retain and restore key structural components, including large and old trees, large snags, and downed logs;

(5) Retain and restore heterogeneity within stands;

(6) Retain and restore heterogeneity among stands;

(7) Manage roads to address fire risk; and

(8) Consider vegetation management objectives when managing wildfires, where appropriate. (p. 147-148)

"The Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) recommends that the dynamic, fire-prone portion of the northern spotted owl's range be actively managed to conserve northern spotted owls, but also address climate change and restore dry forest ecological structure, composition, and processes (e.g., wildfire) to provide for the long-term conservation of the species and its habitat in a dynamic ecosystem (USFWS 2011, pp. III-13, III-20). To do this, management actions should be considered to balance short-term adverse effects with long-term beneficial effects." (p. 285)

"Conflicts between objectives will remain in some locations, such as in places where removing younger, shade-intolerant conifers to reduce competition with larger, legacy conifers may result in a substantial decrease in canopy cover that translates into a reduction in northern spotted owl habitat quality." (p. 287)

"The Service has made considerable effort to discuss recommendations and descriptions of active forest management in dry forests, including actions that manage fuels and restore ecosystem health, in this critical habitat rule. This rule is different from previous designations of northern spotted owl critical habitat in that we are recommending a —hands on approach to forest management within critical habitat. We encourage land managers to consider active management of forests that balance short-term impacts with long-term beneficial effects, which ultimately supports long-term conservation of the northern spotted owl. In dry forests, we recommend that land managers consider a landscape assessment approach to improve the estimation of effects of management actions on northern spotted owl habitat and to better identify and prioritize areas for treatments." (p. 601)

Limitations on Active Management – Klamath

This is inadequate. It grants broad agency discretion in a region that is already beset with controversy over aggressive logging projects in owl habitat.

"In some areas, appropriate management will be more consistent with dry forest management strategies, while in other areas wet forest management strategies will be more appropriate. (p. 151)

Limitations on Active Management – Redwoods

"The long growing season in this region, combined with redwood's ability to resprout from stumps, allows redwood stands to attain suitable stand structure for nesting in a relatively short period of time (40–60 years) if legacy structures are present. Late-successional forest is an important component of

nesting and roosting habitat in the Redwood Zone, and demographic productivity on northern spotted owl breeding sites has been positively correlated with the density of legacy trees in proximity to owl nest sites (Thome *et al.* 1999, p. 57). Forest management in this region should conserve older stands that contain the conditions to support northern spotted owl occupancy or high-value northern spotted owl habitat as described in Recovery Actions 10 and 32 (USFWS 2011, pp. III-43, III-67). On Federal lands this recommendation applies to all land-use allocations (see also Thomas *et al.* 2006, pp. 284–285)." (p. 152)

Active Management and Forest Planning

The Administration has announced a new planning process for BLM-managed lands in Oregon. Based on the Notice of Intent (NOI) and the Administration's press statements, the plan shows a bias towards active management and proposes a significant departure from the Northwest Forest Plan by encouraging regeneration in moist mature forests. This is harmful to the Northern Spotted Owl by risking take of individual birds and habitat, increasing forest fragmentation, and setting back the needed expansion of the old-growth forest ecosystem over time to provide for owl recovery.

This new WOPR planning effort, as announced, amounts to the BLM pulling out of the Northwest Forest Plan. The importance of consistent management across the owl's range has been cited in past court cases.
Two key assumptions behind the biological analysis of the Northwest Forest Plan were that (1) "[r]iparian and Late-Successional Reserves (LSRs) will retain reserve status and will not be available for timber production other than as provided in Alternative 9" and (2) "[a]lternative 9 applies to Forest Service and BLM lands; all future actions on these lands would be consistent with Alternative 9, as adopted in the Record-of-Decision (ROD)." See FEIS at 2-33 to 2-34. (Earthjustice comment letter). BLM's indicated management direction as expressed by the NOI, violates both of these assumptions.

The Okanogan-Wenatchee National Forest Plan Revision has also raised great concern by proposing the elimination of the existing system of late-successional reserves. A Region 6 Forest Service Assessment found that late-successional forests are generally below their historic range of variability, and the availability of snags larger than 20 inches, and snag habitat is generally lacking in some forest types because of past management practices. While the notice of intent proposes that a designated percentage of the forest will be managed for the owl's benefit, there will no longer be areas where the species' protection is guaranteed. This proposal is not consistent with the Northwest Forest Plan, which provides reserves with guaranteed protections that cannot be ignored at the discretion of the local land managers.

In addition, the management standards proposed for portions of the former late-successional reserves could be potentially harmful to many species of wildlife, including the Northern Spotted Owl. The proposed Okanogan-Wenatchee forest plan would allow for significantly greater road densities (more than 15%) than allowed in the current six owl reserves and possibly eight others depending on agency interpretation changes in summer road use. Allowing greater fragmentation and road densities would reduce the amount of suitable owl habitat in those areas, not to mention increasing fire risks, and should not be allowed.

"Land managers should change from the practice of implementing many small, uncoordinated and independent fuel-reduction and restoration treatments. Instead, coordinated and strategic efforts that link individual projects to the larger objectives of restoring landscapes while conserving and recovering northern spotted owl habitat are needed (sensu Sisk *et al.* 2005, entire; Prather *et al.* 2008, entire; Gaines *et al.* 2010, entire). Some examples of this type of planning in the east Cascades that may be emulated or referenced include the Okanagon-Wenatchee National Forest (USDA 2010, entire), The

Nature Conservancy (Davis *et al*. 2012, entire), and the Deschutes National Forest (Smith *et al*. 2011, entire). (p. 149)

"We are also closely involved in and supportive of the respective Forest Service and BLM landscape-level planning efforts currently underway, and will work with the agencies to incorporate the conservation planning recommended in the Revised Recovery Plan and discussed in this final critical habitat designation." (p. 272)

"Landscape assessments developed at the scale of entire National Forests, Ranger Districts, or BLM Districts have the broad perspective that can improve ability to estimate effects of management activities on the function of critical habitat and better identify and prioritize treatment areas and the actions that will restore landscapes while conserving northern spotted owl habitat. The Okanogan-Wenatchee National Forest has developed a landscape evaluation process as part of their forest restoration strategy (USDA 2010, pp. 36–52) that can serve as an example for other administrative units when developing their own assessment approaches. We suggest that the value of such assessments in guiding vegetation management within critical habitat can be enhanced by spatially identifying locations where restoration objectives and northern spotted owl habitat objectives converge, are in conflict, or simply are not an issue (see, *e.g.,* Davis *et al.* 2012, entire)." (p. 287)

"Spies *et al*. (2012, entire) to help prioritize actions and consider tradeoffs such as northern spotted owl conservation, restoration of ecological conditions, and other land management goals. Given the wide geographic area of this critical habitat designation and the variety of landscape conditions and fire regimes, more precise planning and implementation should be done at the appropriate landscape scales such as the National Forest scale, consistent with the goals of the Northwest Forest Plan." (P. 549)

"The landscape assessment approach for the East Cascades provides the best basis for development of strategies to manage dry forest landscapes. Products of the landscape assessment can be used to describe the rationale for management actions. The Service is available to work with land managers to assist in the development and implementation of landscape assessments, but this rule does not mandate any specific management within the critical habitat network, which would be beyond the scope of this rulemaking." (p. 559)

"The BLM is revising its resource management plans for its western Oregon districts in part because of new science related to forest resiliency that was brought forth in the Revised Recovery Plan. Thus, Federal agencies seem to be starting to implement discretionary measures described in the Revised Recovery Plan, but it is too early to foresee the extent to which these recommendations will be applied." (EA p. 48)

"The BLM is beginning another revision of their resource management plans(BLM 2012), in part because of new science related to forest resiliency that has been applied in the northern spotted owl Revised Recovery Plan. BLM announced their notice of intent to develop an Environmental Impact Statement on March 9, 2012 (77 Fed. Reg. 14414), with scoping concluding on June 7, 2012. Though still in the very early stages of planning (that is, just concluding scoping) BLM has indicated a shift towards use of ecological forestry actions to further northern spotted owl conservation. While this action may likely benefit northern spotted owls, the extent and degree to which their resource management plans direct the implementation of these actions, and potentially other recommendations from the Revised Recovery Plan, is not reasonably foreseeable. As details of these actions develop, they will be subject to NEPA

analysis, as will the individual projects implemented under these revised resource management plans; more specifics will be available in those analyses to more accurately determine effects." (EA p. 142)

"While the Forest Service still continues to operate under the NWFP within the range of the northern spotted owl, the Okanogan-Wenatchee National Forest is undergoing a revision of their land use management plan. This forest covers over 4 million ac in the eastern Washington Cascades, and most of it overlays the range of the northern spotted owl. The forest has a proposed action (USFS 2011) and is in the process of developing their draft Environmental Impact Statement, which is due out the first half of 2013. Key features of their proposed action relevant to spotted owl critical habitat are:

(1) A shift in focus from commodity production to ecosystem restoration.

(2) Addressing spotted owl recovery and better integrating habitat conservation with disturbance processes, climate change, and barred owl establishment by moving from smaller scale analyses and projects to incorporating a landscape-scale approach. The forest proposes managing habitat across the landscape, rather than limited to reserve areas, in configurations that are most likely to be, "sustainable, appropriately connected, and most resilient to changing climatic conditions." (USFS 2011, p. 39).

(3) Managing for spotted owl habitat, at the forest-wide scale, on 30 to 75 percent of the habitat capable lands, depending on forest type. Seventy-five percent of the habitat would be within a 1.8 mile radius of a northern spotted owl activity center.

The Forest's proposed action, as described above, mirrors recommendations from the Revised Recovery Plan for northern spotted owl conservation in dry-forest ecosystems and may provide additional conservation benefit to northern spotted owls. However, the forest is still developing their draft Environmental Impact Statement and it remains to be seen whether and to what degree these features are included in the final management plan. As details of these actions develop, they will be subject to NEPA analysis, as will the individual projects implemented under the revised forest plan; more specifics will be available in these analyses to more accurately determine effects." (EA p. 142-143)

"202. We note again that which of these scenarios, or combinations of these scenarios, comes to pass is largely dependent on the approaches undertaken by the land management agencies and the cooperative section 7 processes between the Forest Service or BLM and the Fish and Wildlife Service. Both the Forest Service and the BLM manage their timberlands under the direction of the NWFP, which includes provisions for management both within and outside of reserved areas. Inside reserves, the Service believes that the guidance for development of late-successional forest characteristics is consistent with recommendations for implementing ecological forestry methods to benefit the retention and development of spotted owl habitat. In the non-reserved, or the Matrix, portion of the landscape which these agencies manage, the NWFP provides minimum levels and sizes of standing trees that must remain post-harvest, depending on specific location within the range of the species. The NWFP does not, however, mandate that retaining only these minimum levels of retained trees is necessary. Indeed, in the past decade, the BLM and Forest Service have shifted their timber management emphasis in the Matrix from a regeneration harvest dominated program to one more focused on thinning prescriptions that leave more trees per acre than the minimums allowed under the NWFP. Since both the BLM and Forest Service have a track record of planning and implementing these thinning sales, the Service believes there will be a smooth transition to designing and implementing timber sales that are consistent with the ecological forestry recommendations in the Revised Recovery Plan and the proposed critical habitat designation and with the green-tree retention levels of the NWFP. We mention, however, that the timing

of this implementation is uncertain. Thus, Scenario 1 may be more representative of likely outcomes in the near term." (ECON p. 4-36 – 4-37)

"(2) Potential for Future Revision of Management Plans
(a) Forest Service. The Forest Service has begun the process of revising its Land and Resource Management Plans (which outline the management of, usually, individual National Forests) with the Wenatchee-Okanagan National Forests, and has plans to continue these revisions through most of the range of the spotted owl in the coming decade or more. These revisions could modify the current land-use allocations (e.g., change late-successional reserve to matrix), which could greatly alter both the intended management on those specific areas and also the effect of having designated critical habitat within those areas. It is not possible for us to predict where or how these changes will align with the proposed revised spotted owl critical habitat, except to assume areas of designated critical habitat will continue to be in some sort of reserve or conservation-management status.
(b) Bureau of Land Management. In 2008, the BLM revised its resource-management plans for western Oregon (where the large majority of its lands occur within the range of the spotted owl). Due to legal challenges, the BLM announced on March 9, 2012 that it was initiating the revision of their resource management plans in western Oregon. While we expect BLM to take into account the final critical habitat designation, it would be premature to predict the how management goals and objectives in their revision (including any potential land allocations) would correspond to spotted owl critical habitat. Until these revisions are complete the BLM will be managing their lands within the range of the spotted owl under the NWFP (per solicitor's email)." (ECON p. B-18 – B-19)

Post-Fire Forest Management

Stronger emphasis is needed on changes to post-fire management and restrictions on post-fire logging in owl habitat. While the Recovery Plan offers guidance to the agencies to this effect, only through the Section 7 consultation process can better management that deemphasizes post-fire logging become the norm. The result should be accelerated formation of high-quality owl habitat and nesting structures or multiple cavity-nesting species of conservation concern.

"Under the NWFP, post-fire salvage can occur in the Matrix, AMAs, and, to a much more limited extent, in LSRs (USDA and USDI 1994a, b). In areas where management is focused on development of spotted owl habitat (e.g., critical habitat), the Revised Recovery Plan (Recovery Action 12) recommends managing post-fire areas for, "conserving and restoring habitat elements that take a long time to develop (e.g., large trees, medium and large snags, downed wood)" (USFWS 2011a, p. III-49). Again, it is too early in the implementation of the recovery plan to know the extent to which this recommendation will be applied by the agencies." (EA p. 48)

"Under the auspices of the Revised Recovery Plan's Recovery Action 12 recommendation, critical habitat designation could shift post-fire salvage management guidelines in the matrix from extraction of timber resources to "conserving and restoring habitat elements that take a long time to develop (e.g., large trees, medium and large snags, downed wood)."138 Additionally, under the NWFP, Late Successional Reserves (LSRs) provide for salvage logging after fire events greater than ten acres in size that would likely be inconsistent with this recommendation." (ECON p. 4-5)

"Guidelines for management in LSRs, whether in spotted owl habitat or in younger forest, are generally more restrictive than our management recommendations in the Revised Recovery Plan and those

outlined in the preamble to the proposed critical habitat designation. One exception would include timber management after a fire. The Revised Recovery Plan (Recovery Action 12 (RA 12)) recommends:

In lands where management is focused on development of spotted owl habitat, post-fire silvicultural activities should concentrate on conserving and restoring habitat elements that take a long time to develop (e.g., large trees, medium and large snags, downed wood).

In the NWFP LSRs provide for salvage logging after fire events greater than 10 acres in size that would likely be inconsistent with RA 12, identified above. Otherwise, we don't anticipate requesting any project modifications to proposed projects in LSRs. While we do not expect that substantive changes to a project would be required to avoid adverse modification to critical habitat, in LSRs that are occupied or assumed occupied by the spotted owl the critical habitat designation will trigger an adverse modification analysis in addition to the baseline jeopardy analysis. As referenced above, the cooperative nature of inter-agency consultations makes jeopardy and/or adverse modification determinations for the spotted owl extremely rare. By minimizing the impacts of proposed projects to the spotted owl and its habitat we believe it is likely we've also minimized the impacts to the proposed critical habitat network, since many (but not all) of the minimization actions overlap both the species and its important habitat. Therefore, we expect the addition of an adverse modification analysis to both existing and future consultations to be a relatively minor administrative burden of an additional 4-6 hours per consultation between all Federal staff working on the consultation." (ECON p. B-10)

Forest Service and Bureau of Land Management Ask That Matrix be Exempt

It is of concern that the Forest Service and BLM asked that matrix lands be excluded from the Critical Habitat designation in light of the Final Owl Recovery Plan that indicates high-quality owl habitat in the matrix must be conserved.

"Formal comments from the Forest Service requested that we consider large numbers of specific areas to be removed from, or added to, critical habitat, submitted to us in the form of GIS data. This proposal would have greatly reduced matrix lands in moist forest areas (Western Cascades, Oregon Coast Range, and North Coast Olympics) and eliminated Adaptive Management Areas and Experimental Forests from critical habitat. In addition, BLM requested removal of approximately 300,000 acres of selected BLM lands in western Oregon.

Population modeling results for Composite 8 indicated that many of the lands proposed for removal were essential to conservation of the northern spotted owl because the rangewide population declined by 39 percent and population risk increased by 44 percent. To bring the spotted owl population results back up to levels comparable to proposed critical habitat, the final critical habitat designation includes areas recommended by those agencies for elimination (and that had been removed in our test of Composite 8) because we determined they are essential to the conservation of the species." (p. 60-61)

"Overall, about 318, 296 acres of BLM and USFS lands were removed from critical habitat, 74 percent (236,887 acres) of which were matrix lands of relatively lower value to northern spotted owls." (p. 62-63)

Forest Service Request for 20% More Logging and Regeneration

We see no ecological benefit and likely harm resulting from the Forest Service push for 20% additional logging in the region, and the prospect the agency will begin clearcutting as the BLM is proposing to do. Volume driven logging undermines valid restoration and promotes unsustainable practices.

> "The U.S. Forest Service questioned the DEA assumption about the distribution of timber harvested from Federal lands, and stated that the average estimated annual yield per acre may understate actual timber harvest, as well as the assumption that USFS harvest projections include only thinning activities and do not anticipate future regeneration harvest activities." (p. 659)

> "The DEA based FS Region 6 projections on historical timber harvest quantities provided by USFS. Therefore, planned changes to timber harvest were not contemplated. To address this uncertainty in the amount of timber that could potentially be harvested in the future (i.e., if changes to timber harvest should occur), the FEA scales existing baseline projections upward to account for a potential 20-percent increase in timber harvest projection on USFS lands. The FEA also revised the language regarding projected timber activities to clarify that they may include both thinning and regeneration harvest." (p. 660)

> "In Region 6, the FY2013 and FY2013 NWFP timber program is expected to increase by 20 percent in terms of acres and volume. USFS also disagrees with the assumption that —USFS harvest projections include only thinning activities and do not anticipate future regeneration harvest activities (page 4-18)." (p. 660)

> "USFS: Information provided by USFS Region 6 suggests that projections based on historical timber harvest may underestimate future levels of timber harvest. Specifically, the Region 6 timber program is endeavoring to increase production in FY 2013 and FY 2014.165 USFS will undertake future actions related to the use of active forest management targeting a 20 percent increase in terms of timber harvest volume and acres. Therefore, we contemplate a sensitivity analysis in which the baseline timber harvest accounts for a 20 percent increase in USFS Region 6 relative to historical yields." (ECON p. 4-38)

O & C Lands

We remain concerned about proposals to privatize or manage federal forests as though they were industrial lands. A letter was recently sent go Governor John Kitzhaber by a coalition of conservation groups pointing out that the Northwest Forest Plan requires conservation in these areas, and if they were to be logged, private and state forest lands would likely have to reduce production to compensate.

> "In some areas, for example the O&C lands, our modeling results indicated that those Federal lands make a significant contribution toward meeting the conservation objectives for the northern spotted owl in that region, and that we cannot attain recovery without them." (p. 567)

> "The O&C Act (pertaining to lands in Oregon and California) does not limit the Service's authority to designate critical habitat for the northern spotted owl. The designation of critical habitat is not a land use allocation and does not impose management prescriptions." (p. 583)

Fire Impacts and the Creation of Suitable Owl Habitat

The rule details the owl's life history, but the role of fire in the creation of suitable owl habitat is largely absent. Moreover, the rule repeatedly notes that nesting and roosting habitat are generally characterized by "Large snags and large accumulations of fallen trees and other woody debris on the ground," which typically result from past fires. Then, at the same time the Rule justifies extraordinary active management measures in owl habitat to reduce fire risks; it makes apparently contradictory claims like those below.

Studies by Hanson (2009 and 2010) and Miller (2012) have found that dry forests on the Eastside and in Northern California have not seen an increase in severe, high-intensity fires. Most of the acreage burned has been low to moderate severity with generally beneficial ecological effects. The risk of fire to owls also appears to be exaggerated in the final Owl Recovery Plan and draft Critical Habitat rule.

> "The question of protecting critical habitat from the effects of fire is beyond the scope of this rulemaking." (P. 510)
>
> "Second, there is considerable scientific uncertainty over the risk of fire to northern spotted owl habitat." (p. 599)
>
> "Wildfire Management: NSO habitat is particularly vulnerable to wildfire in drier forest systems, which have experienced recent wildfire losses that have exceeded the range of historical variability.35 Some habitat losses resulting from increased wildfire frequency, intensity, and size can be attributed to excessive fuel buildup resulting from many decades of fire suppression. Fire management activities that benefit the NSO may include modified fuel reduction and fire suppression practices." (ECON p. 1-7)

Current and Past Timber Harvest Listed as a Threat

Nearly all of the subunits proposed for designation managed by federal agencies had current timber harvest listed a significant threat to the species. It is of concern that FWS continues to forcefully promote active management, i.e. logging in owl critical habitat, when timber harvest continues to be such a major and prevalent threat to the species in <u>nearly every single designated subunit</u>.

> "Threats in this subunit include current and past timber harvest;" (p. 190, 191, 192, 193, 196, 197, 199, 200, 201, 208, 209, 211, 212, 214, 216, 217, 218, 219, 220, 221, 223, 224, 225, 227, 228, 229, 230, 231, 232, 234, 235, 236, 238, 239, 241, 242, 243, 244, 245, 247, 248, 250, 251, 252, 253, 254, 255, 257, 258, 259, 261, 262, and 263.)

Adverse Modification

This provision remains of concern because it allows for the adverse modification of habitat resulting from active management.

> "Under the statutory provisions of the Act, we determine destruction or adverse modification on the basis of whether, with implementation of the proposed Federal action, the affected critical habitat would continue to serve its <u>intended conservation function or purpose</u> for the species." (p. 265)
>
> "The key factor involved in the destruction/adverse modification determination for a proposed Federal agency action is whether the affected critical habitat would continue to serve its intended conservation function or purpose for the species with implementation of the proposed action after taking into account any anticipated cumulative effects (USFWS 2004, in litt. entire). Activities that may destroy or adversely modify critical habitat are those that alter the physical or biological features to an extent that appreciably reduces the conservation value of critical habitat for the northern spotted owl." (p. 267)
>
> "In general, we would anticipate that management actions that are consistent with the overall purpose for which a critical habitat unit was designated would not likely destroy or adversely modify critical

habitat as those terms are used in the context of section 7(a)(2) of the Act. Such actions include activities whose intent is to restore ecological processes or long-term forest health to forested landscapes that contain northern spotted owl habitat, such as those actions described in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) and elsewhere in this document. However, each proposed action will be considered on a case-by-case basis." (p. 269-270)

If the effects of the project have more than an insignificant or discountable impact on the ability of the PCEs to provide life-history functions for the northern spotted owl, then the project is likely to adversely affect northern spotted owl critical habitat, and formal consultation is warranted.

…the determination of whether an action is likely to destroy or adversely modify critical habitat is made at the scale of the entire critical habitat network. However, a proposed action that compromises the capability of a subunit or unit to fulfill its intended conservation function or purpose could represent an appreciable reduction in the conservation value of the entire designated critical habitat. Therefore, the biological opinion should describe the relationship between the conservation role of the action area, affected subunits, units, and the entire designated critical habitat." (p. 277)

"As described above, in general, we do not anticipate that activities consistent with the stated management goals or recommended recovery actions of the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011, Chapters II and III) would constitute adverse modification of critical habitat, even if those activities may have adverse effects in the short term, if the intended result over the long term is an improvement in the function of the habitat to provide for the essential life-history needs of the northern spotted owl. However, such activities will be evaluated under section 7, taking into account the specific proposed action, location, and other site-specific factors." (p. 293)

"Each situation should be considered on a case-by-case basis, but, generally, actions that have short-term negative impacts may be consistent with the recovery needs of northern spotted owl when the intent of the action is (1) to improve long-term conditions for the species or (2) to improve the overall condition of the ecosystem. It could be argued either that where populations are greatly depressed there is more need for these actions or, conversely, that there is less flexibility to conduct these actions depending on the specifics of the action and the habitat needs of the owl in that area." (p. 558-559)
"Consequently, project modifications as a result of critical habitat designation may only occur on those portions of the Matrix and AMA that is either younger forests or unoccupied by spotted owls (IEc 2012). The economic analysis calculated the portion of Matrix and AMA that could be affected based, in part, on an assumption that 6.5% of these lands would be unoccupied by northern spotted owls (IEc 2012)." (EA p. 54-55)

Consultation

We remain concerned that current FWS consultations are not adequately protecting Northern Spotted Owl and Marbled Murrelet habitat. We appreciate the direction provided below and urge that FWS adopt a moratorium on the elimination of owl and Murrelet habitat on federal lands.

"Habitat-manipulation projects within unoccupied habitat often trigger formal consultation because of the impacts to the recovery potential of the species, dispersal, and reduced segregation from barred owls; however, in unoccupied spotted owl habitat outside of LSRs the designation of critical habitat may have more of an impact on the design of proposed timber sales. The NWFP guidelines anticipated that most of the timber volume from Federal land would come from these lands, although some provisions

(e.g., downed wood and leave trees) were included to assist species remaining after harvest. Since critical habitat is designated to help conserve (recover) the species, the designation of critical habitat in unoccupied spotted owl habitat may result in the Service requesting that timber sales in these areas be designed to help retain existing habitat and speed the development of spotted owl habitat and late-successional characteristics (including after wildland fire) instead of to maximize the extraction of timber. These ecological-forestry techniques may include smaller pockets of tree removal to create openings, but they would likely be significantly different than a traditional matrix timber-harvest prescription." (ECON p. B-11 – B-12)

"(5) Potential project modifications
(a) Due to the presence of the listed species. The spotted owl protections and minimization and conservation measures triggered by the consultation process (which largely occur during the pre-consultation phase consistent with our streamlined-consultation guidance) include such parameters as:
Restrictions on the timing of activities to avoid disturbing spotted owls during critical nesting periods;
Planning timber sales to avoid existing spotted owl sites;
Planning timber sales to minimize the likelihood of exacerbating barred owl and spotted owl interactions, particularly at existing spotted owl sites;
Minimizing the impacts to existing spotted owl nesting, roosting, and foraging habitat at the localized scale and dispersal habitat at the landscape scale (including overall connectivity between populations); and
Following the recommendations of the Revised Recovery Plan for the Northern Spotted Owl, including conserving known spotted owl sites, retaining older, more-complex stands on the landscape, and following ecological-forestry techniques when conducting timber harvest in areas important to spotted owls. Due to the conservation mandate of critical habitat, our recommendations on actions in critical habitat in the matrix would likely be to change the focus from timber production to development of spotted owl habitat. Following the Revised Recovery Plan¡¦s RA 12 recommendation, our recommendations for post-fire salvage management would potentially shift from extraction of timber resources to ¡§conserving and restoring habitat elements that take a long time to develop (e.g., large trees, medium and large snags, downed wood).¡¨ The incremental effects would not be dependent on the occupancy status of the stands.

The above measures may be applied in areas known or assumed to be occupied by spotted owls, or in areas of suitable habitat whether occupied by spotted owls or not, and may result in the action agency modifying its proposed action." (ECON p. B-14)

Comments from Peer Reviewers

A review of the peer reviews indicates that there isn't real scientific consensus on how to manage forests within the range of the Northern Spotted Owl, there are currently no studies showing owl populations benefit from active management, and there are numerous studies showing potential harm to the owl, its prey based, and to other list species.

<u>Active Management</u>

"Reviewers were divided on the risks posed by climate change and forest health, and whether active management should be applied within critical habitat." (p. 491)

"Three reviewers disagreed with some of the science that was cited, or the interpretation of that science, and noted that the discussion did not adequately address studies that have documented negative effects of timber management on northern spotted owls and their prey." (P. 494)

"Four reviewers indicated that parts of the document were unclear on whether ecological science was applied appropriately, and highlighted the lack of understanding about how such management actions may affect owls and their prey. Two reviewers specifically indicated that they did not think that approach is appropriate." (P. 494)

"Five reviewers believed that the risks were not appropriately balanced, that the discussion was too vague in weighing the tradeoffs, or that there is too little specific scientific understanding of the explicit tradeoffs to conduct an informed discussion. Several of these reviewers indicated that there was too much emphasis on active management in the preamble to the proposed rule given the lack of understanding about how ecological forestry and restoration management might affect owls." (P. 495)

<u>Matrix Protection</u>
"Eight reviewers addressed this question, and all agreed that inclusion of matrix lands in critical habitat was supported. One reviewer noted that the barred owl issue needs to be addressed (see response to *0* for detailed discussion of this issue), and another reviewer was surprised that all habitat-capable lands in the western portion of the species' range were not included in critical habitat (see *0* for a more detailed discussion of this issue)." (p. 493)

Marbled Murrelet

Other listed species may also be harmed by the proposed active management such as the Marbled Murrelet. The draft Rule's Environmental Assessment found that "Active forest management that is in the vicinity of murrelet nesting stands may be detrimental to the species survival and recovery." (p. 61)

This results from increased fragmentation and opening the forests to crows, ravens, and jays, increasing predation pressure on nesting murrelets. Despite this, there was no prohibition in the final Rule on the proposed active management to ensure murrelet nesting stands will not be disturbed, and notably, the fact that active management may be detrimental to Murrelet nesting stands was not mentioned.

Active management, if conducted near nesting murrelets will likely be harmful. There are also indications the prey base of the Northern Spotted Owl could also be harmed by active management including thinning, but these factors are glossed over by the final Rule. And unlike the Northwest Forest Plan, there is no detailed analysis how other listed species will fair under the active management being proposed by the Rule.

We appreciate the concern expressed for the Murrelet and potential implications if its critical habitat is vacated. We are discouraged however, by the lack of discussion on potential negative consequences for the Murrelet of active management in owl habitat, and how adverse modification of owl habitat is in fact allowed by the Rule, and will not afford the Murrelet additional protection in that circumstance.

"Currently 1,735,900 ac of the 2008 northern spotted owl critical habitat designation overlays critical habitat designated for the marbled murrelet. Critical habitat for the marbled murrelet is currently under litigation and may be vacated (see section 3.4.4 Cumulative Impacts). Should vacature occur, the nesting habitat components for marbled murrelets would generally be protected through avoidance or adverse modification of spotted owl PCEs in those areas where marbled murrelet critical habitat overlaps the 2008 spotted owl critical habitat. This 1.7 million acres of overlap will be a baseline from which to compare other alternatives to determine the amount of existing marbled murrelet critical habitat that

may continue to be afforded incidental protections as a result of avoiding adverse modification of spotted owl critical habitat." (EA p. 90)

"Most of the PCEs for nesting habitat under this alternative (e.g., moderate to high canopy closure; multi-layered, multi-species canopy with large overstory trees; and a high incidence of large trees with various deformities) provide structural features that also meet the nesting structure needs of marbled murrelets. However, in some parts of the spotted owl range, PCEs that provide for foraging in the form of dense shrub and hardwood openings, or low density patches of forest, particularly in the Klamath, Northern California Interior Coast Ranges, and Redwood Coast Critical Habitat Units, may not be conducive to murrelet nesting habitat (See Section 2.2.1 Primary Constituent Elements). These vegetation pockets open up forest canopies and fragment the landscape for murrelets, inviting corvids (e.g., crows, ravens, and jays) and increasing the predation pressures on nesting murrelets, reducing the ability of this species to reproduce (Nelson *et al.* 2006). In these areas, protection of spotted owl foraging PCEs from destruction or adverse modification may not necessarily protect some of the habitat attributes required by nesting marbled murrelets. Nevertheless, avoiding adverse modification of spotted owl critical habitat may benefit marbled murrelets overall. Spotted owl critical habitat under this alternative overlaps 2,548,700 ac of marbled murrelet critical habitat. This is a 812,800 ac increase in overlap compared to the No Action Alternative. Should vacature of marbled murrelet critical habitat occur, the nesting habitat components for marbled murrelets would generally be incidentally protected through avoidance or adverse modification of spotted owl PCEs in the approximately 2.5 million acres where marbled murrelet critical habitat overlaps critical habitat designated for the spotted owl under this alternative. However, the specific effects to murrelets are not reasonably foreseeable because the specific responses by managers to critical habitat designation are not reasonably foreseeable (See section 3.1.2.2 Alternative B)." (EA p. 94)

"Critical habitat designated for the marbled murrelet, is currently under litigation. On Jan. 25, 2012, plaintiffs American Forest Resource Council, Carpenters Industrial Council, and Douglas County, Oregon, filed suit in Federal district court, in part, challenging the rule designating marbled murrelet critical habitat. American Forest Resource Council v. Ashe, Civil No. 12-111-JDB (D.D.C.). On Aug. 20, 2011, the Service and the plaintiffs filed a joint motion for entry of a consent decree under which the Court would remand the murrelet critical rule to the Service for reconsideration, and the rule would be vacated pending completion of the remand. As of this writing, the Court has not ruled on this motion. Should the motion be granted, this would result in the removal of critical habitat for the marbled murrelet on the landscape until the Service completes a revision of the rule. Effects of such an action would be a reduction in murrelet habitat protection by removing the requirement for Federal agencies to not destroy or adversely modify critical habitat. Protection for most of the critical habitat PCEs for nesting spotted owl habitat under all action alternatives (e.g., moderate to high canopy closure; multi-layered, multi-species canopy with large overstory trees; and a high incidence of large trees with various deformities) through avoiding their destruction or adverse modification may provide structural features that also meet the nesting structure needs of marbled murrelets. Thus, critical habitat designation for the northern spotted owl may provide some ancillary benefits to marbled murrelets. However, in some parts of the spotted owl range, PCEs that provide for foraging in the form of dense shrub and hardwood openings, or low density patches of forest, particularly in the Klamath, Northern California Interior Coast Ranges, and Redwood Coast Critical Habitat Units, may not provide features beneficial to nesting murrelets. These vegetation pockets open up forest canopies and fragment the landscape for murrelets, inviting corvids (e.g., crows, ravens, and jays) and increasing the predation pressures on nesting murrelets, reducing the ability of this species to reproduce (Nelson et al. 2006). In these areas, protection of some spotted owl PCEs through the avoidance of adverse modification may not provide the

habitat attributes needed by nesting marbled murrelets. Should the motion for remand of marbled murrelet critical habitat be granted, the protections of marbled murrelet critical habitat would not be in place in these areas. However, where spotted owl critical habitat overlaps murrelet critical habitat, it may provide incidental protections to habitat attributes necessary for nesting marbled murrelets through the avoidance of destruction or adverse modification of spotted owl PCEs that also support nesting murrelets.

The current designation of spotted owl critical habitat overlaps 1,735,900 ac of marbled murrelet critical habitat. All Action Alternatives result in an increase in overlap of marbled murrelet habitat compared to the No Action Alternative, ranging from a minimum of approximately 2.1 million ac of overlap for Alternative E, to a maximum of approximately 2.5 million ac for Alternative B. Thus, even if the vacature of marbled murrelet critical habitat occured, compared to the No Action Alternative, all action alternatives provide an increase in the area of incidental protections that may be afforded to marbled murrelets through the avoidance of destruction or adverse modification of critical habitat for spotted owls, and would generally benefit murrelets. Even in those areas outside of critical habitat, the marbled murrelet would continue to be protected under section 7 (Federal actions must avoid jeopardizing the species) and section 9 (prohibition of take of the species without a permit) of the ESA. That is, habitat that is currently occupied will be protected through the consultation process and jeopardy analysis for actions with a Federal nexus (section 7 of the ESA), and the ESA section 9 prohibitions against "take" and the incidental-take-permitting process will also protect both occupied and unoccupied habitat." (EA p. 143-144)

Northern Spotted Owl

We appreciate the hard work that went into the modeling effort and the development and completion of this rule. Despite some flaws and uncertainties, the rule offers renewed hope that the Northern Spotted Owl can be saved from extinction.

"Spotted owl population modeling results for this alternative (northern spotted owl population size of 3,224 females at year 350, and extinction risk of 3 percent of simulations with populations below 1,000 individuals) (Figures 20 and 21) indicate better population performance as compared with the No Action Alternative, and similar performance as compared with the Proposed Action (Alternative B)." (EA p. 106)

ABC Letter in Support of Listing California Spotted Owl and Applying Research Findings to Northern Spotted Owl

February 20, 2015

Doug Krofta
Chief, ESA Listing

U.S. Fish and Wildlife Service
Washington, D.C. 20240

Dear Mr. Krofta,

American Bird Conservancy (ABC) is writing in regard to the petition to the list the California Spotted Owl as threatened or endangered submitted by the Wild Nature Institute and John Muir Project of Earth Island Institute. ABC agrees that a review of the best science and current management practices reveals that the petition has merit and should be considered by the agency.

The petition argues that current land management strategies in California Spotted Owl habitat under the 2004 Sierra Nevada Framework are at the root of continued population declines. The evidence from a significant number of scientific studies cited within the petition is compelling and we urge its consideration.

Recent findings indicate that low and moderate severity fires are not a threat to California Spotted Owl populations, and that owl populations are declining in areas where there is post-fire logging and mechanical fuels treatments. Post-fire logging has been shown to be particularly detrimental to all three owl subspecies' populations by causing abandonment of burned areas that might otherwise remain occupied. The only areas where California Spotted Owl populations are stable are in National Parks.

Information on impacts to the California Spotted Owl should also be considered across the entire range of the species regarding management decisions affecting habitat of the threatened Northern and Mexican Spotted Owl. Based on recent studies, we anticipate current management will lead to a decline of Northern Spotted Owl populations. This comes at a critical population bottleneck for the northern subspecies resulting from historic and ongoing loss of habitat. The Northwest Forest Plan predicted it would not be for another 30 years that sufficient habitat would grow back into large blocks to see owl populations begin to recover.

The invasion of Barred Owl into Spotted Owl's range requires a higher level of protection than previously projected, and more than is being currently afforded by the critical habitat rule's adverse modification policy and post-fire logging of mature and old-growth forests that maintain important biological legacies for owls and a host of prey species found in the ensuing complex early seral and unsalvaged habitat. These activities threaten to undermine the functionality and future extent of the late-successional reserve network envisioned by President Clinton's Northwest Forest Plan.

Risk of fire to the Spotted Owl is being overstated in the Mexican Spotted Owl Recovery Plan, the Northern Spotted Owl Recovery Plan and Final Critical Habitat Rule and the Sierra Nevada Ecosystem Framework of 2004 and aggressive fuels treatments in owl habitat may be counterproductive to recovery. That is because projects now being undertaken in the name of fire prevention in Spotted Owl habitat are often harmful to the owls and require take.

For that reason, we respectfully urge FWS to reexamine this policy and for the land management agencies to avoid Spotted Owl take pending completion of an updated analysis.

We look forward to working with you and the FWS staff to conserve and recover the Spotted Owl.

Sincerely,

Steve Holmer
Senior Policy Advisor
American Bird Conservancy

Cc: Michael Bean, Principal Deputy, Fish, Wildlife and Parks, Department of the Interior
Robert Bonnie, Undersecretary for Natural Resources and the Environment, Department of Agriculture
Tom Tidwell, Chief, U.S. Forest Service
Neil Kornze, Director, Bureau of Land Management

Summary of Wild Nature Institute and John Muir Project Petition

A fundamental premise of the listing petition is that new information merits revisiting the 2006 FWS decision to not list the subspecies based on uncertainties over its population size and response to wildfire and forest management. As the petition notes: "The CSO was denied protection in 2006 based on the assertion that fire represented the primary threat to its survival, and the threat was being addressed by Forest Service actions."

Analysis of demographic data of five California Spotted Owl populations concludes that since 2006 four out of the five populations' studied are declining. The other population, which inhabits National Parks is stable. Other studies published since 2006 indicate the owls are well-adapted to low and moderate severity fire, and that post-fire logging is likely to be the driver of owl population declines.

There is only an estimated population of the CSO based on the number of known occupied sites. In 2006 there were approximately 1,200 – 1,700 pairs. The demographic study estimates a 10-15% decline since that time so ABC estimates the current population is approximately 1,100 – 1,600 pairs.

The demographic data collection was initiated in the late 1980s and early 90s to estimate the subspecies population. The petitioners reviewed the results of multiple analysis methods to determine population trends in each of the five study areas, Lassen, Eldorado, Sierra, Sequoia-Kings Canyon, and San Bernardino, which total 1.4 million acres.

In two of the study areas in Sierra Nevada national forests, populations have declined approximately 10 percent since 2003 (Conner et al 2013), and the other Sierra Nevada study area has a 20 percent decline (Tempel and Guituerrez 2013, Tempel 2014). Population trends for the Lassen study area showed population declines in 2001, 2010, and 2013 (Blakesley et al, 2001, Blakesley et al 2010, and Conner et al 2013) and Conner et al estimated a 21-22 percent decline over the past 18 years. The Tempel 2014 study found the decline in the El Dorado area was as high as 50 percent from 1990-2012.

Gutierrez et al 2012 confirmed this decline stating "there has been a clear decline in abundance over the last fifteen years." Modeling also indicates that extinction is outpacing colonization leading to reduction in owl sites over time. Tempel and Guitierraz 2013 concluded areas are not being colonized due to habitat alternation.

Keane et al (2012) reported that the Meadow Valley fuels treatment project on the Plumas National Forest conducted from 2006-08. After the logging the number of territorial sites declined from 9 to 4 over a four year period (2007-2011). This was confirmed by Stephens et al (2014) which found a 43% loss of CSO within a few years of mechanical thinning. The authors noted that while the region's overall population is declining, the steep rate of decline in the fuels treatment study area were of "a greater magnitude" than elsewhere on the landscape.

Conner et al 2013 found that the Sequoia-Kings Canyon area analysis indicates a population increase of 16-27 percent over the seventeen year study period. Blakesley et al 2010 reported that at a minimum their analysis showed a stable population with a higher adult survival rate than other study areas. The authors suggested the higher survival rate of adults in the National Park resulted from "differences in habitat quality resulting from differences in forest management both before and during the study period…"

The petitioner's conclude on page 92 that: "the only area in the Sierra Nevada in which California spotted owl populations are known to be stable or slightly increasing is an area with an active mixed-severity fire regime and no mechanical thinning or post-fire logging (Sequoia/Kings-Canyon National Park), while all study areas on national forests and private lands (characterized by aggressive reduction of fire due to fire suppression, landscape-level mechanical thinning, and common post-fire logging) have declining populations (Conner et al. 2013, Tempel and Gutiérrez 2013, Tempel 2014, Tempel et al. 2014a). These findings indicate that mixed-severity fire (which includes a high-severity fire component) is, on its own, not a significant threat to California spotted owls. Instead, management activities that follow mixed-severity fire (post-fire "salvage" logging), or are conducted ostensibly to "save" owls from higher-severity fire (mechanical thinning), are primary threats to the owl."

The San Bernardino population declined at a 9 percent rate from 1987 to 1998 (LaHaye et al 1999). The region had extensive logging on private lands and the San Bernardino National Forest in response to a bark beetle outbreak.

Other studies have looked into the effect of habitat alteration. Seamans and Guitierrez (2007a) found the probability of territory colonization decreased, and territory occupancy decreased in areas with as little as 40 acres of logging. Bias and Guitierrez (1992) attributed low use of private timberlands by roosting and nesting CSOs to sanitation and high-grade logging that removed potential nest trees.

Clark et al (2013) concluded: "Our results also indicated a negative impact of salvage logging on site occupancy by spotted owls. We recommend restricting salvage logging after fires on public lands within 2.2 km of spotted owl territories (the median home range size in this portion of the spotted owl's range) to limit the negative impacts of salvage logging."

A 2012 Forest Service study (Lee et al) examining 11 years of CSO breeding season survey data from burned and unburned forests found no significant effects of fire on probabilities of local extinction and colonization. Roberts (2008) and Robert et al. 2011 found many Spotted Owl sites continued to be occupied and reproduced successfully after fire burned portions of their home ranges and core area, and Roberts (2008) also found a higher reproduction rate in mixed-severity burn areas over unburned areas. Williams et al (2011) found that owl home ranges in burned areas are similar to unburned areas. Jenness et al (2004) found that numbers of successfully reproducing Mexican Spotted Owls territories did not statistically differ between burned and unburned forests.

In addition, management prescriptions to prevent fire, risk turning viable habitat into areas with less than 40 percent canopy cover which owls are likely to abandon. Under the Defensible Fuel Profile Zones and Strategically Placed Area Treatments, canopies are reduced the 40 percent cover, the minimum usuable by Spotted Owls. Gallagher (2010) found owls avoided foraging in these treatment areas. Bond (2009) found that Spotted Owls forage in all burn severities, and that owls have a slight preference for feeding in burned areas over unburned areas, and unlogged areas over logged forests.

Under the 2004 Framework, the Forest Service is defining suitable habitat too narrowly, automatically disqualifying burned areas even if owls continue to occupy the site. Despite exposure of agency wrongdoing by an Associated Press expose by Scott Sonner in 2004, the agency continues to assume burned habitat, particularly high-severity burn areas, are a complete loss as owl habitat, and therefore, can be opened to logging. This is a result of the 2004 SFNPA that states areas with stand replacing fires can be removed from Protected Activity Centers.

On page 100 the petition notes: In the Power Fire area and the Freds Fire area, the 2004 Sierra Nevada Forest Plan Amendment allowed the Forest Service to treat the higher-severity fire areas within the pre-fire PAC boundaries as being lost/unsuitable, which not only opened the PACs to post-fire logging, but also allowed the Forest Service to misleadingly claim that "0" acres of "suitable habitat" within the PACs would be salvage logged (Bond 2011).

Current policy also promotes landscape level mechanical thinning in spotted owl habitat, even allowing such activities in PACs and HRCAs. As noted above, the 2004 plan also promotes post-fire logging of owl habitat, assuming that it no longer habitat, and mechanical thinning, despite evidence this is causing severe harm to California Spotted Owls. As the petitioners note on page 95:

"Tempel et al. (2014b) found that mechanical thinning is significantly harming California spotted owls. The authors found that the amount of mature forest with high canopy cover (70–100 percent) was a critical variable for California spotted owl viability (survival, territory extinction rates, and territory colonization rates), and determined that "medium-intensity" logging—mechanical thinning under the 2004 Amendment, and earlier prescriptions generally consistent with the 2004 Amendment— significantly adversely affects California spotted owls at all spatial scales by targeting dense, mature forests with high canopy cover, degrading the quality of such habitat by reducing it to moderate canopy cover. This is adversely affecting California spotted owl reproduction (Tempel et al. 2014b)."

The evidence of negative impacts to owls from post-fire logging is of particular concern. Lee et al. (2012) report that mixed-severity (averaging 32 percent high-severity fire effects) did not reduce CSO occupancy. However, sites that were also post-fire logged saw complete abandonment.

It is also important to consider the historic loss of CSO habitat as a result of reduced abundance of large, old trees, and a decline in snag density. It will take many decades to restore late-successional conditions, and a change in post-fire logging policy to restore snags and downed woody debris. A review of Sierra Nevada National Parks by the SNEP Report found 55 percent of forests are in late-successional condition, but on other federal lands such conditions are found on only 19 percent of forest lands. Beardsley et al (1999) estimated that old growth forests declined from 45 percent to 11 percent of the landscape since 1945.

There is concern that the Forest Service is ignoring the available scientific literature to continue this management direction which is harmful to CSO. The 2013 forest plan for the Lake Tahoe Basin Management Unit continues to claim still occupied habitat has been "lost" to fire, reduced canopy cover protection for owls,

and allows clearcutting of owl habitat and cutting of large trees over 30-inches. Similarly the scoping document for the three early adapter forests in California promotes mechanical thinning and does not provide any significant protections for CSOs.

Negative Impact of Fire Risk Reduction Needs Further Analysis

There currently is a scientific debate about the role of mixed and high severity fires in providing habitat and nesting structures for Spotted Owls, and the degree to which fire is a threat to owl populations. This debate is a core issue for habitat management of all three subspecies, and aggressive management to reduce fire risk has been incorporated into recovery plans, forest plans, and critical habitat rules.

A number of recent studies (Bond et al, , Ganey et al 2014) indicate owls will forage in moderate and even in high severity burn areas due to an abundance of prey, and that these fires create future nest trees and snags and large wood debris beneficial to owl prey (Baker et al 2012).

Maintaining legacies is essential for future use by owls. North et al. (1999) notes "In our study area, stands with high use by owls typically included many "legacies" that survived a fire or windstorm that destroyed much of the previous stand." So, while fire risk reduction may be necessary to protect human lives and homes, scientific evidence is lacking that it is a critical conservation need of Spotted Owls.

Recovery Action 12 of the Northern Spotted Owl Recovery Plan recognizes this importance and recommends that ALL structures that take a long time to form such as legacies and large downed trees be retained. But post-fire logging projects such as the Douglass Fire Recovery and Westside Fire Recovery Projects propose to log extensive areas of suitable owl habitat and remove these legacies RA 12 says should be retained. In addition to removing suitable habitat, the Douglass Project proposes to directly take 24 Spotted Owls, and the Westside Fire Recovery project, still in scoping, contains over fifty owl activity centers within the proposed logging area.

A January 13, 2015 objection to the Four-Forest Restoration Initiative submitted by Dr. William Baker concludes that "…new science shows parts of the plan and Final EIS are not scientifically supported." Baker found that fire risks are overstated, in part because new habitat resulting from forest succession is not being considered, and recommended that the Final EIS suspend proposed treatments in MSO habitat until adequate analysis is completed.

"USFWS and the scientific community need to undertake needed analysis to accurately estimate fire risk to MOS relative to benefits of mixed- and high severity fire for MSO and rates at which new habitat is being produced by forest succession. During the suspension, it is important to conduct and complete small-scale experiments to determine the effects of thinning on MSO, since nothing is known about this."

Additional Resources

Conservation in the Sierra Nevada: Issues and Recommendations. Sierra Forest Legacy. 2012.
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http://www.sierraforestlegacy.org/NR_SFVoiceNewsletter/SFVN_NewsletterCurrent.php
"*Biologist, others in way of logging plans*," Scott Sonner, Associated Press, August, 2004,
http://www.nbcnews.com/id/5621409/print/1/displaymode/1098/

Forest Brochure Misrepresents Science to Promote Logging Initiative, Union of Concerned Scientists, http://www.ucsusa.org/center-for-science-and-democracy/scientific_integrity/abuses_of_science/a-to-z/forest-brochure.html#.VNPWHNLF9Fg

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Additional Comments on Northern Spotted Owl, Marbled Murrelet, and Bald Eagle

ABC endorses the following comments from Cascadia Wildlands.

Spotted Owls:

WOPR Proposed Actions Common to All Action Alternatives:

"Protect stands of older, structurally complex conifer forest" and "maintain habitat for NSO" In LSR.

*Maintain means keep Nesting Roosting and Foraging Habitat (NRF) and dispersal. (Cites III-15 of recovery plan for management allowed in NRF)
*Maintain NRF, Nesting Roosting and Foraging Habitat defined as multi-layered, multi-species canopy, diameter over 30 inches dbh and canopy cover over 60% and decadence components
*Harvest generally prohibited, but road construction allowed, hazard logging allowed unless it downgrades habitat (NRF to dispersal).
*Fire suppression, fuels reduction, insect and disease logging, or any other logging to promote overall health of stand allowed even if it downgrades or removes habitat.
*No requirement for surveys.

*Alternatives A and C: No protections for spotted owl known or historic sites, no requirement for spotted owl surveys. Entirely based on land allocations.

*Alternative B: Is the same as A, except that the Sub-Alternative will protect known and historic sites within the Harvest Land Base, treating these areas as Reserves.

*Alternative D: Maintains all known and historic sites, like Sub B.

NRF and Recovery Action 32 Habitat: It is unclear from the DEIS, but is NRF habitat now being defined as only multi-layered, multi-species canopy, diameter over 30 inches dbh and canopy cover over 60% and decadence components? Spotted owls can and do nest in forests over 80 years old, even if they have not yet developed full decadence components present in unique old-growth forests like RA 32 habitat. In this new plan and DEIS, is the BLM equating RA 32 habitat to NRF habitat?

Better Comparison with NFP:

Generally, spotted owl management under the Northwest Forest Plan consisted of a land allocation approach (Late-Successional Reserves, Riparian Reserves, etc.) and site specific management. In LSRs, timber harvest was not allowed in stands over 80, and in stands under 80 only thinning was permitted to accelerate growth of the stand. In the Matrix, the agency was required to retain 100 acres of best NSO habitat as close as possible to the nest site or owl activity center as a core. Cores are managed as LSR, even if later unoccupied. Additionally within an owl home range (historic, modeled, or documented), the agency is required to maintain certain percentages of the owl's home range (appx. 1.5 mile radius) and certain percentage of the owl's nest core (appx. .6 miles radius). This maintenance of owl habitat generally required the agency to maintain over 60% canopy cover in the area post-treatment.

Also across the Matrix were Connectivity Blocks, where individual tree retention was higher, and the agency was required to maintain 25% of the best habitat within these blocks. Also within each fifth field watershed, 15% of all Matrix lands had to be late-successional forest to help meet spotted owl needs.

The agency is also required to survey for the species in potential habitat, and abide by recommendations made by USFWS to mitigate or eliminate adverse impacts to the species and critical habitat. The agency is also required to comply with the owl's recovery plan.

Under WOPR, almost every alternative shifts these various layers of protection to one land allocation based approach. But the WOPR analysis is unclear and not specific on the impact of the removal of these various protections. For example, if the BLM retained that 15% standard what would still be protected vs. what would be lost? This side by side comparison specific to former individual protective standards is needed to fully grasp the impact of the proposed changes, and to better analyze which changes would be most beneficial or harmful to the species. Please elaborate on a protective standard by standard basis in the FEIS.

<u>Importance of BLM Lands:</u> As an initial point, it is unclear from the NEPA documents produced by the BLM how important BLM lands are to the northern spotted owl. From the logging numbers and conclusions from the modeling in Appendix S, it appears that the differences in harvest land base allocations and volume to be logged will not make any significant impact on owl habitat or recovery objectives. Accordingly, BLM concludes that the primary role of its lands for the northern spotted owl is connectivity in the "central Klamath," coast province.

But this contradicts the DEIS (p 746), that states that BLM are "indispensable" for the northern spotted owl, and critical for both east-west and north-south dispersion. Given the critical nature of BLM reserves, and the critical dispersal element these lands play, the BLM should choose an alternative or modification of an alternative that maximizes reserve size and maximizes dispersal corridors.

In the agency description of riparian reserve objectives, the contribution of conservation and recovery of species is limited to "special status riparian associated species". Formerly the reserves contributed to dispersal and connectivity corridors for terrestrial species as well.

Riparian reserves were originally designed in part to facilitate spotted owl movement between reserves. Given the BLM's lands indispensable need towards owl connectivity, these riparian dispersal corridors should be increased, but it appears that almost every alternative is moving to shrink these riparian corridors. In fact, in the purpose and need for riparian corridors, benefit to terrestrial species like the northern spotted owl was completely ignored, even though this was one of the primary reasons for this allocation's original creation. The BLM should consider an alternative that increased riparian reserve size and protections in order to benefit dispersal capabilities for the northern spotted owl and other terrestrial species. Also it appears the BLM failed to take a hard look at the terrestrial species benefits that are provided by the riparian reserves, or the potential for these benefits to continue.

Scale of Analysis: We are concerned that the spotted owl's scale of analysis was too broad, and may have eliminated many conservation potential benefits by operating on such a large scale. We understand that this scope of analysis is needed for overall harvest projections and a bigger picture, but more local and detailed analysis is needed to more fully capture impacts to individual owl sites, areas of threatened connectivity, and how to rehab or connect isolated patches of owl habitat.

It is clear from the conservation needs of the spotted owl, spelled out on page 747-48, that all high quality habitat is needed for owl recovery, and all sites need to be protected. We are concerned that the definitions of what is considered high-quality habitat has changed, and may have led to much potential habitat falling through the cracks. Generally under the Northwest Forest Plan, forests over 80 years in age were considered to have developed some older forest characteristics that benefited spotted owls, and was considered nesting, roosting, and foraging habitat (NRF). NRF habitat was considered high-quality owl habitat. It appears that the BLM has not adapted this definition of owl habitat, but has used a more complex metric by factoring in tree height, diameter, canopy cover and a range of other variables that are captured in a rating based on owl selection, i.e. "strongly selected for" or "strongly selected against."

The WOPR NEPA description of the models used for spotted owl habitat are not elaborated upon well. Spotted owl habitat suitability is rated on a 0 to 100 scale (higher numbers indicating better habitat) and the scale is based upon canopy cover, mean tree diameter, and slope. This new metric raises a lot of questions. Exactly what variables were included, and how are they weighted? Were legacy trees accounted for or secondary older cohorts accounted for and how? Additionally, the BLM divided owl habitat into four categories "strongly selected for", "selected for", "selected against", and "strongly selected against." I believe this means that a "strongly selected for" area had a high proportion of northern spotted owl nest locations based on the relative habitat suitability value.

It would be beneficial to the public and our organization to see how this new metric rates against the more simple analysis of stand age. In other words, we would like to know and see maps of how much of the BLM land is over 80 years in age, and how much of this land falls within the different new allocations. We need to see these maps and tables side by side with the new interpretations of owl habitat. How many forests over 80 were lost with this new metric and in what areas, or how many forests were gained based on this new habitat value interpretation?

It was make sense based on the owl's crashing demography that the BLM would err on the side of caution, and use the definition of habitat that would capture the most possible acreage to conserve based on the owl's needs and the indispensable nature of BLM lands to these needs. Additionally, it appears that the BLM excluded habitat that was not in large chunks of certain sizes from its modeling or consideration for conservation. Again it would be nice to see on a map and in tables, how much habitat was lost through these consolidations, and in what areas were they lost. It is a hard reality that much of BLM land in western Oregon is in the checkerboard and highly fragmented, but it would be nice to know that the habitat restoration efforts over the past 20 years were not in vain. Perhaps many of these isolated areas are close to being connected by recovering riparian corridors, or recently thinned forests nearing 80 years in age and attaining mature forests characteristics.

We are worried, that this block defining may have incidentally excluded a good deal of habitat that was formerly the focus of numerous recovery efforts. It would also be beneficial to see maps of where thinning had formerly taken place, so that the BLM could take full advantage and consideration of past restoration efforts. It could be that forests poised to more quickly attain habitat characteristics that would benefit the owl because of restoration efforts, will be lost in the definition shuffle and large scale approach taken by the BLM here.

Appendix S Modeling: The BLM states that it modeled in all potential timber harvest when calculating and modeling effects from the alternatives to the species. They specifically did not include any patches under 10 acres, any forests over 500 meters from a road, any early-seral forest, and any forest logged within 50 years. Page 1484.
We are concerned that BLM also did not account for in the model logging defined as "fire-suppression, fuels reduction, insect and disease control, and other activities needed to protect health of the stand or adjacent stands." This type of logging is permitted in LSRs even if it downgrades or removes spotted owl habitat. Page 938.

We have seen numerous timber sales under the Northwest Forest Plan that have logged extensively, downgrading and removing spotted owl habitat that has been classified as "fire-suppression, fuels reduction, insect and disease control" and almost every timber sale planned is justified as a promotion of stand health.

Based on historic rates of this logging, the BLM needs to anticipate and account for a similar degree of this type of forest activity into the future, and needs to model its impact to the Northern Spotted Owl. BLM's failure to do so fails to satisfy the "hard look" required under NEPA.

Additionally, the modelling for the northern spotted owl appears to have an improper baseline. The No Action Alternative is defined as the existing 1995 RMPs for the various BLM districts. Page 27. However, the models for impacts to Northern Spotted Owl habitat uses a baseline of no timber harvest. Appendix S, Page 1464. This is misleading to the public. Under the existing 1995 RMPs, the BLM was largely focused on restorative thinning projects to expedite the creation of Northern Spotted Owl habitat. By in essence changing the baseline to no timber harvest when analyzing impacts to the owl, the BLM masks the beneficial effect of the thinning regiment because under a no timber harvest baseline, these plantations are going to take much longer to development into taller, larger trees and other metrics the BLM is using to define good spotted owl habitat, or "strongly selected for" spotted owl habitat.
The analysis needs to be consistent with its baseline approach, and the modeling for the Northern Spotted Owl needs to be based upon the current management regime under the 1995 RMPs.

Protection of existing sites:

Generally, Northern Spotted Owl management under the 1995 RMPs consisted of a land allocation approach (Late-Successional Reserves, Riparian Reserves, etc.) and site specific management. In LSRs, timber harvest was not allowed in stands over 80, and in stands under 80 only thinning was permitted to accelerate growth of the stand. In the Matrix, the agency was required to retain 100 acres of best NSO habitat as close as possible to the nest site or owl activity center as a core. Cores are managed as LSR, even if later unoccupied. Additionally within an owl home range (historic, modeled, or documented), the agency is required to maintain certain percentages of the owl's home range (appx. 1.5 mile radius) and certain percentage of the owl's nest core (appx. .6 miles radius). This maintenance of owl habitat generally required the agency to maintain over 60% canopy cover in the area post-treatment. To facilitate this management surveys were required for Northern Spotted Owls, and the BLM was also required to comply with the spotted owl's recovery plan.

It appears in every action alternative that surveys for Northern Spotted Owls are not required. Are spotted owl surveys required for management actions in reserves under the various alternatives? The purpose of creating and protecting these reserves is to protect and recover the Northern Spotted Owl. Thinning efforts that have been occurring for decades in Late-Successional Reserves were done to accelerate the development of spotted owl habitat. Riparian Reserves and dispersal habitat have been maintained to allow spotted owls to recolonize this new habitat, which the BLM models to be extensive in the future in Appendix S.

However, as touched on above, management activities and logging is permitted in the reserves even if it downgrades or removes spotted owl habitat. Surveys should be required for the Northern Spotted Owl for projects in the reserves

because the BLM is not modeling for future owl sites, and we want to protect owls that are recolonizing thinned/restored habitat. This would also be an essential monitoring tool for the species, to determine if indeed the species is recolonizing commercially thinned forests.

In order to satisfy Recovery Action 10 and the mandate to conserve spotted owl sites, the BLM needs to conduct surveys for spotted owls and protect sites that it finds. The BLM states that it will, "[i]n areas of significant population decline, sustain the full range of survival and recovery options for the species in light of significant uncertainty." Page 747. The entire planning area is defined as an area of significant population decline.

Marbled Murrelet:

In the NFP and original BLM RMPs, the agency would survey prior to logging in any potential Marbled Murrelet habitat. If there is any indication of occupancy, the agency would protect a 0.5 mile radius of all contiguous existing and recruitment habitat (stands capable of becoming habitat in 25 years). These areas would be managed as LSR. Recruitment habitat was required to "protected and enhanced" by any silvicultural treatment. (Eugene RMP at 62). WOPR alters this regiment in all alternatives as laid out below. In the preferred alternative, murrelet surveys are restricted to the first 35 miles from the coast, and marbled murrelet habitat generally can extend up to 55 miles inland. Additionally, survey habitat is much more strictly defined as detailed out below. Timber harvest is allowed without surveys if large legacy trees are withheld from harvest and habitat is "maintained."

*Alternative A: No surveys, protect existing sites, seasonal disruption restrictions
*Alternative B: Surveys 35 miles from Coast in "mature or structurally-complex coniferous forest" and "conifer forests under 80 years old with platform trees (must be within 35 miles of coast, conifer, dbh greater than 19.1, over 33 meters tall, potential structure over 10 meters from ground, and contains platform over 4 inches in diameter. If stand occupied protect all occupied habitat plus 300 foot buffer around occupied stand. In stands under 80 with platforms, no surveys needed if platform trees aren't removed; maintain habitat (need to define); seasonal restrictions during breeding season.
*Alternative C: surveys in conifer stands over 120 years old, protect sites same as above for 10 years, and existing site protection lasts 10 years
*Alternative D: surveys same as B (but no 35 mile limitation), buffer all contiguous habitat within .5 mile radius of occupied stand (no gaps wider than 100 meters in forest)

<u>Existing Sites</u>: Marbled Murrelets have high nest-site fidelity, and as such, the PSG protocol recommends treating all occupied Marbled Murrelet sites as occupied sites indefinitely. A murrelet site, due to the inability to locate an exact nest location, occupies the entire area of contiguous forest. Given that the BLM is under direction from the FWS to protect occupied habitat, a majority of BLM alternatives say that the BLM will protect existing sites, but it is unclear what this means. Page 722.

Pursuant to the PSG Protocol and available murrelet studies, occupied habitat means all the trees in a contiguous stand, including platform and non-platform trees. Any logging within this occupied habitat opens up the stand to predators and fragments the bird's habitat, resulting in take.

The BLM states that under three of the four action alternatives, all existing murrelet sites would be "retained." Page 733. The BLM needs to elaborate on what this means. We assume it means that the entire survey area, i.e. contiguous forest stand, for each murrelet nest site is to be protected, off limits from any kind of logging. Marbled Murrelet nest sites are compromised by forest and canopy openings that can be created by thinning or adjacent clearcutting. The BLM if indeed it is committed to protecting existing occupied sites, needs to ensure that all these sites are off limits from commercial harvest of any kind, because logging will create forest edges and openings that will expose these nest

sites to an increased risk of predation. Additionally, even if these sites are in reserves this does not guarantee their protection because of the logging permitted in reserves that can downgrade or remove older forest.

300 Feet: In two of the BLM Alternatives the BLM proposes to protect Marbled Murrelet nest sites with a buffer of 300 feet as opposed to a half mile. This results in marbled murrelet occupied sites are approximately 6.5 acres in size as opposed to approximately 500 acres in size. The BLM provides no analysis or scientific justification that these 300 feet buffers will ensure protection of the nest site. Almost assuredly, a 6 acre nest site for the murrelet will result in the failure or predation of that nest site. We have attached numerous studies on the murrelet to that regard. Therefore, the BLM's assumption in the DEIS, that these sites will not be "taken" because of this 300 foot buffer is false and has zero scientific justification or rationale. This prescription will result in violations of the ESA, the MAMU Recovery Plan, the 5 Year Review Recommendations, and the NWFP Recommendations.

Potential or Suitable Habitat: We are concerned that the BLM is defining potential or suitable survey habitat for these alternatives too narrowly, and will accordingly miss certain types of Marbled Murrelet nest sites from this survey regiment. Murrelets will nest in younger stands if a single legacy tree is present, but the BLM is taking a stand level approach. When averaged, stands that provide nesting trees and habitat for murrelets could have average DBH, tree height, and various measurements that will not satisfy the BLM survey standards laid out above. Please provide scientific justification for the assertions that a large cohort of legacy trees within a forest stand is necessary for marbled murrelet habitat.

The BLM either needs to delete the DBH and height limitations or any limitations based on the number of platform trees present, or the BLM needs to factor in the percentage of nest sites that will occur outside of survey habitat and account for their loss and destruction in the modeling of the impacts. As an illustration, the BLM admits that over 10% of the existing occupied sites exist outside of what the agency has modeled or considered "nesting habitat." Page 733. The agency needs to take a hard look at this issue.

35 Mile Delineation: Please explain or provide ecological or scientific justification for the 35 mile mark in Alternative B. It seems entirely arbitrary and will result in the take of murrelets nesting outside this area.

Habitat "Maintenance": Under the alternatives where surveys are required in the future, we are concerned that the BLM's habitat maintenance program will not result in adequate protection of the newly discovered nest site, not make it safe to assume that new sites will be retained, or that Marbled Murrelets will continue to reproduce at these locations. The BLM is permitting logging, as long as the large legacy trees with platforms are not removed. Again, it is inadequate to just protect potential Marbled Murrelet nest trees in a stand. Logging trees that provide canopy closure around these legacy trees opens the stand up to corvids and will result in dramatic risk of nest predation and failure. The entire contiguous stand with large buffers needs to be protected in perpetuity to protect murrelets.

Large Block Habitat: The BLM should have considered blocking up large areas of habitat known to contain legacy and platform trees to provide refuges for the marbled murrelet. Aside from the no action alternative, it appears every alternative is reducing protections for the Marbled Murrelet. Given the species flat lining or declining population levels, coupled with an alarming drop in juvenile numbers which signal problems with reproduction, should implicate an alternative that strengthens protections for the species and creates special reserves for the species to guarantee viability of the species.

False Assumptions: In numerous places throughout the DEIS, the BLM assumes that murrelet populations are increasing. This is false, and we have attached numerous recent studies to this regard. Alternatives that all reduce protections for the species because they are based upon this false assumption flaws the NEPA process.

Studies: We have attached numerous studies that provide scientific support for the points made above. Please contact us for further scientific information or any questions regarding the studies and science provided.

Red Tree Voles:

Under the former management mandate (2001 ROD), vole surveys were required pursuant to the species Survey Protocol (now 3.0) and any sites discovered were required to be managed pursuant to the species Management Recommendations (2.0). There was a frequently used exception for pre-disturbance surveys in thinning projects in stands under 80 years old (Pechmann Exemption). WOPR greatly reduces these protections in all alternatives, completely eliminating the vast majority of the species range (all habitat south of Highway 20) from any survey or management regime.

*Alternatives A and C: No surveys or protections, arguably violates BSS policies to prevent listing.
*Alternatives B and D: Just north of highway 20 surveys required (habitat same as in Survey Protocol), all projects (not just thinning exempt from surveys); vole sites south of highway 20 can/will be designated as non-high priority and logged, sites above highway 20 will be protected under current MR (10 acres buffer plus one acre for every additional nest found)

Sites in Reserves: In the WOPR analysis of effects to red tree voles, the BLM forecasted effects to the species by "applying observed detection rates and mean size of occupied stands against acreage of habitat in the Harvest Land Base" and "assumed all sites would be protected in reserves." However, there is no requirement it appears from the management objectives and actions that surveys be conducted in reserves for red tree voles when activities are planned that could remove red tree vole habitat.

Any timber harvest activities in reserves will remove and displace voles. "Continuing timber harvest in younger forest areas adjacent to remaining patches of older forest diminishes the habitat quality of these stands by maintaining them in an isolated and fragmented condition that may not allow for persistent populations of red tree voles." Federal Register /Vol. 76, No. 198 /Thursday, October 13, 2011 / Proposed Rules 63735. Thinning younger stands occupied by tree voles can reduce or eliminate voles from these stands (Biswell 2010, pers. comm.; Swingle 2010, pers. comm.), and Carey (1991, p. 8) suggests activities that result in rapidly developing (changing, unstable) younger forests are a limiting factor for red tree voles. *Id.* at 637-38.

If the BLM wants to make the assumption that all vole sites are reserved in its analysis, all timber removal activities in the reserves should require full and complete red tree voles surveys, and the adequate protection of these red tree vole sites. *Id.* at 637-38. This should include protections of large blocks of habitat not just isolated patches of older forests created by the current Management Recommendations because the FWS's "evaluation of the remaining older forest patches within the DPS indicate they are likely insufficient to sustain red tree voles over the long term due to their relatively small size and isolated nature." *Id.* at 637-38.

Non-high priority sites: Although the baseline No Action Alternative takes into account the 2001 ROD, it does not mention or consider the "Non-High Priority" process that has designated many acres of existing red tree vole sites as non-high priority and cleared them for logging. Not factoring in this option would allow the BLM to selectively log certain new red tree vole sites and it over looks an option existing land managers had under the NFP. Its availability could influence the BLM's decision to eliminate Survey and Manage for red tree voles in most of the alternatives. Please disclose the amount of acres that have been designated or are proposed to be designated non-high priority. The BLM should develop an alternative that uses the survey and non-high priority approach to managing sites in the Harvest Land Base. Further surveys would contribute to a greater understanding of this imperiled species and inform future management and recovery decisions, not to mention the listing status of the species.

Additionally, will it be possible for the BLM to use the non-high priority process north of highway 20? This is not clear.
Need to List the Species: Based upon the findings of the FWS's Warranted but Precluded Findings for the North Coast Oregon DPS of the red tree vole, any reduction in federal vole protections will result in threats to the persistence of the species, and a potential need to list the species. The North Oregon Coast DPS extends north of the Siuslaw River to the Columbia, and the FWS concluded "that the ongoing effects of the destruction, modification, and curtailment of its habitat, in conjunction with other factors described in this finding, pose a significant threat to the persistence of the North Oregon Coast DPS of the red tree vole." FR 63740.

"Clearly, existing and projected amounts of older conifer forest habitat conducive to red tree vole persistence are less than the amounts projected to have occurred historically and with which tree voles have evolved. High-quality older forest habitat remains in isolated fragments, most of which are too small to support tree voles, and are so widely separated as to be likely well beyond the dispersal capability of the species. Unlike historical conditions, which were highly stochastic, these changes are likely to be permanent. Based on our analysis of best available information, we conclude the remaining high-quality habitat within the DPS is likely insufficient to support red tree voles over the long term, and persists in a fragmented and isolated condition that renders local populations of red tree voles vulnerable to extirpation or extinction through a variety of processes, including genetic stochasticity, demographic stochasticity, environmental stochasticity, and natural catastrophes." FR 63754.

Based on these conclusions by FWS, any reductions to protections to the species will contribute to the need to list the species. This is particularly true because "red tree voles are afforded more protection on Federal lands than on State Forest and private lands within the DPS, primarily as a result of the Survey and Manage protections" *id,* and every BLM DEIS Alternative aside from the no-action alternative removes Survey and Manage protections, or reduces these protections dramatically. Based on the WPB findings by the FWS, the BLM should have developed an alternative that set aside specifically large blocks of habitat in areas critical for red tree vole persistence, dispersal, and genetic connectivity. The BLM did not develop any alternative to this regard and did not analyze these issues at all. Further, the BLM DEIS assumes a large number of sites will be treated as non-high priority, this was not the understanding of the FWS that concluded "all sites on Federal land within the DPS are considered high-priority sites with the exception of 198,000 ac (80,130 ha) of the southernmost portion of the DPS (primarily located within the Siuslaw River drainage)." Undermining survey and manage protections and the high-priority treatment of vole sites will lead to threats to the species persistence within the North Oregon Coast DPS, not just the area north of Highway 20.

Bald Eagle:

The BLM analyzes impacts to the Bald Eagle at the entire planning level scale, and concludes that there will be "indistinguishable" differences between the action alternatives at this scale. Given that there are only approximately 250 thousand acres of nesting habitat on BLM lands, the BLM should be looking specifically at the impacts to these various habitat patches (older forest in close proximity to large water bodies). Merely concluding that there will be minimal differences at a scale of analysis taking into account millions of acres is inadequate under NEPA. Which sites will be logged, which sites will be retained? Does commercial thinning impact the species even if these sites are located in reserves? Please address these questions in the FEIS.

Pups are born at a natal den in spring (generally mid-to late April) and remain there with their mother for about 2 months (Mech 1970, Boyd 1999). During this time any disturbance that results in the female leaving the den may expose the pups to predation or inclement weather. The sensitivity of females to human disturbances at den sites varies greatly among individuals (Boyd 1999). Due to the potential disruption of breeding as a result of human activity associated with any timber harvest, hauling, or road construction activity, these activities and any other activities that

could cause disruption should be restricted from April through June. BLM failed to take a hard look at this issue in violation of NEPA.

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[x]Olson, D.M., D.A. DellaSala, R.F. Noss, J. R. Strittholt, J. Kaas, M. E. Koopman, and T.F. Allnutt. 2012. Climate change refugia for biodiversity in the Klamath-Siskiyou ecoregion. *Natural Areas Journal* 32:65-74.

[xi] DellaSala, D.A., R.G. Anthony, M.L. Bond, E. Fernandez, C.T. Hanson, R.L. Hutto, and R. Spivak. 2013. Alternative views of a restoration framework for federal forests in the Pacific Northwest. *Journal of Forestry 111:402-492*.

[xii] http://coastrange.org/documents/ACS-Finalreport-44pp-0808.pdf

[xiii]Reviewed in Lindenmayer, D.B., P.J. Burton, and J.F. Franklin. 2008. Salvage logging and its ecological consequences. Island Press, Washington, D.C.

Jasmine Benjamin

From: m1allen@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Friday, August 21, 2015 1:09 PM
To: RMP-Comments@heg-inc.com
Subject: Fwd: Comment
Attachments: NPSO RMP-EIS comments.docx

---------- Forwarded message ----------
From: **RMPs_WesternOregon, BLM_OR** <blm_or_rmps_westernoregon@blm.gov>
Date: Fri, Aug 21, 2015 at 8:29 AM
Subject: Fwd: Comment
To: BLM_OR RMPWO_Comments <blm_or_rmpwo_comments@blm.gov>

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Resource Management Plans for Western Oregon
Bureau of Land Management
web: www.blm.gov/or/plans/rmpswesternoregon

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Before including address, phone number, email-address, or any other personal identifying information in your comments, be advised that your entire comment, including personal identifying information, may be made publicly available at any time. If you wish us to withhold your personal information you must state this prominently at the beginning of your comment. While individuals may request that the BLM withhold personal identifying information from public view, the BLM cannot guarantee it will be able to do so.

You have received this email because you have previously submitted a request to be on the mailing list, stakeholder list, submitted a comment, feedback or survey response and/or indicated interest in the RMPs for Western Oregon.

---------- Forwarded message ----------
From: **Darlene Southworth** <southworth@sou.edu>
Date: Wed, Jul 22, 2015 at 12:00 PM
Subject: Comment
To: BLM_OR_RMPs_WesternOregon@blm.gov

Attached find a comment letter from the Native Plant Society of Oregon.

Darlene Southworth
866 Blaine St.,
Ashland, OR 87520

RMPs for Western Oregon
Bureau of Land Management
POB 2 65
Portland, OR 7208

  comment here on behalf of the ative Plant Societ of Oregon with 13 chapters and nearl 1000 members. Our mission is to "enjo , conserve, and stud the natural vegetation of Oregon.

The plan addresses timber harvest and orthern Spotted Owl conservation, but is silent or onl minimall addresses other important resources, e.g., oa woodlands, native plant communities, and rare fungi. f objectives and directives are not in print in the management plan, managers do not consider them important and do not allow time or mone to be spent on those resources.

414 point 3, 421-1: **Clarify whether alternatives except D would protect rare plants and fungi.** The RMP states that BLM would manage Bureau Sensitive plant and fungi species under all alternatives except D. This implies that BLM would surve for and protect Sensitive species 424-4 . owever, BLM polic states that, “application of the Special Status Species policy to provide specific protection to species that are listed b the BLM as sensitive on lands governed b the O C Act must be consistent with timber production as the dominant use of the those lands.”
This inconsistenc allows a conflict between protecting species and harvesting timber. f timber production ta es precedence over protecting sites, the impacts to sensitive species must be anal ed. Define the criteria that would be used to determine if sensitive plant protection was consistent with timber production. dentif how the decision would be made and b whom. Without clarit , this issue is open for interpretation and applications b agenc people and outside entities.

Incorporate objectives and Best Management Practices to protect rare fungi. mplement practices during forest management and reference them in PA to reduce impacts of timber harvest on rare fungi, e.g. leaving coarse wood debris, minimi ing soil and duff disturbance, leaving scattered and aggregated host conifers. These can be applied at the site-specific scale, but unless the are in the RMP, the can be dismissed at the field level.

416-2: Delete the reference to Dahlberg and Stenlid 1995, that "even when sporocarps are present, they are an unreliable indicator of location and activity of mycelia" because it is misleading. The refer to a few species of *Suillus* and the disconnect between individual sporocarps and individual m celia, which ma have fragmented. t does not impl that sporocarp surve s are useless. t s comparable to sa ing that one flowering plant does not tell ou how large its roots are or whether it is clonal. Of course not. " isual observation cannot determine the si e of a genetic individual or a population of a fungal species." That s not what BLM surve s are supposed to do. isual observation tells ou whether a species is T R . Absence of a sporocarp is not informative due to seasonalit , variabilit among ears, and the underground nature of some fungi. But presence is ver important.

422, 424-4: Fungal surveys need to be carried out in stands younger than 180 years old. The RMP states that the BLM assumed that timber activities would not affect Surve Manage plant and fungi sites directl in the o Action alternative because of pre-disturbance surveys and site protection. This doesn’t ta e into account the fact that onl old stands are surve ed. There are undoubtedl fungi sites in ounger stands. Because no surve s are conducted in those stands, fungi that occur there would be impacted b timber harvest activities. This needs to be ac nowledged and the effects anal ed.

423-4, 424-4: "Opportunistic" fungal surveys are not defined. “Opportunistic” is not defined an where except that it would OT mean targeted and repeated surve s. Previous anal sis of fungi state that multiple visits improve the likelihood of detecting rare species. It is unclear if “opportunistic” surveys would detect Sensitive fungi. f such surve s are inade uate, the proposed timber harvest in all action alternatives could contribute to the need to list Sensitive fungi. SSSSP methods for fungal surve s should be followed. There ma be "intuitive" surve s in which surve ors loo for fungi under appropriate hosts or on ground conditions more favorable for fungi.

424-40: Last sentence should acknowledge that changes in environmental conditions and loss of host trees from timber harvest directly and indirectly affect rare plant and fungi species.

425-1: Prescribed burning may consume all downed woody debris and burn 20 feet up the trunks of conifers in drier forest associations, but the RMP inaccuratel states that prescribed burns rarel consume soil duff, large logs, or snags.

905: Late Successional Reserves objectives include management to benefit wildlife. **Also include managing to benefit special status plants or fungi.** Since BLM probabl will not conduct fungi surve s nor special status botan surve s in Alt. D. in the arvest Land Base , BLM should protect, maintain, and enhance habitat for late successional associated plants and fungi in the reserves.

917: Candidate areas for untreated skips and aggregate retention should include rare plant and fungi sites. Leaving aggregated retention patches is a management/ conservation guideline for fungi and is important for special status vascular and nonvascular species.

926-2: One management objective should be to <u>not</u> contribute to the listing of Sensitive species and to contribute to the conservation of Sensitive species per BLM polic 6320.

1069: Close the Medford/Baker Cypress ACEC to OHVs. A trail goes in to the Ba er C press stand and crosses an area with fragile soils, which is adjacent to meadows that are part of the AC C.

1069-1071: Close ACECs/RNAs to OHVs, e.g., Medford/Cobleigh Rd., Povert Flat, Round Top, Table Roc s. O s are a high threat to the values in AC Cs.

1283: Retain the Table Rocks ACEC, now proposed as an SRMA. According to the definition of a SRMA 446-3), "…BLM only designates SRMAs where it recognizes recreation management as the predominant land use plan focus and where the BLM intends to manage and protect specific recreation opportunities and setting characteristics on a long-term basis." This conflicts with the existing designation of Table Roc s as an ACEC, where "…special management attention is needed to protect, and prevent irreparable damage to, important …natural systems or processes…designation also serves as a reminder that significant value s or resource s exist which must be accommodated when future management actions and land use proposals are considered near or within an ACEC."(ACEC Objectives, 1613 Manual, .02 . The table tops contain a ver rare plant communit in vernal pools that has been designated critical habitat for vernal pool fair shrimp. See anal sis for ernal Pool Fair Shrimp 832 . An emphasis on recreation that increases visitor use on the tops of the Table Roc s will trend the dwarf wooll meadowfoam toward listing.

Address use of native plants for restoration, OT non-native plants, as BLM's policy direction.

ALTERNATIVES: Some conservation actions are proposed in some alternatives and not in others. While this provides a range of alternatives, alternatives with suchomissions do not meet BLM polic :

- Population augmentation for T plants is not proposed under all Alternatives. owever, **this is one of the recovery items in the FRGE Recovery Plan so include it.**
- **Treating sudden oak death if detected must be proposed under all Alternatives**. oxious weed polic re uires BLM to control noxious weeds this is a noxious parasite.
- Onl Alt. B proposes managing stands to protect oa s, et oa s are identified in the Affected nvironment 422-2 as a special habitat that needs management to maintain. **Include management of oak stands in all action alternatives**.

Than ou for the opportunit to comment.

Darlene Southworth for the ative Plant Societ of Oregon
866 Blaine St., Ashland, OR 7520
Southworth68@gmail.com

From: fpaulete@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Saturday, August 22, 2015 11:43 AM
To: RMP-Comments@heg-inc.com
Subject: Fwd: Additional Coast Range Association Comments on the 2015 Draft RMP/EIS
Attachments: CRA BLM-RMP-comments_Set 2.pdf

---------- Forwarded message ----------
From: <chuckw@coastrange.org>
Date: Fri, Aug 21, 2015 at 2:55 PM
Subject: Additional Coast Range Association Comments on the 2015 Draft RMP/EIS
To: blm_or_rmpwo_comments@blm.gov

Please accept the attached pdf document as additional Coast Range Association's Comments on the 2015 Draft RMP/EIS.

If you have any questions please contact:
Chuck Willer at this email address or call (541) 231-6651.

Best wishes,

Chuck Willer
Executive Director
Coast Range Association

On April 24, 2015, the BLM announced the release of the Draft RMP/EIS. At that time, the BLM announced that the comment period would be open for 90 days, until July 23, 2015. The BLM has extended the comment period for the Draft Resource Management Plan/Environmental Impact Statement until August 21, 2015. Before including address, phone number, email-address, or any other personal identifying information in your comments, be advised that your entire comment, including personal identifying information, may be made publicly available at any time. While individuals may request that the BLM withhold personal identifying information from public view, the BLM cannot guarantee it will be able to do so. If you wish us to withhold your personal information you must state this prominently at the beginning of your comment. We will make all submissions from organizations or businesses available for public disclosure in their entirety. There are several different ways for to you to comment on the Draft RMP/EIS, including:

Mail: You can submit comments by mail to:

RMPs for Western Oregon
Bureau of Land Management
P.O. Box 2965
Portland, Oregon 97208

Electronic mail (email):
blm_or_rmpwo_comments@blm.gov

Coast Range Association

Building just and sustainable communities that provide for people and the natural world.

www.coastrange.org

CRA
PO Box 2250
Corvallis, OR 97339

August 20, 2015
Jerome E. Perez
State Director
Washington/Oregon
Bureau of Land Management
P.O. Box 2965
Portland, Oregon 97208

ATTN: Mark Brown
Submitted via Email: <blm_or_rmpwo_comments@blm.gov>

RE: This document is a second set of Coast Range Association comments on BLM Draft 2015 Resource Management Plan/EIS for Western Oregon

On behalf of hundreds of member households and thousands of supporters throughout the Coast Range, Oregon and the nation, the Coast Range Association (CRA) submits these comments addressing the Draft Environmental Impact Statement (DEIS) for the Resource Management Plans (RMP) for BLM forests and watersheds in Western Oregon.

1. The DEIS/RMP violates the ESA, NEPA and FLPMA because it failed to analyze ongoing impacts to bull trout and/or bull trout critical habitat.

The DEIS/RMP failed to identify locally relevant management direction, specific management objectives for critical habitat, and site specific interagency coordination needed to recover bull trout.

The DEIS:218 states:

> "The amount of critical habitat for non-salmonid fish species or resident salmonid fish species on BLM administered lands is less than 5 percent of all critical habitat for fish in the decision area (**Table 3-50**). The BLM has very limited ability to affect these non-salmonid and resident salmonid fish species or their critical habitat through forest management, infrastructure maintenance, or habitat manipulations. The analysis contained herein will therefore focus on anadromous salmonids and effects to their habitat."

Table 3-50 (DEIS:218) identifies 3.6 miles of bull trout critical habitat. The BLM cannot exempt itself from legally required NEPA analysis for ESA listed species or FLPMA requirements for planning documents to provide specific management direction to recover the federally listed bull trout. The assertions that bull trout can be dropped from analysis and management direction in the 2015 RMP/DEIS because the amount of bull trout critical habitat in the planning area is small compared to anadromous fish habitat is not only absurd but is not based on the best available science. Equally absurd is the implication in Table 3-50 that bull trout can be dropped from NEPA analysis because the amount of critical bull trout habitat affected is affected is small compared to total bull trout critical habitat in the entire USA. Of particular relevance to this DEIS/RMP is 75FR6394 which states:

> "For example, in the Klamath Basin Recovery Unit where threats to bull trout are greatest, we are designating all habitat known to be occupied at the time of listing that contains the physical or biological features essential to the conservation of the species and that may require special management considerations or protection, and we are also designating a substantial proportion of unoccupied habitat outside of the geographical area occupied by the species at the time of listing that has been determined to be essential for bull trout conservation. Our primary consideration for designating critical habitat for occupied areas was to protect species strongholds for spawning and
> rearing and FMO habitats. Our primary consideration for designating most of unoccupied areas we are including in this designation was to restore connectivity among populations by protecting FMO habitats."

We assert that this 2015 RMP/EIS must identify "special management considerations or protection" for bull trout and analyze the impacts regardless if they are beneficial or detrimental. The kinds of coordination with other agencies and private entities need to be identified because of the mobility of the species to cross property ownerships and the need identified by USFWS to restore connectivity.

Restoration of connectivity for bull trout creates the potential to damage Oregon spotted frog habitat or indirectly kill OSF. The likely presence of Oregon spotted frogs and/or OSF critical habitat along streams further demonstrates the need for clear direction in the RMP for bull trout management when critical habitat for bull trout and OSF overlap. The listing for OSF found that stream improvement projects for fish have damaged OSF habitat. The RMP/EIS needs to document the adverse impact of past stream projects to OSF and identify management direction to avoid this conflict in the future.

The DEIS: 908 states:

"Management Objectives for non-forested lands in the decision area east of Highway 97

- Provide for conservation of Special Status fish and other Special Status aquatic species.
- Provide for the riparian and aquatic conditions that supply stream channels with shade, sediment filtering, leaf litter and large wood, and stream bank stabilization.
- Maintain and restore water quality.
- Maintain and restore access to stream channels for all life stages of fish species.

- Maintain and restore the proper functioning condition and ecological site potential of riparian and wetland areas."

These are well intentioned and necessary objectives but the RMP fails to describe how these objectives will be accomplished for Klamath Basin bull trout. The RMP fails to meet its purpose and need because it does not identify contributions to the recovery of bull trout in either the decision area or the planning area. Similarly, the DEIS lacks analysis of the effectiveness of biological assessments or biological opinions for bull trout. Delaying required Section 7 consultation process hinders our ability to make substantive comment about bull trout for this DEIS. The DEIS fails to disclose that due in part to the failure of the RMP to make actual contributions to the recovery of bull trout in the Klamath Basin, the Klamath Basin bull trout will likely be upgraded to endangered in the short term and likely extirpated in the planning area over the next 100 years.

2. The 2015 DEIS/RMP violates the ESA, NEPA and FLPMA because it failed to analyze impacts to the endangered shortnose sucker and/or shortnose sucker critical habitat.

The DEIS/RMP failed to identify management direction for shortnose sucker , specific management objectives for shortnose sucker critical habitat, and site specific interagency coordination needed to recover shortnose sucker in the Klamath Basin.

The DEIS:218 states:

> "The amount of critical habitat for non-salmonid fish species or resident salmonid fish species on BLM administered lands is less than 5 percent of all critical habitat for fish in the decision area (**Table 3-50**). The BLM has very limited ability to affect these non-salmonid and resident salmonid fish species or their critical habitat through forest management, infrastructure maintenance, or habitat manipulations. The analysis contained herein will therefore focus on anadromous salmonids and effects to their habitat."

Table 3-50 (DEIS:218) identifies 9.0 miles of shortnose sucker critical habitat on DEIS/RMP "decision" lands but fails to indicate the location of those 9.0 miles. Failure to identify the location and water body names of shortnose sucker critical habitat demonstrates the inadequacy of the DEIS and also substantially hinders our ability to make substantive comment for this DEIS.

The DEIS cannot exempt itself from legally required NEPA analysis for ESA listed species and critical habitat occurring on BLM decision area lands. The assertions that shortnose sucker can be dropped from DEIS "fish" analysis because the amount of shortnose sucker critical habitat in the planning area is small compared to anadromous fish habitat is not only absurd but is not based on the best available science. Equally absurd is the implication in DEIS:218 Table 3-50 that shortnose sucker can be dropped from this DEIS analysis because the amount of critical shortnose sucker habitat on BLM lands is small (4.3%) compared to total shortnose sucker critical habitat in the

Klamath Basin.

The DEIS:907-909 identifies management direction for "all water features" including riparian areas, but the management direction seems to be targeted for salmonids and fails to identify management direction for shortnose sucker. The DEIS:909 states: "Manage livestock grazing where listed fish species occur to prevent direct impacts to spawning and incubation." The DEIS is defective because it has no biological analysis of proposed turn out dates in allotments with shortnose sucker critical habitat to determine if the grazing season of use would comply with this directive (DEIS: 1235-1233).

The DEIS:916 states as a management objective for fisheries to "improve the distribution and quantity of high quality fish habitat across the landscape for all life stages of ESA-listed, BLM Special Status Species, and other fish species." The DEIS/RMP is defective because it fails to identify conservation actions needed to make substantial contributions towards the recovery of shortnose sucker. The DEIS identifies existing exclosures, some of which, were apparently constructed to protect shortnose sucker from livestock impacts but the effectiveness of these exclosures for improving habitat for shortnose sucker is not described (DEIS 942-943). The DEIS/RMP is also defective because it did not consider the need for additional exclosures to protect all BLM shortnose sucker critical habitat from grazing impacts (USDI FWS 2012b:73768) and other conservation actions identified in the 2012 Revised Recovery Plan for the Lost River Sucker and Shortnose Sucker (*Deltistes luxatus* and *Chasmistes brevirostris*).

The BLM cannot exempt itself from FLPMA and ESA requirements for the Klamath Falls Resource Area RMP to provide specific management actions to recover the endangered shortnose sucker. The DEIS/RMP fails to meet its purpose and need because it does not identify adequate specific contributions for the recovery of endangered shortnose suckers in either the decision area or the planning area. Similarly, the DEIS lacks analysis of the effectiveness of previous biological assessments or biological opinions for endangered shortnose suckers relevant to this 2015 planning process. Delaying required Section 7 consultation process (e.g., Biological Assessments) hinders our ability to make substantive comment about endangered shortnose suckers for this DEIS (see DEIS:869).

The DEIS/RMP is defective because it fails to disclose that due in part to the failure of the DEIS/RMP to identify and require substantial and effective contributions to the recovery of endangered shortnose suckers in the Klamath Basin, the endangered shortnose sucker will likely be extirpated in the decision area over the next 20-100 years. The endangered shortnose sucker requires active conservation measures to stave off local extirpation. We would like to remind BLM that its failure to take active and coordinated conservation efforts to protect and restore sage grouse ecosystems in the 1970s- 1980s resulted in the unanticipated extirpation of Lakeview District Klamath Falls Resource Area sage grouse by the mid 1990s.

3. The 2015 DEIS/RMP violates the ESA, NEPA and FLPMA because it failed to adequately analyze impacts to the threatened Oregon spotted frog and/or Oregon spotted frog critical habitat.

The DEIS/RMP failed to adequately identify management direction for Oregon spotted frog, failed to identify specific management objectives for Oregon spotted frog critical habitat, and failed to identify site specific interagency coordination needed to recover Oregon spotted frog in the Klamath Basin.

The DEIS is defective because it fails to disclose that the Oregon spotted frog was listed as a threatened species on August 29, 2014 (79FR51658-51710) and revised proposed critical habitat was published on June 18, 2014 (79FR34685-34696). The 79FR34688 states:

> "New information we received from the U.S. Forest Service indicated the proposed critical habitat unit did not include the full extent of occupancy by Oregon spotted frogs (T. Smith, USFS, pers. comm. 2014). Therefore, we propose to include an additional 17 acres (7 ha) in this unit. Upon consideration of the information we received, this refinement includes an additional portion of the Buck Lake drainage system of canals, as well as Spencer Creek from Buck Lake downstream approximately 1.6 miles (2.6 km), ending at the intersection of U.S. Forest Service Road 46 and Clover Creek Road. The additional acreage is occupied by the Oregon spotted frog and contains the essential physical or biological features. *Fifteen acres (6 ha) are managed by the Bureau of Land Management and Fremont-Winema National Forest, and 2 acres (1 ha) are privately owned.* The essential features within the additional acres may require special management considerations or protection to ensure maintenance or improvement of the existing nonbreeding, breeding, rearing, and overwintering habitat; aquatic movement corridors; or refugia habitat, and to address any changes that could affect these features." (emphasis added)

The DEIS:829 identifies indirect adverse impacts from livestock grazing but fails to identify direct mortality from trampling. The DEIS:829-831 fails to disclose impacts to Oregon spotted frogs and critical habitat from custodial grazing in the Buck Lake allotment (DEIS:1227) or the potential benefits to Oregon spotted frogs from Alternative D (no grazing). We assert that a 2000 Rangeland Health Assessment is inadequate to base livestock and other impact assessment to Oregon spotted frogs and/or critical habitat. Rangeland Health Assessments, although useful for identifying obvious impacts, were not designed for assessing impacts to Oregon spotted frogs. For example, the DEIS/RMP is defective because it does not require turn out dates of livestock into Oregon spotted frog critical habitat be delayed until after the Oregon spotted frogs have metamorphosed. The DEIS/RMP is defective because it fails to provide relevant context (as per NEPA) with baseline population monitoring or habitat monitoring of condition/trend in the planning area (e.g. Parsnip Lakes, Wood River Wetlands). The DEIS/RMP is defective because it has failed to provide any monitoring data for Oregon spotted frogs from the Buck Lake/Spencer Creek population. The DEIS/RMP must include specific habitat and population monitoring objectives for the Buck Lake/Spencer Creek population.

We are concerned that in February 2014, the BLM transferred a Section 15 livestock grazing lease for the Buck Lake Allotment (#00104) with a CE that did not acknowledge the presence of Oregon spotted frog and critical habitat within the Buck Lake Allotment (USDI BLM 2014). Due to multiple ownerships of Oregon spotted frog critical habitat in the Buck Lake/Spencer Creek area (79FR34695;USDI BLM 2014) it would seem prudent for the DEIS/RMP to require active coordination with the Forest Service, ODFW, USFWS private land owners, and permitees to

jointly protect and improve habitat for Oregon spotted frog in the Buck Lake/Spencer Creek area. Merely committing to the control of reed canarygrass (which may or may not be a limiting factor for Buck Lake/Spencer Creek Oregon spotted frogs) is not adequate conservation for Oregon spotted frogs (DEIS:830).

The DEIS:1069 (Table F-2) lists the assumed existing Tunnel Creek ACEC that includes Oregon spotted frog critical habitat. Grazing management is listed as "open with stipulations: Fencing to keep cattle out of sensitive wetland areas". The DEIS:942 Table B-8 lists a Tunnel Creek Exclosure and Surveyor Campground Exclosure in the Buck Lake Allotment that would apparently exclude livestock from Oregon spotted frog critical habitat. The DEIS:1085 (Table F-3) lists potential Tunnel Creek ACEC that is "relevant and important" because it has Oregon spotted frogs. The DEIS is defective because it does not explicitly identify the benefits of existing Tunnel Creek ACEC and "potential" Tunnel Creek ACEC for the Oregon spotted frog. The DEIS/RMP:942 is defective because it lacks a conservation action that would identify new fencing that would exclude livestock from the entire expanded Tunnel Creek ACEC and presumably all BLM Oregon spotted frog habitat in the Buck Lake area.

The DEIS fails to discuss the effectiveness of existing or potential livestock exclosures as it relates to Oregon spotted frog habitat and population viability in the Buck Lake/Spencer Creek area.

The final listing of Oregon Spotted Frog (USFWS 2014:51667) states:

> "Surveys conducted at Buck Lake suggest a population decline and have documented most recently small numbers of egg masses (38 masses in 2010), or the equivalent of 76 breeding individual (male and female) (BLM 2012). Additional information indicates that suitable habitat occurs downstream of Buck Lake within Spencer Creek (Smith 2014, pers. comm.). The minimum population estimate for this sub-basin is currently estimated to be 112 breeding individuals suggesting drastic population declines since 1998."

The DEIS/RMP is defective because it relies primarily on passive management for the Buck Lake/Spencer Creek population of Oregon spotted frogs (e.g. livestock exclusion). The DEIS fails to state that passive management is likely not adequate to prevent local extirpation due to ongoing drought, water withdrawals, small population size, and biotic factors (bull frogs, disease). A similar isolated population of Oregon spotted frogs at nearby Parsnip Lakes has declined to 2 egg masses in 2015, even though cattle have been removed from Parsnip Lakes (Personnel communication R. Nawa [KS Wild] with Michael Parker [SOU]). Specifically, the DEIS/RMP has failed to identify the need to develop "competitor free" open water habitat for Oregon spotted frogs at Buck Lake to supplement existing open water habitat (e.g. BLM development of Wood River Wetlands that benefitted Oregon spotted frogs, although bull frogs are believed to be factor for recent declines in that OSF population). Although BLM staff may be pursuing conservation of Oregon spotted frogs at Buck Lake/Spencer Creek, these ongoing efforts, specific management direction, fencing, construction of new habitats, reduction of competitors, and annual monitoring need to be explicitly stated in the DEIS:905-985. The DEIS/RMP apparent reliance on Rangeland Health Assessments in the Buck Lake "custodial" allotment completed in 2000 is clearly inadequate for conserving the Oregon spotted frog. The DEIS:936 stated wildlife objective: "Conserve and recover ESA-listed species and the ecosystems on which they depend so that ESA protections are no longer needed for those species" is not being met. The DEIS:936 fails to identify a time table for implementing active

conservation to halt and reverse declines of ESA-listed Oregon Spotted frogs at Buck Lake and also to systematically search BLM lands for undiscovered populations.

The DEIS:830 states that "there are 508 acres of [Oregon spotted frog] habitat on BLM administered lands, and 67 percent of that habitat occurs in large habitat patches." The DEIS/RMP is defective because it has not required that these possible Oregon spotted frog habitats be systematically searched in a timely manner for Oregon spotted frogs so that the species and its habitat is fully protected with needed conservation actions.

4. The 2015 DEIS/RMP violates NEPA and FLPMA because it failed to analyze impacts to the green sturgeon (*Acipenser medirostris*) that spawns in the Rogue River (Northern Distinct Population Segment).

The DEIS/RMP failed to identify management direction for green sturgeon, specific management objectives for green sturgeon, and site specific interagency coordination needed to prevent the need to federally list the Northern DPS green sturgeon.

The DEIS:218 states:

"The amount of critical habitat for non-salmonid fish species or resident salmonid fish species on BLM administered lands is less than 5 percent of all critical habitat for fish in the decision area (**Table 3-50**). The BLM has very limited ability to affect these non-salmonid and resident salmonid fish species or their critical habitat through forest management, infrastructure maintenance, or habitat manipulations. The analysis contained herein will therefore focus on anadromous salmonids and effects to their habitat."

The BLM cannot exempt itself from NEPA analysis for the green sturgeon.

Table 3-50 contains information about the threatened Southern Distinct Population Segment green sturgeon that spawns in the Sacramento River and sometimes enters the lower ends of large coastal rivers such as the Rogue River. The more relevant green sturgeon that spawns in the Rogue River is in the Northern Distinct Population Segment. The green sturgeon in the Rogue River is a ESA species of concern. The NOAA fisheries states that "Species of Concern are those species about which we have some concerns regarding status and threats, but for which insufficient information is available to indicate a need to list the species under the Endangered Species Act (ESA). We wish to draw <u>proactive attention and conservation action to these species</u>." (emphasis added)

The Rogue River is one of 3 remaining spawning rivers for the Northern DPS of green sturgeon. The DEIS is defective because it fails to alert the decision maker and the public that any diminishment of the Rogue River population of green sturgeon would certainly trigger a formal listing process. Thus, the BLM must identify an active conservation role in the management of green sturgeon in this DEIS/RMP.

The DEIS analysis of large wood contribution to streams is irrelevant to green sturgeon spawning in the mainstem Rogue River.

The DEIS/RMP is defective because it has failed to at least conference with NOAA Fisheries in a timely manner to identify specific conservation actions in this RMP/DEIS to ensure that the Northern DPS green sturgeon does not become threatened with extinction.

The DEIS:906-908 and 916 lists management objectives, management direction and fish related restoration actions. The DEIS/RMP fails to describe how these objectives, direction and restoration will be accomplished for green sturgeon, an ESA anadromous species of concern. The BLM cannot exempt itself from FLPMA requirements for the Medford District to provide species specific management actions to ensure that the green sturgeon does not become threatened with extinction. The DEIS/RMP is defective because it fails to meet its purpose and need by failing to identify specific contributions for the management of green sturgeon in either the decision area or the planning area. Similarly, the DEIS is defective because it lacks analysis of the effectiveness of DEIS management objectives, management direction and fish related restoration actions for green sturgeon. Delaying or downright refusal to conference with NOAA fisheries regarding conservation needs of green sturgeon hinders our ability to make substantive comment about green sturgeon for this DEIS. The DEIS is defective because it fails to disclose that due in part to the failure of the DEIS/RMP to identify actual contributions to the conservation of green sturgeon in the Rogue River, the green sturgeon is likely to become threatened with extinction over the next 100 years. ESA species of concern such as the green sturgeon require spatially explicit conservation measures in this RMP/DEIS to stave off the need for threatened status.

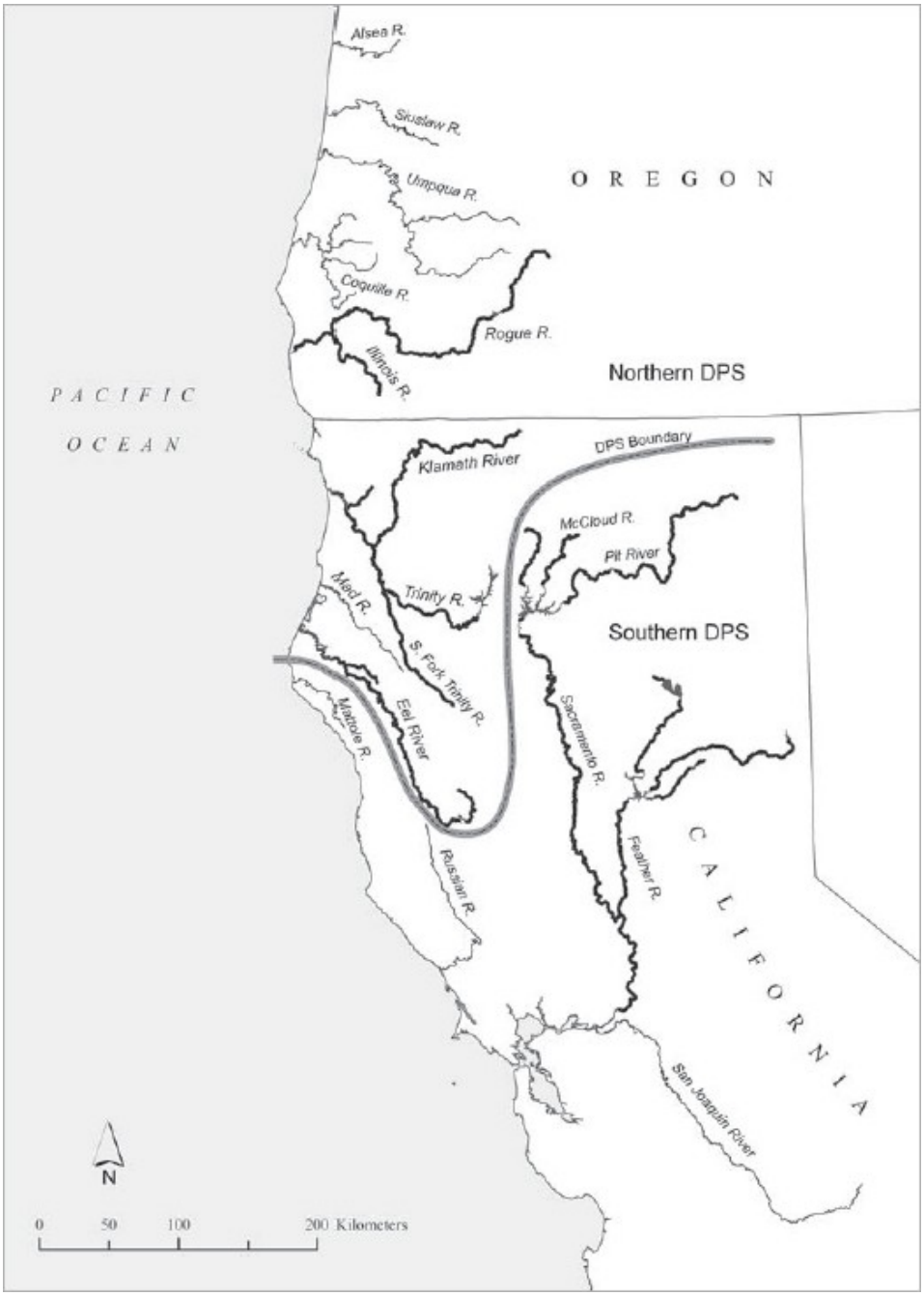

Figure 1. The Northern DPS green sturgeon is found in the Rogue River, Oregon. The Northern DPS green sturgeon is a ESA species of concern. The Southern DPS green sturgeon from the Sacramento River is listed as threatened. Green sturgeon are anadromous fish. They only spawn in natal rivers (e.g. Rogue River) but make annual feeding migrations to the ocean and other river estuaries (Lower Columbia River, Coos Bay).
http://www.nmfs.noaa.gov/pr/images/fish/greensturgeon_dps_map.jpg

New information from Mora et al. (2015) estimated the Rogue River population at 236 adults (150-424). The DEIS/RMP is defective because it fails to coordinate and contribute towards population monitoring or contribute towards water quality monitoring in spawning/rearing areas.

5. The DEIS/RMP is defective because it failed to evaluate effects to western pond turtle or provide for its special conservation needs.

The western pond turtle is a FWS Species of Concern and BLM Sensitive species because of the considerable degradation and loss of wetland habitats within the state, and the presumed unsustainably high level of nest and hatchling depredation.

The FWS is currently evaluating a petition To list the western pond turtle as an endangered or threatened species under the ESA. The FWS states that "based on our review of the petition and sources cited in the petition, we find that the petition presents substantial scientific or commercial information indicating that the petitioned action may be warranted for the western pond turtle *(Actinemys marmorata)* based on Factor A." (80FR16262)

Federal agencies such as the BLM are required to take actions to prevent the need to list species. Rosenburg (2009) identified loss of habitat, recreation disturbance, road mortality, and invasive riparian vegetation as some of the threats relevant to the RMP. Rosenburg 2009:40 states that "loss of deep pools from streams due to sedimentation and loss of large structure such as woody debris may have reduced aquatic habitat following timber harvest (Todd 1999:44)." Stream restoration can destroy or prevent the development of open habitats that provide turtle nesting habitat as well as sunny areas within the stream environment to allow for foraging and basking.

The western pond turtle requires aquatic habitat for feeding/basking and open upland habitat for nesting/overwintering. Rosenburg et al 2009: recommends the following:

- Maintain and increase deep pools in streams
- Provide shallow water habitats with abundant aquatic vegetation for hatchling
- rearing habitat
- On southern exposures, provide sparse vegetation structure adjacent to aquatic
- habitat for nesting within 200 m of aquatic habitat; remove all woody plants in
- designated nesting areas if appropriate
- Provide open fields or open woodlands within 200 m of stream and river habitats
- for over-wintering
- Consider juxtaposition of management actions in terrestrial and aquatic habitat in relation to roads and recreation uses to minimize negative effects

The RMP proposed and ongoing recreation activities do not consider restrictions to protect western pond turtles nor does the DEIS evaluate recreation effects to turtles. One area of concern are sandy open areas used by recreational rafters on the Rogue River that may be in conflict with successful nesting due to human disturbance and dog predation. Grazing and off-road vehicle use need to be seriously considered for elimination from riparian reserves that may be used by turtles for feeding, nesting, overwintering, and estivation.

The RMP fails to discuss the consequences of reducing riparian reserves from 2 tree width to 1 tree width along fish streams and reduced riparian reserves adjacent wetlands/ponds for wintering

habitat (all action alternatives). The 2 tree riparian reserves would include most required nesting/over wintering habitat. Flexibility is needed in riparian reserve management to judiciously remove forest canopy to maintain and enhance known or suspected nesting habitat. The RMP/DEIS needs to recognize the special needs of western pond turtles for open sparsely vegetated nesting/wintering habitat adjacent streams and ponds. Creating dense canopy forests everywhere along streams is an anathema for turtles.

The RMP/DEIS fails to provide coordination with ODFW,FWS, US Forest Service and others to monitor western pond turtles to establish baseline populations and trends. Inventories are needed to locate nesting and overwintering areas such that they can be protected from predation or enhanced with vegetation management. Most importantly a schedule for conservation actions is needed.

6. The Klamath OR/CA geographic subdivision of sage-grouse populations is illustrated in Hagen 2011:19.

At a minimum BLM lands within this geographic subdivision must be considered Greater Sage-Grouse habitat as per IM 2012-044 and also considered for ODFW recommended introduction.

The DEIS:714 states that "[c]urrent threats to Greater Sage-Grouse include loss of habitat through urbanization, energy development, invasive species (e.g., juniper, cheatgrass), intensive grazing, and wildfire. Habitat for the Greater Sage-Grouse is large, intact expanses of sagebrush shrubland (BLM 2013b)." These threats need to be reduced and habitat improved to where reintroduction is possible. Successful reintroduction will require some subset of "Description of the Proposed Plan Goals and Objectives by BLM Resource Program" (USDI BLM 2015:14-17)be stated in the Western Oregon Draft RMP/EIS. Specifically, "Goal SSS 1: Conserve, enhance, and restore the sagebrush ecosystem upon which Greater Sage-Grouse populations depend in an effort to maintain and/or <u>increase their abundance and distribution</u>, in cooperation with other conservation partners" is an appropriate goal for Lakeview District Klamath Falls Resource Area because of potential of increasing Greater Sage-Grouse abundance and distribution. (emphasis added) We further assert that the DEIS/RMP is defective because it failed to select a relevant subset of "Description of the Proposed Plan Actions by BLM Resource Program by BLM Resource Program" (USDI BLM 2015:2-19-2-58) for explicit inclusion in the Western Oregon Draft RMP/EIS for the Klamath OR/CA geographic subdivision of sage-grouse populations.

For example east side Klamath Resource area needs to include the following from USDI BLM 2015:2-16 "Objective LG/RM 1: Manage livestock grazing to maintain or improve Greater Sage-grouse habitat by achieving Standards for Rangeland Health (SRH)." Nearly all of the vegetation conservation goals and objectives for sage grouse habitat in USDI BLM 2015(2)15-16 would merit inclusion in the Klamath Falls RMP.

The DEIS:714 states that"[m]anagement direction common to all alternatives would treat and remove encroaching, invasive juniper within Greater Sage-Grouse habitat in the decision area similarly among all alternatives." The Western Oregon RMP needs to identify conservation measures for actions in greater sage-grouse habitat because commercial juniper projects and other authorized activities in formerly occupied sage-grouse habitat <u>are damaging potential sage-grouse</u>

habitat. For example, the Bly Area Rangeland Health Standards assessment (USDI BLM 2007:16) stated that "It is likely that some of the most disturbed areas [from juniper removal] (e.g., skid trails, landings) will experience a permanent exotic annual species component due to this disturbance and never fully restore." Juniper removal for commercial purposes is degrading sage-grouse habitat by increasing "permanent exotic annual species". This is relevant because the Bly Area Rangeland Health Standards assessment (USDI BLM 2007:22) states that "there is also an historic sage grouse lek site that was active in the early 80's in the Swede Cabin allotment (T36S R15E Sec 32 SESE)."

7. The DEIS fails to provide full evaluation of the effects of the RMP on fishers.

Cumulative loss of fisher habitat from private land clear-cutting, wild fire, and RMP logging are not evaluated in the context of fisher persistence over the next 40 years. The DEIS did not use the best available science required for section 7 conferencing/consultation. Habitat protection measures are inadequate and do not specify how they would be implemented.

The Proposed Rule to list fisher (USDI FWS 2014c:60431) states:

"Most Federal activities must comply with the National Environmental Policy Act of 1969, as amended (NEPA) (42 U.S.C. 4321 et seq.). NEPA requires Federal agencies to formally document, consider, and publicly disclose the environmental impacts of major Federal actions and management decisions significantly affecting the human environment. NEPA does not regulate or protect fishers, but requires full evaluation and disclosure of the effects of Federal actions on the environment."

The DEIS:701-70;1415-1420 fails to provide full evaluation of the effects of the RMP on fishers. The DEIS failed to use the Draft Species Report for Fisher (USDI FWS 2014d) to guide analysis and impact assessment. The Draft Species Report is the best available science for assessing forest management impacts to fisher. Since the DEIS did not use the best available science in the Draft Species Report for Fisher, the DEIS usefulness for section 7 consultation with FWS is questionable. The proposed listing for fisher (USDI FWS 2014c:60437) states that "[s]ection 7(a) of the Act requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as an endangered or threatened species and with respect to its critical habitat, if any is designated… Section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any action that is likely to jeopardize the continued existence of a species proposed for listing or result in
destruction or adverse modification of proposed critical habitat."

The DEIS:705 states: "[t]The action alternatives would have a 1 to 3 percent loss of denning habitat in the first decade (and in the second decade for Alternative C), but additional habitat would develop in subsequent decades that would surpass current conditions by 2033 (*Appendix R*). Similarly, total fisher habitat and resting habitat would decrease in the first two decades under the action alternatives (by 3-5 percent and 10-15 percent, respectively), but additional habitat would develop in subsequent decades that would surpass current conditions by the year 2043. In

contrast, the No Action alternative would lead to a continual decrease in total fisher habitat, denning habitat, and resting habitat over 50 years (**Figure 3-170**)." Appendix R:1418 (Table R-9) lists the decreased acres of fisher habitat for the first ten years which ranges from 7,269 acres in Alt B to 33,907 acres in No Action.

The DEIS analysis failed to report the severity of the alternatives in terms of habitat that is likely to be lost over the next 40 years (USDI FWS 2014c:60428) because the DEIS apparently modeled "ingrowth". The USDI 2014c:60430 reports that FWS analysis of habitat loss did not include "ingrowth" although they acknowledge ingrowth is occurring on federal lands (USDI FWS 2014d:84-92). We assert that because the DEIS modeled "ingrowth" the analysis is not comparable to analysis in USDI FWS 2014d which is the best available science. This is important because modeling ingrowth would trade off ongoing habitat loss acres when it is not known to what extent ingrowth would become fisher habitat of equal value, especially if the ingrowth acres were previously clear-cut. The DEIS must report the total amount of acres of habitat lost over a 40 period to be consistent with best available science.

The Proposed Listing page 60429 states "[v]egetation management techniques of the past (primarily timber harvest) have been implicated as one of the two primary causes for fisher declines across the United States. Many fisher researchers have suggested that the magnitude and intensity of past timber harvest is one of the main reasons fishers have not recovered in Washington, Oregon, and portions of California, as compared to the northeastern United States (Service2014, pp. 54–56)." The DEIS fails to describe the kinds of timber harvest in fisher habitats and how it would adversely affect specific habitat needs of fisher.

The DEIS fails to take a hard look at cumulative impacts from ongoing private land clear- cutting, habitat losses from fire and proposed BLM logging. We assert that projected intensive private land clear cutting of existing fisher habitat and losses from fire will be a major stressor for fisher in the planning area and that additional BLM logging over the same 40 year period could result in jeopardizing the continued existence of fisher.

The Draft Species Report p. 15 states: "Throughout their range, fishers are obligate users of tree or snag cavities for dens where they give birth (reviewed by Lofroth *et al.* 2010, p. 119; Coulter 1966, p. 81). Kits may be moved from their natal den to numerous maternal den locations before they are weaned; as a result a denning female requires multiple den trees per year (Arthur and Krohn 1991, p. 382; Paragi *et al.* 1996a, p. 80; Higley and Matthews 2006, p. 7; Powell 1993, p. 67). Once weaned, the kits stay with the female, and consequently the family unit utilizes multiple structures (<u>for example, tree cavities, hollow logs, and log piles</u>) within the female's home range until juvenile dispersal in the fall or winter (Truex *et al.* 1998, p. 35; Aubry and Raley 2006, p. 7, 12, 16–17; Higley and Matthews 2006, p. 6–7; Matthews *et al.* 2009, p. 9)." (emphasis added)

For all action alternatives the DEIS:937 says to "[r]etain structures used as known fisher natal and maternal den sites." The DEIS fails to explain how these structures would be found or how they would be retained.

For all action alternatives the DEIS:937 states that "Within the Applegate, Chetco, Illinois, Middle Rogue, Upper Klamath, Upper Klamath Lake, and Upper Rogue sub-basins, retain conifers and hardwoods that have structures that are typically used as denning or resting sites

(e.g., cavities, mistletoe, rust brooms) by fisher:
Live or dead conifers ≥ 36 inches DBH that have cavities, mistletoe, or rust brooms; Live or dead hardwoods ≥ 24 inches DBH that have cavities, mistletoe, or rust brooms "

The DEIS fails to explain exactly how these structures would be found or how they would be retained. Merely retaining standing conifers >36" dbh and hardwoods >24"dbh is not based on best available science. Smaller "cavity" trees would need to be retained if they are the largest ones available in a stand. In addition to standing trees, the RMP must also provide for retention of hollow logs and log piles.

For all action alternatives the DEIS:937 says to "[r]estrict activities that create noise or visual disturbance(s) above ambient conditions within 0.5 miles of known fisher natal and maternal den sites from February 1 to June 30." The DEIS/RMP has failed to restrict OHV use that would disturb fishers. Ongoing heavy OHV use on designated and user created (existing) routes in the Medford District east of I-5 would be certain to disturb denning fishers. Instead of restricting OHV use to designated routes in the Medford District, the RMP would expand authorized use to existing (user created) routes on 661,357acres that are currently limited to designated roads and trails (DEIS 1376 Table P-1 and DEIS:1386 Table P-8). We assert the initial RMP decision must be restrict OHV to designated routes in the Medford District (DEIS 1376 Table P-1) in all action alternatives to protect denning fishers, spotted owls and listed fishes.

The proposed fisher listing p. 60431 states: "Also, the National Forest and BLM units with anadromous fish watersheds provide riparian habitat conservation area buffers on either side of a stream, depending on the stream type and size. With limited exceptions, timber harvesting is generally not permitted in riparian habitat conservation areas, and the additional protection guidelines provided by National Forests and BLM may provide refugia and connectivity among more substantive blocks of fisher habitat." (emphasis added) We assert that action alternatives that have reduced existing 2 tree riparian reserves to 1 tree riparian reserves are not responsive to the combined conservation needs of coho salmon, fisher, pond turtle, and spotted owls. The fisher would benefit immensely from 2 tree width reserves along fish streams. Reducing riparian reserves by 50% seriously reduces the action alternatives contribution towards recovery of fisher (i.e. it does not meet the purpose and need). Fishers prefer undisturbed riparian areas. The robust riparian reserves in the no action alternative would best meet the needs of fishers and this conservation needs to identified for fishers.

The Proposed Listing p. 60430 states "[v]egetation management that removes important habitat elements (such as den sites and canopy cover) has a greater effect on fishers than activities that maintain these elements." The proposed listing p. 60429 states that "[b]ecause of the similarity between fisher and northern spotted owl habitat requirements, we determined this to be one of the best sources of data to evaluate the potential effects of vegetation management on loss of fisher habitat on Federal lands throughout the analysis area. We used timber harvest acreage data, approved Timber Harvest Plans, and consultations to evaluate the stressor of current vegetation management on fisher habitat."

Although not implied in the DEIS, BLM timber sale EAs frequently use maintenance of spotted owl NRF and dispersal habitat as a surrogate for protecting fisher habitat because of assumed similarities of species needs for canopy retention in older forests. The BLM must consider new

information that has found that instead of maintaining NSO and fisher habitat in recent BLM harvest units, the BLM marking and subsequent logging has actually caused NSO habitat to be downgraded and even removed. A three page letter dated August 15,2014 from Dayne Barron (Medford BLM) to Roseburg Field Office Supervisor (FWS) states: " the actual actions resulted in the removal of approximately 25 acres of NRF habitat, downgrade of approximately 10 acres of NRF habitat and the removal of approximately 91 acres of dispersal habitat." This is important because anticipated assertions by BLM (that maintaining spotted owl habitat also maintains fisher habitat through canopy retention standards) is not being implemented as stated in EAs and decision documents. The RMP/DEIS is not meeting the "purpose and need" for recovering fisher because it lacks a mechanism to ensure that canopy retention standards are met in harvest units.

A well-documented native fisher population is found primarily in the Medford BLM district (Planning Criteria:191). The DEIS lacks a spatially explicit analysis to identify lands with high habitat value and identify where specific conservation actions are needed. Fuels treatment projects are in conflict with fisher preferred habitat and spatially explicit analysis is needed to ensure that cumulative fuels treatment impacts do not harm fisher habitat. Current project level analysis simply assumes that project impacts are not important because there is abundant fisher habitat that is not being impacted. This is false and not scientifically valid. The DEIS lacks landscape scale spatially explicit analysis to identify high value habitat for fishers for protection and enhancement of "key elements" . The Draft Species Report for fisher has spatially explicit models to identify high value fisher habitat but the DEIS failed to use this "best available science".

8. The RMP/DEIS failed to analyze the effects of salvage logging, thinning, and fire suppression on wildfire dependent black-backed woodpeckers in the Medford and Lakeview District portion of planning area. The RMP failed to provide adequate post-fire snag retention standards for black-backed woodpeckers.

The black-backed woodpecker is undergoing a federal status review for a possible proposed listing. The findings from the Federal Register notice (78FR21097)[1] states:

"On the basis of our determination under section 4(b)(3)(A) of the Act, we find that information in the petition and readily available in our files presents substantial scientific or commercial information indicating that listing the Oregon Cascades-California population and the Black Hills population of the black-backed woodpecker may be warranted. This finding is based on information provided in the petition, in addition to information readily available in our files, on the possible loss of black-backed woodpecker habitat due to **salvage logging, fire suppression, and forest thinning**, and on the possible negative population effects due to small population size and climate change. We will initiate a status review to determine whether listing each population as endangered or threatened under the Act is warranted." (emphasis added)

[1] http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0F5

Federal agencies such as the BLM are required to take actions to prevent the need to list species such as the black-backed woodpecker. We recommend that the BLM review Bond et al. 2012 (attached) to develop conservation actions in the RMP to maintain and enhance black-backed woodpeckers in the planning area and decision area lands.

The DEIS/RMP failed to analyze alternative that would improve viability of black-backed woodpeckers by instituting conservation measures to provide large patches of intact burned forest, manage for dense forests with no thinning, curtail fuels treatment, and reduce the intensity of fire suppression efforts in appropriate potential habitat. Black-backed nesting appears restricted to BLM lands east of I-5 in the Medford and Lakeview districts but could extend west along the Siskiyou Crest.

The DEIS/RMP is defective because it fails to include quantitative landscape scale retention requirements for robust post-fire snag forests. Relying on action alternative limited prohibitions for commercial salvage in reserves may not be adequate to assure adequate habitat for black-backed woodpeckers to reproduce successfully. In addition, the RMP needs to identify active management to increase black-backed populations which are believed to be declining in the planning area. For example, prescribed fire that kills patches of young pine trees has been found to be successful to attract black-backed woodpeckers for successful reproduction. See link below:

http://www.yakimaherald.com/news/local/burned-out-forests-helping-some-birds-thrive/article_d29559b4-0fed-11e5-a226-9b95973e21b6.html

Although Bond et al. 2012 was written for California, most of the recommendations are applicable to the forested planning area and decision area lands east of I-5.

The DEIS/RMP is defective because it fails to require BLM to coordinate with ODFW, FWS, Forest Service, Partners in Flight and others to conduct annual scientific monitoring of black-backed woodpecker populations in the planning area similar to protocols in Bond et al. 2012. The DEIS/RMP is defective because it lacks baseline black-backed woodpecker population data for the planning area or baseline numbers of documented successful reproduction on decision area lands.

9. The DEIS/RMP spotted owl analysis (DEIS: 746-819) and management direction (DEIS: 938) is defective because post-harvest canopy monitoring have found that NSO habitat has been downgraded and/or removed contrary to decisions asserting to "maintain" habitat.

Modeling assumptions that harvest will "maintain" NSO habitat have been disproven by BLM overcutting of northern spotted owl habitat. The DEIS:938 says to "maintain habitat for spotted owls". The DEIS:938 defines what it means to "maintain habitat for spotted owls ":

> "Although structural characteristics vary across the northern spotted owl's range, northern spotted owl *nesting roosting habitat* generally is characterized by conifer

> stands with a multi-layered, multispecies canopy dominated by large (> 30 inches diameter at breast height) conifer overstory trees, and an understory of shade-tolerant conifers or hardwoods, ≥ 60 percent canopy cover, substantial decadence in the form of large, live conifer trees with deformities (such as cavities, broken tops, and dwarf mistletoe infections; numerous large snags), ground cover characterized by large accumulations of logs and other woody debris, and a canopy that is open enough to allow northern spotted owls to fly within and beneath it. Northern Spotted owl *dispersal habitat* generally is characterized by conifer forest stands with an average diameter of ≥ 11 inches at breast height and ≥ 40 percent canopy cover."

We provide data that demonstrates that BLM has overcut spotted owl habitat causing it to be downgraded or removed. We assert that modeling assumptions about harvest "maintaining habitat for spotted owls" have been shown to be false with empirical data of overcutting and that the "maintain" criteria cannot be consistently met with current timber sale marking techniques (i.e. there is no certainty for maintaining habitat). The purpose and need statement for recovering ESA listed species is not being met.

The BLM DEIS/RMP must consider new information that has found that instead of maintaining NSO and fisher habitat in recent BLM harvest units, the BLM marking and subsequent logging has actually caused NSO habitat to be downgraded and even removed. A three page letter dated August 15, 2014 from Dayne Barron (Medford BLM) to Roseburg Field Office Supervisor (FWS) states: " the actual [harvest] actions resulted in the removal of approximately 25 acres of NRF habitat, downgrade of approximately 10 acres of NRF habitat and the removal of approximately 91 acres of dispersal habitat." The O'Lickety and Lick Stew Project overcutting is not an isolated incident. Failure rates of field checked units are 90% failure to maintain. Unplanned northern spotted owl habitat downgrade and removal has been documented on the Medford District Butte Falls resource area with the Vine Maple timber sale (attached). The BLM post-implementation monitoring of the Bald Lick timber sale shows that nearly every unit logged was downgraded or removed (attached). The BLM post-implementation monitoring of Wagner Anderson timber sale found that 3 units checked had downgraded or removed spotted owl habitat and monitoring for 17 remaining units has not been posted. Klamath Siskiyou Wildlands post-implementation monitoring at the Deer North timber sale in the Grants Pass resource area found one unit with dispersal habitat removed (attached).

Notes from a BLM/FWS meeting dated September 19, 2014 states: "There is uncertainty whether the proposed level of timber harvest will be compatible with spotted owl recovery and meet ESA section 7 obligations." (attached) Obviously the extent of habitat downgrading and removal is much greater in extent than presented here and all BLM NSO post-harvest habitat monitoring needs to be analyzed for DEIS/RMP. The DEIS/RMP models are wrong because of high failure rates to maintain NSO habitat as assumed. BLM models and management directs the maintenance of NSO habitat but the BLM is actually downgrading and removing habitat.

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Jasmine Benjamin

From: m1allen@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Friday, August 21, 2015 1:15 PM
To: RMP-Comments@heg-inc.com
Subject: Fwd: American Bird Conservancy Comment - Attachment 1
Attachments: ABC Spotted Owl Comment Letter revised.pdf

---------- Forwarded message ----------
From: **RMPs_WesternOregon, BLM_OR** <blm_or_rmps_westernoregon@blm.gov>
Date: Fri, Aug 21, 2015 at 8:32 AM
Subject: Fwd: American Bird Conservancy Comment - Attachment 1
To: BLM_OR RMPWO_Comments <blm_or_rmpwo_comments@blm.gov>

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Resource Management Plans for Western Oregon
Bureau of Land Management
web: www.blm.gov/or/plans/rmpswesternoregon

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Before including address, phone number, email-address, or any other personal identifying information in your comments, be advised that your entire comment, including personal identifying information, may be made publicly available at any time. If you wish us to withhold your personal information you must state this prominently at the beginning of your comment. While individuals may request that the BLM withhold personal identifying information from public view, the BLM cannot guarantee it will be able to do so.

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---------- Forwarded message ----------
From: **Steve Holmer** <sholmer@abcbirds.org>
Date: Fri, Aug 14, 2015 at 12:17 PM
Subject: American Bird Conservancy Comment - Attachment 1
To: "BLM_OR_RMPs_WesternOregon@blm.gov" <BLM_OR_RMPs_WesternOregon@blm.gov>

AMERICAN BIRD CONSERVANCY

Shaping the future for birds

June 9, 2015

Douglas Krofta
Chief, ESA Listing
U.S. Fish and Wildlife Service
Washington, D.C. 20540
Re: FWS–R1–ES–2014–0061

Dear Chief Krofta,

Thank you very much for this opportunity to comment on the status of the Northern Spotted Owl. Due to continued population declines across all demographic study areas, the lack of breeding success, past and ongoing habitat loss, lack of adequate regulatory mechanisms to conserve the subspecies on federal lands, and the Barred Owl incursion, American Bird Conservancy (ABC) urges that the Service propose to uplist the subspecies to endangered status and additional conservation measures promptly be developed and implemented to help prevent its extinction.

Enclosed in this letter are past comments from ABC and others that underscore some of the reasons endangered status is warranted and identify critical issues that need to be addressed to stabilize owl populations and eventually recover the subspecies.

Briefly, some of these issues include decisions within the 2012 Northern Spotted Owl Critical Habitat rule to protect only high quality owl habitat versus all suitable owl habitat, and the promotion of active management and fire risk reduction in owl habitat. Recent population declines and a significant number of newly published studies indicate these issues should be reexamined and new policies developed to augment habitat protection, reduce habitat loss, and minimize the risk of Barred Owl incursion from management activities.

The best available science and the continuing decline of Northern Spotted Owl populations indicate that the agency should protect all suitable owl habitat not just high-quality owl habitat. The definition of high quality owl habitat needs to be made more inclusive to ensure sufficient habitat will be conserved to allow for recovery.

In its review of the draft Northern Spotted Owl recovery plan The Wildlife Society raised concern about the Service's narrow definition of high quality owl habitat. The Society notes that the proposed definition is only a subset of suitable habitat. Their analysis then states:

"…by limiting the definition of high quality habitat to a fairly narrow range of habitat conditions, management agencies will be able to justify thinning or commercial harvest in a broad range of naturally regenerated stands. Most of these naturally regenerating stands originated from fire and usually are suitable spotted owl habitat; therefore, they are not likely to be greatly "improved" by management. In western Oregon and Washington such stands are typically comprised of large trees that are 80-160 years old, and include scattered (i.e., residual) old-growth trees that survived wildfires. These stands may not meet the strict definition of high quality habitat, but they are often the best remaining habitat in the heavily harvested or burned landscapes that are managed by the Bureau of Land Management and Forest Service. They often occur in small patches, isolated among large areas of young forest within these disturbed landscapes, and they often serve as nest sites for spotted owls as well as

refugia for species such as flying squirrels and tree voles, which are important prey of northern spotted owls. Because of the high timber volume in these stands there is intense pressure to log them. Commercial thinning is often recommended as a prescription to reduce risk of fire or improve forest conditions for owls in these stands, despite the fact that it is usually unclear if thinning will either improve these forests as habitat for owls or accelerate their transition from suitable to high quality habitat."

This uncertainty was one of the reasons the Northwest Forest Plan included recommendations to restrict thinning in naturally regenerated stands over 80 years old in western Oregon and Washington. ABC's comments on the draft rule on pages 7-58 and a critique of the final rule is on pages 58-88.

Another concern is the continued use of the rule's adverse modification standard to justify owl take and the elimination of mature forests eight years and older that are used by Northern Spotted Owls and prey. Please see the attached ruling on the White Castle Secretarial Pilot Project that proposed to log in mature forests utilized by owls. The ruling found this was a controversial practice likely to impact owls and therefore in need of a complete environmental analysis.

Another notable project that is an example of the current lack of adequate regulatory mechanisms on federal lands is the Westside Fire Recovery Project on the Klamath National Forest. The project is inconsistent with the Northwest Forest Plan and Northern Spotted Owl conservation due to proposed extensive post-fire logging in a late-successional reserve according to comments by Dr. Jerry Franklin which are on pages 105-114.

ABC drafted a comment letter of support for the California Spotted Owl petition for listing on pages 89-95which summarizes key points that we believe are also relevant to the Northern Spotted Owl status review. Recently published studies indicate California Spotted Owls are well adapted to fire, that logging practices are contributing to population declines, and that post-fire logging in particular threatens owls and eliminates otherwise suitable owl habitat. ABC urges that these scientific findings also be applied to the Northern Spotted Owl.

Proposed and planned revisions to the Northwest Forest Plan are raising concern that existing regulatory mechanisms will be replaced with new standards that do not provide an equivalent level of protection of Northern Spotted Owls in the near term, and fail to provide for adequate protection of mature forests needed to replace and augment old-growth forests and restore the late-successional ecosystem.

Complete analysis of the draft BLM RMP is underway, but an initial review indicates that it weakens existing protections for mature forests and riparian reserves. It is of great concern that the no-action alternative in the BLM's draft RMP is based on the Northwest Forest Plan as written, as opposed to the Plan as currently implemented. As a result, there is not an accurate baseline upon which to compare the action alternatives.

The Forest Service is on a slower timetable and is currently developing a science synthesis to guide their Northwest Forest Plan revisions. Several recent letters to the administration and agency are enclosed to detail our concerns about the plan revisions and reiterate our view that additional habitat protection is urgently needed for the Northern Spotted Owl and that proposals to weaken existing standards are not based on the best available science.

It is important to consider that the backdrop of these plan revisions is a precipitous drop in owl numbers and a general lack of breeding success in many areas. A brief review of the 2013 reports finds a disturbing downward population trend.

Southern Oregon Cascades
http://www.reo.gov/monitoring/reports/nso/CAS%20nso%20demog%20annual%20report%202014.pdf

The percentage of sites where spotted owls were detected on the study area (31%) represented a 4.0%

decrease from 2013. Overall, the mean percentage of sites with owls detected has remained similar for the Wilderness and LSR, although a gradual decline is evident on both areas. In 2014 the decline in sites where spotted owls were detected in the Matrix was greater than for most years. In 2014 there were 92 non-juvenile owls detected ($\bar{x}$= 160.1, SE = 7.4, n = 25 years), with 50 males, 41 females and 1 sex unknown; this was the fewest number of owls detected during the study (Appendix 5). However, despite our more extensive night time survey effort in the spring, the number of sites where spotted owls were detected in the last two years has been the lowest ever recorded. In 2014 productivity increased relative to 2013 and was greater than in most years. The total number of spotted owls detected and the number of previously banded owls identified in 2014 were the lowest recorded for the study. Spotted owl detections at historic territories were unchanged from 2013-2014 at LSR sites, whereas, the double digit decrease in spotted owl detections in the Matrix LUA well exceeded the slight decrease in detections recorded for the Wilderness sites. Overall this has been the long-term trend across the study area as detections of spotted owls have gradually declined.

East slope of the Cascade Range, Washington
http://www.reo.gov/monitoring/reports/nso/CLE%20nso%20demog%20annual%20report%202014.pdf

In 2014 we banded 5 juvenile owls and 2 adult owls, bringing the total number of owls banded during 1989-2014 to 857 (161 adults , 69 subadults, and 627 juveniles, Table 1). Our monitoring effort has remained relatively consistent after 1992, except for 8-10 territories we began monitoring with only 1 visit per year beginning in 2002. None of these “minimum-protocol” territories contained owls in 2014. We confirmed the bands of 14 Spotted Owls, and detected another 4 Spotted Owls on 11 territories. This compares to a high of 120 owls on 64 territories in the same area in 1992 (a decline of 85%,Figures 3,4 Table 2). Four of the 5 females for which we determined nesting status in 2014 nested. We found young at an additional territory after the incubation and rearing period. Of these 5 nesting females, all produced young. Thus, the reproductive potential of the Spotted Owl population on the Cle Elum Study Area has declined over time. At the current population size, the total number of young produced in an above-average reproductive year (e.g. 2014) is only slightly greater than the worst reproductive years when the population was much larger (e.g. 1993, 1997, Figure 10). The small number of reproductive females remaining on the study area is clearly a cause for concern should this situation persist, given recent analyses that suggest there is a genetic bottleneck in this region (Funk et al. 2009).

Oregon Coast Ranges
http://www.reo.gov/monitoring/reports/nso/COA%20nso%20demog%20annual%20report%202014.pdf

In 2014, we detected owls at 48 of the 172 sites surveyed (Fig. 2, Appendix A). Owls were detected at 56 sites in 2013 (Fig. 2, Appendix A). The percent of sites in which a spotted owl was detected has gradually declined over the course of the study from a high of 88 percent in 1991 to a low of 28 percent in 2014. This was a decrease in 2014, from 33 percent in 2012 and 2013 (Fig. 3, Appendix A). In 2014, pairs were observed at 17 percent of the sites, down from 20 percent in 2013. Single owls were observed at 9 percent of the sites surveyed. In 2014, there were 2 sites (1% of total) where both a male and female were detected, but pair status was not established (Fig. 3, Appendix A). Of 33 females that met protocols for determination of nesting status in 2014, 22 (67%) attempted to nest and 12 (55%) successfully fledged young.(Appendix D, F). Of 34 females that met protocols for reproductive status, 12 (35%) produced young (Appendix E). The total number of young produced by the 12 females that produced young was 20 and the mean brood size for those 12 females was 1.67 (SE= 0.14; Appendix H).

Willamette National Forest
http://www.reo.gov/monitoring/reports/nso/HJA%20nso%20demog%20annual%20report%202014.pdf

The number of sites surveyed in 2014 was similar to the number reported in past years (171 sites; Figure 1,

Table 1). Most of the non-juvenile spotted owls detections in 2014 were pairs (68%) with substantially fewer resident single owls (12%) or single owls with unknown residency status (20%; Table 1). The proportion of sites where either a pair or a single owl was detected decreased by 11% (Table 1) and the proportion of sites where pairs were detected increased by 1% between 2013 and 2014 (Figure 1). This is the second lowest proportion of territories where we detected pairs of spotted owls to date (Figure 1). We were able to survey 35 spotted owl pairs to determine nesting status prior to 1 June 2014 (Forsman 1995). Twenty-nine of these pairs (83%) initiated nesting prior to 1 June 2014; all but one (97%) successfully produced at least one young (Figure 4). The Final Revised Recovery Plan released in 2011 (U.S. Fish and Wildlife Service 2011) has withdrawn the MOCA network and recommended that managers continue to consider the LSR land use allocation under the NWFP as the current reserve network. The Fall Creek LSR has supported as many as 25 pairs of spotted owls, but currently supports only 11. Continued loss of spotted owl pairs in that LSR may render that area ineffective as a reserve. The South Santiam, Horse Creek, and Hagan LSRs have never supported more than 11, 8, and 3 pairs, respectively. These LSRs were not likely to support more than 20 pairs of spotted owls but may provide connectivity within the reserve network.

Klamath Mountain Province of Oregon
http://www.reo.gov/monitoring/reports/nso/KLA%20nso%20demog%20annual%20report%202014.pdf

In recent years there has been a steady decline in the number of non-juveniles detected (Appendix B) and an even larger decrease in the number of pairs detected (Appendix A). The number of non-juveniles detected in 2014 (102) was the lowest ever documented on the study area (Appendix B). The number of individual spotted owls during 2014 was 54.3% fewer than the high of 223 during 2002. The number of pairs detected on the study area has declined every year since 2005. The 38 pairs detected during 2014 was the lowest number documented during the study period. Although the number of sites surveyed during this period has remained relatively constant, the number of pairs detected at sites has declined and the number of unoccupied sites has increased (Appendix A). While the recent meta-analysis (Forsman et al, 2011a) indicated that survival on the KSA was stable through 2006, the most recent data regarding occupancy has shown a steady and rapid decline, which suggests the stability of the population may be in question. The decrease in the number of subadults is even more pronounced than the decrease within all non-juvenile age classes. The highest proportion of subadults ever documented in the KSA (25.1%) occurred during 2003 and has declined to under 10% during each of the past eight years (Appendix B). The nest success rate for 2014 (80.0%) was higher than the 1990-2014 average of 74.4%.

Barred Owl Impacting Spotted Owl Population
There is mounting evidence that barred owls may be negatively impacting the spotted owl population within the KSA. This is illustrated by several apparent population trends: (1) spotted owl detections have been steadily decreasing (Figure 6) and reached the lowest point in 2014, when barred owl detections reached their highest level; (2) fecundity rates appear to be declining (Figure 8) and in only 2 of the previous 10 years was the rate above the 25 year average; and (3) the fecundity rate for sites with known barred owl presence was lower than at other sites and is continuing to decline. Forsman et al. (2011a) noted that the consistency of the negative associations between spotted owl demographic rates and the presence of barred owls supports the conclusion that barred owls are having a negative effect on spotted owl populations. The recent KSA data, with the combination of decreasing occupancy and reduced fecundity, appears to reinforce this conclusion.

Northwestern California
http://www.reo.gov/monitoring/reports/nso/NWC%20nso%20demog%20annual%20report%202014.pdf
Reproductive patterns in northern spotted owls on our study area continues to follow a pattern of low reproductive output in “bad” years and average or, occasionally, high reproductive output in “good” years. In 2014, reproductive output by spotted owls was one of the highest observed (Table 6) during the 30 years of the study, only slightly less than reproductive output observed in 2001. In general, productivity and the proportion

of nests that fledge young have remained relatively stable while the proportion of birds nesting each year is primarily responsible for variation in reproductive output. The average rate of population change for the WCSA population was 0.975, suggesting the WCSA population was declining at a rate of 2.5% per year. Based on 95% confidence interval, this estimate was different than a stationary population. However, this average rate of decline does not reflect the fairly dramatic loss in the population observed in 2011 and 2012 (Figure 4) although there was no apparent loss in 2013.

Olympic Peninsula
http://www.reo.gov/monitoring/reports/nso/OLY%20FS%20nso%20demog%20annual%20report%202014.pdf

During the 2014 field season, we conducted 231 visits to 40 historical survey areas (mean survey visits per site = 6.0 ± 0.38 SE). Spotted owl pairs were detected at 5 sites (Tables 1–2). We detected spotted owls at 3 other sites during night surveys. Follow-up visits at the latter sites indicated that the spotted owl detections were from paired individuals that had been previously documented at adjacent sites. Of the 10 adult spotted owls detected in 2014, 6 were previously banded and 4 (2 male, 2 females) were banded for the first time (Table 3). The total number of territorial owls detected in 2014 decreased slightly from 2013 and was still far below historical levels (Table 1). In contrast, the number of survey areas in which we detected barred owls remained high (Fig. 3). All 5 females located in 2014 attempted to nest (Table 4) and 4 of the 5 females that nested produced young (Table 5). We documented 7 juveniles that successfully left the nest and 1 juvenile that was found dead at the base of a nest tree. As the total number of territorial adults detected on the study area in 2014 decreased slightly from 2013, the number of owls detected on the study area remained far below historical levels. This was the first year in which significant numbers of spotted owls nested on the study area 2 since 2010. Although this is a positive sign, the generally low level of reproduction in most years since 2010 is resulting in an aging population.

Olympic National Park
http://www.reo.gov/monitoring/reports/nso/OLY%20NPS%20nso%20demog%20annual%20report%202014.pdf
In 2014, National Park Service personnel monitored and managed data on a sample of 52 spotted owl territories (hereafter "sites") to measure survival and reproductive rates, as well as site occupancy status. Crews made 233 visits to these sites, detecting spotted owl pairs at four and single spotted owls at six. This was the lowest proportion of sites with detections of spotted owls for any year of this study. At the ten sites where spotted owls responded, they were found on an average of 58% of monitoring visits. We documented four nest attempts and all were successful, fledging a total of six young. ONP crews banded three new adult spotted owls, one subadult, and one juvenile.

Tyee Density Study Area, Roseburg, Oregon
http://www.reo.gov/monitoring/reports/nso/TYE%20nso%20demog%20annual%20report%202014.pdf

In 2014, we documented 65 non-juvenile spotted owls in the DSA, including 27 pairs and 11 unpaired individuals (Appendix 2). This represents approximately 46% of the number of individuals that were located during the first year of the study in 1990 and was the lowest number of owls detected since inception of the study (Fig. 2). It also represents the first year that the population of spotted owls has dipped below 50% of the original 1990 population level. A comparison of the proportions of known-age owls detected in the study area in 1996, 2005, and 2014 indicates an aging population, with low recruitment of young owls in recent years (Fig. 3). Within the DSA we documented only 3 individuals under the age of 5 years old in 2014 as compared to 34 individuals in 1996. Median age in 1996 was 6 years old for males and 7 years old for females. It was very similar in 2005 where the median age for males was 7 years old and for females it was 6 years old. By 2014, the median age had raised to 10 years old for both sexes. In 2014, the number of pairs and the total number of non-juvenile spotted owls detected was the lowest recorded for the 25 year survey period (Fig. 4). In 2014, approximately 81% of the pairs (N=27) and 64% of the nesting pairs (N=11) in the DSA were located on federal

land and 36% were on private land. Although proportion of females nesting in 2014 was higher than the previous year, (0.40, 95% CI = 0.20- 0.60), the proportion of those that actually were successful (2 out of 10) was well below the 62.7% average. The number of females actually nesting has severely declined in the last 5 years and remained low as the population of spotted owls continued to decline (Fig. 2). For all years combined, the annual percentage of females that nested averaged 48.6% (N= 25 years, Table 1). The average number of young produced per female in 2014 was 0.172, which was considerably lower than the average of 0.506 for all years (N=25) (Appendix 3). The data continued to indicate that most measures of reproductive performance of spotted owls were lowest for 1-yr-old owls, intermediate for 2- yr-old owls, and highest for adults (Tables 2–3).

Hoopa Valley

Of 60 historic spotted owl territories within and adjacent to the DSA, All were surveyed using night calling while 54 received at least one day-time site visit with a total of 188 site visits during the 2014 season. Twenty four activity centers were confirmed occupied during the 2014 season with 15 pairs and 9 single males within the DSA and the 2 territories in the ANNEX portion of the reservation along the southeast boundary (Table 1). In addition, 1 territory outside the DSA was also surveyed, off the NE corner which supported a pair. Of the 15 pairs checked for nesting status, 5 were nesting (Tables 1 and 2). The five nesting pairs fledged 10 young and the number of young fledged (NYF) per female monitored was 0.67 owlets per female monitored (Table 2). The estimate of RJS for the period 1995-2013 was 0.972 (SE 0.01 and 95% CI 0.953-0.991). This point estimate of lambda indicates that the population is declining by 2.3% annually. The top random effects model included a quadratic time trend $\phi(t)$ $p(t)$ $\lambda(t)$: RE (T+TT) (Figure 3). The recent decline in survival, the point estimate of RJS and the actual number of birds detected this past season all point to a population that is in fact, declining. This apparent decline in spotted owls corresponds with an increase in total annual barred owl detections and proportion of spotted owl territories with barred owl detections (Figure 1).

The Northern Spotted Owl 2014 Demography Studies, **http://www.reo.gov/monitoring/reports/northen-spotted-owl-reports-publications.shtml** are now available. Also please incorporate the results of the January 2015 spotted owl demographic meta-analysis workshop held in Corvallis. You can obtain a copy from USGS, which has embargoed its public release.

We believe a 12-month finding for endangered status would offer the Service an opportunity to review and analyze recent scientific studies and assess current management practices. Meanwhile, we urge the Service to develop and adopt interim protections for the Northern Spotted Owl. Specifically, we ask that the Service not allow for take of Northern Spotted Owls in connection with forest management activities on federal lands and to develop an outreach strategy to state and private landowners to adopt Habitat Conservation Plans or other measures to reduce take and to conserve suitable habitat.

Thank you for considering these comments on behalf of American Bird Conservancy. I can be contacted at sholmer@abcbirds.org, or 202-888-7490 if you have any questions or if I can be of further assistance.

Sincerely,

Steve Holmer
Senior Policy Advisor
American Bird Conservancy

American Bird Conservancy Comment Letter on Draft Northern Spotted Owl Critical Habitat Rule

July 6, 2012

Public Comments Processing
Attn: FWS-RI-ES-2011-0112
Division of Policy and Directives Management
U.S. Fish and Wildlife Service
4401 N. Fairfax Dr. MS 2042-PDM
Arlington, VA 22203

Thank you for this opportunity to comment. This letter and attached appendices on the proposed designation of Critical Habitat for the threatened Northern Spotted Owl are submitted on behalf of American Bird Conservancy (ABC).

Additional habitat protection is needed to stabilize and eventually recover the Northern Spotted Owl's population and ABC appreciates that the U.S. Fish and Wildlife Service (the Service) has identified nearly 14 million acres of potential Critical Habitat necessary to recover the threatened species and the old-growth ecosystem upon which it depends. With some modest additions, the Final Rule can provide a path towards eventual recovery and delisting of the species.

ABC supports designating as Critical Habitat all of the 13,961,684 identified acres, and adding all areas within the late-successional reserve network that were excluded, plus any occupied or suitable Northern Spotted Owl habitat that was not identified in the draft.

ABC is deeply concerned about the draft Rule's encouragement of active management in Northern Spotted Owl Critical Habitat, the changes it suggests to management plans and projects, and logging projects in suitable owl habitat that have already been initiated. The 2010 Final Northern Spotted Owl Recovery Plan is already influencing management changes on federal forests potentially detrimental to the restoration of large blocks of habitat needed to recover the Northern Spotted Owl such as regeneration of moist forests to create early-seral habitat. The draft Critical Habitat rule could expand this harmful policy and should be revised to instead to favor reducing forest fragmentation by maintaining the system of late-successional reserves to allow the continued formation of large blocks of suitable habitat.

A number of the Recovery Actions in the Final Recovery Plan appear to be contradictory, some calling for the protection of additional owl habitat, while others allowing, even encouraging increased adverse modification. This contradiction is also found in the draft Critical Habitat rule which proposes a significant increase in Critical Habitat acreage while at the same time green-lighting logging techniques proven harmful to owls and owl habitat, eliminating the proven late-successional reserves necessary to ensure large blocks of habitat, and recommending protection only for the very highest quality owl habitat.

The Environmental Assessment concluded that a wide degree of uncertainty would be created in regard to

timber outputs, depending on how the Rule was implemented, and which of the advisory Recovery Actions were followed by the land management agencies. While the assessment did analyze different scenarios for timber production, it did not analyze a reserve-less strategy that could potentially allow for logging in currently-protected forests older than 80 years but not yet old enough to be considered high quality owl habitat. At the same time, the Service appears to endorse a policy of reserve-less management on page 94.

A more complete Environmental Assessment is needed for the public to be able to fully assess the potential consequences of this Rule. Similarly, the Economic Analysis is faulty and offers an incomplete look at the economic effects of the Rule by analyzing only the potential value of timber production, while ignoring the monetary benefits of other important values provided by maturing and old-growth forests such as stable stream flows, clean water supplies, and carbon storage.

Based on the available information in the draft Rule and Environmental Assessment, we must assume the elimination of late-successional reserves is a potential application of this Critical Habitat rule and Final Recovery Plan. Therefore the effects of eliminating the reserves should be fully analyzed by the Rule and companion Economic Analysis and Environmental Assessment. And because this analysis is notably absent, and because the Economic Analysis did not analyze the vast majority of economic activity on the forests affected, the public is currently unable to determine the full consequences of the pending rule.

We therefore urge the Service to make abundantly clear to the public and to the land managing agencies that elimination of the reserves is not an application of, or a recommendation of the final Rule, economic analysis, or environmental assessment.

The Service is promoting an unacceptably risky strategy in the Final Recovery Plan, Draft Rule and ESA consultations in regard to short-term losses of Northern Spotted Owl, a species that the evidence indicates merits endangered status. The draft Rule leaves many important questions unanswered. There is a lack of quantification of how many Northern Spotted Owls can be taken or habitat acres degraded, no thresholds are provided that land managers should not exceed, nor is there any indication how many additional owls may (or may not) be gained by the claimed long-term habitat benefits of the projects, or how and where large blocks of habitat will be recovered absent the reserves. Given these uncertainties, a more cautious approach that maintains the reserves created by the Northwest Forest Plan is warranted.

Thank you for this opportunity to comment. In the pages that follow are additional comments on the proposed Critical Habitat rule, essential background, and supporting materials that we hope you will find useful as you develop the final Rule. We look forward to working with the Service to preserve and recover the Northern Spotted Owl.

Siskiyou National Forest, Oregon.

Comment Letter to President Barack Obama

Below is a comment letter concerning the Draft Critical Habitat rule from conservation groups and scientific organizations sent to President Barack Obama asking the mature and old-growth forests be protected and the Rule be changed to ensure the system of late-successional reserves created by the Northwest Forest Plan are maintained:

American Bird Conservancy ⁂ Natural Resources Defense Council
Sierra Club ⁂ Center for Biological Diversity ⁂ Friends of the Earth Endangered Species Coalition
⁂ Oregon Wild ⁂ Conservation Northwest WildEarth Guardians ⁂ Cornell Lab of Ornithology ⁂
Geos Institute

July 2, 2012

The Honorable Barack Obama
President of the United States of America
The White House
1600 Pennsylvania Ave NW
Washington D.C. 20500

Dear President Obama,

The undersigned organizations urge your support for the conservation of the mature and old-growth

forests in the Pacific Northwest. These magnificent forests provide clean drinking water for millions of Americans, a world-class tourism destination, sustainable forestry, and habitat essential to the survival of hundreds of species of wildlife.

Conservation of the old-growth ecosystem as symbolized by the Northwest Forest Plan developed under the leadership of President Bill Clinton was a significant environmental advance that ended decades of unsustainable management practices in the region.

Studies show that the Northwest Forest Plan is working as intended to retain mature and old forests, and that the highly fragmented forest ecosystem is growing back into the large blocks of mature forest habitat needed to maintain water quality and recover threatened species such as the Northern Spotted Owl, Marbled Murrelet and Pacific salmon stocks.

Your administration recently released a draft Critical Habitat proposal for the Northern Spotted Owl that identifies sufficient habitat necessary to conserve the threatened species and the old-growth ecosystem upon which it depends. We commend the agency's use of modeling to identify the proposed acreage which we believe represents the best available science.

However, the draft plan and accompanying Presidential Memorandum raise concern because of the proposed active management in owl critical habitat that is not supported by the best available science. Three major scientific societies are advising the administration to conduct more research on the effects of active management on owl populations before treatments are applied more broadly. We agree with the scientists' call for caution.

The draft also includes provisions that could have the unintended consequence of weakening or eliminating habitat protections of the Northwest Forest Plan. We respectfully urge the administration to modify the proposed Critical Habitat rule to ensure that the protected reserves of the Northwest Forest Plan are maintained so that future generations of Americans will be assured they will have an opportunity to enjoy the splendor of these old-growth forests.

Sincerely,

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APPENDICES

A. Petition to list the Northern Spotted Owl as Endangered prepared by the Geos Institute

B. Comments on the Draft Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl by Ernie Niemi

C. Email from David Iverson, Region 4, dated August 6, 1990, Goodbye Thoughts, and "Inside Out" by Steven P. Smith, a farewell commentary by a Willamette National Forest biologist.

D. Scientific Societies Request for Environmental Impact Statement of Proposed Active Forest Management in Spotted Owl Critical Habitat

E. Open Letter to President Barack Obama from 229 Scientists in Support of Northwest Forest Plan

F. The Wildlife Society Peer Review of the 2010 Draft Revised Recovery Plan for the Northern Spotted Owl

G. Summary of Key Findings, Northwest Forest Plan: The First 15 Years (1994-2008), (Davis et al 2011), R6-RPM-TP-03-2011

H. Watershed Condition Status and Trend (Laningan et al 2012), General Technical Report PNW-GTR-856, February 2012

I. Comment letter submitted by Earthjustice on behalf of plaintiff groups

J. Forest Service and BLM Volume Offered under Northwest Forest Plan (FY 1995 – FY 2010), Region 5 & 6 PTSAR Report, and BLM Timber Sale Information System.

K. What is Wrong with the Secretarial Pilot Projects by Francis Eatherington, Cascadia Wildlands

Executive Summary

Draft Critical Habitat Rule Weakens Habitat Protection for the Northern Spotted Owl

Studies show that the Northwest Forest Plan is working as intended to retain mature and old forests, and that the highly fragmented forest ecosystem is growing back into the large blocks of mature forest habitat needed to maintain water quality and recover threatened species such as the Northern Spotted Owl, and Marbled Murrelet.

With some modest additions the draft Critical Habitat proposal for the Northern Spotted Owl identifies sufficient habitat necessary to conserve the threatened species and the old-growth ecosystem upon which it depends. ABC commends the agency's use of modeling to identify a significant increase in proposed acreage which we believe represents the best available science. We support designating all of the identified acres, plus additional areas

that warrant designation such areas in late-successional reserves, currently occupied and suitable owl habitat.

However, the draft plan and accompanying Presidential Memorandum raise concern because of the proposed active management in owl critical habitat that is not supported by the best available science. Three major scientific societies are advising the administration to conduct more research on the effects of active management on owl populations before treatments are applied more broadly. We agree with the scientists' call for caution.

The draft also includes provisions that could have the unintended consequence of weakening or eliminating habitat protections of the Northwest Forest Plan. In particular, the provisions in the draft plan encouraging unproven thinning and restoration logging, combined with the expansive definition of adverse modification that allows degradation of owl habitat, have the potential to allow for logging of areas now protected by the Northwest Forest Plan, including mature forests that the Plan had intended to become old-growth.

These provisions, which were repeated numerous times in the draft, appear to intend a substantial increase of timber harvest in the region while providing a minimum of habitat protection, in terms of both total acreage by encouraging unwarranted exclusions, and weaker management standards than the standards and guidelines of the Northwest Forest Plan's late-successional reserves. This language has the potential to allow excessive logging to the detriment of the Northern Spotted Owl population and may foreclose owl recovery by not providing adequate late-successional forest necessary to ensure high quality owl habitat in the future.

There is also concern about changes to land management plans resulting from the Critical Habitat rule and Final Recovery Plan. The Service tacitly endorsed elimination of the owl reserves east of the Cascade Crest by including language favorable to that approach in the Owl Recovery Plan. The proposed Okanogan-Wenatchee Forest Plan revision would eliminate the existing owl reserves and in the Environmental Assessment (p. 94), it says that would be consistent with Recovery Plan and therefore compatible with owl recovery.

We strongly disagree. It should be noted that this portion of the Draft Recovery Plan was strongly criticized by peer reviewers, but in the Final Plan, their concerns were not addressed.

We respectfully urge the U.S. Fish and Wildlife Service to modify the proposed Critical Habitat rule to ensure that the protected reserves of the Northwest Forest Plan are maintained so that future generations of Americans will be assured they will have an opportunity to enjoy the splendor of these old-growth forests.

Recommended Changes

We urge that the Final Critical Habitat Rule make clear that eliminating the system of late-successional reserves would be detrimental to owl recovery and is not a recommended outcome of this rulemaking, or the Environmental Assessment and Economic Analysis.

The proposal encouraging adverse modification of habitat for ecoforestry purposes is not supported by the best available science. We recommend it be removed from the final rule.

We recommend that the determinations of adverse modification be at the appropriate fine scale to ensure ESA compliance.

We recommend that the standards and guidelines of the Northwest Forest Plan late-successional and riparian reserve systems be used to preclude inappropriate or unsustainable management practices. The Northwest Forest Plan allows for restoration and provides standards and guidelines that are more protective of owls and better suited to experiments in ecological restoration.

Prescriptive requirements to retain trees above a certain age or size to restore the deficiency in old forests, and mapping where large blocks of closed canopy forests will be retained and allowed to mature is necessary to ensure these values will be not become subject to mismanagement or overcutting.

Active management in owl habitat should be considered experimental, conducted on a small scale, and monitored to determine its impact on Northern Spotted Owls. The necessity and benefits of active management in owl habitat remains in dispute.

We recommend the Service develop an environmental impact statement to devise a research strategy that addresses this question.

American Bird Conservancy

American Bird Conservancy (ABC) is a 501(c)(3) non-profit organization whose mission is to conserve native birds and their habitats throughout the Americas. It achieves this by safeguarding the rarest bird species, restoring habitats, reducing threats to bird species, and building capacity to advance bird conservation.

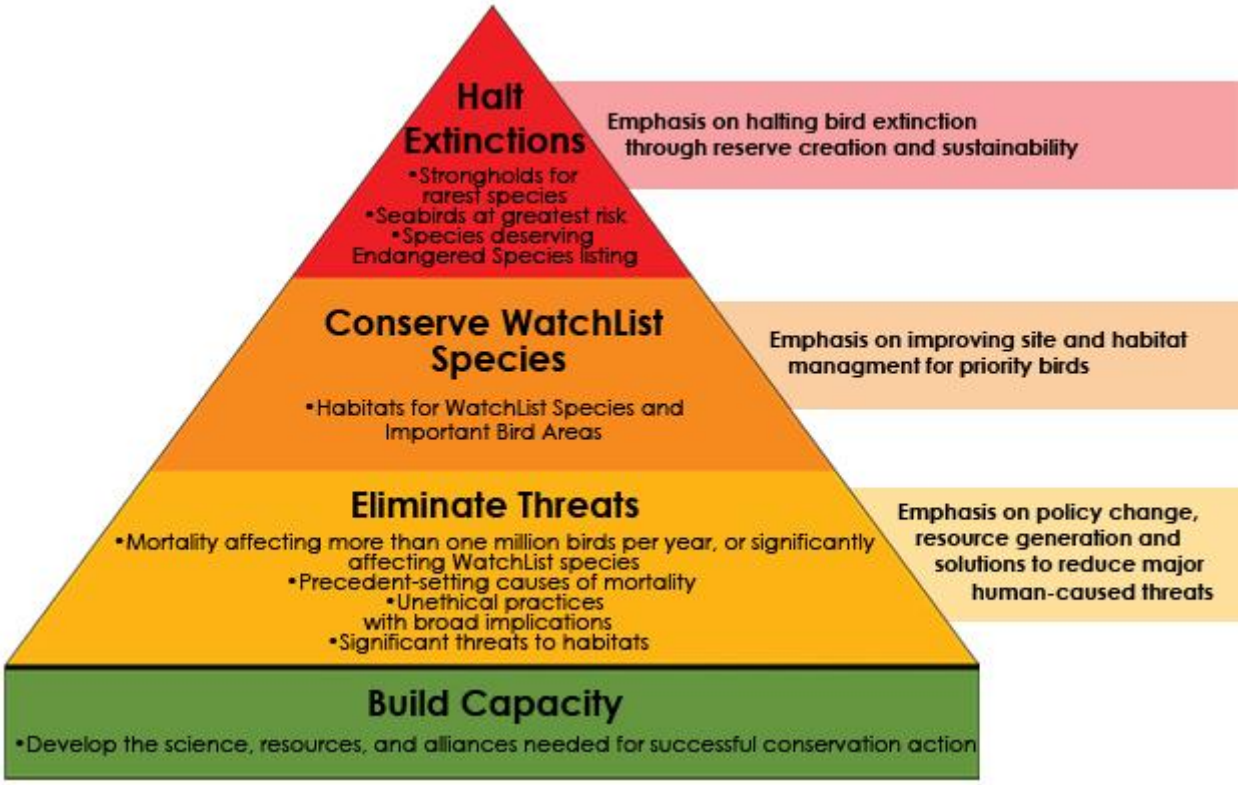
ABC is the only U.S.-based group with a major focus on bird habitat conservation throughout the entire Americas. ABC has more than 8,000 individual members and 30,000 constituents. ABC's members, supporters, and activists enjoy viewing, studying, and photographing migratory birds. Some of its members and constituents routinely observe the Northern Spotted Owl in California, Washington, and Oregon.

ABC is a leading organization working to reduce threats to birds from habitat destruction; from collisions with buildings, towers, and wind turbines; and from toxins such as hazardous pesticides and lead.

ABC uses a variety of mechanisms to achieve these objectives including scientific research and analysis; advocating for bird conservation at the local, state, regional, and federal levels; forming bird conservation partnerships; and pressing for meaningful regulatory changes to address such threats effectively through various means, including rulemaking petitions and litigation. See, e.g., ABC v Fed. Communications Commission, 516 F.3d 1027 (D.C. Cir. 2008) (in response to ABC's review petition seeking protection of migratory birds from collisions with communications towers, the court vacated a part of the order for violation of the National Environmental Policy Act ("NEPA"), 42 U.S.C. § 4321 et seq.).

ABC's staff includes more than 20 scientists with expertise in bird conservation. ABC's scientists have published in many reputed journals such as the Antarctic Journal of the United States, The Auk, Biodiversity Conservation, Biological Invasions, Biological Sciences, Bird Conservation International, Boletin SAO, Canadian Field Naturalist, Chelonion Research Monographs, Colonial Waterbirds, Condor, Cotinga, Ecological Applications, Ecology, Emu, Florida Field Naturalist, International Zoo Yearbook, Journal of Avian Medicine and Surgery, Journal of Field Ornithology, Journal of Raptor Research, Journal of Wildlife Diseases, Journal of Wildlife Management, Molecular Ecology, Neotropical Birding, North American Bird Bander, Oecologia, Ornitologiá Columbiana, Ornitologiá Neotropical, Oryx, Pacific Conservation Biology, Proceedings of the National Academy of Science, Proceedings of the Western Foundation of Vertebrate Zoology, Wilson Bulletin, Wilson Journal of Ornithology, and Zoo Biology.

The American Bird Conservancy Strategic Bird Conservation Framework



The problems facing birds today are myriad and complex, requiring a far-reaching, bold vision for conservation. ABC has developed a unique and successful strategy to preserve bird diversity and maintain or increase wild bird populations. This strategy is fully articulated in *The American Bird Conservancy Guide to Bird Conservation* published in 2010 by University of Chicago Press (ISBN-13:978-0-226-64727-2).

The highest bird conservation priority is halting extinctions, followed by conserving and restoring habitats. In the case of the Northern Spotted Owl draft Critical Habitat rule, the Service is proposing to place lower priority general habitat needs before the specific needs of an endangered species, even to the point of allowing large numbers of Northern Spotted Owls to be killed (taken) and significant habitat to be degraded or completely eliminated for decades. While the stated goal to improve future habitat conditions for the owl is well-intended, this activity is not supported by peer-reviewed studies showing owl populations will benefit, and it is, in fact, pushing an already extremely imperiled species closer to extinction and should be immediately halted.

Review Indicates Endangered Status Warranted for Northern Spotted Owl

A review of the extensive literature on the Northern Spotted Owl, forest ecology, and conservation biology published over the two decades since the subspecies was listed indicates Northern Spotted Owl populations have continued to decline and now meet the Endangered Species Act's definition of an *endangered* species, that is, it is *"…in danger of extinction throughout all or a significant portion of its range…"*. As a result, stronger conservation measures are needed than the Service is currently considering.

On federal lands, Northern Spotted Owl populations not only continue to decline despite the Northwest Forest Plan, the decline is accelerating and vital rates are deteriorating (Forsman *et al*. 2010). In study areas not managed under the Northwest Forest Plan owl declines are significantly greater (Anthony *et al*. 2006). A recently published large-scale demographic study (Forsman *et al*. 2010) found that the species is declining on seven of eleven active demographic study areas at about 3% annually range-wide, and concluded that the Northern Spotted Owl clearly is on a trajectory towards extinction. Funk *et al*. (2010) provides evidence for recent genetic bottlenecks in northern spotted owls that increase the vulnerability of the Northern Spotted Owl to extinction.

Currently, the subspecies is already nearly extirpated in much of its range. In British Columbia, as far as we know, all remaining birds are in captivity; few remain on the Olympic Peninsula, Southwest Washington, and the northern portion of the Oregon Coast Range. Populations are very small and isolated in most of Washington where rates of decline are highest. Areas that have little federal land support few or no owls, and Forsman *et al*. (2010) state that as a result, too few Northern Spotted Owls exist in four regions (southwestern Washington, the Coast Range of northwest Oregon, the California Cascades, and much of Washington's Olympic Peninsula) to conduct a demographic study with their methods. Further, the literature suggests these declines are not likely to lessen even with the latest owl recovery plan in place due to the un-quantified and unmitigated risks accepted in the plan.

Considering that the best available science has documented an ongoing, range-wide decline of the Northern Spotted Owl and its extirpation in many regions that historically were occupied, we are requesting that the Service upgrade the Northern Spotted Owl's Endangered Species Act listing status from *threatened* to *endangered* and take decisive action to stop the further deterioration of the Northern Spotted Owl's population and degradation of its habitat.

The Northern Spotted Owl meets the Endangered Species Act's definition of an *endangered* species because of impacts under four of five criteria established under the Endangered Species Act for determining the status of a species. A brief summary is provided here and the full analysis developed by the Geos Institute is available in the appendix.

1. **The present or threatened destruction, modification, or curtailment of the owl's habitat or range**

The Northern Spotted Owl is endangered by loss and modification of habitat, due especially to historic and ongoing logging and fire associated management. Over a century of logging has removed much of the Northern Spotted Owls' habitat. In 1990, habitat loss was estimated at 60-88% since the early part of the 19th Century. Since the owl was listed in 1990, habitat loss has continued throughout the owls' range. While much of this loss

has slowed on federal lands due to the Northwest Forest Plan, habitat loss continues at relatively high rates on nonfederal lands. Additionally, it appears that the effects of past logging still are occurring on both federal and nonfederal lands as increased fragmentation and habitat loss propagate through the ecosystem.

The Northwest Forest Plan assumed a period of decades would be necessary before habitat in many of the late-successional reserves became suitable for owls; only about 36% of the reserves currently are functioning as old-growth forests, with most of the reserves still in various stages of recovery from logging. Additionally, other human actions, including post-disturbance logging and extensive fuel treatments, urban development, livestock grazing, mining, recreation, and road construction, have contributed to past and continue to contribute to present cumulative losses and degradation of Northern Spotted Owl habitat and their prey.

2. Disease or predation

The Northern Spotted Owl is subject to disease and predation pressures that have increased substantially since its listing. Changes in habitat that result in more open areas (e.g., from forest thinning) and increased fragmentation of older forests likely cause an increase in predation by Great Horned Owls, Northern Goshawks, and Red-Tailed Hawks that either increase mortality on adult Spotted Owls or on dispersing juveniles. In addition, Leskiw and Gutiérrez (1998) present evidence of predation on Spotted Owls by Barred Owls, a risk that is growing with increasing overlap in distribution of Spotted and Barred Owls.

3. Inadequacy of existing regulations to protect the owl and its habitat

The Northern Spotted Owl is endangered and its habitat is subject to adverse modification due to the inadequacy of existing state and federal regulations. Existing regulations have failed to truly protect the Northern Spotted Owl and its habitat on private, state, or federal lands. This failure is evidenced by the continued loss and degradation of owl habitat, the failure to restore habitat damaged by past management practices, and by a demonstrated failure to reverse the decline of the Northern Spotted Owl over the last two decades.

4. Other natural or human caused factors

The Northern Spotted Owl is endangered by threats associated with the continued increase in Barred Owl populations. These detrimental impacts may be interacting with habitat loss and fragmentation to accelerate the decline of Northern Spotted Owl populations. Barred Owls compete with Northern Spotted Owls and are considered a major threat to Spotted Owls. Collapse of Northern Spotted Owl populations has followed the north to south invasion of the Barred Owl and areas that recently have been invaded by Barred Owls are beginning to show signs of population declines.

A Conservation History of the Northern Spotted Owl

The conservation history of the Northern Spotted Owl offers important lessons that should advise the options developed by policymakers. The consequences of past active management and agency misconduct have engendered mistrust with the public, and are a reason for caution whenever new proposals for active management in owl habitat are considered.

The damage caused to the National Forests by overcutting during the 1960s, 1970s, 1980s, and 1990s has yet to be addressed by the land management agencies. For example, there remains an excess of logging roads on the National Forests and an estimated $10 billion backlog of road maintenance. The impacts to publicly owned forests are reduced water quality, increased water filtration costs for downstream communities, and diminished fisheries and aquatic ecosystems.

Agency scientists first confirmed the Northern Spotted Owl's decline and connection to old-growth forest habitat in 1983. But instead of taking steps to moderate habitat loss, a series of legislative riders allowed for record logging levels in owl habitat from 1983 – 1990 and listing of the species as threatened was delayed until 1990.

Aerial view of fragmentation and road impacts in Oregon's Coast Range.

In 1990, Congress passed an old-growth logging rider (section 318 of the FY 1990 Interior Appropriations bill) that overturned two court injunctions that had halted over 140 old-growth timber sales, and orders the Forest Service and Bureau of Land Management (BLM) to offer a fixed volume of timber in Washington and Oregon during that year, about 9.6 billion board feet. It also includes sufficiency language saying citizens could not challenge these projects if they violate environmental laws except for the Endangered Species Act. Many of these projects did not have stream buffers to protect water quality or other minimal environmental safeguards.

Defeat of the next legislative amendment offered in 1991 to prevent environmental review of timber sales in owl habitat, opened the court house door to legal challenges against timber sales proposed in owl habitat. In 1991, Federal Judge William Dwyer then ruled the agency had systematically and deliberately failed to abide by wildlife protection laws.

Regeneration harvest fragments habitat which is detrimental to the Northern Spotted Owl. Mt. Hood National Forest, Oregon.

Judge Dwyer's scathing ruling and resulting injunctions shut down the region's timber sales program on federal lands. In Congress, public pressure was building for permanent protection of the ancient forests. Only the intervention of Speaker of the House Thomas Foley prevented a House vote on the Ancient Forest Protection

Act, a bill that had been championed by Rep. Jim Jontz.

The injunctions and political gridlock prompted intervention by incoming President Bill Clinton. A forest summit was held in Portland, Oregon in 1993, and agencies were directed to develop the Northwest Forest Plan. This was a first of its kind, multispecies and ecosystem conservation plan intended to protect late-successional forests and riparian areas, as well as the Northern Spotted Owl, Marbled Murrelet, Pacific Salmon stocks, and 600 other old-growth-dependent species. The Plan went into effect in 1994 and it remains today the best available conservation framework of its kind.

The Emergency Rescissions Act of 1995, better known as the "salvage logging rider" or "lawless logging", suspended most environmental laws from June 1995 until December 1996 to allow the Forest Service to address forest health emergencies. Instead of legitimate restoration, the public witnessed hundreds of old-growth and roadless area timber sales offered for sale, including dozens in the Pacific Northwest that had been previously ruled illegal by federal courts.

Strong public opposition and hundreds of protests ensued. Pressure on the Clinton Administration led then Secretary of Agriculture Dan Glickman to cancel over 150 of the roadless area projects that had been offered under the Rider, but many of the old-growth sales were logged.

Agency budgeting and the system of incentives created by Congress to boost logging played a role in the management abuses that occurred under the rider. In 1976, the Forest Service Salvage Fund was created to expedite the removal of insect-infested, dead, damaged, or down timber. Salvage sale revenues are deposited in the Salvage Fund to pay for additional projects. The Fund created an incentive for managers to promote salvage sales, because forest managers keep the sales receipts instead of returning the funds to the Treasury.

The Interagency Review on the Salvage Program of 1996 found that the fund creates a financial incentive for agency managers to choose salvage logging when other restoration activities that do not return receipts to the agency would be more appropriate. Other incentives such as the KV fund were found to create a similar problem. By allowing the Forest Service to keep all timber sale receipts instead of returning the proceeds of selling the public's timber to the Treasury, a powerful incentive has been created for the agency to overcut the forest to maintain their own budgets and staffing levels.

In the aftermath of the Salvage Logging Rider, multiple attempts were made in Congress and by the subsequent Bush Administration to expedite logging by weakening or eliminating environmental protection and public involvement for timber sales nationwide. Most of these efforts, such as Rep. Bob Smith's Forest Health Bill of 1997, were unsuccessful, but the Healthy Forests Restoration Act of 2003 did pass and was signed into law by President Bush, although only after significant changes were made to target projects towards thinning around homes and communities.

Repeated attempts were also made to reduce or eliminate key protections of the Northwest Forest Plan, including agency proposals to eliminate the survey and manage requirement, and the aquatic conservation strategy protecting streams and degraded watersheds. The Northern Spotted Owl Critical Habitat designation and Owl Recovery Plan offered by the Bush Administration were heavily criticized as scientifically flawed and biased against the Northwest Forest Plan.

A later investigation by the Department of Interior's Inspector General confirmed that political interference had prevented the Service from preparing a scientifically sound Recovery Plan. This contributed to the Recovery Plan being remanded and the Critical Habitat designation being thrown out.

In addition, BLM developed and publicly promoted the Western Oregon Plan Revisions (WOPR), a scientifically

flawed plan that would have eliminated the late-successional reserves or allowed logging in reserve to increase logging of federal mature and old-growth forests managed by BLM in Oregon by 400%. Independent scientific reviews, including those by the U.S. Environmental Protection Agency and National Marine Fisheries Service, found the plan would likely cause significant harm to the forests, water quality, and threatened species. A review of the draft plan by BLM's own science assessment team found numerous deficiencies.

The WOPR planned for the elimination of 680 known nesting sites of the threatened Northern Spotted Owl, and another 600 known nesting sites of the Marbled Murrelet, a threatened sea bird that also depends on old-growth forests. The BLM's flawed WOPR analysis concluded that owl and murrelet populations would not be harmed by increased logging, but BLM refused to consult with Service wildlife experts on its plan. A federal judge rule the WOPR illegal in March 2012.

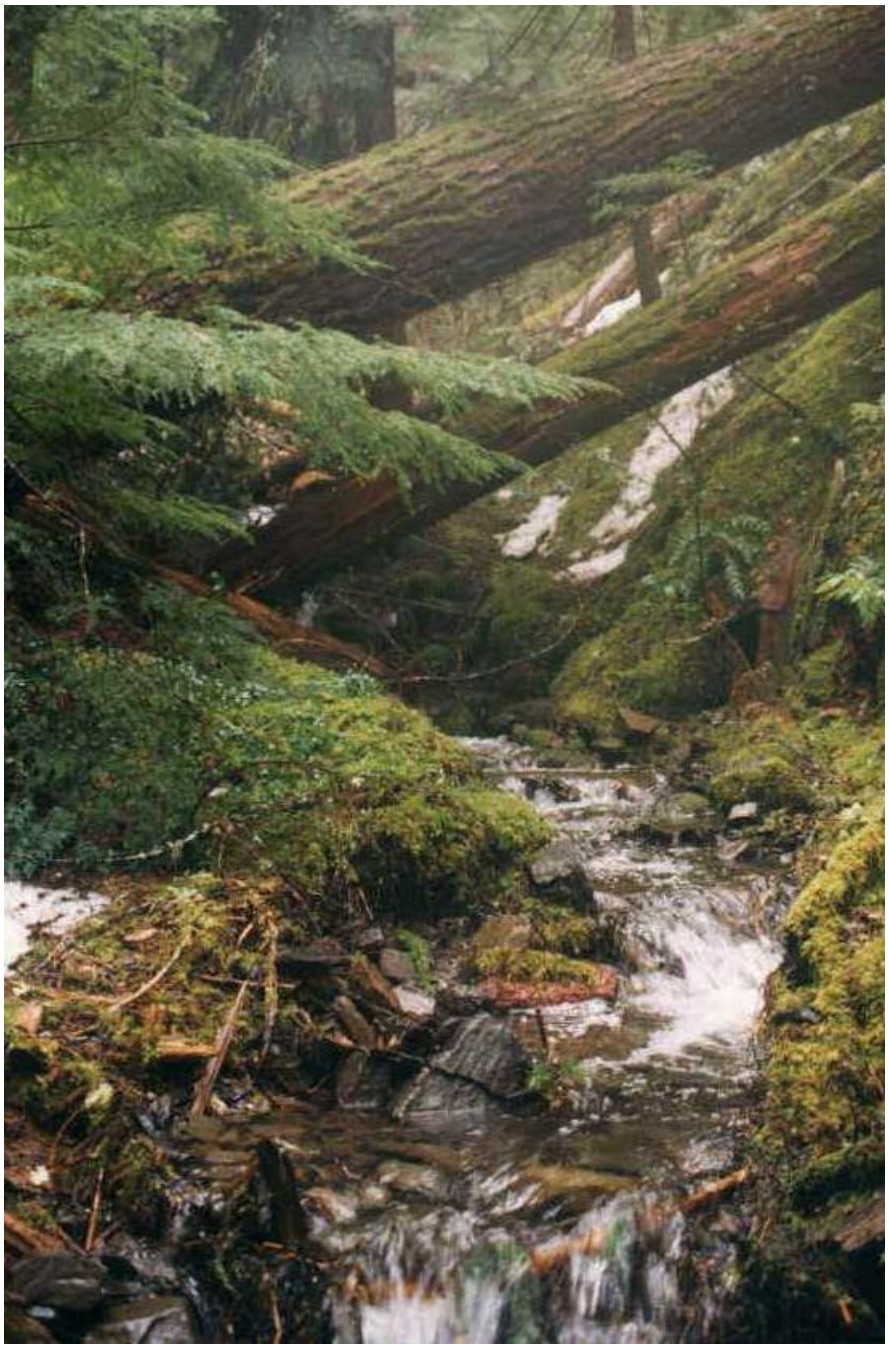
Administration Proposes another Western Oregon Plan Revision

The Administration has announced a new planning process for BLM-managed lands in Oregon. Based on the Notice of Intent (NOI) and the Administration's press statements, the plan shows a bias towards active management and proposes a significant departure from the Northwest Forest Plan by encouraging regeneration in moist mature forests. This is harmful to the Northern Spotted Owl by risking take of individual birds and habitat, increasing forest fragmentation, and setting back the needed expansion of the old-growth forest ecosystem over time to provide for owl recovery.

For example, the NOI states:

"The revisions to the existing RMPs will determine how the BLM will actively manage BLM-administered lands in western Oregon to further recovery of threatened and endangered species, provide clean water, restore fire-adapted ecosystems, produce a sustained yield of timber products, and provide for recreation opportunities."

The statement shows a high degree of bias because it falsely assumes active management can accomplish all of those things. In fact, past active management that resulted in excessive logging and road building is the reason we have threatened and endangered species in the region. Active management, while producing timber volume, also harms water quality and diminishes recreational opportunity. Active management has also been shown to increase, rather than decrease fire risk if expensive follow up treatments to remove or burn slash piles and to conduct managed burns are not carried out.



The Northwest Forest Plan is working to restore degraded watersheds and protect clean drinking water supplies. Willamette National Forest, Oregon.

It also ignores the benefits of preservation. The Wilderness Society has released a report Wilderness and Water Mix Well on the relationship between healthy watersheds and protected lands in the National Forest System. The report found that only 38% of watersheds where active management is greatest were functioning properly, 58% were at risk, and 5% were impaired. In contrast, protected lands scored much higher; 80% of Wilderness is functioning properly and only 18% at risk and 1% impaired. Roadless areas scored in second place with 64% functioning properly, 34% at risk and 2% impaired.

This new WOPR planning effort is essentially BLM pulling out of the Northwest Forest Plan. This undermines the integrity of the Plan, which provides an adequate regulatory mechanism to conserve the Northern Spotted Owl and other wide-ranging species. The importance of consistent management across the owl's range has been

cited in past court cases.

Two key assumptions behind the biological analysis of the Northwest Forest Plan were that (1) "[r]iparian and Late-Successional Reserves (LSRs) will retain reserve status and will not be available for timber production other than as provided in Alternative 9" and (2) "[a]lternative 9 applies to Forest Service and BLM lands; all future actions on these lands would be consistent with Alternative 9, as adopted in the Record-of-Decision (ROD)." See FEIS at 2-33 to 2-34. (Earthjustice comment letter).

BLM's indicated management direction as expressed by the NOI, violates both of these assumptions.

Okanogan-Wenatchee National Forest Plan Revision

The Okanogan-Wenatchee National Forest Plan Revision has also raised great concern by proposing the elimination of the existing system of late-successional reserves. A Region 6 Forest Service Assessment found that late-successional forests are generally below their historic range of variability, and the availability of snags larger than 20 inches, and snag habitat is generally lacking in some forest types because of past management practices.

While the notice of intent proposes that a designated percentage of the forest will be managed for the owl's benefit, there will no longer be areas where the species' protection is guaranteed. This proposal is not consistent with the Northwest Forest Plan, which provides reserves with guaranteed protections that cannot be ignored at the discretion of the local land managers.

The Forest Service claims that static reserves are no longer a viable strategy for conserving the owl, but to date has not produced credible evidence to support that contention. Portions of the now discredited Northern Spotted Owl Recovery Plan of 2008 reached the same unfounded conclusion, and inclusion of similar language in the 2010 Draft Recovery Plan spawned strong opposition from the scientific societies that peer-reviewed the plan.

The Final Owl Recovery Plan calls for conserving older stands that have occupied or high-value spotted owl habitat, and to "Continue to manage for large, continuous block of late-successional forest." Without the system of late-successional reserves remaining in place, the agency has not provided any mechanism to ensure that the land management agencies will provide for large, continuous blocks. In fact, given the management history, and continued proposals to further fragment the forest, the importance of maintaining the reserve system should be that much more apparent.

The reviewers found that the science included in the draft was incomplete because numerous studies to the contrary had not been considered. In the final draft, a greater effort was made to reference the omitted studies, but the conclusions remained the same. For example, evidence presented in Hanson *et al*. (2009) on fire risk was cited but not used.

Several new studies have been published that also analyze satellite images of the forest, and have found that high intensity, "catastrophic" fires have not been increasing in Northern California, or on the Eastside. As a result, we believe the plan overestimates fire risk. Similarly, the Hanson study was also not used regarding the rates of recruitment relative to rates of loss to stand-replacing fires, resulting in an overestimation of the amount of reserve likely to be lost.

In addition, the management standards proposed for portions of the former late-successional reserves could be potentially harmful to many species of wildlife, including the Northern Spotted Owl. The proposed Okanogan-Wenatchee forest plan would allow for significantly greater road densities (more than 15%) than allowed in the

current six owl reserves and possibly eight others depending on agency interpretation changes in summer road use. Allowing greater fragmentation and road densities would reduce the amount of suitable owl habitat in those areas, not to mention increasing fire risks, and should not be allowed.

Volume Driven Restoration is Not Restoration

The Obama Administration has committed itself to a significant increase in logging on the National Forests as indicated by the February 2012 report "Increasing the Pace of Restoration and Job Creation on our National Forests." A March Forest Service memo to Region 6 calls for a 20% increase in volume this year, and that it is to fall under the rubric of restoration.

We question whether legitimate restoration can be accomplished when meeting timber volume targets is the primary management directive. Hard timber targets on the National Forests were ended because evidence emerged that it was causing harm to the forests, and to the Forest Service itself.

Included in the appendix is a farewell letter from Steven Smith, a wildlife biologist from Willamette National Forest detailing mistreatment of agency biologists at the hands of timber managers. Here's one excerpt:

"Even more disheartening is attending meetings where the spotted owl gets blamed for this internal crisis as well. A strange paradox since Forest Service managers are ultimately responsible for the spotted owl crisis as well."

A return to timber target driven management would mark a huge setback that threatens to undo the agency's progress towards professional integrity and stewardship. We urge the Service to oppose Forest Service and BLM plans to increase timber production under the guise of restoration. It threatens the Northern Spotted Owl and risks returning the Forest Service and BLM to the errant ways of their past as well as delegitimizing other much needed restoration work on federal lands.

Flawed Final Northern Spotted Owl Recovery Plan

Northern Spotted Owl. Photo by the Service.

Concern is being raised by scientists that active management in suitable owl habitat is not supported by the best available science. There are currently no peer-reviewed studies showing Spotted Owls benefit from the proposed logging treatments, while others show short-term harm to owl and prey base from thinning with declines lasting up to 30 years.

Estimates of owl habitat loss from fire are not based on defensible data sources and we remain concerned that the agency is operating on the unproven and unanalyzed assumption that Northern Spotted Owls are not resilient to fire. All three subspecies of Spotted Owl exist in fire adapted forests. At the same time, the agency fails to address the problem of post-fire logging which degrades and eliminates legacies, habitat for the owl's prey base, and owl foraging areas.

Given the 2.9% annual decline in owl population, it is not acceptable to allow for short-term losses of owls in the hope that improved habitat conditions might prove beneficial to the species someday in the distant

future. But this is precisely what the draft Plan is calling for.

"While proposed Federal actions must comply with requirements of the Act, actions with some short-term adverse impacts to spotted owls and critical habitat, but whose effect is to conserve or restore natural ecological processes and enhance forest resilience in the long term, should generally be consistent with the goals of critical habitat management."

(Executive Summary p. 8)

The proposed Critical Habitat rule relies heavily on the Final Northern Spotted Owl Recovery Plan and cites it as if it were a peer reviewed document. However, the Final Owl Recovery Plan was never peer reviewed. In addition, peer reviewers identified many faults in the Draft Recovery Plan, particularly concerning active management and the need for maintaining owl reserves that were never corrected in the Final.

For example, the summary of The Wildlife Society (TWS) review states:

"Other aspects of the 2010 DRRP are flawed and many are not based on best available science.
The lack of a permanent proposal for a reserve system is a major problem that prevents full review of the 2010 DRRP. We believe this will necessitate further peer review prior to finalization of a recovery plan. The Service's strategy for no reserves in dry forests in the eastern Cascades is exacerbated by the proposals for aggressive management of these dry forests because the treatments will reduce the amount of closed canopy forests in the landscape and reduce the amount and suitability of habitat for the subspecies. These proposals are not based on a complete review of the available science and they rely on unpublished reports. In addition, there has been no formal accounting of how closed canopy forests can be maintained with the widespread treatments that are being proposed. Management actions, which are not based on good science, in dry forests with no reserves will likely lead to failure to achieve recovery criteria."

The TWS review also noted that in at least a dozen instances, important studies with bearing on these issues, and that often contradicted the intended management direction were excluded from the analysis. It can be concluded that the agency had cherry-picked studies supporting one view while actively ignoring opposing studies. The Society concluded in its typically diplomatic fashion that:

"In summary, we commend the Service for their intent to use the best available science in developing the 2010 DRRP for the Spotted Owl; however, we found strong evidence that this was not the case throughout much of the Plan. The Service should make a comprehensive effort to base their recommendations and guidelines on the best available science so that they are in compliance with Secretarial Order #3305 issued by Interior Secretary Salazar on September 29, 2010 and the Presidential Memorandum of Scientific Integrity."

Unfortunately, no such effort was made to correct the scientific deficiencies identified in the TWS review. While some of the omitted studies were cited in the final recovery plan, the same unsubstantiated conclusions in support of logging in owl habitat and eliminating owl reserves on the Eastside were reached.

Another team of five scientists (Hansen, Bond, Odion, DellaSala, Baker) that reviewed the draft concluded, *"…there are considerable deficiencies in the 2010 draft recovery plan where the Fish and Wildlife Service did not make use of best science, untested assumptions regarding risks of active management vs. fire, and unpublished literature in assessing forest recruitment vs. late-successional "losses" post-fire."*

The group of scientists urged the Service to recommend retention of all existing late-successional reserves, additional new reserves to create greater connectedness across the landscape, and greater protections from logging, especially post-disturbance logging within late-successional reserves.

Old-growth forests in the Pacific Northwest and northern California store more carbon per acre than any other forests in the world.

Research on Effects of Logging on Owl Populations

The scientific societies are urging the agency to develop an Environmental Impact Statement on the effects of thinning and ecoforestry on Northern Spotted Owl populations. To date the agency has no evidence that thinning or ecoforestry benefits owl populations, but we know that many of the projects will, in fact, cause short-term harm.

The need for this type of research was identified by Jack Ward Thomas in the 1990 Interagency Science Report, which also found that logging had not been found to be compatible maintaining suitable owl habitat, and the need for a precautionary approach that requires treatments be proven before broadly implemented.

"We propose a two-part conservation strategy. The first stage, prescribes and implements the steps needed to protect habitat in amounts and distribution that will adequately ensure the owl's long-term survival. The second stage calls for research and monitoring to test the adequacy of the strategy and to seek ways to produce and sustain suitable owl habitat in managed forests. Insights gained in this second stage can be used to alter or replace habitat conservation areas prescribed in the first stage, but only if the modified strategy can be clearly demonstrated to provide adequately for the long-term viability of the owl." (ISC p 2)

"The ability to harvest timber in currently suitable owl habitat and have that habitat remain suitable has not been clearly demonstrated." (ISC p 104)

"Allow silvicultural treatments that have been tested or demonstrated through experimentation to facilitate the development of suitable habitat, such as planting trees." (ISC p 325)

More recently the Forest Service Fifteen Year Monitoring Report on the Northwest Forest Plan states:

"First, there is very little research documenting the effect of wildfire on spotted owls and spotted owl demography. In light of losses of nesting/roosting habitat to wildfires as high as 10 percent in some provinces, we need to understand how fire severity, spatial patterns of wildfire, and fuel reduction management treatments might affect owl habitat use, prey populations, and owl demography. We recommend increased research and monitoring on this subject to better inform managers on how to manage habitat in fire-prone areas."

High Quality Habitat Is Insufficient

The best available science and the continuing decline of Northern Spotted Owl populations indicate that the agency should designate as Critical Habitat and protect all suitable owl habitat, not just high-quality owl habitat. The definition of high quality owl habitat needs to be made more inclusive to ensure sufficient habitat will be conserved to allow for recovery.

In its review of the draft recovery plan The Wildlife Society raised concern about the narrow definition of high quality owl habitat being proposed. The Society notes that the proposed definition is only a subset of suitable habitat. Their analysis then states:

"…by limiting the definition of high quality habitat to a fairly narrow range of habitat conditions, management agencies will be able to justify thinning or commercial harvest in a broad range of naturally regenerated stands. Most of these naturally regenerating stands originated from fire and usually are suitable spotted owl habitat; therefore, they are not likely to be greatly "improved" by management. In western Oregon and Washington such stands are typically comprised of large trees that are 80-160 years old, and include scattered (i.e., residual) old-growth trees that survived wildfires. These stands may not meet the strict definition of high quality habitat, but they are often the best remaining habitat in the heavily harvested or burned landscapes that are managed by the Bureau of Land Management and Forest Service. They often occur in small patches, isolated among large areas of young forest within these disturbed landscapes, and they often serve as nest sites for spotted owls as well as refugia for species such as flying squirrels and tree voles, which are important prey of northern spotted owls. Because of the high timber volume in these stands there is intense pressure to log them. Commercial thinning is often recommended as a prescription to reduce risk of fire or improve forest conditions for owls in these stands, despite the fact that it is usually unclear if thinning will either improve these forests as habitat for owls or accelerate their transition from suitable to high quality habitat.

This uncertainty was one of the reasons that the Northwest Forest Plan included recommendations to restrict thinning in naturally regenerated stands over 80 years old in western Oregon and Washington. This restriction should be retained in the final Critical Habitat Rule.

Downed woody debris and legacy trees are important elements of quality habitat for the Northern Spotted Owl and its prey base.

Under the proposed Rule, it is likely that the issue of whether a particular habitat meets the high quality standard will become an area of ongoing controversy and dispute, and as the TWS analysis indicates, it has the potential to leave unprotected large acreage in the 80-160 year range. These forests are currently protected if they are in late-successional reserves, but if the reserves are eliminated, these areas become subject to logging that will set back the recovery of owl habitat by many decades.

TWS recommended changes to the draft that were not incorporated into the final:

"Therefore, we recommend that the Service use a more inclusive definition of high quality habitat that would encompass a variety of late-successional forest types (i.e. mature and old-growth forests) in which spotted owls nest, roost, and forage. We also recommend that the Service take a more conservative approach and not recommend thinning in naturally regenerated stands over approximately 80 years old, especially when those stands include remnant old-growth trees. These stands will be the spotted owl nesting habitat of the future (if they are not already), and thinning them will most likely represent habitat loss for spotted owls and their prey, both in the near and long term. Such habitat loss will be in conflict with the Service's recovery criteria and delisting objectives as stated in the recovery plan."

Timber Sales Harmful to the Northern Spotted Owl

Forest Service Region 5 and now the BLM with the Pilots are moving forward with the type of active management envisioned in the Final Recovery Plan and Draft Critical Habitat rule. The results are not encouraging. Projects are resulting in take of Northern Spotted Owls, loss of Critical Habitat, controversy, appeals

and litigation. There are better policy alternatives.

The Beaverslide Project

The Beaverslide Project on the Six Rivers National Forest proposes to remove and degrade owl habitat claiming it will provide long-term benefits after causing short-term harm. The proposed active management will degrade 850 acres of "low to moderate quality" nesting and roosting habitat, and 2,162 acres of foraging habitat.

The project was approved only several months before the owl Recovery Plan was completed and is being challenged by Conservation Congress and Environmental Protection Information Center who argue that due to new information from the Recovery Plan and other studies, the Fish and Wildlife Service should reinitiate consultation.

The plaintiffs argue that the agency has violated the ESA for failing to consider new information and for failing to use the best available science; violated the National Environmental Policy Act for failing to consider direct, indirect, and cumulative effects for its action the owl, its habitat, and its prey; and that the Forest Service violated the National Forest Management Act by failing to comply with monitoring requirements of the Six Rivers National Forest plan.

The 2011 Recovery Plan requires that "active management" projects explicitly evaluate the short-term effects to Spotted Owls and their prey while considering the long-term benefits of such projects, especially in Spotted Owl core areas. There are significant adverse short-term direct impacts to owls and to the owl's prey from commercial thinning and other management activities (Forsman et al. 2004, Manning et al. 2012). The Forest Service failed to consider these studies in its Biological Assessment because it predated the Recovery Plan.

The 2011 Revised Northern Spotted Owl Recovery Plan states:

"Research directly evaluating spotted owl responses to vegetation management including thinning, fuels reduction, and management intended to restore ecosystem functions is needed to address...whether thinning operations designed to create future spotted owl habitat result in site abandonment during or after the operation and what types of vegetation management operations will spotted owl to persist in existing territories (2011 RP at III-46 to III-47)."

This lack of information should cause the Service to take a precautionary approach, but instead the agency appears to be moving ahead as though those questions have been answered. To date, we see no indication the agency is even attempting to answer these questions and its work on the Beaverslide project shows a remarkable abdication of the agency's responsibility to conserve and recover a threatened species.

In the project area, "twelve of the thirteen Northern Spotted Owl territories are currently below threshold within the 0.7 mile radius and all territories are below threshold within the 1.3 mile radius" below which reproduction is diminished. But, the Service failed to consider the 2011 Recovery Plan's discussion about direct effects of thinning on Northern Spotted Owl’s, or several other studies concerning decreased use by Northern Spotted Owl of harvested areas and reduced forage in stands that have been thinned or selectively logged for one to five decades. Without an explicit evaluation of short-term impacts to Northern Spotted Owls, it appears that implementation of the project will likely adversely affect the Northern Spotted Owls in the project area.

In an expert declaration in the case, Dominick DellaSala, chief scientist of the Geos Institute states: "The fact that all of these owl territories are below the Services' thresholds is a significant factor in analyzing potential harm to the resident owls in this area because any further degradation of the owl's structural habitat, or the owl's prey habitat is likely to cause significant short-term adverse effects on the owls, which may disrupt essential behavior

patterns, including breeding, feeding, or sheltering...there is no analysis in the Biological Assessment that describes the short-term effects on the spotted owls that reside in the remaining territories...and the Service only presents its conclusions about the long-term habitat needs of the owl. The Service ' fails to ensure that they meet the requirements of the 2011 Recovery Plan that the area, "retain sufficient nesting, roosting, and foraging habitat within the provincial core-use area and within the provincial home range to support, breeding, feeding, and sheltering."

DellaSala also notes the area is already heavily fragmented from past active management and that "any additional fragmentation from road building (even temporary roads) or logging is likely to adversely impact owl occupancy" and could facilitate invasion of the area by Barred Owls.

In addition, the Forest Service failed to take a hard look as required by the National Environmental Policy Act at the short-term effects on the owls and their prey. The agency analysis admits that "timber harvest and associated management activities may have a short-term negative effect on Northern Spotted Owl by modifying suitable owl habitat", but it never provides the necessary "hard look" to determine whether this short-term negative effect could cause additional reductions in "productivity and survivorship" in these below threshold activity centers, and it also failed to discuss the potential adverse indirect effects from the short-term reduction in the owl's prey base.

The Forest Service then makes numerous statements about the project benefits, but never provides any quantifiable or the required detailed hard look to substantiate those conclusions. For example, there is no disclosure that flying squirrels may not again use these areas for 20 years or that Northern Spotted Owls may not again forage in these areas for decades, or that this may lead to a loss of productivity and survivorship. The Forest Service' failure to take a hard look at the direct and indirect impacts of thinning and other management activities on the Northern Spotted Owls and their prey base in already degraded activity centers is unreasonable, arbitrary, capricious, and otherwise in violation of NEPA.

Because the project would reduce the amount of snags in the project area, it is important to look at the effect that would have on species that require snags such as the Western Screech Owl. There is essentially no Western Screech Owl population data for the project or planning area making Forest Service assertions that these species habitats are sufficient impossible to verify. Other species that may be negatively affected by snag removal in the project area include the Red-breasted Sapsucker, White-headed Woodpecker, Downy Woodpecker, Hairy Woodpecker, Brown Creeper, Vaux's Swift, and Flammulated Owl.

Goose Logging Project

Conservation groups have filed a legal challenge against the 2,100 acre Goose timber sale in the Willamette National Forest, Oregon for the potential damage to streams and endangered species habitat it may cause if carried out unchanged. The project would remove large mature trees from riparian buffers, adversely modify 454 acres of suitable Northern Spotted Owl habitat, and the agency did not analyze or disclose the impacts the logging will have on competition with Barred Owls.

Rio Climax Timber Sale

Four conservation groups are protesting a BLM Medford District’s plan to log trees larger than 30 inches in diameter and construct a new logging road because this will likely to adversely affect habitat of the Northern Spotted Owl.

Kelsey Peak Timber Sale, Six Rivers National Forest

The project proposes 1,521 acres of commercial thinning, 51 acres of late mature forest restoration and another 237 acres of low thinning considered as stand improvement (TSI). There are 13 owl activity centers in the project area. Fuel and thinning treatments within nesting-roosting habitat would amount to 327 and 85 acres respectively, for a total of 412 acres for all action alternatives. (DEIS p. 94) Within Northern Spotted Owl territories, Alternative 2A and 4 would thin 83 acres and Alternative 3 would thin 82 acres of nesting, roosting Northern Spotted Owl habitat that may cause short-term habitat degradation (DEIS 252).

Algoma EIS, Shasta-Trinity National Forest

The project area is in Northern Spotted Owl Critical Habitat and proposes to thin 5,600 acres of mixed conifer in natural stands and plantations, including 930 acres of sanitation treatments and 640 acres in Riparian Reserves, 1,100 acres of natural and activity generated fuels with mechanical and prescribed fire and an additional 200 acres with under burning. Including the future projects in the CHU from Table 14, there will be a 50 percent degradation of Northern Spotted Owl foraging habitat for 30 years, possibly longer. One stated purpose of the project is to produce LSR reserves to serve as habitat for the Northern Spotted Owl, yet the entire project area is in already suitable owl critical habitat. This logic would make sense if the FS were converting unsuitable habitat or plantation habitat to become nesting/foraging habitat. There is no need for forestry “improvements”.

Mudflow EIS, Shasta-Trinity National Forest

The agency preferred Alternative 2 proposes 1626 acres of thinning of mixed conifer stands, 594 acres of plantations, 185 acres of ponderosa pine sanitation, 197 acres of regeneration, 189 acres of wet meadow logging, 121 acres of shaded fuel break, 45 acres of black oak restoration. 134 acres of regeneration is proposed for a plan amendment that would reduce the 15% retention guidelines. 88% of the project area is within designated Critical Habitat CA-2 for the Northern Spotted Owl.

Pettijohn HFRA LSR EIS, Shasta-Trinity National Forest

The project is within Clear Creek Late Successional Reserve (LSR) and Critical Northern Spotted Owl Habitat. Silvicultural methods include 802 acres (and 58 acres in Riparian Reserve (RR)) of Tractor thinning from below, 104 acres (and16 acres in RR) of Cable logging, 153 acres (and 22 acres in RR) of Helicopter logging and 1,995 acres of FMZs that include mastication and hand pile/burn concentrations. The Biological Assessment page 51 for the Pettijohn project determined that the proposed actions “may affect and likely adversely affect the northern spotted owl through the reduction of habitat quality”. Existing NRF habitat would be degraded in about 1,793 acres due to FMZ and thinning prescriptions. Existing foraging habitat would be downgraded to connectivity habitat in about 288 acres due to thinning prescriptions.

Gemmill EIS, Shasta-Trinity National Forest

1,279 acres commercial logging, 10 Northern Spotted Owl Activity Center’s - The project proposes to; commercial thin 1,279 acres of that 300 acres is within Riparian Reserves (RR), 751 acres of mature forests and 528 acres of old-growth forest, thin from below 268 acres to reconstruct a 30 year old ridge top fuel break, 44 acres of plantation thinning, reduce fuels on 27 acres adjacent to private property, reconstruct 23.6 miles of road, construct 0.5 miles of “temporary” road. In LSR and Northern Spotted Owl Critical Habitat.

Petersburg Pines HFRA EA, Klamath National Forest

The project area boundary encompasses 10,380 acres. The proposed action is comprised of five main treatment types comprised of 7,350 acres: Thinning 2,332 acres with variable density thinning followed by fuels reduction activities (935 acres Tractor, 1,147 acres Skyline Yarder and 250 acres Helicopter); prescribed burning on 2,753

acres; fuel reduction activity in shaded fuel breaks on 879 acres; roadside fuels reduction activities on 1,288 acres and fuels reduction activities immediately adjacent to private property on 98 acres. The Proposed Action would "modify" 164 acres of N/R habitat within 1.3 mile home ranges and 755 acres of F habitat. Within Northern Spotted Owl 1.3 mile home ranges the Proposed Action may downgrade or remove approximately 79 acres of N/R habitat and 80 acres of forage habitat. Within Core Areas 17 acres of N/R and 45 acres of F would be modified.

Alternative 3 would modify 141 acres of N/R habitat and 834 acres of forage habitat. Understory burning and Fuel breaks could be detrimental to Northern Spotted Owl habitat and have the potential to downgrade and remove habitat within the project area by removing or reducing the suitable habitat characteristics within units. Shaded fuel breaks could be detrimental to Northern Spotted Owl habitat by reducing the amount and/or types of snags, CWD, understory vegetation and prey. Combined treatments within 1.3-mile Northern Spotted Owl home ranges would modify 560 acres of N/R and 1247 acres of foraging habitat. The Proposed Action would remove/downgrade N/R habitat within home range for a reproductive pair.

Smokey HFRA, Mendocino National Forest

Approximately 80% of the project area is within the Buttermilk Late Successional Reserve (LSR). 933 of commercial "thinning" is proposed within 737 acres in LSR and 196 acres in the Matrix land allocation. Mechanical fuels treatments are proposed on 637 acres, prescribed fire on 2689 acres, pre-commercial thinning on 400 acres, understory thinning and meadow enhancement on 1763 acres.

What is Wrong with Secretarial Pilot Projects in Moist Forests

Secretary of the Interior Ken Salazar has initiated a series of Pilot Projects on lands managed by the Bureau of Land Management that seek to test new ideas in ecoforestry. Two moist forest Pilot Projects are being implemented to test the theories of Drs. Norm Johnson and Jerry Franklin using regeneration harvest to produce high-quality early-seral forests. These are the Roseburg BLM Pilot and the Coos Bay BLM Pilot.

After tracking the BLM's two moist forest pilot projects, Cascadia Wildlands, a partner of American Bird Conservancy has identified significant problems, detailed in full in the appendix.

In our view, these moist forests are already providing Spotted Owl habitat and therefore should be retained. We encourage the BLM to discontinue implementation this type of harvest, especially in the new proposed Resource Management Plans. In addition, the Coos Bay BLM Pilot proposes to log over 900 healthy, rare, Port Orford Cedars and jeopardizes hundreds more that are retained, even old-growth trees.

The BLM has argued there is a need to break through "gridlock", implying that environmentalists have stopped all logging. This is not true. The Coos Bay BLM has been selling 150% of their target volume over the past five years with virtually no controversy. Roseburg BLM has been close to their target volume. There is no gridlock in our forests, and there are better ways to promote high-quality early-seral habitat, such as not salvage logging after a natural disturbance.

The Siuslaw National Forest in Oregon has operated a successful and noncontroversial timber sale program for the past decade.

Lack of Service Oversight Allowing Owl Take on Private and State Lands

The U.S. Fish and Wildlife Service needs to do more to enforce the ESA against take of the Northern Spotted Owl on private lands. When asked about this at a public open house concerning the draft Critical Habitat rule, Oregon State Director Paul Henson stated that the agency had tried to enforce ESA Section 9 against Boise Cascade in one case twenty years ago and was ruled against by the court, and therefore would not make another Section 9 enforcement attempt for take on private lands. We like to see federal agencies doing everything it can to conserve the rapidly declining owl.

During the last administration, a Service program to review California timber sale plans and provide technical assistance to landowners was discontinued. As a result, these sales, that were formerly were often modified to mitigate the most likely harm to owl or owl habitat, are now proceeding unchanged.

The Environmental Protection Information Center has been compiling owl take information gathered by analyzing Timber Harvest Plans of Sierra Pacific Industries, Inc. whose actions, including logging, road building and other disturbance in northern California that result in significant habitat degradation and destruction that is likely to actually kill and injure Northern Spotted Owls. Sierra Pacific's actions result in unlawful take of Northern Spotted Owl by significantly impairing the essential behavior patterns of nesting, roosting, and foraging in violation of Section 9(a) of the ESA.

A review of seventeen Timber Harvest Plans with at least one Northern Spotted Owl activity center in or near the THP boundary. In total these will destroy over 1,000 acres of nesting/roosting habitat, and over 3,500 acres of foraging habitat. This constitutes illegal take under the ESA. Additional habitat will be destroyed by Sierra Pacific in areas where occupancy and use by the Northern Spotted Owl is unknown, and because the company does not share all information about Northern Spotted Owl on its property, additional take can be assumed.

Sierra Pacific currently lacks an HCP for management of their lands. Conservations groups are requesting the company halt logging or disturbance of owl habitat and immediately begin working with the Service to develop an HCP. We further urge the Service to renew the program of review timber harvest plans in California.

Regarding management of state lands in Washington State, the Society for Conservation Biology review of the draft owl Recovery Plan states: "One reviewer who is familiar with the actions of state agencies in Washington suggests that the regulations seem designed to facilitate continued declines in, rather than recovery of, Northern Spotted Owl populations."

Forest practices on state and private lands in Oregon such as this are detrimental to Northern Spotted Owls, Marbled Murrelet and water quality.

Benefits of the Northwest Forest Plan

The Northwest Forest Plan is a significant environmental achievement of the Clinton Administration that should be built upon and extended by the Obama Administration. We believe this would be the best policy from a forest and wildlife management perspective. It is also the only mechanism available to provide legal certainty and ensure that an adequate regulatory mechanism remains in place to conserve and recover wide-ranging threatened species in the region.

What follows are a series of summaries and excerpts from Northwest Forest Plan documents detailing the management philosophy, standards and guidelines, and results.

The Forest Service Ten Year Review of the Northwest Forest Plan found that, overall, the Plan's conservation strategy and reserve network appear to be working as designed. The total area of medium and large older forests on federal lands in the Plan increased by more than 1 million acres during the ten-year period, almost double the anticipated amount. The Plan's outcomes for Spotted Owls were expected to take at least a century. Spotted Owl population declines were expected for the first 40 to 50 years under the Plan, with owl populations stabilizing in the mid-21st Century and possibly increasing after that as owl habitat recovery exceeded loss.

FEMAT: Report of the Forest Ecosystem Management Assessment Team

Option 9: thinnings are allowed in any stand regardless of origin up to 80 years; salvage of areas larger than ten acres where trees have been killed by catastrophic events.

The requirements for the Matrix under Option 9 vary by area:

For most National Forests in Washington, Oregon, and California, 15 percent of trees would be retained following harvest; half of that volume would be left in small intact patches of late-successional forest and the rest dispersed throughout the harvest unit.

For National Forests in the Oregon Coast Range, and the Olympic and Mt. Baker-Snoqualmie National Forests, retention requirements would be reduced because of the extent of Riparian Reserves and Marbled Murrelet protection in those areas.

For Bureau of Land Management districts in Oregon, retention varies from 6 to 25 large green trees per acre depending on location, with 150-year rotations prescribed for some areas.

* For federal forests in northern California, long rotations are prescribed for conifer and mixed conifer/hardwood (180 years) and hardwood (100 years) forests.

Five options (1, 3, 4, 5, and 9) specifically require **protection of specified rare and locally endemic species** associated with late-successional forests within the Matrix. All options except 7 and 8 require surveys and protection of occupied marbled murrelet nesting sites. Other protective measures may be added to provide for at-risk species under each option.

Late-Successional Reserves

Under Option 9, Late-Successional Reserves are based on boundaries that represent an Integration of previous efforts (Johnson et al. 1991; USDI 1992c). They incorporate some portion of the reserves from each of those previous efforts and include new areas designated to protect Key Watersheds. Thinning or silvicultural treatments inside Reserves require review by an interagency oversight team to ensure that they are beneficial to the creation of late-successional forest conditions. Activities that would be permitted in the western and eastern portions of the range are described separately below. Salvage of dead trees would be based on guidelines adapted from the Final Draft Recovery Plan for the Northern Spotted Owl (USDI 1992c) and would be limited to areas where catastrophic loss exceeded ten acres.

West of the Cascades

There is no entry allowed in stands older than 80 years of age. Thinnings (pre-commercial and commercial) may occur in stands up to 80 years of age regardless of the origin of the stands (plantations planted after logging or stands naturally regenerated after fire or blow down). The purpose of these silvicultural treatments is to be neutral or beneficial to the creation and maintenance of late-successional forest

conditions.

East of the Cascades and the eastern portion of the Klamath Province

Given the increased risk of fire in these areas due to more xeric conditions and the rapid accumulation of fuels as the aftermath of insect outbreaks and drought, there are additional management activities allowed in late-successional reserves. Guidelines to reduce risks to large-scale disturbance are adapted from the Final Draft Recovery Plan for the Northern Spotted Owl (USDI 1992c). These guidelines can be found at the end of the chapter.

Northwest Forest Plan Record of Decision & Standards and Guidelines

Late-successional reserves: Late-successional reserves are to be managed to protect and enhance old-growth forest conditions. For each late-successional reserve (or group of small reserves), managers should prepare an assessment of existing conditions and appropriate activities. No programmed timber harvest is allowed inside the reserves. However, thinning or other silvicultural treatments inside these reserves may occur in stands up to 80 years of age if the treatments are beneficial to the creation and maintenance of late-successional forest conditions.

In the reserves east of the Cascades and in Oregon and California Klamath Provinces, additional management activities are allowed to reduce risks of large-scale disturbance. Salvage guidelines are intended to prevent negative effects on late-successional habitat. Non-silvicultural activities within late-successional reserves are allowed where such activities are neutral or beneficial to the creation and maintenance of late-successional habitat. Thinning or other silvicultural activities must be reviewed by the Regional Ecosystem Office and the Regional Interagency Executive Committee.

Alternative 9, like all of the other action alternatives, applies the same criteria for management of habitat on both Forest Service and BLM lands. This was done in order to accomplish most efficiently the dual objectives discussed above -- that is, achieving the biological results required by law, while minimizing adverse impact on timber harvests and jobs. The inefficiencies involved in applying different criteria on Forest Service and BLM land have been noted in previous analyses. For example, in the Report of the Scientific Analysis Team ("SAT Report"), the team found that BLM's plans were relatively high-risk, when compared to the plans of the Forest Service, in terms of conserving the northern spotted owl. As a result, the SAT found that in order for the Forest Service to "make up for significantly increased risks," it would have to dramatically increase the size of protected areas on Forest Service land (SAT Report, pp. 12-13).

In addition, Alternative 9 offers one advantage that the other alternatives do not — its inclusion of adaptive management areas. Adaptive management involves experimentation, identifying new information, evaluating it, accounting for it in discretionary decisions, and determining whether to adjust plan direction. The object is to improve the implementation and achieve the goals of the selected alternative. Each of the alternatives incorporates the principles of adaptive management to some extent, but Alternative 9 is the only one that specifically allocates ten adaptive management areas, which may be used to develop and test new management approaches to achieve the desired ecological, economic, and other social objectives.

These AMAs offer the opportunity for creative, voluntary participation in forest management activities by willing participants. We recognize that this will take time, effort, and a good-faith commitment to the goal of improved forest management. Many of the potentially participating communities and agencies have different capabilities for joining this effort. Our approach to implementing this initiative will recognize and reflect these differences as we seek to encourage and support the broadest possible participation. Moreover, Alternative 9 allows silvicultural activities, such as thinning young monoculture stands, in late-successional reserves when those

activities will enhance late-successional conditions.

Forest Service Ten Year Review (2003)

Overall, the Plan's conservation strategy and reserve network appear to be working as designed.

- The total area of medium and large older forests on federal lands in the Plan area gained more than 1 million acres during the ten-year period, almost double the anticipated amount.

- Spotted Owl populations declined about 7.5 percent per year across their northern range and 2 percent per year across their southern range. Declines may have resulted from habitat loss, Barred Owls, and other factors.

- The loss of habitat was less than expected, as less timber was harvested and less habitat was lost to wildfire than expected.

The Plan's outcomes for Spotted Owls were expected to take at least a century. Spotted Owl population declines were expected for the first 40 to 50 years under the Plan, with owl populations stabilizing in the mid-21st Century and possibly increasing after that as owl habitat recovery exceeded loss.

Forest Service Fifteen Year Review (2008)

The NWFP projected that over a time horizon of ten decades, LSOG forest could be restored and maintained at desired levels. In this second monitoring cycle….these analyses indicate a NWFP-wide decline in federal LSOG slightly less than what was anticipated (FEMAT 1993); however, losses in some provinces (e.g. Oregon Klamath) were higher than the projected 2.5 percent decadal rate of loss. Helping to offset these losses is the potential for future recruitment in the next few decades (fig. 1-7). Furthermore, the results support assumptions made in the NWFP that the primary role in maintaining or restoring LSOG and related habitats would fall to federal lands. Specifically, federal lands contain less than half of the total forest land, but the federal share of total LSOG increased from 65 to 67 percent over the monitoring period. Harvesting removed about 13 percent (approximately 491,000 ac) of LSOG on nonfederal lands. Loss of LSOG on federal land due to harvest was less than 0.5 percent (approximately 32,100 ac).

The study found that: "…the current analysis of habitat within and around the large reserve network validates the assumption that the repetitive design of large reserves can absorb losses without resulting in isolation of population segments. Not enough time has passed for us to accurately detect or estimate significant recruitment of nesting/roosting habitat, however increases were observed in "marginal" younger forests indicating that future recruitment of nesting/roosting habitat will occur as anticipated, within the next few decades."

The most recent estimate for Northern Spotted Owl population trends on federally administered lands is a 2.8 percent annual rate of decline, which is slightly lower than the 2.9 percent estimated by Forsman et al. (2011), which included two additional nonfederal study areas not managed under the NWFP. The rate of decline is highest in the northern portion of the range (Washington), where populations are estimated to have declined 40 to 60 percent since 1994. Populations remain stationary in the central portion of the owl's range, located in southwestern Oregon (fig. 2-4).

Marbled Murrelet Findings in 15-Year Report

Declining murrelet population trends and habitat losses underscore the need to minimize the loss of suitable habitat, especially in the relatively near term (next 40 to 50 years at least), until re-growing forests develop the

structure needed for marbled murrelet nesting. The observed population decline, about four percent per year at the NWFP-area scale, was not unexpected, as population demographic models have predicted murrelet populations to be declining south of Canada in the range of three to seven percent per year (McShane et al. 2004, USFWS 1997).

In light of the observed population declines and habitat losses, continued management of federal NWFP lands to conserve existing potential nesting habitat and to promote development of new nesting habitat is essential. It is not clear what other actions could be taken on federal lands to help reverse the population decline. Management to reduce risk of losses to fire would be important if done so that the management action has minimal impact to nesting habitat. The possible causes of observed population decline will require further study, and likely involve several interacting factors. Timber harvest of higher suitability habitat on nonfederal lands is one factor that may contribute to these declines.

Watershed Condition Status and Trend 15-Year Report

A Forest Service analysis of watershed condition released in Feb. 2012 finds that the Northwest Forest Plan is working well to recover impaired watersheds across the region. Watershed Condition Status and Trend (Laningan et al 2012) published by the Pacific Northwest Research Station analyzed data from 1994-2008, the first fifteen years of the Northwest Forest Plan and found that 69% of the watersheds in the NWFP area had a positive change in condition as a result of road decommissioning and vegetation growth. The report summary notes: "Watershed condition was most positive for congressionally reserved lands, followed by late-successional reserves, and then matrix lands."

Clean water coming from the Willamette National Forest, Oregon.

Northern Spotted Owl Critical Habitat Rule

After the Bush Administration's owl Critical Habitat rule and Recovery Plans were remanded by a federal court in 2010, new plans were initiated with a court-ordered Nov. 15, 2012 deadline for the Critical Habitat designation. The best science indicates any final critical habitat designation and management recommendations should exceed the protections of the Northwest Forest Plan, not minimize or ignore them.

It is vitally important to note that this Critical Habitat designation will guide future management changes in the region. Following publication of the final rule, the land management agencies have indicated that forest and land management plans will be amended to conform to the Critical Habitat rule across the owl's range. Based on the available information, we must assume the elimination of late-successional reserves is a potential application of this Critical Habitat rule and therefore the effects of eliminating the reserves should be

fully analyzed by both the rule and companion economic analysis and environmental assessment. And, because this analysis is notably absent, the public is currently unable to determine the full consequences of the pending rule. Redoing the analysis at this point is impossible given the court-ordered deadline.

<u>We therefore urge the agency to make abundantly clear to the public and to the land managing agencies that elimination of the reserves is not an application of, or a recommendation of this rule</u>.

The rule as drafted endorses a significant departure from the standards and guidelines of the Northwest Forest Plan by promoting active management in owl habitat, potentially weakens habitat protection for the threatened owl further by endorsing elimination of late-successional reserves, neither of which reflect the best available science.

The final Critical Habitat rule should instead provide for additional habitat protection needed to reverse the owl's decline and allow for its eventual recovery. Given past mismanagement, continuing pressure to utilize these forests to meet economic needs and to pay for local government services, and the influx of the Barred Owl, it is essential that firm protections, such as the system of late-successional reserves provided by the Northwest Forest Plan remain in place and that suitable owl habitat be preserved, not subjected to logging.

The Draft Critical Habitat Rule Undermines the Northwest Forest Plan

The draft critical habitat rule notes that the Northwest Forest Plan "…has been successful in the conservation and recruitment of late-successional forest and associated species on Federal lands (Thomas et al. 2006. P. 283) (p.52), but then proceeds to recommend its dismantling based on three main justifications, that commercial timber harvest from matrix lands was insufficient, the lack of active restoration in areas that may contain "uncharacteristically high risk of severe fire," and the a lack of early-seral habitats in moist forests. A careful review of these claims reveals that none of them hold up to scrutiny.

It should be noted the Service appears to be biased against the Northwest Forest Plan by ignoring information and studies in the scientific literature Courtney et al. (2004), Lint (2004), DellaSala and Williams (2006) that demonstrate the importance of reserves and others that show the effectiveness of the overall strategy such as the Forest Service' fifteen year reviews mentioned above. Most recently 229 scientists sent a letter to President Barack Obama urging the preservation of the reserve system created by the Northwest Forest Plan. The letter is included in the appendix. This appearance of bias is of particular concern because that was one aspect of the political interference undermining the 2008 Critical Habitat Rule and Recovery Plan due to demands by Bush administration officials to ignore the requirements of the Northwest Forest Plan.

The Service on page 53-54 of the draft rule sites and appears to be agreeing with Thomas et al concerning improvements to the Northwest Forest Plan. Missing from the list however, was any mention of maintenance of large blocks of habitat necessary for the owl survival and recovery.

Fragmented forests. Willamette National Forest, Oregon.

The bias against the late-successional reserves is heard once again on page 54 where it repeats that *"Critical Habitat for the northern spotted owl is not intended to be a "hands off" reserve in the traditional sense. Rather, it*

should be a hands-on ecosystem management landscape that should include a mix of active and passive actions to meet a variety of conservation goals that support long-term spotted owl conservation."

However, on page 131 the draft contradictorily advises *"(3) Continue to manage for large, continuous blocks of late-successional forest."*

And on page 274 directs for the East Cascades *"In the interim, management actions are needed to protect current habitat, especially where it occurs in large blocks on areas areas of the landscape where it is more likely to be resistant or resilient to fires and other disturbance events."*

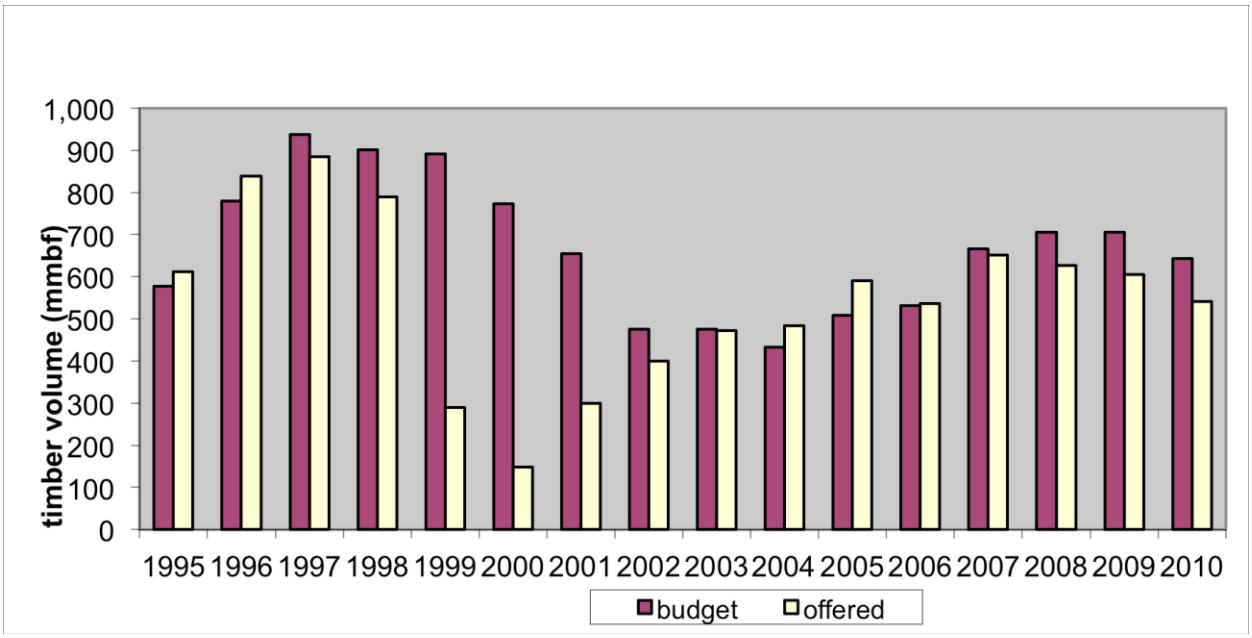
There is no indication how these requirements are to be accomplished under a reserve-less system. And nowhere is there any analysis showing that a reserve-less strategy allowing logging in owl habitat is going to be better for Northern Spotted Owl populations than the current system of protected reserves.

Timber Analysis: Agencies Meeting 96% of Funded Volume Target Since 2003

Timber sale data undermines the idea that the Northwest Forest Plan is not producing a stable flow of timber. The final Northwest Forest Plan was a political compromise that under-delivered on old-growth protection by placing 42% of the remaining acres in the matrix, and overpromised on timber volume. The plan's billion board foot estimate was never realistic because it is predicated on logging old-growth, which is not supported by the public and that in practical terms has generally been ruled in violation of wildlife protection laws. The estimate was also completed prior to the designation of the riparian reserve network which turned out larger than anticipated. The Bush Administration recognized these factors to a degree, and lowered the allowable sale quantify to 800 million board feet.

A look at timber sale output in the Northwest Forest Plan region reveals the agency is at a sustainable level and meeting the volume targets budgeted by Congress; see Forest Service and BLM Offered under the Northwest Forest Plan included in the appendix. Since 2003, the budget approved by Congress and the Administration has called for 4,668 million board feet from the Northwest Forest Plan area. The agencies have offered 4,507 board feet, or 96% of the planned budget.

In addition, exports from the region are skyrocketing. In 2010 over 2 billion board feet of logs and lumber were exported from the West Coast. In 2011 it topped 3 billion. There is no shortage of logging in the Pacific Northwest.



Source: Forest Service and BLM Volume Offered under Northwest Forest Plan (FY 1995 – FY 2010), Region 5 & 6, PTSAR Report, and BLM Timber Sale Information System.

The Probable Sale Quantity (PSQ) needs to be recalculated to offer a realistic assessment based on conservation needs. Here are some factors to consider:

Clearcutting and regeneration harvest are socially and scientifically unacceptable because removing the majority of the structure harms water quality and does not mimic natural processes. By increasing forest fragmentation it is particularly harmful to the threatened Northern Spotted Owl and Marlbed Murrelet.

The need to increase protection Northern Spotted Owls and meet Recovery Action 32 to protect all suitable nesting, roosting, foraging habitat indicates that all suitable nesting, roosting and foraging habitat should be removed from the timber base. Similarly, the need to protect Marbled Murrelet habitat, including both occupied stands, and mature forest to be recruited as high quality nesting habitat indicates that all the mature forests within the range of the marbled murrelet should be removed from the timber base.

The PSQ needs to be recalculated to mitigate for the increasing intensity of management on non-federal lands as a result of the current boom in raw log exports. Harvest rotations are getting shorter and ecological and watershed values are declining and habitat for the Northern Spotted Owl and Marbled Murrelet continue to be lost, so management of federal forest lands must be adjusted to compensate.

In addition, the Rule and accompanying Economic Analysis and Environmental Assessment fail to analyze a range of management options that could meet the objective of ecological restoration and forest resilience while also minimizing harm to the Northern Spotted Owl. For example, conservation groups have released a report Ecologically Appropriate Restoration Thinning in the Northwest Forest Plan Area identifying twenty-years of non-controversial thinning projects in Oregon and Washington that do not rely on removing owl habitat. We urge the Service consider this option as opposed to allowing regeneration of mature forests that are already providing suitable Northern Spotted Owl habitat.

Economic Analysis of the Draft Critical Habitat Designation

The *Draft Economic Analysis* has substantial flaws and fails to provide the Secretary with a sound basis for determining if the economic benefits of excluding any area from the Critical Habitat designation outweigh the economic benefits of including it. Instead, it provides a poorly informed, incomplete, and biased description of these benefits. Consequently, the *Draft Analysis* does not provide a reasonable basis for any determination by the Secretary to exclude any area from the final designation.

The *Draft Analysis* narrowly focuses on how the designation of critical habitat would affect the timber industry, disregarding its other effects on the economy. Extensive evidence confirms that timber constitutes a small percentage of the total value of goods and services provided by forests in this region. With its limited focus and pro-timber bias, the *Draft Analysis* cannot provide the Secretary with a solid foundation for weighing the full economic benefits of designating lands against the full economic benefits of excluding them.

The *Draft Analysis* misconstrues the designation's timber-related benefits. The *Draft Analysis* measures the benefits of increased timber production with one eye closed, looking only at the market value of the additional logs and ignoring the costs of producing them.

The *Draft Analysis* fails to comply with the requirements of Executive Order 12866. This executive order requires the Secretary, before adopting a final rule to designate critical habitat for the Northern Spotted Owl to describe for the public and base his decision on "the best reasonably available…economic…information concerning the need for and consequences of the intended regulation."[1] The *Draft Analysis* overlooks far too much of the best, readily available economic information to provide a full picture of the economic consequences of excluding areas from the designation. This conclusion is reinforced by comparing the *Draft Analysis* against the requirements of OMB Circular A-4, which provides guidance for complying with Executive Order 12866.

This guidance requires the Secretary to "consider any important ancillary benefits and countervailing risks" before making any decision to exclude areas from the designation, using "the same standards of information and analysis quality that apply to" the analysis of timber-related impacts.[2] In stark contrast, The *Draft Analysis* arbitrarily focuses on how the designation (or exclusion) of different areas would affect timber production, and applying dramatically different standards of information and analysis to describe the other important ancillary benefits of designation. Thus, the Secretary would violate Executive Order 12866 if he were to rely on the *Draft Analysis* as the basis for a decision to exclude any area from the designation.

These are the findings of Dr. Ernie Niemi who has drafted "Comments on the Draft Economic Analysis of Critical Habitat Designation for the Northern Spotted Owl." These comments are included in the appendix.

[1] xecutive Order 12866, Section 1 7 .
[2] OMB Circular A-4, p. 26.

Active management has economic and environmental costs not accounted for in the draft Rule and accompanying documents.

Active Management in Critical Habitat

The draft Critical Habitat rule includes extensive language supporting active management in all areas of owl Critical Habitat, including regeneration harvest in moist Westside forests. The draft goes so far as to suggest that forest management goals can take precedence over owl conservation, and that the conservation of this endangered species must be "compatible with broader landscape management goals":

We strongly encourage the application of ecosystem management principles and active forest management to ensure the long-term conservation of the Northern Spotted Owl and its habitat, as well as other species dependent on these shared ecosystems. (p. 13)

In conclusion, the designation and management of critical habitat for the spotted owl must be compatible with these broader landscape management goals if it is to conserve the spotted owl as required by the Act. It is therefore important to emphasize that spotted owl critical habitat should not be a "hands off" reserve in the traditional sense. Rather, it should be a "hands on" ecosystem management landscape that should include a mix of active and passive actions to meet a variety of forest conservation goals that support long-term spotted owl conservation. It would be inconsistent with the stated purposes of the Act, the Revised Recovery Plan (USFWS 2011), and the goals of the Northwest Forest Plan (NWFP) if spotted owl critical habitat was narrowly managed and, in so doing, discouraged land managers from implementing scientifically justified measures for conserving forest ecosystem functions and health.(p.15)

Likewise, in moist and some mixed forests, management of spotted owl critical habitat should be compatible with broader ecological goals, such as the retention of high-quality older forest, the continued treatment of young or homogenous forest plantations, and the conservation or restoration of complex early seral forest habitat (Spies et al. 2007b, pp. 57–63; Betts et al. 2010, pp. 2117, 2126–2127; Swanson at al. 2010, entire). In general, actions that promote ecological restoration and those that apply ecological forestry principles as described in the Revised Recovery Plan (USFWS 2011, pp. III-11 to III-41) are likely to be consistent with the conservation of the Northern Spotted Owl and the management of its critical habitat.

Recommendation for moist Westside forests:

"*Regeneration harvest, if carried out, should consider ecological forestry principles." (p.131)*

For example, some restoration treatments may have an immediate neutral or beneficial effect on existing Northern Spotted Owl habitat (e.g., roads management, some prescribed fire prescriptions). Other treatments, however, may involve reductions in stand densities, canopy closure, or ladder fuels (understory vegetation that has the potential to carry up into a crown fire)—and thus affect the physical or biological features needed by the species. At the stand scale, this can result in a level of conflict between conserving existing Northern Spotted Owl habitat and restoring dry-forest ecosystems. We typically cannot expect to meet both objectives on the same acre if that acre currently functions as suitable Northern Spotted Owl habitat. We can reconcile this conflict, however, by managing at the landscape scale.

This approach has raised the concern of Society for Conservation Biology, The Wildlife Society, and American Ornithologists' Union who wrote:

"These proposed policy changes have the potential to adversely impact federal lands in the Pacific Northwest to

the detriment of spotted owls and other federally threatened and endangered species….we are especially concerned about the potential habitat impacts of adopting untested "active management" forestry technique."

The groups are asking the Department of the Interior to prepare and Environmental Impact Statement to prepare a scientific approach to test active management forestry's impact on spotted owl prior to being used at a commercial or landscape scale. We agree with this assessment and urge an end to owl take until the agency can offer an analysis showing what the acceptable limits to owl take and habitat loss are while still providing a high degree of certainty of owl recovery.

Adverse Modification of Habitat

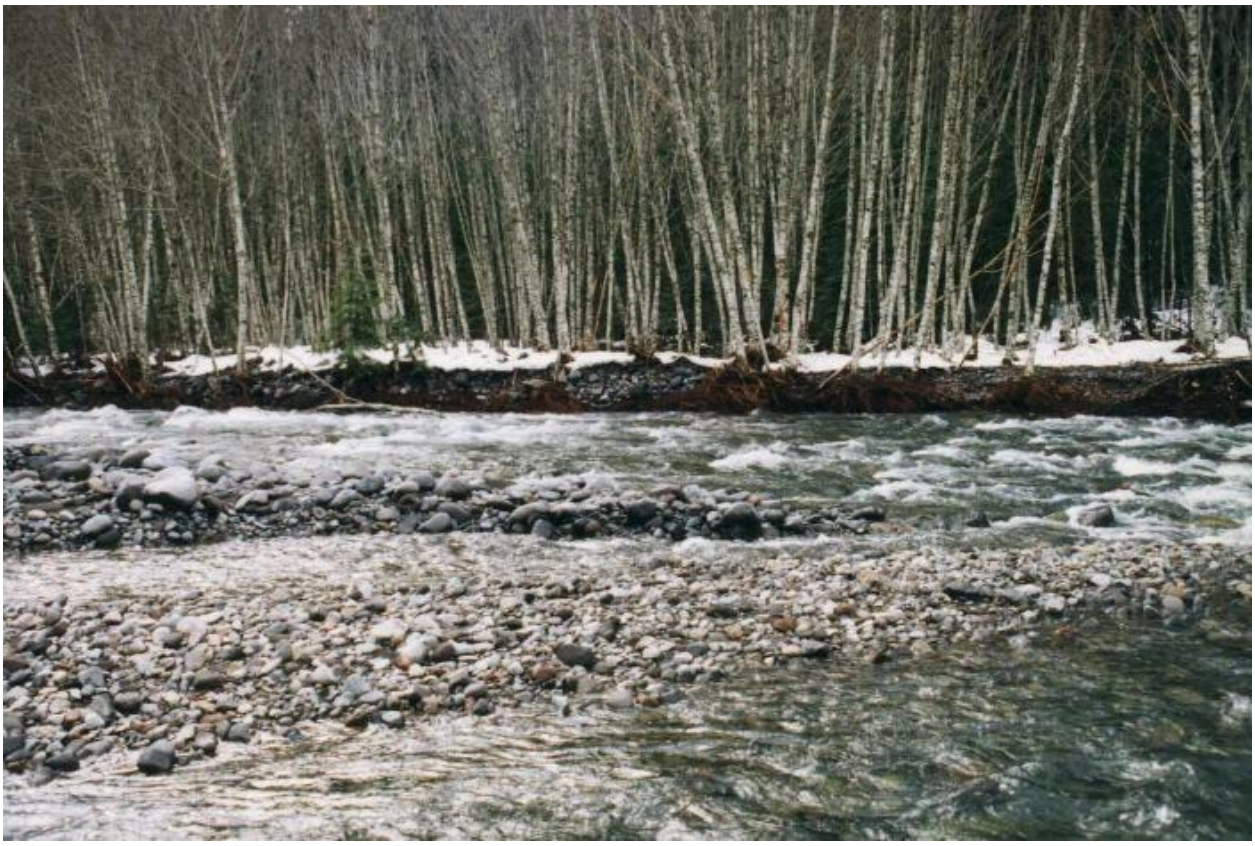
The draft Critical Habitat rule further states that if projects have considered ecological forestry principles, that in general these activities would not be considered adverse modification of owl habitat by the Service. As a result of this provision, the normal protections provided by critical habitat to prevent adverse modification may not apply at the discretion of the Service.

In general, silviculture prescriptions that apply ecological forestry principles to address the conservation of broader ecological processes are compatible with maintaining the proposed critical habitat's essential features in the long term (USFWS 2011, p. III-14). (p. 14)

Landslides and erosion are potential impacts of active management on steep or unstable slopes. Oregon's Coast Range.

*We would anticipate that in most cases, restoration and thinning actions (see **Special Management Actions and Considerations**) at or below this size (500 acres) will likely not adversely affect a given critical habitat subunit; however, such a determination would have to be made on a case-by-case basis, after careful consideration of the specific conditions of the proposed action.*

The Service should evaluate adverse modification at the appropriate scale of individual owl home ranges as geographically defined for each proposed project action, particularly active management; determine jeopardy at the scale of the subunit (approximately 100,000 acres), and cumulative effects need to be evaluated to avoid a level of excessive loss that is currently not quantified.



The Northwest Forest Plan protects water quality, threatened salmon runs, and habitat for the Marbled Murrelet. Willamette National Forest, Oregon.

The 1993 Report of the Scientific Analysis Team (SAT) ironically, already thoroughly reviewed the risks associated with logging in suitable owl habitat, and concluded "intentions to selectively cut forest stands to create conditions favorable for spotted owls, represents increased risks to the viability of the spotted owl (SAT p. 145)."

The issue of short-term losses versus long-term habitat gains was also analyzed and the scientists concluded "*that the short-term effect of these actions on habitat loss may be much more significant than the long-term predicted habitat gains*."

The Scientific Analysis Team report said:

"Lacking experience with selective cutting designed to create spotted owl habitat, such practices must be considered as untested hypotheses requiring testing to determine their likelihood of success. ... Given the uncertainty of achieving such expectations, it is likely that some silvicultural treatments, which have been characterized as largely experimental, may well have an opposite effect from that expected. Consequently, such treatments may hinder the development of suitable habitat or they may only partially succeed, resulting in development of marginal habitat that may not fully provide for the needs of spotted owls. Results which fall short of the expected conditions could occur because of delay or failure to regenerate stands that have been cut, increased levels of wind throw of remaining trees, mechanical damage during logging to trees remaining in the logging unit, the spread of root rot and other diseases. Increased risk of wildfires associated with logging operations that increase fuels and usually employ broadcast burning to reduce the fuels also increase the risk of not attaining expected results. Such events may spread to areas adjacent to stands that are logged, thereby affecting even more acreage than those acres directly treated." [SAT p 147-148]

"The combined risks associated with treatment of spotted owl habitat or stands expected to develop into

suitable habitat for spotted owls, as discussed above, will likely result in situations where either habitat development is inhibited or only marginal habitat for spotted owls is developed. The exact frequency of these partial successes or failures is unknown. Given the likely cumulative relationship among the risks for each factor, it appears to us that the overall risk of not meeting habitat objectives is high. … Members of the Interagency Scientific Committee indicated that, because a plan (the Interagency Scientific Committee's Strategy) was put forth which proposes to reduce the population of a threatened species by as much as 50 percent, providing the survivors with only marginal habitat would be extremely risky and certainly in their minds not 'scientifically credible' (USDA 1991:45)." [SAT p 151].

"The transition period (1-50 years) between implementation of the Interagency Scientific Committee's Strategy and achievement of an equilibrium of habitat and spotted owls is a critical consideration. … Given the existing risks that face owl populations and the sensitivity of the transition period, the short-term effect of these actions on habitat loss may be much more significant than the long-term predicted habitat gains. We further conclude that, although research and monitoring studies are presently being initiated, no significant new data exist which suggest that the degree of certainty that is expressed in the Bureau of Land Management Draft Resource Management Plans for developing owl habitat silvicultural treatments is justified. Therefore, it is our opinion that the course prescribed in the Interagency Scientific Committee's Strategy, pertaining to timber harvest in Habitat Conservation Areas, remains the most likely course to result in superior habitat conditions within reserves (i.e., Old-Growth Emphasis Areas). The approach prescribed by the Interagency Scientific Committee's Strategy preserves options for adjustments in the course of management under a philosophy of adaptive management." [SAT p 151-152].

Olympic National Park, Washington State

According to forest policy expert Doug Heiken of Oregon Wild, "The SAT indicates that these comments apply equally to density management and patch cutting, both of which are being promoted as tools to enhance owl habitat. The SAT also cited concerns about the effect of logging on snags and down woody debris which are essential features of owl habitat. The authors of the Northwest Forest Plan took all this into account and determined that 80 years is a useful place to draw the line between younger forests that are likely to benefit from careful thinning and older forests that are likely to experience net negative consequences. There is no new

science to change that conclusion." ABC urges the Service to not allow for adverse modification of Northern Spotted Owl Habitat by active management or ecoforestry in stands greater than 80 years.

Lack of Scientific Evidence for Active Management

While early-seral habitats are desirable for some species, logging is not the best means to establish early-seral habitat within the range of the Northern Spotted Owl. We recommend that agency utilize natural disturbances and refrain from post-fire logging which has the potential to create abundant high-quality early-successional habitats.

In the draft Rule land managers are encouraged to develop early seral habitat to benefit a variety species but no evidence is presented showing the Northern Spotted Owl benefits from the creation of early seral habitat, nor is there analysis showing what potential harm may come to the threatened species if various levels of direct take and habitat loss or degradation were to occur.

Open meadows. Mt. Rainier National Park, Washington State.

The draft Environmental Assessment identified two endangered species, Fender's blue butterfly and Oregon silverspot butterfly whose open, early seral habitat such as grasslands, meadows, oak woodlands, or aspen woodlands may conflict with Northern Spotted Owl management intended to maintain closed canopy forests (p. 52). But the assessment notes that listed plant and butterfly species and their closely associated open habitats are explicitly not included in the proposed critical habitat revision (p.50). The Service concludes on page 62: *"that designation of critical habitat for the Northern Spotted Owl in this alternative would have a neutral effect on those species associated with open, early seral habitats."*

We see no justification to convert nesting, roosting, and foraging habitat of the Northern Spotted Owl to early-seral. Under the Northwest Forest Plan restoration of owl habitat, when it occurs, should hasten creation of owl habitat, not set it back by many decades. This provision is unrelated to owl recovery or sound forest management and should be removed from the final designation.

Other listed species may also be harmed by the proposed active management such as the Marbled Murrelet. The draft Environmental Assessment found that "Active forest management that is in the vicinity of murrelet nesting stands may be detrimental to the species survival and recovery." (p. 61) This results from increased fragmentation and opening the forests to crows, ravens, and jays, increasing predation pressure on nesting murrelets. Despite this, there is no prohibition in the draft Rule on the proposed active management to ensure murrelet nesting stands will not be disturbed.

The draft Rule on page 8 on the other hand states: *"Consistent with the best available science and the adaptive management principles outlined in the Revised Recovery Plan for the Northern Spotted Owl, we strongly encourage the application of ecosystem management principles and active forest management to ensure the long-term conservation of the northern spotted owl and its habitat, as well as other species dependent on these shared ecosystems."*

In reality, active management, if conducted near nesting murrelets would be harmful. There is also indications the prey base of the Northern Spotted Owl could also be harmed by active management including thinning, but these factors appear to be glossed over by the draft Rule. And unlike the Northwest Forest Plan, there is no detailed analysis how other listed species will fair under the active management being proposed by the draft Rule.

Studies by Hanson (2009 and 2010) and Miller (2012) have found that dry forests on the Eastside and in Northern California have not seen an increase in severe, high-intensity fires. Most of the acreage burned has been low to moderate severity with generally beneficial ecological effects. The risk of fire to owls also appears to be exaggerated in the final Owl Recovery Plan and draft Critical Habitat rule.

The agency recommends conserving old-growth trees and forests on wherever they are found, including in the matrix lands. This is the most positive development stemming from the final Recovery Plan and draft Critical Habitat rule.

The Rule recommends that for the moist forests in the West Cascades/Coast Ranges of Oregon and Washington "*…to conserve stands that support northern spotted owl occupancy or contain high-value northern spotted owl habitat (USFWS 2011, p. III-17). Silvicultural treatments are generally not needed to accomplish this goal*."

However despite this clear statement that active management is not needed in these moist forests, the Draft recommends "dynamic management" in threatened forest types that conserves all stages of forest development where tradeoffs between short-term and long-term risks are better balanced, and recognize the Northwest Forest Plan is now an integrated conservation strategy that contributes to all components of sustainability.

In plain language that says the Service is approving a more discretionary management approach that reduces protections to increase the amount of logging in owl habitat.

Presidential Memorandum

President Barack Obama issued a memorandum to Secretary of the Interior Ken Salazar stating that logging should be allowed and considered an acceptable practice in Northern Spotted Owl Critical Habitat. The memo is of great concern because it is not based on the best available science and makes exaggerated claims about the evidence supporting the Service's position. It appears to prejudge the outcome and effects of a federal rulemaking and seek a predetermined outcome before the public had even been given a chance to review or comment on the draft Rule. The text of a portion of the memo signed by President Barack Obama follows:

Importantly, the proposed rule recommends, on the basis of extensive scientific analysis that areas identified as Critical Habitat should be subject to active management, including logging, in order to produce the variety of stands of trees required for healthy forests. The proposal rejects the traditional view that land managers should take a "hands off" approach to forest habitat in order to promote species health; on-going logging activity may be needed to enhance forest resilience.

In order to avoid unnecessary costs and burdens and to advance the principles of Executive Order 13563, consistent with the ESA, I hereby direct you to take the following actions:

(1) publish, within 90 days of the date of this memorandum, a full analysis of the economic impacts of the proposed rule, including job impacts, and make that analysis available for public comment;

(2) consider excluding private lands and State lands from the final revised critical habitat, consistent with applicable law and science;

(3) develop clear direction, as part of the final rule, for evaluating logging activity in areas of critical habitat, in accordance with the scientific principles of active forestry management and to the extent permitted by law;

(4) carefully consider all public comments on the relevant science and economics, including those comments that suggest potential methods for minimizing regulatory burdens;

(5) give careful consideration to providing the maximum exclusion from the final revised critical habitat, consistent with applicable law and science; and

(6) to the extent permitted by law, adopt the least burdensome means, including avoidance of unnecessary burdens on States, tribes, localities, and the private sector, of promoting compliance with the ESA, considering the range of innovative ecosystem management tools available to the Department and landowners.

The Society for Conservation Biology, The Wildlife Society, and American Ornithologists' Union raised the same concern about the President's memo stating:

"We are concerned that this memorandum overstates the quality and quantity of scientific research on the potential benefits of active forest management, especially in the Pacific Northwest on a federally threatened species. In particular, we are unaware of any substantial or significant scientific literature that demonstrates that active forest management enhances the recovery of spotted owls."

Additional Areas Where Critical Habitat Should Be Designated

ABC believes all occupied and suitable owl habitat should be designated Critical Habitat. Tribal lands important for the recovery of Northern Spotted Owl, such as the 5,400 acre Coquille forest have been excluded. Similarly, portions of the Coos Bay Wagon Road lands and the Cascade-Siskiyou National Monument area in Oregon have also been excluded with little explanation.

We urge the agency to allocate additional critical habitat in prime Northern Spotted Owl habitat adjacent and near to the Monument to include as much dispersal/connectivity habitat as possible. The Monument currently seems to be a functional island of designated Critical Habitat in its surrounding landscape.

Dave Willis, a local conservationist familiar with the area recommends some specific additions we believe

beneficial to the Northern Spotted Owl and would urge their inclusion.

"Some of the best canopy in the area is located outside the Monument in and NNW of the Monument's "missing northwest quadrant" in the western half of T39S, R3E. This forest canopy and Northern Spotted Owl habitat is as good or better quality than anything in the Monument CHU itself north of Highway 66. Yet the document designates only ~200 acres of CHU in the far extreme northwest Section 6 corner of the western half of T39S,R3E. The gap in CHU between northern CSNM CHU in ECS2 and the most southeastern CHU in Klamath East Subunit 5 is quite strange – skipping over and excluding some of the best forest canopy in the region. Likewise, in addition to the gap in CHU designation NNW of the Monument highlighted above, CHU designation on the Monument's east and west sides are also deficient.

Noting the inadequacy of the Monument's current boundaries, a group of scientists with much research and on-the-ground experience in the Cascade-Siskiyou National Monument area has recommended expansion of the Monument in exactly this outside-the-current-Monument area between the Green Springs Summit and Grizzly Peak. (See: Frost, Odion, Trail, Williams et al, *Interim Report – Cascade-Siskiyou National Monument Boundary Study: Identification of Priority Areas for Monument Expansion*, April 2011.) Rather than aid this needed biological bolstering outside current Monument boundaries, the current lack of CHU designation adjacent and near to the Monument undercuts the considered and informed recommendations of this site-specific scientific report – and degrades the habitat connectivity function of the existing Monument itself by further isolating it."

Coos Bay Wagon Road Lands

Similarly, here is a concern being raised by Francis Eatherington, a local expert regarding the lack of designation on federal lands with likely merit. We believe these lands should be reviewed and the occupied and suitable Northern Spotted Owl designated as Critical Habitat.

"Many of the sections of Coos Bay Wagon Road (CBWR) lands with mature and old growth forests were left out of proposed Critical Habitat, even though these lands had been designated in 1992. Out of 74,500 acres of Coos Bay Wagon Road in Coos Bay and Roseburg BLM Districts, only about 14,000 acres were proposed for critical habitat. The remaining 60,000 contain areas of significant old growth forests and mature forests over 120 years old. For instance, section 1, T28, R11, or section 1, T29, R10, or sections 5 and 19, T28, R7.

14,000 acres of critical habitat that was designated was in current LSR in Coos County. However, no CBWR lands in Douglas County were proposed for critical habitat, not even in the LSR or the ACEC lands managed by Roseburg BLM, where significant old growth forest exists.
In Coos County, and on Coos Bay BLM District lands, only some of the existing LSR was proposed a critical habitat. None of the existing matrix was proposed, even though these lands were critical habitat in 1992, and still contains significant stands of mature and old growth forests."

Exclusions

The draft has identified 13,962,449 acres of potential Critical Habitat, a significant increase in acreage above the 5.3 million acres currently designated. The Administration is recommending that some identified lands be exempted from Critical Habitat designation because they argue the lands are already being conserved or that conservation purposes can better be achieved through exclusion. Here's a brief summary of the proposed and potential exclusions:

Private lands with conservation agreements such as Habitat Conservation Plans (HCPs), and Safe Harbor agreements are proposed for exclusion 711,803 acres

State land with conservation agreements are proposed for exclusion	225,013 acres
State park lands are proposed for exclusion	164,776 acres
Congressionally reserved natural areas are proposed for exclusion	2,631,736 acres
Private lands without formal conservation agreements	555,901 acres
State lands without formal conservation agreements	281,247 acres

The draft includes language favoring the general exclusion of state and private lands, to exclude the proposed lands, and to strongly consider the exclusion of other state and private lands unless it is absolutely essential for owl conservation. Private and state lands without formal conservation agreements are also under consideration for exclusion. Private lands in Oregon were not included the modeling analysis.

If all exclusions were granted, a total of 9,391,973 acres would remain. ABC supports designating all 13,962,449 acres plus additional acres where occupied or suitable Northern Spotted Owl habitat is found.

Private and state land HCPs and Safe Harbor agreements are a means of encouraging landowner support and participation in species conservation. Providing an exemption in this case creates an incentive for landowners that have been cooperative and developed HCP or Safe Harbor Agreement. However, in regard to the Northern Spotted Owl stronger steps to ensure recovery are needed. This exemption should not be granted and all conservation agreements updated to include recovery goals in areas with proposed critical habitat.

Funding shortfalls have led to the potential closing of many California state parks. Some states have made severe cuts in environmental programs and public lands and their management have become increasingly politically polarized. Proposals to privatize public lands are being offered in many state legislatures. As a result, there is no assurance these state park lands will be managed for conservation purposes in the future.

Similarly, political polarization and ongoing efforts to boost logging in owl habitat, dispose of federal lands and to de-designate Wilderness and other conservation designations raise concern that these lands cannot assure the conservation benefits they currently provide. As a result of these threats, the owl should have the added assurance of all occupied and suitable habitat receiving the protection of critical habitat designation.

Private and state lands without conservation agreements should not be excluded. The Owl Recovery Plan states that an additional contribution to owl habitat protection is needed on private and state lands.

Oregon State Forests in particular are failing to comply with the owl recovery plan. On the Elliot State Forest, the Oregon Department of Forestry (ODF) has abandoned its HCP and its plans fail to comply with the recovery plan with sale proposals in violation of recovery actions 10, 19 and 32. The Elliott's Forest Management Plan says it will only "consider" the recovery plan, but to date, there is no indication it is being followed. ODF now claims forests as young as 51 years old can be suitable nesting habitat, while the agency is clearcutting forests 130-150 years old. In addition, any notion of adaptive management improvements over time is currently impossible. ODF admits that there is no budget for the monitoring necessary for adaptive management, and there is still not even a draft monitoring plan for the Elliott.

Legal Issues Related to Exemptions and Adverse Modification

A review of the draft Rule by Earthjustice found a number of concerns that also influenced ABC's decision to

oppose the proposed exemptions. Here is a brief summary of their analysis which is included in full in the appendices.

The proposed critical habitat rule proposes exemptions and active management in designated critical habitat not supported by the law or the best available science. It is recommended that the Service designate all lands, both federal and non-federal, identified as suitable habitat exclusions, and to adopt a much more cautious approach toward logging in designated critical habitat by eliminating or modifying language related to active management in the draft rule. The scale at which adverse modification of critical habitat will be assessed must be clarified to be at the appropriate subunit scale to comply with the intent of the ESA and provide for owl recovery.

Analysis: Draft Rule Lowers the Bar for Habitat Protection

The provisions in the draft plan encouraging unproven thinning and restoration logging, combined with the expansive definition of adverse modification that allows degradation of owl habitat, have the potential to allow for logging of areas that should be conserved to provide the additional habitat needed to stabilize Northern Spotted Owl populations and provide for recovery. This Rule, combined with the elimination of late-successional reserves could allow logging in areas now protected by the Northwest Forest Plan, including mature forests that the Plan had intended to become old-growth.

These provisions, which were repeated numerous times in the draft, appear to allow an increase of timber harvest in the region while minimizing habitat protection, in terms of both total acreage by encouraging unwarranted exclusions, and lax management standards weaker than the standards and guidelines of the Northwest Forest Plan.

This language encouraging active management in Northern Spotted Owl Critical Habitat, particularly on combination with the elimination of reserves has the potential to allow excessive logging to the detriment of the Northern Spotted Owl population and may foreclose recovery by not providing adequate late-successional forest necessary to ensure high quality habitat in the future. Changes to land management plans such as the proposed Okanogan-Wenatchee Forest Plan are being influenced by the Final Recovery Plan, and Draft Critical Habitat rule's and Environmental Assessment's encouragement of a reserve-less strategy.

We urge the Service to reconsider. This approach of allowing the land management agencies broad discretion for active management across the landscape was tested in the decades prior to the Northwest Forest Plan and proved disastrous to the Northern Spotted Owl and Marbled Murrelet and left only fragments of the old-growth ecosystem remaining.

Recommended Changes

We urge that the Final Critical Habitat Rule make clear that eliminating the system of late-successional reserves would be detrimental to owl recovery and is not a recommended outcome of this rulemaking, or the Environmental Assessment and Economic Analysis.

The proposal encouraging adverse modification of habitat for ecoforestry purposes is not supported by the best available science. We recommend it be removed from the final rule.

We recommend that the determinations of adverse modification be at the appropriate fine scale to ensure ESA compliance.

We recommend that the standards and guidelines of the Northwest Forest Plan late-successional and riparian

reserve systems be used to preclude inappropriate or unsustainable management practices. The Northwest Forest Plan allows for restoration and provides standards and guidelines that are more protective of owls and better suited to experiments in ecological restoration.

Prescriptive requirements to retain trees above a certain age or size to restore the deficiency in old forests, and mapping where large blocks of closed canopy forests will be retained and allowed to mature is necessary to ensure these values will be not become subject to mismanagement or overcutting.

Active management in owl habitat should be considered experimental, conducted on a small scale, and monitored to determine its impact on Northern Spotted Owls. The necessity and benefits of active management in owl habitat remains in dispute.

We recommend the Service develop an environmental impact statement to devise a research strategy that addresses this question.

Northern Spotted Owl Critical Habitat Final Rule Summary and Analysis

Protecting the old growth forests of the Pacific Northwest and northern California is a major challenge due to political and economic pressures to allow for a maximum timber harvest within wildlife protection legal constraints. In the case of the Northern Spotted Owl political interference preventing sustainable forest management was a primary factor in its' population decline and listing as a threatened species and it continues to be a major hurdle to recovery that has to be overcome by federal and state wildlife professionals and conservationists.

The Final Critical Habitat rule reflects the ongoing challenge to balance preservation with commerce due to the inclusion of additional habitat protection measures coupled with direction for increased active management. The ultimate impact of the final rule will be determined by the project-by-project Sec. 7 consultations required by the Endangered Species Act, and potential changes to federal forest management plans across the region that attempt to incorporate direction from the final Northern Spotted Owl Critical Habitat Rule and Final Recovery Plan.

Summary
The Northern Spotted Owl critical habitat final rule of 2012 designates 9,577,969 acres, an increase of 4,265,600 acres from the current designation. A total of 4.3 million acres determined to be important for the owl's recovery were exempted from the designation.

The rule also directs the land management agencies to conserve older forest, high-value habitat, and areas occupied by Northern Spotted Owls. An estimated 1.1 acres of occupied and high-quality owl habitat previously designated for timber harvest in the Matrix should now to be protected.

Another 1.1 million acres of designated critical habitat in the Matrix is not considered high quality or occupied owl habitat. For these areas of the Matrix, the rule promotes active forest management including application of "ecological forestry," which may result in an increase or decrease in timber harvest of approximately 25 million board feet depending on the extent in which the proposed active management prescriptions or habitat protection measures are applied by the land management agencies.

The rule acknowledges the supremacy and importance of the Northwest Forest Plan, but then endorses pending changes to the region's forest management plans proposed by the land management agencies to adopt the

active management principles espoused in the Rule and Recovery Plan. The Incremental Effects Memorandum concluded that the management standards of the Recovery Plan and proposed Rule are weaker that the standards and guidelines of the existing Northwest Forest plan.

This analysis, combined with the stated intentions of the land management agencies to increase harvest in the region by 20% or more, and the marked and continual decline of the Marbled Murrelet population, raises concern the proposed management changes to the Northwest Forest Plan are likely to have negative consequences for two listed bird species of highest conservation concern.

Presidential Memorandum

The draft 2012 Northern Spotted Owl critical habitat rule was accompanied by a Presidential Memorandum which was in keeping with the Obama Administration's recently announced deregulatory initiative to direct the agency to tailor regulations to "reduce burdens and maintain flexibility" based on the Jan. 18, 2011 Executive Order 13563.

The memo directed the agency to accomplish this in part by adhering to a new policy of "active management" including logging and to reject the "hands off" management approach of past critical habitat designations. The memorandum claimed there is "extensive scientific analysis" in support of active forest management in owl critical habitat. In fact, there are no peer-reviewed studies demonstrating that Northern Spotted owl populations benefit from the proposed logging. Dozens of other peer-reviewed studies show that if carried out in owl habitat, the proposed active management would likely be harmful to owl populations and their prey, and to the threatened Marbled Murrelet.

The memo further directed the agency to develop clear direction for logging in critical habitat. The final rule provides more detailed logging prescriptions than in the draft. The final rule also provides important clarifications narrowing the proposed the active management to younger stands in the Matrix not being utilized by the owl for nesting or roosting.

However, direction for Eastside forests raise concern due to the lack of adequate landscape scale protection, there is a lack of clear direction in the Klamath region, and standards for conserving high-quality owl habitat on BLM lands are lax. This will be discussed in more detail in the active management section.
The Presidential Memo appears to have influenced the modeling exercise which demonstrates a bias against inclusion of private and state lands. Appendix C of the draft rule provides a detailed sequential summary of the process that sought to limit acreage protected, and to restrict that protection to public lands. Private lands in Oregon were never included in any of the models.

Ultimately, the model chosen did not include the alternative with most acres (over 18 million), and it assumes that Barred Owl control will be taking place, thereby reducing the amount of needed habitat. There is considerable doubt that the shot-gunning of thousands of Barred Owls will happen on federal lands due to opposition from animal rights groups. Therefore, it possible the agency has underestimated the amount of acres needed for recovery.

The other main effect of the memo is the broad exclusions for private, state and congressionally designated lands. While some of these exclusions are consistent with other designations and agency policy in regard to private landowners with HCPs and other conservation agreements, other aspects of the decision exclude areas without adequate conservation agreements that account for recovery, or in the case of state lands, without adequate forest management standards being in place. The Society of Conservation Biology and Environmental Protection Information Center are developing detailed critiques of the exemptions, the need for recovery standards in HCPs, and exclusion of Critical Habitat in the Redwoods region.

FWS Response to Presidential Memorandum Finds No Substantial Regulatory Burden (*ABC Comments in italics*)

FWS responded to the Presidential Memorandum in the Final Rule that it had released an economic analysis, and provided a description of ecological forestry.

> "Consistency with Presidential Directive. On February 28, 2012, the President issued a memorandum to the Secretary of the Interior regarding the proposed revised critical habitat for the northern spotted owl, specifically on minimizing regulatory burdens." (p. 10)

The agency then notes it will be up the land management agencies to decide upon and implement ecological forestry:

> "We note, however, that this discussion of ecological forestry is provided to Federal, State, local and private land managers, as well as the public, for their consideration as they make decisions on the management of forest land under their jurisdictions and through their normal processes. This critical habitat rule itself does not take any action or adopt any policy, plan, or program in relation to active forest management." (p. 10-11)

FWS concludes that any concerns about the potential regulatory burden are unfounded and have been addressed in the final rule:

> "Our analysis indicated that the revision of critical habitat could have relatively little incremental effect above and beyond the conservation measures already required as a result of its threatened species status under the Act, and thus is not expected to impose substantial additional regulatory burdens." P. 11

FWS is committed to working closely with the land management agencies to implement active management and ecological forestry:

> "The Service is committed to working closely with the U.S. Forest Service and BLM to implement the active management and ecological forestry concepts discussed in the Revised Recovery Plan and this critical habitat rule. Both recommend that land managers use the best science to maintain and restore forest health and resilience in the face of climate change and other challenges.
>
> To meet this goal, we have prioritized the timely review of forestry projects that will be proposed in critical habitat. We have already completed section 7 conference opinions on the proposed rule with the agencies, and have recently held interagency coordination meetings with the section 7 Level 1 staff in Oregon, Washington, and California. In these meetings, we identified ways to streamline the section 7 process to ensure that potential projects can be implemented in a timely manner consistent with northern spotted owl conservation." (p. 271-272)
>
> "The Service has assured the BLM and FS that it is committed to working closely with them to evaluate and implement active management and ecological forestry concepts of the recovery plan and critical habitat rule into potential timber management projects." (p. 281)

FWS says the ecological forest management is compatible with owl recovery and may increase timber harvest. While we agree that timber harvest may increase for a variety of reasons, we do not see where FWS has demonstrated that ecological forestry is compatible with owl recovery. And while we appreciate the limitations prescribed in the final rule, we remain concerned that the rule inappropriately promotes logging in owl habitat.

> "In our proposed rule, we provided a description of ecological forestry management actions that are

compatible with both northern spotted owl recovery and timber harvest, as recommended in the Revised Recovery Plan for the Northern Spotted Owl (76 FR 38575; July 1, 2011), which, in some areas, may actually increase harvest relative to recent realized levels (but not necessarily to planned levels under the NWFP). While it is outside the purview of the Service to direct forestry management, we will consult with Federal action agencies and make recommendations on the best measures to provide protections for the owl and have minimal negative economic impacts." (ECON p. ES-3)

Importance of Northwest Forest Plan

The final rule appropriately acknowledges the importance of the Northwest Forest Plan in conserving habitat and populations of the Northern Spotted Owl. In addition, it recognizes the need to recruit additional owl habitat, and confirms that the Northwest Forest Plan has been successful at retaining and expanding owl habitat.

> "In developing this critical habitat designation, we also recognize the importance of the Northwest Forest Plan (NWFP) and its land management strategy for conservation of native species associated with old-growth and late-successional forest, including the northern spotted owl. The designation of areas as critical habitat does not change land use allocations or Standards and Guidelines for management under the NWFP, nor does this rule establish any management plan or prescriptions for the management of critical habitat." (p. 7)
>
> "The Service believes the NWFP has functioned as intended for the retention and development of late-successional forest habitat (Thomas *et al*. 2006; Davis 2012). (p. 622)
>
> "We recently issued a Revised Recovery Plan for the Northern Spotted Owl (2011) that recommends more specific types of timber-harvest prescriptions in both areas managed for wildlife and areas managed for timber production, and also recommends extra protections for older habitat and spotted owl sites in non-reserved areas or areas managed for timber production. Currently, the guidelines for managing the large reserves of the NWFP are more restrictive than the recommendations for reserved lands in the Revised Recovery Plan or in the proposed revised critical habitat designation." (ECON p. B-4)

Misuse of Ecosystem Management

The Northwest Forest Plan is first and foremost, a multispecies management plan for listed species including the Northern Spotted Owl, Marbled Murrelet and salmon stocks that provides the land management agencies with an adequate regulatory mechanism to comply with the Endangered Species Act. The Northwest Forest Plan promotes an ecosystem management approach with the specific goal of protecting those listed species and perpetuating the late-successional forest ecosystem. The Final Rule misapplies the Northwest Forest Plan's ecosystem management approach to promote ecological forestry which has not been adequately field tested or monitored, and is likely to be detrimental to Marbled Murrelets and listed salmon by increasing fragmentation.

American Bird Conservancy has developed a unique and successful strategy to preserve bird diversity and maintain or increase wild bird populations. This strategy is fully articulated in The American Bird Conservancy Guide to Bird Conservation published in 2010 by University of Chicago Press (ISBN-13:978-0-226-64727-2). The highest bird conservation priority is halting extinctions, followed by conserving and restoring habitats.

In the case of the Northern Spotted Owl draft Critical Habitat rule, the Service is proposing to place lower priority general habitat needs before the specific needs of an endangered species, even to the point of allowing large numbers of Northern Spotted Owls to be killed (taken) and significant habitat to be degraded or completely eliminated for decades. While the stated goal to improve future habitat conditions for the owl is well-intended, this activity is not supported by peer-reviewed studies showing owl populations will benefit, and it is, in fact,

pushing an already extremely imperiled species closer to extinction and should be immediately halted.

> "Thus, to conserve the northern spotted owl as directed by the Act, one must also conserve the ecological processes that occur within the ecological landscape inhabited by the species. These processes—such as vegetation succession, forest fire regimes, and nutrient cycling—create and shape the physical or biological features that form the foundation of critical habitat." (p. 20-21)

> "A fundamental goal of critical habitat management should thus be to understand, describe, and conserve these processes, which in turn will maintain the physical or biological features essential to the conservation of the species. This ecosystem approach will ultimately have the highest likelihood of conserving listed species such as the northern spotted owl in the long term (Knight 1998, p. 43)." (p. 21)

> "Active adaptive forest management within critical habitat, as discussed herein for the consideration of land managers, may be fully compatible and consistent with these landscape-level ecosystems. Most importantly, this approach is compatible with the ecosystem-based approach of the Northwest Forest Plan." (p. 21)

Timber sale data undermines the idea that the Northwest Forest Plan is not producing a stable flow of timber. The final Northwest Forest Plan was a political compromise that under-delivered on old-growth protection by placing 42% of the remaining acres in the matrix, and overpromised on timber volume. The plan's billion board foot estimate was never realistic because it is predicated on logging old-growth, which is not supported by the public and that in practical terms has generally been ruled in violation of wildlife protection laws. The estimate was also completed prior to the designation of the riparian reserve network which turned out larger than anticipated. The Bush Administration recognized these factors to a degree, and lowered the allowable sale quantify to 800 million board feet.

A look at timber sale output in the Northwest Forest Plan region reveals the agency is at a sustainable level and meeting the volume targets budgeted by Congress; see Forest Service and BLM Offered under the Northwest Forest Plan included in the appendix. Since 2003, the budget approved by Congress and the Administration has called for 4,668 million board feet from the Northwest Forest Plan area. The agencies have offered 4,507 board feet, or 96% of the planned budget.

In addition, exports from the region are skyrocketing. In 2010 over 2 billion board feet of logs and lumber were exported from the West Coast. In 2011 it topped 3 billion. There is no shortage of logging in the Pacific Northwest.

> "While the NWFP has been successful in conserving large blocks of late-successional forest (Thomas *et al.* 2006, p. 283, Davis *et al*. 2011, p. 38), concerns have been expressed that it provides less than the anticipated level of commercial timber harvest on matrix lands, does not promote active restoration in areas that may contain uncharacteristically high risk of severe fire (Spies *et al.* 2006, pg. 359; Thomas *et al.* 2006, p. 277), and does not promote development of complex early-seral forest in areas where regeneration harvest has been conducted (Betts et al. 2010, p. 2117; Hagar 2007, p. 109; Swanson et al. 2011, p. 124). (p. 24-25)

Need for Additional Habitat Conservation

The rule confirms that additional habitat is necessary to conserve the Northern Spotted Owl in light of continued populations decline and the growing presences of the Barred Owl.

> "Although the rate of loss of habitat due to timber harvest has been reduced on Federal lands over the

past two decades, both past and current habitat loss remain a threat to the northern spotted owl. Despite implementation of habitat conservation measures in the early 1990s, Thomas et al. (1990, p. 5) and USDI (1992, Appendix C) foresaw that owl populations would continue to decline for several decades, even with habitat conservation, as the consequence of lag effects at both individual and population levels." P. 13

"The development of a critical habitat network for the northern spotted owl must take into account current uncertainties, such as those associated with barred owl impacts and climate change predictions (USFWS 2011, p. III-10)." (p. 17)

"Given the continued decline of northern spotted owl populations, the apparent increase in severity of the threat from barred owls, and information indicating a recent loss of genetic diversity for the subspecies, retaining both occupied northern spotted owl sites and unoccupied, high-value northern spotted owl habitat across the subspecies' range are key components for recovery (USFWS 2011, p. I-9)." (p. 17-18)

"This revision of critical habitat represents an increase in the total land area identified from previous designations in 1992 and 2008. This increase in area is due, in part, to: (a) the unanticipated steep decline of the northern spotted owl and the impact of the barred owl, requiring larger areas of habitat to maintain sustainable spotted owl populations in the face of competition with the barred owl (e.g., Dugger *et al*. 2011, p. 2467); (b) the recommendation from the scientific community that the conservation of more occupied and high-quality habitat is essential to the conservation of the species (Forsman *et al.* 2011, p. 77); (c) the need to provide for redundancy in northern spotted owl populations, by maintaining sufficient suitable habitat for northern spotted owls on a landscape level in areas prone to frequent natural disturbances, such as the drier, fire-prone regions of its range (in other words, —back-up areas of habitat so that owls have someplace to go if their habitat burns or trees die due to insect infestation, etc.)" (p. 85)

"(3) It ensures that adequate amounts of current and future habitat is available for spotted owls to persist and recover by designating a habitat network consisting of approximately 50 percent of the available high-suitability spotted owl habitat rangewide. An additional 21 percent of high-qualitiy habitat is encompassed within Congressionally Reserved lands that are not designated, but will retain their value for spotted owls. This high-quality habitat, in addition to areas required for population connectivity, is necessary to support rangewide populations with low extinction risk at both rangewide and regional scales.

(4) Compared to previous spotted owl conservation strategies, it provides increased redundancy in habitat to help buffer potential adverse impacts due to climate change and other stochastic (i.e., unpredictable) events by enlarging the total area of the final designation within the fire-prone portions of the northern spotted owl's range." (p. 175-176)

"In the development of habitat conservation networks, the intent of spatial redundancy is to increase the likelihood that the network and populations can sustain habitat losses by inclusion of multiple populations unlikely to be affected by a single disturbance event. This is essential to the conservation of the northern spotted owl because disturbance events such as fire can potentially remove large areas of habitat with negative consequences for northern spotted owls. Redundancy provides a type of —emergency back-up system to sustain populations in the wake of such events. While the modeling and evaluation process used by the Service did not formally analyze redundancy, we incorporated spatial redundancy at two scales: by (1) making critical habitat subunits large enough to support multiple groups of owl sites; and (2) distributing multiple critical habitat subunits within a single geographic region. This

was particularly the case in the fire-prone Klamath and Eastern Cascades portions of the range." (P. 557) "Likewise, in addition to our modeling results, peer review of both the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) as well as our proposed rule to revise critical habitat, suggested that retention of high quality habitat in the matrix is essential for the conservation of the species. Population performance based on reserves under the NWFP, for example, fared very poorly compared to this final designation of critical habitat. As described in the section **Changes from the Proposed Rule**, we tested possible habitat networks without many of these matrix lands, which resulted in a significant increase in the risk of extinction for the northern spotted owl." (p. 567-568)

"We recommend that habitats with high value to the conservation of the northern spotted owl be conserved. High-value habitat includes mid-seral forests as one component. Mid-seral forests that are generally not occupied by northern spotted owls, however, may be appropriate areas for land management agencies to consider for active forest management that may increase their rate of development into high-quality habitats." (p. 594)

"Rangewide, the proposed revised critical habitat is comprised of approximately 4.6% younger forests that are essential to the conservation of the species, and where individual timber harvests may occur. (For analysis purposes we used a 40-acre minimum patch size to determine such areas, because areas smaller than 40 acres are not likely to have individual planned timber harvests. Based on our experience, harvests in areas smaller than 40 acres would likely be incorporated within a larger planning and consultation process). In particular, of the 63 critical habitat subunits proposed for designation, four (NCO-5, ORC-3, WCC-1 and WCS-6) contain proportionally greater areas of younger forests that are essential to the conservation of the species (10.03%, 10.29%,12.58% and 10.42%, respectively) because they can develop additional habitat necessary to support viable spotted owl populations in the future. These areas of younger forest may or may not presently be occupied by spotted owls. These areas are important for the purposes of distinguishing potential effects of the designation, because they represent cases wherein section 7 consultations may not be necessary but for the designation of critical habitat. In other words, impacts and resulting costs associated with consultation in these areas may be solely an incremental effect of the designation." (ECON p. B-7)

Need for Additional Habitat Due to Barred Owl

"The recovery of the northern spotted owl therefore requires both protection of habitat and management where necessary to provide sufficient high-quality habitat to allow for population growth and to provide a buffer against threats such as competition with the barred owl." (p. 139-140)

"As the barred owl is present throughout the range of the northern spotted owl, special management considerations or protections may be required in all of the critical habitat units and subunits to ensure the northern spotted owl has sufficient habitat available to withstand competitive pressure from the barred owl (Dugger et al. 2011, pp. 2459, 2467). In particular, studies by Dugger et al. (2011, p. 2459) and Wiens (2012, entire) indicated that northern spotted owl demographic performance is better when additional high-quality habitat is available in areas where barred owls are present." (p. 140)

"Including more habitat in critical habitat designation, as compared to the No Action Alternative, would provide increased conservation benefits for northern spotted owls in the face of predicted climate change and the threat from barred owls. Hotter, drier summers and wetter nesting seasons, as predicted for the Pacific Northwest, have the potential to negatively affect northern spotted owls. The presence of high quality habitat my buffer the negative effects of climate change (see section 3.4.3 Climate Change). In addition, maintaining additional habitat distribution across the range of the species may increase the likelihood that spotted owls will persist in areas where barred owls are also present (Dugger *et al.* 2011;

Forsman *et al.* 2011; Wiens 2012)." (EA p. 107)

Importance of Northwest Forest Plan Reserves

The documents reaffirm other federal studies showing the effectiveness and importance of the Northwest Forest Plan reserves for maintaining and providing for additional old growth forests and to enhance water quality across the region:

> "The system of reserves within the NWFP is essential for the conservation and development of large areas of late-successional forest across the landscape; however, because the NWFP was designed to benefit multiple species not every acre of the late-successional reserves (LSRs) provide high-quality habitat for northern spotted owls. In addition, barred owls have become increasingly abundant in the Pacific Northwest and likely have a large effect on the continued decline of northern spotted owl populations. With barred owls now sharing the range of the northern spotted owl, conservation of northern spotted owls outside NWFP reserved areas is increasingly important for species recovery." (p. 24)

> "To conserve the northern spotted owl it is essential to have larger, connected areas that are managed for the development of their habitat even though some of those areas may not currently be occupied by the species. As habitat develops over time, both within occupied and unoccupied areas, we anticipate northern spotted owls will colonize the unoccupied habitat and positively contribute to population demographics which contribute to conservation of the species." (p. 619)

> "The Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011a) recommends restoration-focused management in reserve and non-reserve areas to accommodate climate change and dynamic ecosystem processes, with the goal of maintaining or restoring forest ecosystem structure, composition, and processes so they are sustainable and resilient under current and future climate conditions. In addition, the plan recommends extra protections for older habitat and spotted owls sites in non-reserved areas (USFWS 2011a). Recovery actions recommended by recovery plans are not regulatory and are implemented at the land manager's discretion.

> "The current guidelines for managing the large reserves of the NWFP are aimed at creating and maintaining the habitat characteristics required by late-successional species, including the northern spotted owl, and, thus, are consistent with the objectives of the proposed critical habitat designation (USDA and USDI 1994a, b)." (EA p. 47)

> "The current guidelines for managing the large reserves of the NWFP may be more restrictive than the general recommendations provided by the Service in the proposed revised critical habitat designation. Therefore, reserved lands are already being managed to reduce impacts or for the benefit of the NSO, consistent with the objectives of proposed critical habitat designation." (ECON p. 4-4)

Eastside Reserves

The final rule doubts the viability of Eastside reserves as result of fires, a point that was strongly contested by The Wildlife Society and peer-reviewers. The Forest Service claims that static reserves on the Eastside are no longer a viable strategy for conserving the owl, but to date has not produced credible evidence to support that contention. Portions of the now discredited Northern Spotted Owl Recovery Plan of 2008 reached the same unfounded conclusion, and inclusion of similar language in the 2010 Draft Recovery Plan spawned strong opposition from the scientific societies that peer-reviewed the plan.

The Final Owl Recovery Plan calls for conserving older stands that have occupied or high-value spotted owl habitat, and to "Continue to manage for large, continuous block of late-successional forest." Without the system of late-successional reserves remaining in place, the agency has not provided any mechanism to ensure that the land management agencies will provide for large, continuous blocks. In fact, given the management history, and continued proposals to further fragment the forest, the importance of maintaining the reserve system should be that much more apparent.

The reviewers found that the science included in the draft was incomplete because numerous studies to the contrary had not been considered. In the final draft, a greater effort was made to reference the omitted studies, but the conclusions remained the same. For example, evidence presented in Hanson et al. (2009) on fire risk was cited but not used.

Several new studies have been published that also analyze satellite images of the forest, and have found that high intensity, "catastrophic" fires have not been increasing in Northern California, or on the Eastside. As a result, we believe the plan overestimates fire risk. Similarly, the Hanson study was also not used regarding the rates of recruitment relative to rates of loss to stand-replacing fires, resulting in an overestimation of the amount of reserve likely to be lost.

> "Widespread management of large, fully contiguous blocks of habitat east of the Cascades is not ecologically sustainable in many places, due to the dynamic ecological processes and fire regimes that shape the distribution of forested habitats in this region (Williams 2012, entire). We do, however, recommend land managers consider the conservation of larger blocks of current habitat on areas of landscapes where it is more likely to be resistant or resilient to fire and other natural disturbance. We encourage the use of landscape assessments to identify areas important for ecological process restoration and areas that are valuable for northern spotted owl conservation and recovery (see, e.g., NWFP Standards and Guidelines p. C-13)." (p. 593-594)

Economic Impacts

The economic analysis concluded that the final rule is not likely to have a major economic impact. For example, the reduction of potential harvest from high-quality owl habitat in matrix lands may be offset by a slight increase in harvest from other matrix lands as a result of the active management provisions in the Rule.

> "It concludes that only a relatively small portion of the overall proposed revised designation may result in more than minor incremental administrative costs. It found that potential incremental changes in timber harvests on Bureau of Land Management and U.S. Forest Service lands may occur on approximately 1,449,534 ac (585,612 ha) proposed for designation, or 10 percent of the total lands included in the proposed designation and that there is the potential for 307,308 ac (123,364 ha) of private land to experience incremental changes in harvests, or approximately 2 percent of total lands proposed. No incremental changes in harvests are expected on State lands." (p.12)
>
> "Most potential economic impacts would occur, if at all, on Federal matrix lands managed by BLM and the Forest Service, although we note that the amount of Federal matrix lands has been reduced from the proposed rule, as described in **Changes from the Proposed Rule**, which would have the effect of reducing the range of potential economic impacts presented by the FEA." (p. 307)
>
> "As outlined in the economic analysis timber harvest may increase, decrease or stay substantially the same as recent timber harvest levels depending on how the Forest Service and BLM decide to manage their lands within the designation. Furthermore, timber industry employment is affected not only by harvest trends but also by fluctuations in national and international markets; changes in land ownership;

and increasing mechanization and productivity in the industry." (p. 581)

"Of the matrix lands, approximately 1.1 million acres are predominantly younger forests (considered to be unoccupied) and 1.6 million acres are northern spotted owl habitat. Furthermore, we estimate that approximately 6.5 percent of northern spotted owl habitat is likely to be unoccupied. We find that incremental economic impacts to USFS timber harvest are relatively more likely in unoccupied matrix lands or approximately 1,158,314 acres of 2,629,031 total acres of all USFS matrix lands." (p. 661)

"The results of this assessment suggest that incremental changes in annual harvests are likely to be small, less than one percent of total harvests in the 56 counties overlapping the designation." (p. 676) "Importantly, we note that under the third scenario analyzed in the DEA, the potential decrease in harvest from BLM lands represents approximately 2 percent of total harvests from BLM lands in these counties (Based on BLM transaction data over the last four quarters (2011Q4–2012Q3) viewed at *http://www.blm.gov/or/resources/forests/blm-timber-data.php*). Thus, if affected, impacts to revenue payments resulting from the designation are likely to be small." (p. 681)

"Finally, the designation is likely to reduce or increase annual timber harvests from Federal lands by less than one percent." (p. 682)

"These scenarios include: (1) administrative costs only; (2) potential positive incremental impacts to timber harvest on Federal lands; and (3) potential negative incremental impacts to timber harvest on Federal lands. Furthermore, the economic analysis presents a potential low impact and high impact outcome for each of the three scenarios. Thus under the positive impact scenario, the estimated annualized *increase* in timber harvest revenue on Federal lands range from $1,230,000 to $3,070,000. Under the negative impact scenario, the annualized *decrease* in timber harvest revenue on Federal lands ranges $2,460,000 to $614,000,000. In all three scenarios, the estimated annualized administrative costs on Federal lands are from $185,000 to $316,000." (p. 751)

"In addition, actual Federal timber harvests have not kept pace with the levels anticipated by the NWFP due in part to controversy over harvesting mature and old-growth stands, which were expected to be the primary harvest component in the first few decades of the plan. For example, planned annual harvest levels under the NWFP totaled over 800 million board feet from 1999 to the present, while actual harvest levels in recent years have been approximately 60 percent of this planned total (USFS, Pacific Northwest Region, Northwest Forest Plan—The First 15 Years (1994-2008): Socioeconomic Status and Trends, R6-RPM-TP-03-2011, 2011.). As the availability of Federal timber sales decreased, the relative importance of harvests from private lands increased." (ECON p. ES-6)

"Between 1990 and 2000, timber industry employment in the NWFP area declined by approximately 30,000 jobs. Meanwhile, there were increases in both population and total employment in the tri-state area of California, Oregon, and Washington; population increased by 15 percent and employment grew 18 percent, representing a total of 3.8 million jobs gained. Routman, K. 2007. Forest Communities and the Northwest Forest Plan: What Socioeconomic Monitoring Can Tell Us. *Science Findings* (95). Pacific Northwest Research Station, USDA Forest Service. (ECON p. ES 6-7)

"The 2012 Economic Analysis distinguishes the *incremental* costs of designation from *baseline* costs, and quantifies specific potential effects to timber harvest practices and volume along with administrative costs. As discussed in detail in this report, the annualized incremental impacts under the negative impact scenario range from a loss of approximately $2.65 to $6.48 million, while the positive impact scenario ranges from a gain of approximately $900,000 to $2.9 million. The analysis also contemplates an "administrative cost only" scenario, with annualized losses of $196,000 to $335,000." (ECON p. ES-10)

> "Timber harvests between 2000 and 2010 did not keep pace with NWFP projections. The plan predicted that harvests from public lands within the NWFP area would be over 800 million board feet (MMBF) annually from 1999 to present.80 Predicted harvests have not been met within the NWFP area, in part due to controversy over harvesting mature and old-growth stands, which were expected to be the primary harvest component in the first few decades of the NWFP. (ECON p. 3-3)

Ecological Forestry and Increasing Timber Harvest

This section of the economic analysis attempts to analyze how much additional harvest could be expected if ecological forest was applied to non-high quality matrix. Approximately, a 10% increase above current volume levels can be expected.

> "190. Compared to actual timber harvest levels in recent years, the Service and available literature suggest that there is the potential for increases in timber harvest on some Federal matrix lands if the USFS and BLM apply the considerations in the proposed critical habitat rule for active management in dry, mixed, and moist forests. The best opportunity for increases in Federal timber harvest, compared to the recent status quo, involve a mix of thinning and variable retention prescriptions in younger matrix forests consistent with existing standards and guidelines of the NWFP. The proposed critical habitat rule considers these methods and provides considerations for how to apply them in a manner consistent with NSO recovery and to avoid destruction and adverse modification of critical habitat.
>
> 191. Some published literature and reports exist that outline how these forestry practices might affect timber harvest practices and volumes. Ecological forestry methods are being applied in the Pacific Northwest, in part, in an effort to better reconcile competing economic and conservation goals.157 Specifically, we rely on research published by Dr. K. Norman Johnson and Dr. Jerry F. Franklin to support the analysis.158 This research contemplates that implementation of ecological forest practices, as envisioned by the Franklin/Johnson Moist Forest restoration strategy, could produce about two-thirds of the per-acre timber yields anticipated by the NWFP.159
>
> 192. We utilize this ratio, in combination with the ratio of historical actual harvest volumes relative to NWFP planned volumes, to derive an estimate of potential increases in harvest levels relative to the regulatory baseline. Historic timber harvest on Federal lands have equaled approximately 60 percent of the probable sale quantity (PSQ) envisioned under the NWFP.160 The two-thirds timber harvest yield resulting from ecological forestry practices as envisioned by Johnson and Franklin is also based on PSQ under the NWFP. Thus, for purposes of illustrating a potential increase in timber harvest resulting from critical habitat, we scale baseline projections up by 10 percent (0.66 ÷ 0.60 = 1.10)." (ECON p. 4-29)

Active Management

While we appreciate that the final Rule offers clarifications about where and under what conditions active management would be appropriate for owl recovery we remain concern that the benefits of active management are overstated and even under the more limited circumstance described in the final rule, could cause harm to owls and elimination of habitat.

The 1993 Report of the Scientific Analysis Team (SAT) thoroughly reviewed the risks associated with logging in suitable owl habitat, and concluded "intentions to selectively cut forest stands to create conditions favorable for spotted owls, represents increased risks to the viability of the spotted owl (SAT p. 145)."

The issue of short-term losses versus long-term habitat gains was also analyzed and the scientists concluded "that the short-term effect of these actions on habitat loss may be much more significant than the long-term predicted

habitat gains."

"As stated above, many areas of critical habitat do not require active management, and active forest management within such areas could negatively impact northern spotted owls. We are not encouraging land managers to consider active management in areas of high-quality owl habitat or occupied owl sites; rather, we encourage management actions that will maintain and restore ecological function where appropriate. In some areas, forest stands are not on a trajectory to develop into high-value habitat, ecological processes have been disrupted by human actions, or projected climate change is expected to further disrupt or degrade desired forest conditions." (p. 26)

"In general, prescriptions (e.g., vegetation management, prescribed fire, etc.) that apply ecological forestry principles to address the restoration and conservation of broader ecological processes in areas where this is needed, while minimizing impacts to structurally diverse or mature and old forest that does not require such management can be compatible with maintaining the critical habitat's essential features in the long term at the landscape scale (USFWS 2011, p. III-14). The Service has recently consulted on these types of management actions in occupied northern spotted owl habitat on Bureau of Land Management (BLM) and U.S. Forest Service (USFS) lands." (p. 28)

In sum, vegetation and fuels management in dry and mixed-dry forests may be appropriate both within and outside designated critical habitat where the goal of such treatment is to conserve natural ecological processes or restore them (including fire) where they have been modified or suppressed (Allen *et al.* 2002, pp. 1429–1430; Spies *et al.* 2006, pp. 358–361; Fielder *et al.* 2007, entire; Prather *et al.* 2008, entire; Lindenmayer *et al.* 2009, p. 274; Tidwell 2011, entire; Stephens *et al.* 2009, pp. 316–318; Stephens *et al.* 2012a, p. 13; Stephens *et al.* 2012b, pp. 557–558; Franklin *et al.* 2008, p. 46; Miller *et al.* 2009, pp. 28–30; Fule *et al.* 2012, pp. 75–76).

"Likewise, in some moist and mixed forests, management of northern spotted owl critical habitat should be compatible with broader ecological goals, such as the retention of high-quality older forest, the continued treatment of young or homogenous forest plantations to enhance structural diversity, heterogeneity and late-successional forest conditions, and the conservation or restoration of complex early-seral forest habitat, where appropriate (Spies et al. 2007b, pp. 57–63; Betts et al. 2010, pp. 2117, 2126–2127; Swanson at al. 2011, entire).

In general, actions that promote ecological restoration and those that apply ecological forestry principles at appropriate scales as described above and in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011, pp. III-11 to III-41) may be, in the right circumstances, consistent with the conservation of the northern spotted owl and the management of its critical habitat. However, we emphasize that this rule does not take any action or adopt any policy, plan or program in relation to active forest management." (p. 30)

"The Service supports the goals of maintaining and restoring ecological function and development of future northern spotted owl habitat. We encourage land managers to consider a stronger focus on ecological forestry in areas where commercial harvest and restoration are planned. We recognize the need to balance both the conservation of current owl sites and the development of future owl habitat." (p. 31)

"…whereas other forest areas would likely benefit from more proactive forestry management. For example, in drier, more fire-prone regions of the owl's range, habitat conditions will likely be more dynamic, and more active management may be required to reduce the risk to the essential physical or biological features from fire, insects, disease, and climate change, as well as to promote regeneration

following disturbance.

While we recommend conservation of high-quality and occupied northern spotted owl habitat, long-term northern spotted owl recovery could benefit from forest management where the basic goals are to restore or maintain ecological processes and resilience, as discussed in detail in the Revised Recovery Plan (USFWS 2011, pp. III-11 to III-39). (p. 141)

"The Service believes that application of these ecological forestry goals and principles, including those generally described in Johnson and Franklin (2009, entire; 2012, entire), may result, in some situations, in fewer adverse impacts to northern spotted owl critical habitat when compared to application of traditional silviculture as currently applied or permitted on private, State, and Federal matrix lands." (P. 546)

"This rule does not establish management prescriptions for lands designated as critical habitat. However, the Service has made considerable effort to discuss, for the benefit of land managers, potential approaches to active forest management in dry forests, including actions that manage fuels and restore ecosystem health. We encourage land managers to consider active management of their forests that balances short-term impacts with long-term beneficial effects that ultimately support long-term conservation of the northern spotted owl. In dry forests, this could include using a landscape assessment approach to improve the estimation of effects of management actions on northern spotted owl habitat and to better identify and prioritize areas for treatments. The assessment may be used to provide support and rationale for treatment, especially in areas where active forest management actions appear to be in conflict with the conservation of high-value northern spotted owl habitat." (p. 586)

"Outside of LSRs, proposed timber sales may be designed to maximize timber extraction within the NWFP guidelines, including green-tree retention, coarse-wood retention, etc. Where spotted owl habitat would be harvested within proposed critical habitat in these land-use allocations, we would likely request a modification to the prescriptions in an effort to retain and improve spotted owl habitat to better meet critical habitat goals.

More recently, timber sales in all of these non-reserved areas that are occupied by spotted owls have been generally designed following the recommendations of the Revised Recovery Plan, which call for using ecological-forestry techniques to help create better spotted owl habitat more quickly than if the forest was left alone while retaining existing spotted owls at their nests. These ecological-forestry recommendations are consistent with the activities we also recommend within critical habitat in the proposed revised rule to help develop higher-quality spotted owl habitat. Therefore, we would not be likely to request significant changes in the project design due to critical habitat." (ECON p. B-11)

"On non-DOD Federal lands, we conclude that the highest potential for on-the-ground incremental effects due to the designation of spotted owl critical habitat is likely to be in unoccupied spotted owl habitat (1) in areas where regeneration-harvest timber sales were anticipated by the NWFP and (2) in post-fire salvage situations in non-LSR allocations." (ECON p. B-15)

Ecological Forestry

The sections below provide an honest assessment of the intent of ecological forestry which is to attempt to increase harvest while conserving the owl. In practice, ecological forestry is a more benign form of clearcutting than allowed by the letter of the Northwest Forest Plan. But it very important to note, clearcutting is currently only rarely allowed to happen by the courts on any significant scale as a result of impacts it has to wildlife habitat and water quality. So while not as bad as the clearcuts of old, ecological forestry is a step in the wrong direction

because right now there is little or no clearcutting on heavily fragmented federal lands, while extensive clearcutting is taking place on private and state lands.

BACKGROUND ON ECOLOGICAL FORESTRY

132. As discussed above, the Pacific Northwest timber industry has faced challenges over the past decade. Likewise, the forests themselves have undergone changes due to past management practices, shifting disturbance patterns, and climate change.125 In an effort to address some of these challenges, land managers are contemplating a shift to ecological forestry practices. Johnson, N.K. and J.F. Franklin. 2009. Restoration of Federal Forests in the Pacific Northwest: Strategies and Management Implications. Unpublished manuscript. August 15, 2009. 120 pp. Accessed at http://www.cof.orst.edu/cof/fs/PDFs/JohnsonRestoration_Aug15_2009.pdf on April 5, 2012.

133. The main goal of ecological forestry-based management is to achieve ecological goals while simultaneously providing economic and social benefits.127 In general, the approach follows the principles of natural forest stand development; it values the role of natural disturbances in initiating, developing, and maintaining forest ecosystems, and encourages active restoration of spatial heterogeneity and conservation of older stands and trees.128 In addition, it recognizes that desirable ecological conditions are maintained through a program of active management that includes periodic timber harvest.129

134. The Proposed Rule states that, ¡§In general, actions that promote ecological restoration and those that apply ecological forestry principles as described in the Revised Recovery Plan (USFWS 2011, pp. III¡V11 to III¡V41)¡Kare likely to be consistent with the conservation of the northern spotted owl and the management of its critical habitat.¡¨130,131 It recommends that land managers consider managing NSO critical habitat according to the following basic management practices, which are consistent with ecological forestry and recommended in the Revised Recovery Plan:

Conserve the older growth, high quality and occupied forest habitat as necessary to meet recovery goals; Implement science-based active vegetation management to restore forest health, especially in drier forests in the eastern and southern portions of the species¡¦ range;

Encourage landscape-level planning and vegetation management that allow historical ecological processes, such as characteristic fire regimes and natural forest succession, to occur on these landscapes throughout the range of the NSO. This approach has the best chance of resulting in forests that are resilient to future changes that may arise due to climate change.132

135. Ideally, implementation of ecological forestry would allow Federal land managers to increase the overall amount of timber harvested from Federal lands while simultaneously improving habitat for the NSO and other listed species. Exactly how these practices would be implemented by the land management agencies is currently uncertain. Various pilot projects on BLM lands are ongoing to test alternatives and learn more about the challenges and opportunities associated with ecological forestry practices.133 In addition, the land managing agencies must make decisions consistent with their land use management plans, forestry programs, and other statutory and regulatory responsibilities.134 Thus, capturing the interface between ecological forestry and critical habitat concerns, and assessing related economic impacts, is an uncertain exercise." (ECON P. 3-23 – 3-25)

Early Seral Management

We appreciate the clarification that high-quality or areas on a trajectory to become high-quality habitat should

not be removed to create early-seral habitats. We remain concerned about the potential effect of harvest to create early seral habitats and that passive restoration of post-fire environments be utilized instead of active management.

> "The Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) suggests that management of early-seral habitats be considered where they are underrepresented and would improve landscape and biological diversity. Within that context, thinning and targeted variable-retention harvest in moist forests could be considered, where the conservation of complex early-seral forest habitat is a management goal. This approach provides a contrast to traditional clear-cutting that does not mimic natural disturbance or create viable early-seral communities that grow into high-quality habitat (Dodson *et al*. 2012, p. 353; Franklin *et al*. 2002, p. 419; Swanson *et al*. 2011, p. 123; Kane *et al*. 2011, pp. 2289–2290; Betts *et al*. 2010, p. 2127, Hagar 2007, pp. 117–118). Swanson (2012, entire) provides a good overview and some management considerations. The Revised Recovery Plan does not suggest that high-quality owl habitat or areas currently on a trajectory to become high-quality owl habitat be removed to create early-seral conditions. The Revised Recovery Plan recommends such treatments, if considered by the land management agencies, be applied in matrix areas consistent with the Standards and Guidelines of the NWFP." (p. 592)

Need for Additional Research

We appreciate the advisories calling for additional research and concur that the Experimental Forests are an appropriate place for experimentation. We remain concerned that the land management agencies are not being required to provide evidence of the benefits of active management to owl populations prior to proposed removal of owl habitat.

> "However, a better understanding of how ecological forestry approaches affect owls and their prey is needed. Studies have shown negative effects of commercial thinning and other conventional forestry practices on both northern spotted owls (Forsman *et al.* 1984, pp. 16-17; Meiman *et al.* 2003, p. 1261) and their prey (Waters *et al.* 1994, p. 1516; Luoma *et al.* 2003, pp. 343-373; Wilson 2010, entire).This need was recognized in Recovery Action 11 of the Revised Recovery Plan, which states —When vegetation management treatments are proposed to restore or enhance habitat for northern spotted owls (e.g., thinnings, restoration projects, prescribed fire, etc.), consider designing and conducting experiments to better understand how these different actions influence the development of northern spotted owl habitat, northern spotted owl prey abundance and distribution, and northern spotted owl demographic performance at local and regional scales. Furthermore, the recovery strategy outlined in the Revised Recovery Plan (USFWS 2011) identifies monitoring and research, as well as active adaptive forest management, as important steps in achieving recovery goals." (p. 31)
>
> "Towards this objective of learning critical new scientific insights from research and adaptive management, we especially encourage research and active adaptive forest management on the seven Forest Service Experimental Forests." (p. 32)
>
> "Five peer reviewers and numerous public commenters indicated that active forest management should be conducted in areas that are not currently high value for northern spotted owls and in an adaptive management framework given the uncertainties regarding how such management practices will impact northern spotted owls and their prey.
>
> The Service expects to support and design, in concert with the BLM, USFS, and researchers, scientific studies on the effects of ecological forestry projects in northern spotted owl critical habitat, to gain a better understanding of the short-term and long-term impacts of these silvicultural treatments on

northern spotted owls, their prey and forest vegetative structure. We are currently designing and funding just such a study through Oregon State University for the pilot project in the Middle Applegate Watershed." (P. 544).

Limitations on Active Management

We appreciate the limitations and clarifications on active management detailed in the following sections, particularly the Westside, but we remain concerned that adequate direction has not been provided for the Eastside or Klamath:

"Given these concerns, and recognizing that appropriate management actions will vary depending upon site-specific conditions, we provide the following suggestions regarding active forest management for consideration by land managers within critical habitat as consistent with the recommendations of the Revised Recovery Plan for the Northern Spotted Owl:

1. Focus active management in younger forest, lower quality owl habitat, or where ecological conditions are most departed from the natural or desired range of variability.

2. In moist forests on Federal lands, follow NWFP guidelines as informed by the Revised Recovery Plan and focus on areas outside of LSRs (i.e., matrix). In dry forests, follow NWFP guidelines and focus on lands in or outside of reserves that are most —at-risk of experiencing uncharacteristic disturbance and where the landscape management goal is to restore more natural or resilient forest ecosystems (see, *e.g.,* Davis *et al*. 2012, entire; Franklin *et al*. 2008, p. 46).

3. Avoid or minimize activities in active northern spotted owl territories (or the high-quality habitat within these territories)." (p. 32)

Determinations of Adverse Effects and Application of the Adverse Modification Standard.

"We have clarified that our discussion of ecological forestry and active management is intended for land managers to consider when developing management plans or planning projects, as in many areas this approach may be consistent with critical habitat for the northern spotted owl, but that such management is not mandated by the Service and is not required as the result of this rulemaking. We have also clarified this issue in the final rule language by stating that we have made the 16 U.S.C. 1532(5)(A)(i) determination that essential biological and physical features in occupied areas may require special management considerations or protection, but that the rule does not require land managers to implement, or preclude land managers from implementing, such measures." (p. 59)

"We have clarified language regarding development of diverse, early-seral forest to indicate that: (1) We do not recommend these actions in older forest stands or areas that currently function as owl habitat; and (2) this type of management is most appropriate where more traditional forestry methods have typically been conducted on matrix lands." (p. 59)

"Some areas of northern spotted owl habitat, particularly in wetter forest types, are unlikely to be enhanced by active management activities, but instead need protection of the essential features;" (p. 141)

"In moist forests that are currently providing mature and late-successional forest that functions as habitat for northern spotted owls, active management is generally unnecessary to conserve older growth forests (Johnson and Franklin 2009, p. 3)." (p. 142)

“If land managers are actively managing forests, we recommend that these activities be focused on lower quality owl habitat (lower relative habitat sustainability (RHS)); that these activities focus on ecological restoration, or apply principles of ecological forestry; and, where possible, evaluate the effects of these treatments on northern spotted owls and other species of concern using an active adaptive forest management framework.” (p. 143-144)

“Within dry forests, the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) emphasizes active forest management that could meet overlapping goals of northern spotted owl conservation, climate change response, and restoration of dry forest ecological structure, composition, and process, including wildfire and other disturbances (USFWS 2011, pp. III-20). For the rest of the northern spotted owl‘s range that is not fire-prone, the Revised Recovery Plan emphasizes habitat management that accelerates the development of future habitat, restores larger habitat blocks, and reduces habitat fragmentation.” (p. 282)

“Second, we continue to encourage forest land managers to consider the application of ecological forestry principles to their commercial timber harvest (see response to peer review question 4a-c, above), and we believe that application of these principles in many instances may result in better long-term ecological conditions for northern spotted owls and other forest wildlife when compared to the application of traditional silviculture methods.” (P. 549-550)

“Commercial thinning has been shown to negatively affect northern spotted owls and their prey, and we have included a more detailed discussion of this issue in the final rule. In areas where active management may be appropriate for consideration, the goal is to conserve and restore ecological function; however, we recognize that management agencies may have multiple management goals. In areas where actions such as commercial thinning may be considered (e.g., the matrix land use allocation), we are not encouraging them in areas of high-quality owl habitat.” (p. 593)

“We have identified the major threats to owl recovery in this rule, including traditional timber harvest that resulted in the removal of large areas of old forest. Active management, in general, may affect water quality and recreational opportunities, but it may also restore habitat conditions or reduce fire risk if implemented properly. We encourage land managers to be mindful of these concerns and to protect important areas from long-term adverse impacts wherever possible.” (p. 595)

“We emphasize that careful consideration should be given to any forest management activities occurring within northern spotted owl critical habitat… Further, we recommend that the focus of these treatments be outside of high-value habitat for northern spotted owls wherever possible and that high-quality habitats be conserved and recruited. Work inside of LSRs should be in accordance with the NWFP Standards and Guidelines.” (p. 596)

“In the final rule, we have refined and expanded our discussion of ways land managers might implement active management to minimize potential risks to northern spotted owls and their habitat, and provide appropriate safeguards in the face of scientific uncertainties surrounding disturbance dynamics in dry forests and northern spotted owl responses to management.” (p. 597)

“The Revised Recovery Plan for the Northern Spotted Owl also recommends the application of active forest management to restore forest ecosystem structure, composition, and processes. processes. In response to public comment regarding the appropriateness of this activity in critical habitat, we have clarified the relationship between this revised recovery plan recommendation and its application within spotted owl critical habitat. Its discussion in the revised critical habitat rule is provided primarily for consideration by Federal, State, local, and private land managers, as they make decisions on the

management of forest land under their jurisdictions and through their normal processes. This critical habitat rule does not take any action or adopt any policy, plan or program in relation to active forest management. Many areas of critical habitat do not require active management, and active forest management within such areas could negatively impact northern spotted owls. We are not encouraging land managers to consider active management in areas of high-quality owl habitat or occupied owl sites; rather, we encourage management actions that will maintain and restore ecological function where appropriate." (EA p. 55-56)

"Public commenters and peer reviewers were divided on the ecological effects of active forest management and forest restoration as described in the proposed revised rule. Much of the concern from those opposed to active management within critical habitat units derived from a false assumption that critical habitat designation would require these activities and would allow or encourage activities inconsistent with the objectives and standards and guidelines of the late-successional reserves of the NWFP. We did not propose any change to the NWFP in the proposed rule, nor does the Service have the authority to change the land management plans of other agencies. We have clarified this in the final rule, stating that actions within critical habitat would also need to be consistent with the objectives and standards and guidelines of all relevant agency management plans. In addition, although the proposed critical habitat rule refers to the active management recommendations of the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011), the critical habitat rule itself does not mandate or require any specific type of management by any agency or entity. It discusses the concept of active forest management only for future consideration by land managers as they make their own land management decisions. Finally, because all federal activities in designated critical habitat, regardless of objective, must avoid its destruction or adverse modification, the discussion of active forest management and restoration does not override the necessity to meet section 7(a)(2) requirements of the ESA. The only statutory requirement resulting from the designation of critical habitat is that Federal agencies ensure that their actions are not likely to result in the "destruction or adverse modification" of critical habitat, as that term is used in its statutory context, after consultation with the Service. Based on these clarifications regarding the discussion of active forest management in the preamble to the rule, we do not consider the impacts of the rule to be significant or highly controversial for this reason." (EA p. 151)

Limitations on Active Management – West Cascades/Coast Ranges of Oregon and Washington

"Special management considerations or protection may be required in areas of moist forests to conserve or protect older stands that contain the conditions to support northern spotted owl occupancy (RA10: USFWS 2011, p. 43) or contain high-value northern spotted owl habitat (RA32: USFWS 2011, p. 67). Silvicultural treatments are generally not needed to maintain existing old-growth forests and high-quality habitat on moist sites (Wimberly et al. 2004, p. 155; Johnson and Franklin 2009, pp. 3, 39).
Efforts to alter either fuel loading or potential fire behavior in these sites could have undesirable ecological consequences as well (Johnson and Franklin 2009, p. 39; Mitchell et al. 2009, pp. 653–654; USFWS 2011, p. III-17). Furthermore, commercial thinning has been shown to have negative consequences for northern spotted owls (Forsman et al. 1984, Meiman et al. 2003) and their prey (Waters et al. 1994, Luoma et al. 2003, Wilson 2010). Active management may be more appropriate in younger plantations that are not currently on a trajectory to develop old-growth structure." (p. 145)
"(1) Conserve older stands that contain the conditions to support northern spotted owl occupancy or high-value northern spotted owl habitat as described in Recovery Actions 10 and 32 (USFWS 2011, pp. III-43, III-67). On Federal lands this recommendation applies to all land-use allocations (see also Thomas et al. 2006, pp. 284–285).

(2) Management emphasis needs to be placed on meeting northern spotted owl recovery goals and long-term ecosystem restoration and conservation. When there is a conflict between these goals, actions that

would disturb or remove the essential physical or biological features of northern spotted owl critical habitat need to be minimized and reconciled with long-term ecosystem restoration goals.

(3) Continue to manage for large, continuous blocks of late-successional forest.

(4) In areas that are not currently late-seral forest or high-value habitat and where more traditional forest management might be conducted (e.g. matrix), these activities should consider applying ecological forestry prescriptions." (p. 146)

"Ideally, proposed actions within critical habitat should occur on relatively small patches of younger, mid-seral forest stands that do not cause reductions in higher quality northern spotted owl habitat. They should also be planned in such a way that their net occurrence on the regional landscape is consistent with broader ecosystem-based planning targets (e.g., Spies *et al.* 2007a, entire) to provide the physical or biological features that are essential to the conservation of the northern spotted owl. Within that context, thinning and targeted variable-retention harvest in moist forests could be considered where the conservation of complex early-seral forest habitat is a management goal. This approach provides a contrast to traditional clearcutting that does not mimic natural disturbance or create viable early-seral communities that grow into high-quality habitat (Dodson *et al.* 2012, p. 353; Franklin *et al.* 2002, p. 419; Swanson *et al.* 2011, p. 123; Kane *et al*. 2011, pp. 2289–2290; Betts *et al*. 2010, p. 2127, Hagar 2007, pp. 117–118)." (p. 283-284)

"In other words, such treatments can be dispersed across the landscape and over time to both accommodate northern spotted owl habitat needs and conservation of diverse and complex early-seral habitat." (p. 284)

Limitations on Active Management – Eastside/Dry Forests

A key difference in the recommendations for Westside and Eastside is for the Westside the agency recommends managing for large, continuous blocks of late-successional forest, but the forest the Eastside this is absent. There continues to be scientific controversy and uncertainty regarding the likely survival of eastside reserves. The agency has overstated the likelihood they will be lost.

"In order to preserve the essential physical or biological features, these dynamic, disturbance-prone forests should be managed in a way that promotes northern spotted owl conservation, responds to climate change, and restores dry forest ecological structure, composition and processes, including wildfire and other disturbances (USFWS 2011, p. III-20). The following restoration principles apply to the management that may be required in this dry forest region (USFWS 2011, pp. III-34 to III-35):

(1) Conserve older stands that contain the conditions to support northern spotted owl occupancy or high-value northern spotted owl habitat as described in Recovery Actions 10 and 32 (USFWS 2011, pp. III-43, III-67). On Federal lands this recommendation applies to all land-use allocations (see also Thomas *et al.* 2006, pp. 284–285).

(2) Emphasize vegetation management treatments outside of northern spotted owl territories or highly suitable habitat;

(3) Design and implement restoration treatments at the landscape level;

(4) Retain and restore key structural components, including large and old trees, large snags, and downed logs;

(5) Retain and restore heterogeneity within stands;

(6) Retain and restore heterogeneity among stands;

(7) Manage roads to address fire risk; and

(8) Consider vegetation management objectives when managing wildfires, where appropriate. (p. 147-148)

"The Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) recommends that the dynamic, fire-prone portion of the northern spotted owl's range be actively managed to conserve northern spotted owls, but also address climate change and restore dry forest ecological structure, composition, and processes (e.g., wildfire) to provide for the long-term conservation of the species and its habitat in a dynamic ecosystem (USFWS 2011, pp. III-13, III-20). To do this, management actions should be considered to balance short-term adverse effects with long-term beneficial effects." (p. 285)

"Conflicts between objectives will remain in some locations, such as in places where removing younger, shade-intolerant conifers to reduce competition with larger, legacy conifers may result in a substantial decrease in canopy cover that translates into a reduction in northern spotted owl habitat quality." (p. 287)

"The Service has made considerable effort to discuss recommendations and descriptions of active forest management in dry forests, including actions that manage fuels and restore ecosystem health, in this critical habitat rule. This rule is different from previous designations of northern spotted owl critical habitat in that we are recommending a —hands on approach to forest management within critical habitat. We encourage land managers to consider active management of forests that balance short-term impacts with long-term beneficial effects, which ultimately supports long-term conservation of the northern spotted owl. In dry forests, we recommend that land managers consider a landscape assessment approach to improve the estimation of effects of management actions on northern spotted owl habitat and to better identify and prioritize areas for treatments." (p. 601)

Limitations on Active Management – Klamath

This is inadequate. It grants broad agency discretion in a region that is already beset with controversy over aggressive logging projects in owl habitat.

"In some areas, appropriate management will be more consistent with dry forest management strategies, while in other areas wet forest management strategies will be more appropriate. (p. 151)

Limitations on Active Management – Redwoods

"The long growing season in this region, combined with redwood's ability to resprout from stumps, allows redwood stands to attain suitable stand structure for nesting in a relatively short period of time (40–60 years) if legacy structures are present. Late-successional forest is an important component of nesting and roosting habitat in the Redwood Zone, and demographic productivity on northern spotted owl breeding sites has been positively correlated with the density of legacy trees in proximity to owl nest sites (Thome *et al.* 1999, p. 57). Forest management in this region should conserve older stands that contain the conditions to support northern spotted owl occupancy or high-value northern spotted owl habitat as described in Recovery Actions 10 and 32 (USFWS 2011, pp. III-43, III-67). On Federal lands this recommendation applies to all land-use allocations (see also Thomas *et al.* 2006, pp. 284–285)." (p. 152)

Active Management and Forest Planning

The Administration has announced a new planning process for BLM-managed lands in Oregon. Based on the Notice of Intent (NOI) and the Administration's press statements, the plan shows a bias towards active management and proposes a significant departure from the Northwest Forest Plan by encouraging regeneration in moist mature forests. This is harmful to the Northern Spotted Owl by risking take of individual birds and habitat, increasing forest fragmentation, and setting back the needed expansion of the old-growth forest ecosystem over time to provide for owl recovery.

This new WOPR planning effort, as announced, amounts to the BLM pulling out of the Northwest Forest Plan. The importance of consistent management across the owl's range has been cited in past court cases.
Two key assumptions behind the biological analysis of the Northwest Forest Plan were that (1) "[r]iparian and Late-Successional Reserves (LSRs) will retain reserve status and will not be available for timber production other than as provided in Alternative 9" and (2) "[a]lternative 9 applies to Forest Service and BLM lands; all future actions on these lands would be consistent with Alternative 9, as adopted in the Record-of-Decision (ROD)." See FEIS at 2-33 to 2-34. (Earthjustice comment letter). BLM's indicated management direction as expressed by the NOI, violates both of these assumptions.

The Okanogan-Wenatchee National Forest Plan Revision has also raised great concern by proposing the elimination of the existing system of late-successional reserves. A Region 6 Forest Service Assessment found that late-successional forests are generally below their historic range of variability, and the availability of snags larger than 20 inches, and snag habitat is generally lacking in some forest types because of past management practices. While the notice of intent proposes that a designated percentage of the forest will be managed for the owl's benefit, there will no longer be areas where the species' protection is guaranteed. This proposal is not consistent with the Northwest Forest Plan, which provides reserves with guaranteed protections that cannot be ignored at the discretion of the local land managers.

In addition, the management standards proposed for portions of the former late-successional reserves could be potentially harmful to many species of wildlife, including the Northern Spotted Owl. The proposed Okanogan-Wenatchee forest plan would allow for significantly greater road densities (more than 15%) than allowed in the current six owl reserves and possibly eight others depending on agency interpretation changes in summer road use. Allowing greater fragmentation and road densities would reduce the amount of suitable owl habitat in those areas, not to mention increasing fire risks, and should not be allowed.

> "Land managers should change from the practice of implementing many small, uncoordinated and independent fuel-reduction and restoration treatments. Instead, coordinated and strategic efforts that link individual projects to the larger objectives of restoring landscapes while conserving and recovering northern spotted owl habitat are needed (sensu Sisk *et al.* 2005, entire; Prather *et al.* 2008, entire; Gaines *et al.* 2010, entire). Some examples of this type of planning in the east Cascades that may be emulated or referenced include the Okanagon-Wenatchee National Forest (USDA 2010, entire), The Nature Conservancy (Davis *et al*. 2012, entire), and the Deschutes National Forest (Smith *et al*. 2011, entire). (p. 149)
>
> "We are also closely involved in and supportive of the respective Forest Service and BLM landscape-level planning efforts currently underway, and will work with the agencies to incorporate the conservation planning recommended in the Revised Recovery Plan and discussed in this final critical habitat designation." (p. 272)
>
> "Landscape assessments developed at the scale of entire National Forests, Ranger Districts, or BLM

Districts have the broad perspective that can improve ability to estimate effects of management activities on the function of critical habitat and better identify and prioritize treatment areas and the actions that will restore landscapes while conserving northern spotted owl habitat. The Okanogan-Wenatchee National Forest has developed a landscape evaluation process as part of their forest restoration strategy (USDA 2010, pp. 36–52) that can serve as an example for other administrative units when developing their own assessment approaches. We suggest that the value of such assessments in guiding vegetation management within critical habitat can be enhanced by spatially identifying locations where restoration objectives and northern spotted owl habitat objectives converge, are in conflict, or simply are not an issue (see, *e.g.,* Davis *et al.* 2012, entire)." (p. 287)

"Spies *et al*. (2012, entire) to help prioritize actions and consider tradeoffs such as northern spotted owl conservation, restoration of ecological conditions, and other land management goals. Given the wide geographic area of this critical habitat designation and the variety of landscape conditions and fire regimes, more precise planning and implementation should be done at the appropriate landscape scales such as the National Forest scale, consistent with the goals of the Northwest Forest Plan." (P. 549)

"The landscape assessment approach for the East Cascades provides the best basis for development of strategies to manage dry forest landscapes. Products of the landscape assessment can be used to describe the rationale for management actions. The Service is available to work with land managers to assist in the development and implementation of landscape assessments, but this rule does not mandate any specific management within the critical habitat network, which would be beyond the scope of this rulemaking." (p. 559)

"The BLM is revising its resource management plans for its western Oregon districts in part because of new science related to forest resiliency that was brought forth in the Revised Recovery Plan. Thus, Federal agencies seem to be starting to implement discretionary measures described in the Revised Recovery Plan, but it is too early to foresee the extent to which these recommendations will be applied." (EA p. 48)

"The BLM is beginning another revision of their resource management plans(BLM 2012), in part because of new science related to forest resiliency that has been applied in the northern spotted owl Revised Recovery Plan. BLM announced their notice of intent to develop an Environmental Impact Statement on March 9, 2012 (77 Fed. Reg. 14414), with scoping concluding on June 7, 2012. Though still in the very early stages of planning (that is, just concluding scoping) BLM has indicated a shift towards use of ecological forestry actions to further northern spotted owl conservation. While this action may likely benefit northern spotted owls, the extent and degree to which their resource management plans direct the implementation of these actions, and potentially other recommendations from the Revised Recovery Plan, is not reasonably foreseeable. As details of these actions develop, they will be subject to NEPA analysis, as will the individual projects implemented under these revised resource management plans; more specifics will be available in those analyses to more accurately determine effects." (EA p. 142)

"While the Forest Service still continues to operate under the NWFP within the range of the northern spotted owl, the Okanogan-Wenatchee National Forest is undergoing a revision of their land use management plan. This forest covers over 4 million ac in the eastern Washington Cascades, and most of it overlays the range of the northern spotted owl. The forest has a proposed action (USFS 2011) and is in the process of developing their draft Environmental Impact Statement, which is due out the first half of 2013. Key features of their proposed action relevant to spotted owl critical habitat are:

(1) A shift in focus from commodity production to ecosystem restoration.

(2) Addressing spotted owl recovery and better integrating habitat conservation with disturbance processes, climate change, and barred owl establishment by moving from smaller scale analyses and projects to incorporating a landscape-scale approach. The forest proposes managing habitat across the landscape, rather than limited to reserve areas, in configurations that are most likely to be, "sustainable, appropriately connected, and most resilient to changing climatic conditions." (USFS 2011, p. 39).

(3) Managing for spotted owl habitat, at the forest-wide scale, on 30 to 75 percent of the habitat capable lands, depending on forest type. Seventy-five percent of the habitat would be within a 1.8 mile radius of a northern spotted owl activity center.

The Forest's proposed action, as described above, mirrors recommendations from the Revised Recovery Plan for northern spotted owl conservation in dry-forest ecosystems and may provide additional conservation benefit to northern spotted owls. However, the forest is still developing their draft Environmental Impact Statement and it remains to be seen whether and to what degree these features are included in the final management plan. As details of these actions develop, they will be subject to NEPA analysis, as will the individual projects implemented under the revised forest plan; more specifics will be available in these analyses to more accurately determine effects." (EA p. 142-143)

"202. We note again that which of these scenarios, or combinations of these scenarios, comes to pass is largely dependent on the approaches undertaken by the land management agencies and the cooperative section 7 processes between the Forest Service or BLM and the Fish and Wildlife Service. Both the Forest Service and the BLM manage their timberlands under the direction of the NWFP, which includes provisions for management both within and outside of reserved areas. Inside reserves, the Service believes that the guidance for development of late-successional forest characteristics is consistent with recommendations for implementing ecological forestry methods to benefit the retention and development of spotted owl habitat. In the non-reserved, or the Matrix, portion of the landscape which these agencies manage, the NWFP provides minimum levels and sizes of standing trees that must remain post-harvest, depending on specific location within the range of the species. The NWFP does not, however, mandate that retaining only these minimum levels of retained trees is necessary. Indeed, in the past decade, the BLM and Forest Service have shifted their timber management emphasis in the Matrix from a regeneration harvest dominated program to one more focused on thinning prescriptions that leave more trees per acre than the minimums allowed under the NWFP. Since both the BLM and Forest Service have a track record of planning and implementing these thinning sales, the Service believes there will be a smooth transition to designing and implementing timber sales that are consistent with the ecological forestry recommendations in the Revised Recovery Plan and the proposed critical habitat designation and with the green-tree retention levels of the NWFP. We mention, however, that the timing of this implementation is uncertain. Thus, Scenario 1 may be more representative of likely outcomes in the near term." (ECON p. 4-36 – 4-37)

"(2) Potential for Future Revision of Management Plans
(a) Forest Service. The Forest Service has begun the process of revising its Land and Resource Management Plans (which outline the management of, usually, individual National Forests) with the Wenatchee-Okanagan National Forests, and has plans to continue these revisions through most of the range of the spotted owl in the coming decade or more. These revisions could modify the current land-use allocations (e.g., change late-successional reserve to matrix), which could greatly alter both the intended management on those specific areas and also the effect of having designated critical habitat within those areas. It is not possible for us to predict where or how these changes will align with the proposed revised spotted owl critical habitat, except to assume areas of designated critical habitat will continue to be in some sort of reserve or conservation-management status.
(b) Bureau of Land Management. In 2008, the BLM revised its resource-management plans for western

Oregon (where the large majority of its lands occur within the range of the spotted owl). Due to legal challenges, the BLM announced on March 9, 2012 that it was initiating the revision of their resource management plans in western Oregon. While we expect BLM to take into account the final critical habitat designation, it would be premature to predict the how management goals and objectives in their revision (including any potential land allocations) would correspond to spotted owl critical habitat. Until these revisions are complete the BLM will be managing their lands within the range of the spotted owl under the NWFP (per solicitor's email)." (ECON p. B-18 – B-19)

Post-Fire Forest Management

Stronger emphasis is needed on changes to post-fire management and restrictions on post-fire logging in owl habitat. While the Recovery Plan offers guidance to the agencies to this effect, only through the Section 7 consultation process can better management that deemphasizes post-fire logging become the norm. The result should be accelerated formation of high-quality owl habitat and nesting structures or multiple cavity-nesting species of conservation concern.

"Under the NWFP, post-fire salvage can occur in the Matrix, AMAs, and, to a much more limited extent, in LSRs (USDA and USDI 1994a, b). In areas where management is focused on development of spotted owl habitat (e.g., critical habitat), the Revised Recovery Plan (Recovery Action 12) recommends managing post-fire areas for, "conserving and restoring habitat elements that take a long time to develop (e.g., large trees, medium and large snags, downed wood)" (USFWS 2011a, p. III-49). Again, it is too early in the implementation of the recovery plan to know the extent to which this recommendation will be applied by the agencies." (EA p. 48)

"Under the auspices of the Revised Recovery Plan's Recovery Action 12 recommendation, critical habitat designation could shift post-fire salvage management guidelines in the matrix from extraction of timber resources to "conserving and restoring habitat elements that take a long time to develop (e.g., large trees, medium and large snags, downed wood)."138 Additionally, under the NWFP, Late Successional Reserves (LSRs) provide for salvage logging after fire events greater than ten acres in size that would likely be inconsistent with this recommendation." (ECON p. 4-5)

"Guidelines for management in LSRs, whether in spotted owl habitat or in younger forest, are generally more restrictive than our management recommendations in the Revised Recovery Plan and those outlined in the preamble to the proposed critical habitat designation. One exception would include timber management after a fire. The Revised Recovery Plan (Recovery Action 12 (RA 12)) recommends:

In lands where management is focused on development of spotted owl habitat, post-fire silvicultural activities should concentrate on conserving and restoring habitat elements that take a long time to develop (e.g., large trees, medium and large snags, downed wood).

In the NWFP LSRs provide for salvage logging after fire events greater than 10 acres in size that would likely be inconsistent with RA 12, identified above. Otherwise, we don't anticipate requesting any project modifications to proposed projects in LSRs. While we do not expect that substantive changes to a project would be required to avoid adverse modification to critical habitat, in LSRs that are occupied or assumed occupied by the spotted owl the critical habitat designation will trigger an adverse modification analysis in addition to the baseline jeopardy analysis. As referenced above, the cooperative nature of inter-agency consultations makes jeopardy and/or adverse modification determinations for the spotted owl extremely rare. By minimizing the impacts of proposed projects to the spotted owl and its habitat we believe it is likely we've also minimized the impacts to the proposed critical habitat network, since many (but not all) of the minimization actions overlap both the species and its important habitat. Therefore,

we expect the addition of an adverse modification analysis to both existing and future consultations to be a relatively minor administrative burden of an additional 4-6 hours per consultation between all Federal staff working on the consultation." (ECON p. B-10)

Forest Service and Bureau of Land Management Ask That Matrix be Exempt

It is of concern that the Forest Service and BLM asked that matrix lands be excluded from the Critical Habitat designation in light of the Final Owl Recovery Plan that indicates high-quality owl habitat in the matrix must be conserved.

"Formal comments from the Forest Service requested that we consider large numbers of specific areas to be removed from, or added to, critical habitat, submitted to us in the form of GIS data. This proposal would have greatly reduced matrix lands in moist forest areas (Western Cascades, Oregon Coast Range, and North Coast Olympics) and eliminated Adaptive Management Areas and Experimental Forests from critical habitat. In addition, BLM requested removal of approximately 300,000 acres of selected BLM lands in western Oregon.

Population modeling results for Composite 8 indicated that many of the lands proposed for removal were essential to conservation of the northern spotted owl because the rangewide population declined by 39 percent and population risk increased by 44 percent. To bring the spotted owl population results back up to levels comparable to proposed critical habitat, the final critical habitat designation includes areas recommended by those agencies for elimination (and that had been removed in our test of Composite 8) because we determined they are essential to the conservation of the species." (p. 60-61)

"Overall, about 318, 296 acres of BLM and USFS lands were removed from critical habitat, 74 percent (236,887 acres) of which were matrix lands of relatively lower value to northern spotted owls." (p. 62-63)

Forest Service Request for 20% More Logging and Regeneration

We see no ecological benefit and likely harm resulting from the Forest Service push for 20% additional logging in the region, and the prospect the agency will begin clearcutting as the BLM is proposing to do. Volume driven logging undermines valid restoration and promotes unsustainable practices.

"The U.S. Forest Service questioned the DEA assumption about the distribution of timber harvested from Federal lands, and stated that the average estimated annual yield per acre may understate actual timber harvest, as well as the assumption that USFS harvest projections include only thinning activities and do not anticipate future regeneration harvest activities." (p. 659)

"The DEA based FS Region 6 projections on historical timber harvest quantities provided by USFS. Therefore, planned changes to timber harvest were not contemplated. To address this uncertainty in the amount of timber that could potentially be harvested in the future (i.e., if changes to timber harvest should occur), the FEA scales existing baseline projections upward to account for a potential 20-percent increase in timber harvest projection on USFS lands. The FEA also revised the language regarding projected timber activities to clarify that they may include both thinning and regeneration harvest." (p. 660)

"In Region 6, the FY2013 and FY2013 NWFP timber program is expected to increase by 20 percent in terms of acres and volume. USFS also disagrees with the assumption that —USFS harvest projections include only thinning activities and do not anticipate future regeneration harvest activities (page 4-18)."

(p. 660)

"USFS: Information provided by USFS Region 6 suggests that projections based on historical timber harvest may underestimate future levels of timber harvest. Specifically, the Region 6 timber program is endeavoring to increase production in FY 2013 and FY 2014.165 USFS will undertake future actions related to the use of active forest management targeting a 20 percent increase in terms of timber harvest volume and acres. Therefore, we contemplate a sensitivity analysis in which the baseline timber harvest accounts for a 20 percent increase in USFS Region 6 relative to historical yields." (ECON p. 4-38)

O & C Lands

We remain concerned about proposals to privatize or manage federal forests as though they were industrial lands. A letter was recently sent go Governor John Kitzhaber by a coalition of conservation groups pointing out that the Northwest Forest Plan requires conservation in these areas, and if they were to be logged, private and state forest lands would likely have to reduce production to compensate.

"In some areas, for example the O&C lands, our modeling results indicated that those Federal lands make a significant contribution toward meeting the conservation objectives for the northern spotted owl in that region, and that we cannot attain recovery without them." (p. 567)

"The O&C Act (pertaining to lands in Oregon and California) does not limit the Service's authority to designate critical habitat for the northern spotted owl. The designation of critical habitat is not a land use allocation and does not impose management prescriptions." (p. 583)

Fire Impacts and the Creation of Suitable Owl Habitat

The rule details the owl's life history, but the role of fire in the creation of suitable owl habitat is largely absent. Moreover, the rule repeatedly notes that nesting and roosting habitat are generally characterized by "Large snags and large accumulations of fallen trees and other woody debris on the ground," which typically result from past fires. Then, at the same time the Rule justifies extraordinary active management measures in owl habitat to reduce fire risks; it makes apparently contradictory claims like those below.

Studies by Hanson (2009 and 2010) and Miller (2012) have found that dry forests on the Eastside and in Northern California have not seen an increase in severe, high-intensity fires. Most of the acreage burned has been low to moderate severity with generally beneficial ecological effects. The risk of fire to owls also appears to be exaggerated in the final Owl Recovery Plan and draft Critical Habitat rule.

"The question of protecting critical habitat from the effects of fire is beyond the scope of this rulemaking." (P. 510)

"Second, there is considerable scientific uncertainty over the risk of fire to northern spotted owl habitat." (p. 599)

"Wildfire Management: NSO habitat is particularly vulnerable to wildfire in drier forest systems, which have experienced recent wildfire losses that have exceeded the range of historical variability.35 Some habitat losses resulting from increased wildfire frequency, intensity, and size can be attributed to excessive fuel buildup resulting from many decades of fire suppression. Fire management activities that benefit the NSO may include modified fuel reduction and fire suppression practices." (ECON p. 1-7)

Current and Past Timber Harvest Listed as a Threat

Nearly all of the subunits proposed for designation managed by federal agencies had current timber harvest listed a significant threat to the species. It is of concern that FWS continues to forcefully promote active management, i.e. logging in owl critical habitat, when timber harvest continues to be such a major and prevalent threat to the species in nearly every single designated subunit.

> "Threats in this subunit include current and past timber harvest;" (p. 190, 191, 192, 193, 196, 197, 199, 200, 201, 208, 209, 211, 212, 214, 216, 217, 218, 219, 220, 221, 223, 224, 225, 227, 228, 229, 230, 231, 232, 234, 235, 236, 238, 239, 241, 242, 243, 244, 245, 247, 248, 250, 251, 252, 253, 254, 255, 257, 258, 259, 261, 262, and 263.)

Adverse Modification

This provision remains of concern because it allows for the adverse modification of habitat resulting from active management.

> "Under the statutory provisions of the Act, we determine destruction or adverse modification on the basis of whether, with implementation of the proposed Federal action, the affected critical habitat would continue to serve its intended conservation function or purpose for the species." (p. 265)
>
> "The key factor involved in the destruction/adverse modification determination for a proposed Federal agency action is whether the affected critical habitat would continue to serve its intended conservation function or purpose for the species with implementation of the proposed action after taking into account any anticipated cumulative effects (USFWS 2004, in litt. entire). Activities that may destroy or adversely modify critical habitat are those that alter the physical or biological features to an extent that appreciably reduces the conservation value of critical habitat for the northern spotted owl." (p. 267)
>
> "In general, we would anticipate that management actions that are consistent with the overall purpose for which a critical habitat unit was designated would not likely destroy or adversely modify critical habitat as those terms are used in the context of section 7(a)(2) of the Act. Such actions include activities whose intent is to restore ecological processes or long-term forest health to forested landscapes that contain northern spotted owl habitat, such as those actions described in the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011) and elsewhere in this document. However, each proposed action will be considered on a case-by-case basis." (p. 269-270)
>
> If the effects of the project have more than an insignificant or discountable impact on the ability of the PCEs to provide life-history functions for the northern spotted owl, then the project is likely to adversely affect northern spotted owl critical habitat, and formal consultation is warranted.
>
> …the determination of whether an action is likely to destroy or adversely modify critical habitat is made at the scale of the entire critical habitat network. However, a proposed action that compromises the capability of a subunit or unit to fulfill its intended conservation function or purpose could represent an appreciable reduction in the conservation value of the entire designated critical habitat. Therefore, the biological opinion should describe the relationship between the conservation role of the action area, affected subunits, units, and the entire designated critical habitat." (p. 277)
>
> "As described above, in general, we do not anticipate that activities consistent with the stated management goals or recommended recovery actions of the Revised Recovery Plan for the Northern Spotted Owl (USFWS 2011, Chapters II and III) would constitute adverse modification of critical habitat, even if those activities may have adverse effects in the short term, if the intended result over the long term is an improvement in the function of the habitat to provide for the essential life-history needs of the northern spotted owl. However, such activities will be evaluated under section 7, taking into account the specific proposed action, location, and other site-specific factors." (p. 293)

"Each situation should be considered on a case-by-case basis, but, generally, actions that have short-term negative impacts may be consistent with the recovery needs of northern spotted owl when the intent of the action is (1) to improve long-term conditions for the species or (2) to improve the overall condition of the ecosystem. It could be argued either that where populations are greatly depressed there is more need for these actions or, conversely, that there is less flexibility to conduct these actions depending on the specifics of the action and the habitat needs of the owl in that area." (p. 558-559)
"Consequently, project modifications as a result of critical habitat designation may only occur on those portions of the Matrix and AMA that is either younger forests or unoccupied by spotted owls (IEc 2012). The economic analysis calculated the portion of Matrix and AMA that could be affected based, in part, on an assumption that 6.5% of these lands would be unoccupied by northern spotted owls (IEc 2012)." (EA p. 54-55)

Consultation

We remain concerned that current FWS consultations are not adequately protecting Northern Spotted Owl and Marbled Murrelet habitat. We appreciate the direction provided below and urge that FWS adopt a moratorium on the elimination of owl and Murrelet habitat on federal lands.

"Habitat-manipulation projects within unoccupied habitat often trigger formal consultation because of the impacts to the recovery potential of the species, dispersal, and reduced segregation from barred owls; however, in unoccupied spotted owl habitat outside of LSRs the designation of critical habitat may have more of an impact on the design of proposed timber sales. The NWFP guidelines anticipated that most of the timber volume from Federal land would come from these lands, although some provisions (e.g., downed wood and leave trees) were included to assist species remaining after harvest. Since critical habitat is designated to help conserve (recover) the species, the designation of critical habitat in unoccupied spotted owl habitat may result in the Service requesting that timber sales in these areas be designed to help retain existing habitat and speed the development of spotted owl habitat and late-successional characteristics (including after wildland fire) instead of to maximize the extraction of timber. These ecological-forestry techniques may include smaller pockets of tree removal to create openings, but they would likely be significantly different than a traditional matrix timber-harvest prescription." (ECON p. B-11 – B-12)

"(5) Potential project modifications
(a) Due to the presence of the listed species. The spotted owl protections and minimization and conservation measures triggered by the consultation process (which largely occur during the pre-consultation phase consistent with our streamlined-consultation guidance) include such parameters as:
Restrictions on the timing of activities to avoid disturbing spotted owls during critical nesting periods;
Planning timber sales to avoid existing spotted owl sites;
Planning timber sales to minimize the likelihood of exacerbating barred owl and spotted owl interactions, particularly at existing spotted owl sites;
Minimizing the impacts to existing spotted owl nesting, roosting, and foraging habitat at the localized scale and dispersal habitat at the landscape scale (including overall connectivity between populations); and
Following the recommendations of the Revised Recovery Plan for the Northern Spotted Owl, including conserving known spotted owl sites, retaining older, more-complex stands on the landscape, and following ecological-forestry techniques when conducting timber harvest in areas important to spotted owls. Due to the conservation mandate of critical habitat, our recommendations on actions in critical habitat in the matrix would likely be to change the focus from timber production to development of spotted owl habitat. Following the Revised Recovery Plan¡¦s RA 12 recommendation, our recommendations for post-fire salvage management would potentially shift from extraction of timber

resources to ¡§conserving and restoring habitat elements that take a long time to develop (e.g., large trees, medium and large snags, downed wood).¡¨ The incremental effects would not be dependent on the occupancy status of the stands.

The above measures may be applied in areas known or assumed to be occupied by spotted owls, or in areas of suitable habitat whether occupied by spotted owls or not, and may result in the action agency modifying its proposed action." (ECON p. B-14)

Comments from Peer Reviewers

A review of the peer reviews indicates that there isn't real scientific consensus on how to manage forests within the range of the Northern Spotted Owl, there are currently no studies showing owl populations benefit from active management, and there are numerous studies showing potential harm to the owl, its prey based, and to other list species.

Active Management

"Reviewers were divided on the risks posed by climate change and forest health, and whether active management should be applied within critical habitat." (p. 491)

"Three reviewers disagreed with some of the science that was cited, or the interpretation of that science, and noted that the discussion did not adequately address studies that have documented negative effects of timber management on northern spotted owls and their prey." (P. 494)

"Four reviewers indicated that parts of the document were unclear on whether ecological science was applied appropriately, and highlighted the lack of understanding about how such management actions may affect owls and their prey. Two reviewers specifically indicated that they did not think that approach is appropriate." (P. 494)

"Five reviewers believed that the risks were not appropriately balanced, that the discussion was too vague in weighing the tradeoffs, or that there is too little specific scientific understanding of the explicit tradeoffs to conduct an informed discussion. Several of these reviewers indicated that there was too much emphasis on active management in the preamble to the proposed rule given the lack of understanding about how ecological forestry and restoration management might affect owls." (P. 495)

Matrix Protection

"Eight reviewers addressed this question, and all agreed that inclusion of matrix lands in critical habitat was supported. One reviewer noted that the barred owl issue needs to be addressed (see response to *0* for detailed discussion of this issue), and another reviewer was surprised that all habitat-capable lands in the western portion of the species' range were not included in critical habitat (see *0* for a more detailed discussion of this issue)." (p. 493)

Marbled Murrelet

Other listed species may also be harmed by the proposed active management such as the Marbled Murrelet. The draft Rule's Environmental Assessment found that "Active forest management that is in the vicinity of murrelet nesting stands may be detrimental to the species survival and recovery." (p. 61)

This results from increased fragmentation and opening the forests to crows, ravens, and jays, increasing predation pressure on nesting murrelets. Despite this, there was no prohibition in the final Rule on the proposed active management to ensure murrelet nesting stands will not be disturbed, and notably, the fact that active management may be detrimental to Murrelet nesting stands was not mentioned.

Active management, if conducted near nesting murrelets will likely be harmful. There are also indications the prey base of the Northern Spotted Owl could also be harmed by active management including thinning, but these factors are glossed over by the final Rule. And unlike the Northwest Forest Plan, there is no detailed analysis how other listed species will fair under the active management being proposed by the Rule.

We appreciate the concern expressed for the Murrelet and potential implications if its critical habitat is vacated. We are discouraged however, by the lack of discussion on potential negative consequences for the Murrelet of active management in owl habitat, and how adverse modification of owl habitat is in fact allowed by the Rule, and will not afford the Murrelet additional protection in that circumstance.

> "Currently 1,735,900 ac of the 2008 northern spotted owl critical habitat designation overlays critical habitat designated for the marbled murrelet. Critical habitat for the marbled murrelet is currently under litigation and may be vacated (see section 3.4.4 Cumulative Impacts). Should vacature occur, the nesting habitat components for marbled murrelets would generally be protected through avoidance or adverse modification of spotted owl PCEs in those areas where marbled murrelet critical habitat overlaps the 2008 spotted owl critical habitat. This 1.7 million acres of overlap will be a baseline from which to compare other alternatives to determine the amount of existing marbled murrelet critical habitat that may continue to be afforded incidental protections as a result of avoiding adverse modification of spotted owl critical habitat." (EA p. 90)
>
> "Most of the PCEs for nesting habitat under this alternative (e.g., moderate to high canopy closure; multi-layered, multi-species canopy with large overstory trees; and a high incidence of large trees with various deformities) provide structural features that also meet the nesting structure needs of marbled murrelets. However, in some parts of the spotted owl range, PCEs that provide for foraging in the form of dense shrub and hardwood openings, or low density patches of forest, particularly in the Klamath, Northern California Interior Coast Ranges, and Redwood Coast Critical Habitat Units, may not be conducive to murrelet nesting habitat (See Section 2.2.1 Primary Constituent Elements). These vegetation pockets open up forest canopies and fragment the landscape for murrelets, inviting corvids (e.g., crows, ravens, and jays) and increasing the predation pressures on nesting murrelets, reducing the ability of this species to reproduce (Nelson *et al.* 2006). In these areas, protection of spotted owl foraging PCEs from destruction or adverse modification may not necessarily protect some of the habitat attributes required by nesting marbled murrelets. Nevertheless, avoiding adverse modification of spotted owl critical habitat may benefit marbled murrelets overall. Spotted owl critical habitat under this alternative overlaps 2,548,700 ac of marbled murrelet critical habitat. This is a 812,800 ac increase in overlap compared to the No Action Alternative. Should vacature of marbled murrelet critical habitat occur, the nesting habitat components for marbled murrelets would generally be incidentally protected through avoidance or adverse modification of spotted owl PCEs in the approximately 2.5 million acres where marbled murrelet critical habitat overlaps critical habitat designated for the spotted owl under this alternative. However, the specific effects to murrelets are not reasonably foreseeable because the specific responses by managers to critical habitat designation are not reasonably foreseeable (See section 3.1.2.2 Alternative B)." (EA p. 94)
>
> "Critical habitat designated for the marbled murrelet, is currently under litigation. On Jan. 25, 2012, plaintiffs American Forest Resource Council, Carpenters Industrial Council, and Douglas County, Oregon, filed suit in Federal district court, in part, challenging the rule designating marbled murrelet critical habitat. American Forest Resource Council v. Ashe, Civil No. 12-111-JDB (D.D.C.). On Aug. 20, 2011, the Service and the plaintiffs filed a joint motion for entry of a consent decree under which the Court would remand the murrelet critical rule to the Service for reconsideration, and the rule would be vacated pending completion of the remand. As of this writing, the Court has not ruled on this motion. Should the motion be granted, this would result in the removal of critical habitat for the marbled murrelet on the

landscape until the Service completes a revision of the rule. Effects of such an action would be a reduction in murrelet habitat protection by removing the requirement for Federal agencies to not destroy or adversely modify critical habitat. Protection for most of the critical habitat PCEs for nesting spotted owl habitat under all action alternatives (e.g., moderate to high canopy closure; multi-layered, multi-species canopy with large overstory trees; and a high incidence of large trees with various deformities) through avoiding their destruction or adverse modification may provide structural features that also meet the nesting structure needs of marbled murrelets. Thus, critical habitat designation for the northern spotted owl may provide some ancillary benefits to marbled murrelets. However, in some parts of the spotted owl range, PCEs that provide for foraging in the form of dense shrub and hardwood openings, or low density patches of forest, particularly in the Klamath, Northern California Interior Coast Ranges, and Redwood Coast Critical Habitat Units, may not provide features beneficial to nesting murrelets. These vegetation pockets open up forest canopies and fragment the landscape for murrelets, inviting corvids (e.g., crows, ravens, and jays) and increasing the predation pressures on nesting murrelets, reducing the ability of this species to reproduce (Nelson et al. 2006). In these areas, protection of some spotted owl PCEs through the avoidance of adverse modification may not provide the habitat attributes needed by nesting marbled murrelets. Should the motion for remand of marbled murrelet critical habitat be granted, the protections of marbled murrelet critical habitat would not be in place in these areas. However, where spotted owl critical habitat overlaps murrelet critical habitat, it may provide incidental protections to habitat attributes necessary for nesting marbled murrelets through the avoidance of destruction or adverse modification of spotted owl PCEs that also support nesting murrelets.

The current designation of spotted owl critical habitat overlaps 1,735,900 ac of marbled murrelet critical habitat. All Action Alternatives result in an increase in overlap of marbled murrelet habitat compared to the No Action Alternative, ranging from a minimum of approximately 2.1 million ac of overlap for Alternative E, to a maximum of approximately 2.5 million ac for Alternative B. Thus, even if the vacature of marbled murrelet critical habitat occured, compared to the No Action Alternative, all action alternatives provide an increase in the area of incidental protections that may be afforded to marbled murrelets through the avoidance of destruction or adverse modification of critical habitat for spotted owls, and would generally benefit murrelets. Even in those areas outside of critical habitat, the marbled murrelet would continue to be protected under section 7 (Federal actions must avoid jeopardizing the species) and section 9 (prohibition of take of the species without a permit) of the ESA. That is, habitat that is currently occupied will be protected through the consultation process and jeopardy analysis for actions with a Federal nexus (section 7 of the ESA), and the ESA section 9 prohibitions against “take” and the incidental-take-permitting process will also protect both occupied and unoccupied habitat.” (EA p. 143-144)

Northern Spotted Owl

We appreciate the hard work that went into the modeling effort and the development and completion of this rule. Despite some flaws and uncertainties, the rule offers renewed hope that the Northern Spotted Owl can be saved from extinction.

“Spotted owl population modeling results for this alternative (northern spotted owl population size of 3,224 females at year 350, and extinction risk of 3 percent of simulations with populations below 1,000 individuals) (Figures 20 and 21) indicate better population performance as compared with the No Action Alternative, and similar performance as compared with the Proposed Action (Alternative B).” (EA p. 106)

AMERICAN BIRD CONSERVANCY

Shaping the future for birds

February 20, 2015

Doug Krofta
Chief, ESA Listing
U.S. Fish and Wildlife Service
Washington, D.C. 20240

Dear Mr. Krofta,

American Bird Conservancy (ABC) is writing in regard to the petition to the list the California Spotted Owl as threatened or endangered submitted by the Wild Nature Institute and John Muir Project of Earth Island Institute. ABC agrees that a review of the best science and current management practices reveals that the petition has merit and should be considered by the agency.

The petition argues that current land management strategies in California Spotted Owl habitat under the 2004 Sierra Nevada Framework are at the root of continued population declines. The evidence from a significant number of scientific studies cited within the petition is compelling and we urge its consideration.

Recent findings indicate that low and moderate severity fires are not a threat to California Spotted Owl populations, and that owl populations are declining in areas where there is post-fire logging and mechanical fuels treatments. Post-fire logging has been shown to be particularly detrimental to all three owl subspecies' populations by causing abandonment of burned areas that might otherwise remain occupied. The only areas where California Spotted Owl populations are stable are in National Parks.

Information on impacts to the California Spotted Owl should also be considered across the entire range of the species regarding management decisions affecting habitat of the threatened Northern and Mexican Spotted Owl. Based on recent studies, we anticipate current management will lead to a decline of Northern Spotted Owl populations. This comes at a critical population bottleneck for the northern subspecies resulting from historic and ongoing loss of habitat. The Northwest Forest Plan predicted it would not be for another 30 years that sufficient habitat would grow back into large blocks to see owl populations begin to recover.

The invasion of Barred Owl into Spotted Owl's range requires a higher level of protection than previously projected, and more than is being currently afforded by the critical habitat rule's adverse modification policy and post-fire logging of mature and old-growth forests that maintain important biological legacies for owls and a host of prey species found in the ensuing complex early seral and unsalvaged habitat. These activities threaten to undermine the functionality and future extent of the late-successional reserve network envisioned by President Clinton's Northwest Forest Plan.

Risk of fire to the Spotted Owl is being overstated in the Mexican Spotted Owl Recovery Plan, the Northern Spotted Owl Recovery Plan and Final Critical Habitat Rule and the Sierra Nevada Ecosystem Framework of 2004 and aggressive fuels treatments in owl habitat may be counterproductive to recovery. That is because projects now being undertaken in the name of fire prevention in Spotted Owl habitat are often harmful to the

owls and require take.

For that reason, we respectfully urge FWS to reexamine this policy and for the land management agencies to avoid Spotted Owl take pending completion of an updated analysis.

We look forward to working with you and the FWS staff to conserve and recover the Spotted Owl.

Sincerely,

Steve Holmer
Senior Policy Advisor
American Bird Conservancy

Cc: Michael Bean, Principal Deputy, Fish, Wildlife and Parks, Department of the Interior
Robert Bonnie, Undersecretary for Natural Resources and the Environment, Department of Agriculture
Tom Tidwell, Chief, U.S. Forest Service
Neil Kornze, Director, Bureau of Land Management

Summary of Wild Nature Institute and John Muir Project Petition

A fundamental premise of the listing petition is that new information merits revisiting the 2006 FWS decision to not list the subspecies based on uncertainties over its population size and response to wildfire and forest management. As the petition notes: "The CSO was denied protection in 2006 based on the assertion that fire represented the primary threat to its survival, and the threat was being addressed by Forest Service actions."

Analysis of demographic data of five California Spotted Owl populations concludes that since 2006 four out of the five populations' studied are declining. The other population, which inhabits National Parks is stable. Other studies published since 2006 indicate the owls are well-adapted to low and moderate severity fire, and that post-fire logging is likely to be the driver of owl population declines.

There is only an estimated population of the CSO based on the number of known occupied sites. In 2006 there were approximately 1,200 – 1,700 pairs. The demographic study estimates a 10-15% decline since that time so ABC estimates the current population is approximately 1,100 – 1,600 pairs.

The demographic data collection was initiated in the late 1980s and early 90s to estimate the subspecies population. The petitioners reviewed the results of multiple analysis methods to determine population trends in each of the five study areas, Lassen, Eldorado, Sierra, Sequoia-Kings Canyon, and San Bernardino, which total 1.4 million acres.

In two of the study areas in Sierra Nevada national forests, populations have declined approximately 10 percent since 2003 (Conner et al 2013), and the other Sierra Nevada study area has a 20 percent decline (Tempel and Guituerrez 2013, Tempel 2014). Population trends for the Lassen study area showed population declines in 2001, 2010, and 2013 (Blakesley et al, 2001, Blakesley et al 2010, and Conner et al 2013) and Conner et al estimated a 21-22 percent decline over the past 18 years. The Tempel 2014 study found the decline in the El Dorado area was as high as 50 percent from 1990-2012.

Gutierrez et al 2012 confirmed this decline stating "there has been a clear decline in abundance over the last fifteen years." Modeling also indicates that extinction is outpacing colonization leading to reduction in owl sites over time. Tempel and Guitierraz 2013 concluded areas are not being colonized due to habitat alternation.

Keane et al (2012) reported that the Meadow Valley fuels treatment project on the Plumas National Forest conducted from 2006-08. After the logging the number of territorial sites declined from 9 to 4 over a four year period (2007-2011). This was confirmed by Stephens et al (2014) which found a 43% loss of CSO within a few years of mechanical thinning. The authors noted that while the region's overall population is declining, the steep rate of decline in the fuels treatment study area were of "a greater magnitude" than elsewhere on the landscape.

Conner et al 2013 found that the Sequoia-Kings Canyon area analysis indicates a population increase of 16-27 percent over the seventeen year study period. Blakesley et al 2010 reported that at a minimum their analysis showed a stable population with a higher adult survival rate than other study areas. The authors suggested the higher survival rate of adults in the National Park resulted from "differences in habitat quality resulting from differences in forest management both before and during the study period…"

The petitioner's conclude on page 92 that: "the only area in the Sierra Nevada in which California spotted owl populations are known to be stable or slightly increasing is an area with an active mixed-severity fire regime and no mechanical thinning or post-fire logging (Sequoia/Kings-Canyon National Park), while all study areas on national forests and private lands (characterized by aggressive reduction of fire due to fire suppression, landscape-level mechanical thinning, and common post-fire logging) have declining populations (Conner et al. 2013, Tempel and Gutiérrez 2013, Tempel 2014, Tempel et al. 2014a). These findings indicate that mixed-severity fire (which includes a high-severity fire component) is, on its own, not a significant threat to California spotted owls. Instead, management activities that follow mixed-severity fire (post-fire "salvage" logging), or are conducted ostensibly to "save" owls from higher-severity fire (mechanical thinning), are primary threats to the owl."

The San Bernardino population declined at a 9 percent rate from 1987 to 1998 (LaHaye et al 1999). The region had extensive logging on private lands and the San Bernardino National Forest in response to a bark beetle outbreak.

Other studies have looked into the effect of habitat alteration. Seamans and Guitierrez (2007a) found the probability of territory colonization decreased, and territory occupancy decreased in areas with as little as 40 acres of logging. Bias and Guitierrez (1992) attributed low use of private timberlands by roosting and nesting CSOs to sanitation and high-grade logging that removed potential nest trees.

Clark et al (2013) concluded: "Our results also indicated a negative impact of salvage logging on site occupancy by spotted owls. We recommend restricting salvage logging after fires on public lands within 2.2 km of spotted owl territories (the median home range size in this portion of the spotted owl's range) to limit the negative impacts of salvage logging."

A 2012 Forest Service study (Lee et al) examining 11 years of CSO breeding season survey data from burned and unburned forests found no significant effects of fire on probabilities of local extinction and colonization. Roberts (2008) and Robert et al. 2011 found many Spotted Owl sites continued to be occupied and reproduced successfully after fire burned portions of their home ranges and core area, and Roberts (2008) also found a higher reproduction rate in mixed-severity burn areas over unburned areas. Williams et al (2011) found that owl home ranges in burned areas are similar to unburned areas. Jenness et al (2004) found that numbers of

successfully reproducing Mexican Spotted Owls territories did not statistically differ between burned and unburned forests.

In addition, management prescriptions to prevent fire, risk turning viable habitat into areas with less than 40 percent canopy cover which owls are likely to abandon. Under the Defensible Fuel Profile Zones and Strategically Placed Area Treatments, canopies are reduced the 40 percent cover, the minimum usuable by Spotted Owls. Gallagher (2010) found owls avoided foraging in these treatment areas. Bond (2009) found that Spotted Owls forage in all burn severities, and that owls have a slight preference for feeding in burned areas over unburned areas, and unlogged areas over logged forests.

Under the 2004 Framework, the Forest Service is defining suitable habitat too narrowly, automatically disqualifying burned areas even if owls continue to occupy the site. Despite exposure of agency wrongdoing by an Associated Press expose by Scott Sonner in 2004, the agency continues to assume burned habitat, particularly high-severity burn areas, are a complete loss as owl habitat, and therefore, can be opened to logging. This is a result of the 2004 SFNPA that states areas with stand replacing fires can be removed from Protected Activity Centers.

On page 100 the petition notes: In the Power Fire area and the Freds Fire area, the 2004 Sierra Nevada Forest Plan Amendment allowed the Forest Service to treat the higher-severity fire areas within the pre-fire PAC boundaries as being lost/unsuitable, which not only opened the PACs to post-fire logging, but also allowed the Forest Service to misleadingly claim that "0" acres of "suitable habitat" within the PACs would be salvage logged (Bond 2011).

Current policy also promotes landscape level mechanical thinning in spotted owl habitat, even allowing such activities in PACs and HRCAs. As noted above, the 2004 plan also promotes post-fire logging of owl habitat, assuming that it no longer habitat, and mechanical thinning, despite evidence this is causing severe harm to California Spotted Owls. As the petitioners note on page 95:

"Tempel et al. (2014b) found that mechanical thinning is significantly harming California spotted owls. The authors found that the amount of mature forest with high canopy cover (70–100 percent) was a critical variable for California spotted owl viability (survival, territory extinction rates, and territory colonization rates), and determined that "medium-intensity" logging—mechanical thinning under the 2004 Amendment, and earlier prescriptions generally consistent with the 2004 Amendment— significantly adversely affects California spotted owls at all spatial scales by targeting dense, mature forests with high canopy cover, degrading the quality of such habitat by reducing it to moderate canopy cover. This is adversely affecting California spotted owl reproduction (Tempel et al. 2014b)."

The evidence of negative impacts to owls from post-fire logging is of particular concern. Lee et al. (2012) report that mixed-severity (averaging 32 percent high-severity fire effects) did not reduce CSO occupancy. However, sites that were also post-fire logged saw complete abandonment.

It is also important to consider the historic loss of CSO habitat as a result of reduced abundance of large, old trees, and a decline in snag density. It will take many decades to restore late-successional conditions, and a change in post-fire logging policy to restore snags and downed woody debris. A review of Sierra Nevada National Parks by the SNEP Report found 55 percent of forests are in late-successional condition, but on other federal lands such conditions are found on only 19 percent of forest lands. Beardsley et al (1999) estimated that old growth forests declined from 45 percent to 11 percent of the landscape since 1945.

There is concern that the Forest Service is ignoring the available scientific literature to continue this management direction which is harmful to CSO. The 2013 forest plan for the Lake Tahoe Basin Management

Unit continues to claim still occupied habitat has been "lost" to fire, reduced canopy cover protection for owls, and allows clearcutting of owl habitat and cutting of large trees over 30-inches. Similarly the scoping document for the three early adapter forests in California promotes mechanical thinning and does not provide any significant protections for CSOs.

Negative Impact of Fire Risk Reduction Needs Further Analysis

There currently is a scientific debate about the role of mixed and high severity fires in providing habitat and nesting structures for Spotted Owls, and the degree to which fire is a threat to owl populations. This debate is a core issue for habitat management of all three subspecies, and aggressive management to reduce fire risk has been incorporated into recovery plans, forest plans, and critical habitat rules.

A number of recent studies (Bond et al, , Ganey et al 2014) indicate owls will forage in moderate and even in high severity burn areas due to an abundance of prey, and that these fires create future nest trees and snags and large wood debris beneficial to owl prey (Baker et al 2012).

Maintaining legacies is essential for future use by owls. North et al. (1999) notes "In our study area, stands with high use by owls typically included many "legacies" that survived a fire or windstorm that destroyed much of the previous stand." So, while fire risk reduction may be necessary to protect human lives and homes, scientific evidence is lacking that it is a critical conservation need of Spotted Owls.

Recovery Action 12 of the Northern Spotted Owl Recovery Plan recognizes this importance and recommends that ALL structures that take a long time to form such as legacies and large downed trees be retained. But post-fire logging projects such as the Douglass Fire Recovery and Westside Fire Recovery Projects propose to log extensive areas of suitable owl habitat and remove these legacies RA 12 says should be retained. In addition to removing suitable habitat, the Douglass Project proposes to directly take 24 Spotted Owls, and the Westside Fire Recovery project, still in scoping, contains over fifty owl activity centers within the proposed logging area.

A January 13, 2015 objection to the Four-Forest Restoration Initiative submitted by Dr. William Baker concludes that "…new science shows parts of the plan and Final EIS are not scientifically supported." Baker found that fire risks are overstated, in part because new habitat resulting from forest succession is not being considered, and recommended that the Final EIS suspend proposed treatments in MSO habitat until adequate analysis is completed.

"USFWS and the scientific community need to undertake needed analysis to accurately estimate fire risk to MOS relative to benefits of mixed- and high severity fire for MSO and rates at which new habitat is being produced by forest succession. During the suspension, it is important to conduct and complete small-scale experiments to determine the effects of thinning on MSO, since nothing is known about this."

Additional Resources

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Letter from Conservation Groups to Administration Regarding Principles for Northwest Forest Plan Revision

December 9, 2014
Robert Bonnie
Undersecretary for Natural Resources and Environment

U.S. Department of Agriculture
Washington, D.C. 20250

Jim Lyons
Deputy Assistant Secretary
Land and Minerals Management
U.S. Department of the Interior
Washington, D.C. 20240

Michael Bean
Principal Deputy
Fish, Wildlife, and Parks
U.S. Department of the Interior
Washington, D.C. 20240

Dear Mr. Bonnie, Mr. Lyons, and Mr. Bean,

The undersigned conservation organizations would like to follow up on a recent meeting with Forest Service regional foresters Randy Moore and Jim Peña and planning staff. Outlined below we express our concerns and offer a vision for the proposed revision to President Bill Clinton's Northwest Forest Plan (NWFP).

Our organizations are concerned by the proposed forest by forest revision process which lacks the overarching standards and guidelines of the NWFP, and past and current agency actions to weaken the NWFP, including the offering of projects inconsistent with conserving the Northwest's late-successional ecosystem and the birds, fish and other wildlife it sustains. We encourage the administration to consider a better course of action than the currently proposed NWFP revisions. We are confident one exists, and that it is consistent with the best available science and our collective efforts to combat climate change.

We urge the Obama Administration to keep the NWFP as a consistent, regional, interagency plan and continue the ecosystem management approach that accounts for the needs of multiple listed species which depend on the preservation and restoration of large blocks of mature and old-growth forests and intact watersheds that remain in short supply on the landscape. Recent science has reaffirmed the importance of the NWFP as a global model for ecosystem management and biodiversity conservation, particularly the reserve network[i]. We urge the administration to abide by the founding principles of the NWFP, particularly with respect to its emphasis on scientific credibility and legal defensibility as also outlined herein.

The NWFP is a success and an example of strong presidential leadership that provided the Northwest's old-growth forest ecosystem a needed breather from decades of intensive logging that all but eliminated a functional old forest ecosystem in the Pacific Northwest[ii] and the resulting national public controversy. Due to forest growth provided for by the NWFP, what was once a significant annual source of CO_2 due to logging of old forests is now a significant net carbon sink.[iii] Additionally, water quality has significantly improved due to the plan's watershed restoration emphasis and constraints on logging in riparian buffers[iv].

The NWFP as implemented (i.e., emphasizing commercial thinning in young plantations and de-emphasizing regeneration harvest (e.g. clearcutting) and preservation of mature and old growth forests) remains a solid foundation upon which to build and offers the best model to address numerous new stressors to this late-successional ecosystem. For example, radio-tracking studies demonstrate that Northern Spotted Owls have a higher likelihood of survival against Barred Owl invasion when larger blocks of late successional habitat are available[v].

Based upon the latest information about wildlife population declines, the influx of the Barred Owl, rising

carbon dioxide levels in the atmosphere and the likely impacts of climate change, additional protective measures for wildlife habitat, preservation of high biomass forests, and increased protection of stream buffers should be implemented by this plan revision.

We recommend that plan revisions build on the protective standards and guidelines and reserve allocations of the NWFP by incorporating new policy recommendations such as ecological integrity (as specified in the 2012 planning rule), climate resilience, connectivity, and especially carbon storage (as specified by the Council on Climate Preparedness and Resilience Climate and Natural Resources Working Group). Below are the following principles we believe are consistent with these new policies and best science.

Strengthening and Expanding Reserves

- Expand the late successional reserve and riparian reserve systems to provide refugia for late-successional species and to ameliorate new stressors, including Barred Owls and climate change.

- Prohibit post-disturbance logging in reserves to protect carbon sequestration of post-fire landscapes, provide habitat for threatened species and prey, and to provide complex early seral forests that are as rich as old-growth forests[vi] and increasingly rare due to post-fire logging.

- Designate additional reserves and larger no-logging buffers within the range of the threatened Marbled Murrelet to reduce habitat fragmentation effects.

- Designate all mature and old-growth forest, all high-carbon forests, all reserves, all critical habitat, all key watersheds, and all roadless areas larger than 1,000 acres, as "not suitable for timber production" to ensure that timber production does not take priority over ecological and restoration goals.

- Withdraw reserves and all administratively protected classifications from mining.

Protecting Watersheds, Aquatic Species

- Retain existing Aquatic Conservation Strategy (ACS) objectives and riparian reserve boundaries, and the standards and guidelines that emphasize restoration, and avoid actions that would retard or prevent achievement of the ACS objectives for all watersheds, over time.

- Preserve requirements that projects maintain and restore the aquatic functions and processes of streams and watersheds by demonstrating consistency with the nine Aquatic Conservation Strategy Objectives at scales relevant to those functions and processes.

- Prohibit grazing in riparian reserves and key watersheds and provide for voluntary federal grazing permit vacation to reduce cumulative effects of grazing[vii].

Reducing Stressors by Addressing Roads

- Rationalize the road system by reducing road densities and road-related impacts to listed aquatic and terrestrial species, improving all standards for road decommissioning and removal, and restoring connections to inventoried roadless areas.

- Accelerate implementation of Travel Analysis Report recommendations and Watershed Restoration Action Plan projects to implement a minimum road system.

Advancing Forest Restoration

- Promote variable density thinning in plantations to accelerate development of late-seral conditions and reduce fire risks. Limit tree thinning to 20 inch dbh to restore older tree characteristics to dry and moist forests.

Protecting High Biomass Forest Carbon Stores and Reducing CO_2 Emissions

- Conduct baseline inventory of carbon stocks and fluxes to identify and protect all high biomass forests[viii] for their carbon storage value.

- Analyze and mitigate for carbon dioxide emissions resulting from regeneration logging, forest thinning, post-fire logging, and biomass utilization[ix].

Re-Establishing Connectivity

- Establish and protect redundant habitat linkages for wolves and other wildlife along elevation gradients and north-south gradients and microrefugia (mainly low elevation and north-facing mature forests) for species movements and persistence in a changing climate[x].

- Protect all native (unmanaged) forest in all land allocations from logging to add connectivity and increased functionality of late-seral ecosystem needed to arrest declines in listed salmon populations and late-seral species such as Northern Spotted Owl, Marbled Murrelet, Pacific Fisher, Humboldt marten, and Red-tree Vole.

Protecting Drinking Water Sources

- Protect drinking water source areas for municipal water supplies from degrading activities including commercial logging, grazing, mining and off-road vehicle use.

Recommending Wilderness, Wild and Scenic and other Protected Areas

- Recommend new Wilderness Areas and Wild and Scenic Rivers, including tributary additions to existing Wild and Scenic Rivers.

- Complete the Research Natural Area System, designate additional Special Interest Areas and designate and protect National Recreational Trails.

Allowing for Appropriate Wildland Fire Management

- When appropriate, allow fires to burn safely in the backcountry and provide for un-salvaged early seral habitat for fire-dependent species. Focus thinning on the home ignition zone and flammable tree plantations.

Conversely, conservation groups are opposed to dissolution of the regionally integrated NWFP with each National Forest and BLM District Office adopting inconsistent and weaker standards that do not take a comprehensive ecosystem protection and restoration approach. Judge William Dwyer concluded that the BLM and Forest Service had to do an ecosystem-wide plan as opposed to forest-by-forest plans and ruled that the agencies could not, given the current conditions of the forests, meet their obligations under NEPA and the ESA "without planning on an ecosystem basis." *Seattle Audubon Society v. Lyons,* 871 F. Supp. 1291, 1311 (W.D. Wash. 1994) (emphasis in original).

The best available science does not support eliminating or shrinking the late-successional or riparian reserves or weakening of other protective management standards. As noted above, scientific studies indicate that Northern Spotted Owls have a better chance of coexisting with Barred Owls when there are more large blocks of habitat available. Logging in suitable or high quality Critical Habitat of the Northern Spotted Owl is inconsistent with recommendations to preserve existing habitat, and should be avoided. Clearcuts, including modified clearcuts (ecoforestry) on federal forests will hasten owl decline[xi] and degrade water quality and should therefore be opposed.

Past and recent agency actions to weaken protections of the Northwest Forest Plan and to offer extensive post-fire timber sales and other projects in the NWFP region that are inconsistent with the best available science or current understandings of climate adaptation and resilience have eroded public and scientific trust. We are greatly concerned the land management agencies are leading NWFP revision process in what appears to be a piecemeal and uncoordinated fashion. Specifically, we are concerned by:

- The BLM's Western Oregon Plan Revision and the Okanogan/Wenatchee National Forest draft plan revision that propose to eliminate or reduce reserves and weaken management standards in the Northwest Forest Plan.

- Proposals to replace the NWFP Aquatic Conservation Strategy with a modified Aquatic Conservation and Restoration Strategy that has weaker protection standards[xii], and to eliminate Survey and Manage Requirements.

- Large-scale post-fire logging in mature and old-growth forests and Key watersheds such as the proposed Westside post-fire logging project on the Klamath National Forest in California despite extensive science that indicates this type of logging is not consistent with ecological integrity or climate resilience[xiii].

- Raising the age of logging in late-successional reserves in California from 80 years to 120.

- Allowing for logging that downgrades or degrades suitable Northern Spotted Owl habitat in designated critical habitat.

- Not re-designating late-successional stands in the matrix as reserves or updating the current 800 million board foot Probably Sale Quantity to reflect the additional protections required by the Northern Spotted Owl critical habitat designation and the need to conserve forest carbon.

- Continuing to propose damaging logging despite lack of up to date regional population numbers for Northern Spotted Owl, Marbled Murrelet, Red Tree Vole, and Pacific fisher and the impact of these projects on these imperiled species.

- Lack of analysis of impact of large-scale thinning effects in Northern Spotted Owl and Marbled

Murrelet critical habitat and suitable nesting, roosting and foraging owl habitat.

In conclusion, we urge the land management and wildlife protection agencies under your purview to address these specific recommendations listed above as part of the upcoming planning process and build upon the protections of the historic NWFP. This will ensure that the plan continues to be a leading example of large-landscape conservation and ecosystem restoration. Thank you for your consideration.

We look forward to working with the administration and federal agencies on the NWFP, and are interested in meeting with you at your convenience to discuss these issues in more detail.

Sincerely,

Kristen Boyles
Staff Attorney
Earthjustice

Rhett Lawrence
Conservation Director
Oregon Chapter, Sierra Club

Randi Spivak
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Epic-Environmental Protection Information Center

Larry Glass
President of the Board
SAFE (Safe alternatives for our Forest Environment)

Laurele Fulkerson
Policy Director
Gifford Pinchot Task Force

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Letter to Regional Foresters Regarding Northwest Forest Plan Revisions

May 5, 2015

Jim Peña
Randy Moore
Regions 5 & 6
U.S.D.A. Forest Service

Dear Regional Supervisors Peña and Moore,

On behalf of the undersigned conservation groups we wish to express our continuing concern about the proposed revision of President Clinton's Northwest Forest Plan.

Our coalition supports maintaining and building upon the existing late-successional and riparian reserve systems, Aquatic Conservation Strategy, protections for rare species under the Survey and Manage program, and other protections of the Northwest Forest Plan and urges the agency to adopt a more aggressive effort to decommission forest roads to support watershed restoration and job creation. We are opposed to proposals that increase logging of mature forests that need to be conserved in order to restore the late-successional ecosystem, reduce stream and watershed protections, or reintroduce regeneration harvest to heavily fragmented landscapes.

We appreciate that the Forest Service has initiated a public process via the interviews, listening sessions and a science synthesis to help inform forest plan revisions within the Northwest Forest Plan area. We have several recommendations to ensure the public and scientists can fully participate.

Immediate questions related to the science synthesis include: 1) what are the topics and questions that will guide the synthesis, and 2) how will new and independent scientific information be incorporated? We recommend that a comment period and web portal be opened to ensure that a full range of views and scientific studies will be considered.

It remains unclear how the Forest Service's planning effort will be coordinated with the BLM's plan revisions already underway or how revised individual plans will address the regional needs and maintain viable populations of wide-ranging listed and candidate species such as the Northern Spotted Owl, Marbled Murrelet, North Oregon Coast Range DPS of the Red Tree Vole, Pacific Fisher, populations of Coho Salmon, as well as hundreds of survey and manage species that include many localized and rare endemics.

Attached is a report prepared by Geos Institute summarizing the best available science and the many accomplishments of the Northwest Forest Plan. As the 20-Year Monitoring reports are being released, we urge the Forest Service to include the findings of this report and highlight the successes of the Plan accordingly.

We also would like to thank you for the implementation successes of the Northwest Forest Plan that include improving water quality, turning the region's forests into a carbon sink, slowing the rate of decline of Northern Spotted Owls, and protecting and restoring large blocks of mature and old growth forests needed by hundreds of species.

We would like to request a meeting to discuss these issues and our recommendations.

Sincerely,

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American Bird Conservancy

Dominick DellaSala, Ph.D.
Chief Scientist
Geos Institute

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Comments by Dr. Jerry Franklin on Westside Fire Recovery Project

Ms. Patricia A. Grantham, Forest Supervisor
Ms. Wendy Coats, Environmental Coordinator
Klamath National Forest Supervisor's Office
1711 S. Main Street
Yreka, CA. 96097

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RE: Comments on the Draft Environmental Impact Statement for the Westside Fire Recovery Project

Dear Supervisor Grantham and Ms. Coats:

April 6, 2015

I have reviewed the Westside Fire Recovery Project DEIS dated March 2015. I would like to offer the following comments based on my experience as a forester, scientist, and educator involved in the study and management of forest ecosystems in the Pacific Northwest. I rarely submit formal comments on projects but I feel I need to do so because extensive areas of Late Successional Reserves are proposed for treatment.

Summary

My comments are focused primarily on activities proposed for Late Successional Reserves (LSRs), a land use allocation that I helped to create and populate as a member of the Forest Ecosystem Management Assessment Team (1993). Excepting the proposed roadside salvage, approximately 72% of the proposed salvage logging in the preferred alternative (#2) is located within LSRs—roughly 4,900 acres out of 6,800 acres total. In part, the logging is justified in the DEIS on the basis that it is needed to assist in rapid re-establish late-successional forest conditions and Northern Spotted Owl habitat with the LSRs.[1] Given the important and well defined ecological role assigned the LSRs in the Northwest Forest Plan (NWFP) I have paid special attention to the scientific rationale offered for the extensive salvage logging that is proposed in LSRs.

The LSR network was designed as a robust system of ecological reserves, which could accommodate large intense natural disturbances and the natural recovery processes that were expected to follow them. The FEMAT team well understood that salvage operations would interfere with these recovery processes, which is why they recommended that salvage in LSRs should be very limited in the FEMAT report; this conservative direction with regards to salvage in LSRs was incorporated in the NWFP.

Salvage logging of large snags and down boles does not contribute to recovery of late-successional forest habitat; in fact, the only activity more antithetical to the recovery processes would be removal of surviving green trees from burned sites. Large snags and logs of decay resistant species, such as Douglas-fir and cedars, are particularly critical as early and late successional wildlife habitat as well as for sustaining key ecological processes associated with nutrient, hydrologic, and energy cycles.

[1] According to the DEIS, the purpose and need for post-fire treatments is: 1) worker and public safety and access; 2) safe conditions for firefighters performing fire suppression for community protection; 3) a project that is economically viable, meeting project objectives and benefiting our local communities; and 4) restored and fire-resilient forested ecosystems. DEIS, i.

Stand-replacement fires provide large pulses of coarse woody debris (CWD) including snags and logs, which lifeboat dependent species and processes until the regenerating forest begins to produce large and decay-resistant dead wood structures, which is typically not for a century or more. Since this pulse provides all of the large CWD that is going to be available to the ecosystem for at least the next 100 to 150 years, it is not appropriate to use the levels of CWD found in mature and old stands of a particular Plant Association Group (PAG) as a guide to levels of CWD that should be retained after salvage. Effectively none of the large snags and logs of decay-resistant species can be viewed as being in excess of what is needed to assist in natural recovery to late-successional forest conditions and, hence, appropriate for salvage on land allocations where ecological objectives are primary, such as LSRs. Retention of large snags and logs are specifically relevant to Northern Spotted Owl (NSO) since these structures provide the habitat that sustain most of the owl's forest-based prey species.

If large fuels are viewed as a critical fire control issue, this could be dealt by creating appropriate Fuel Management Zones or snag-free corridors. In summary, general salvage of large snags and logs is absolutely inconsistent with a goal of assisting recovery of late-successional forest conditions.

Extensive reforestation by planting is proposed within the LSRs in the Westside Project area. Slow re-establishment of forest cover can be expected after natural stand replacement disturbances in the Pacific Northwest if tree regeneration is allowed to develop naturally. Recent studies of the establishment of natural stands following wildfire has shown that it commonly took 40 to 60 years on average for tree establishment to be completed and closed forest canopies to develop (Freund et al. 2014 and Tepley et al. 2014). This slow natural tree regeneration process contributed positively to sustaining regional forest biodiversity because it allowed shrub-dominated habitat to persist for decades, which sustained a large array of early-successional species, many of which are early successional habitat specialists (Swanson et al. 2011). Many of these species require snags, logs, and diverse plant resources; some insect pollinators, for example, require CWD for their larval stages. I would also note that some of the early successional animals, such as wood rats, are important prey species for the Northern Spotted Owl. Naturally disturbed, early successional habitat undergoing slow natural reforestation (without salvage or planting) is currently the rarest of the natural forest developmental stages in the Pacific Northwest – even more so than old-growth forests. Yet, as research at Mount St. Helens has showed, these large, slowly reforesting disturbed areas are major hotspots of regional biodiversity.

Limited planting may be appropriate within the LSRs to establish tree seed sources for specific species and locations but this should not be done using traditional approaches, which are designed to create extensive areas of uniformly stocked forest stands. Uniform tree planting over large areas is inappropriate in LSRs even at low densities. Appropriate plantings in LSRs would be limited in area and spatially heterogeneous. The inappropriateness of creating dense uniform stands is apparent from the fact that since the origin of the NWFP we have undertaken major programs in variable density thinning in existing plantations in LSRs! Establishment of "fully stocked" plantations on sites characterized by Fire Regimes I and II is particularly inappropriate,

since it simply recreates the potential for the next uncharacteristic stand replacement fire. This last issue does not appear to have been addressed in the DEIS.

The DEIS does not appear to include some current and relevant information regarding habitat preferences of the NSO. Alan B. Franklin et al. (2000) report that in northwestern California, the highest habitat fitness for NSO is found in landscapes that are a mixture of mature and old forest with open vegetation types, such as brush fields and young forest, and not in landscapes dominated by old forests. The fact that an early successional species — the dusky-footed woodrat — is the primary prey for NSO in this region may be part of the reason that owls prefer a mixed landscape. In any case, the fact that habitat fitness for the owl is favored by a heterogeneous landscape mosaic should be factored into decisions regarding establishment of conifer plantations, both within and outside of LSRs.

Late Successional Reserves

A brief review of the conceptual basis for the Late Successional Reserve (LSR) system is appropriate before commenting specifically upon activities proposed for LSRs impacted by the 2014 fires on the Klamath National Forest. LSRs were established to provide for old-growth ecosystems and related natural processes and constituent species, of which the NSO is one. The LSR system was designed as a well-distributed geographic network using occurrences of high-quality late-successional forest as a primary criterion for locating boundaries of specific LSRs.

The team that designed the LSR system knew that large stand replacing disturbances would impact LSRs and, therefore, that the LSR network needed to be able to accommodate such disturbances. The team had had numerous experiences with such disturbances, including the 1980 Mount St. Helens eruption and the 1988 Yellowstone Fires. Hence, the team built sufficient redundancy into the LSR system so that it could accommodate large disturbances and still remain viable as a regional network. This redundancy would also allow for natural recovery processes within impacted LSRs. Building reserve systems that will accommodate natural disturbance regimes is, of course, a first principle in conservation biology (Lindenmayer and Franklin 2003).

Creating a resilient LSR network ultimately resulted in a higher density and greater total acreage of LSRs than a reserve system that would simply have accommodated current habitat needs for NSO. This point is illustrated by comparing the LSR system with the Habitat Conservation Area (HCA) system proposed (and, at that time, judged to be adequate) for NSO (Thomas et al. 1990). The HCA system proposed approximately 5.5 million acres of reserves in addition to areas already reserved from timber harvest by Congress and the management agencies. The LSR network incorporated 7.4 million acres (in addition to already reserved lands) with an additional estimated contribution of 2.6 million acres of Riparian Reserves. The ultimate adoption of the LSR network as the basis for the NWFP reserve system resulted in a network that provided for much larger numbers of NSO than the proposed HCA network (Noon and McKelvey 1996), because the LSRs were focused on incorporating the highest quality old-growth forests, has a greater total reserved acreage, and created some very large reserves.

I have documented the basis for my assertion that the LSR network was built to be resilient in the preceding paragraph; i.e. it was built to accommodate significant loss and continue to function as

an effective reserve system for old-growth related species. One could say that the LSR system was overbuilt in terms of immediate habitat needs. A major reason for doing this was the FEMAT planners belief that natural recovery processes could and should be accommodated following major disturbances to LSRs. Hence, guidelines for salvage included statements such as: "Management objectives [following natural disturbances in Late Successional Reserves] should focus on either simulating natural succession or allowing it to occur unimpeded," FEMAT 1993, p. IV-36, and "Because there is much to learn about the development of species associated with these [old-growth] forests and their habitat, it seems prudent to only allow removal of conservative quantities of salvage material from Late-Successional Reserves and retain management options until understanding of the process has improved." FEMAT 1993, p. III-36.

One might question the appropriateness of allowing natural recovery processes to proceed if stand-replacement fire behavior with the resulting high levels of fuels were not characteristic of the LSRs. However, approximately ¾ of the affected area in the LSRs are habitats that belong to PAGs on which either stand-replacement or mixed fire regimes are characteristic and, therefore, on which large fuel loads would have been experienced in past post-fire environments. Hence, it would appear to me that the fire effects experienced were characteristic of what would be expected in the majority of the LSR area proposed for salvage in the Westside Fire area.

One of the major motivating factors in conducting salvage logging in the Westside fire area – including the LSRs – seems to be economic and not ecologic (DEIS, 10-11), which is further indicated by the Chief's "Emergency Situation Determination" and the "Alternative Arrangements" secured from the Council on Environmental Quality. The NWFP specifically directs that, "Salvage will not be driven by economic or timber sale program factors" in LSRs (NFP SFEIS F-21). The teams that put together FEMAT and the NWFP specifically wanted the LSRs to be exempted from the pressures of programmed timber harvest, because the primary drivers in LSRs were ecological and not economic. Hence, it would seem that the salvage proposed within LSR segments as part of the Westside Salvage Project is inconsistent with the goals and principles of LSR management.

Snags, Logs, and Coarse Woody Debris (CWD)

The role of CWD in the development of late-successional forest habitat is an important factor to consider in evaluating the appropriateness of salvage activities in the Westside project area, particularly within the LSRs. Most of the salvage proposed in the LSRs is on PAGs where large volumes of snags and logs following wildfire are characteristic. Large snags and logs are the most important surviving structural elements or biological legacies of a forest disturbance(Franklin et al. 2002), excepting only surviving large live trees. Importance, in this case, refers to the roles of these structures in:

(1) Providing essential habitat for an immense array of species;
(2) Maintaining important ecosystem functions; and
(3) Structurally enriching the young forest stand, making it possible for mid- and late-successional species to re-colonize the stand much earlier in its chronological development than would otherwise be the case (Franklin et al. 1987).

The importance of large snags and down wood for a broad array of species is recognized in the EIS document. These structures provide habitat for early as well as late successional species and sustain many important ecosystem processes (e.g., Harmon et al. 1986). However, the long persistence and multiple roles played by the large pulse of snags, logs, and other CWD provided by the stand-replacement event (Harmon et al. 1986; Maser et al. 1988) do not appear to be adequately recognized in the analysis of how much of this wood should be retained. For example, large Douglas-fir logs continue to fulfill important ecological functions, such as habitat for small mammals and salamanders, for 200 to 250 years after their death. Cedar snags can persist for at least as long as 1 ½ centuries and as logs for over twice that long.

The massive input of large dead wood is characteristic and critical to stand development processes and the ultimate provision of habitat for late-successional species following stand replacement fires (Maser et al., 1988; Franklin et al. 2002). As noted these wood structures may persist and play functional roles for several centuries, particularly in the case of decay resistant species. Large pines may also persist as snags for several decades and additional periods as logs on the forest floor. In fact, the entire recovering forest ecosystem will depend upon this pulse of CWD until it reaches a point in its development where the new stand begins to generate snags and logs of comparable size and heartwood content—generally between 100 and 200 years (Maser et al. 1988; Franklin et al., 2002). Consequently, basing snag and CWD retention following salvage on levels of these structures found in existing mature and old forests is not appropriate; *all of this initial pulse of wood is needed to reach those levels one to two centuries from now!* Indeed, the use of mature forests as a standard for CWD is particularly inappropriate since this is the period when CWD levels are at their lowest level during the entire *natural* developmental sequence from stand-replacement fire to old growth (see diagram in paper by Spies in Maser et al. 1988). It certainly does not appear to me that the approach taken in the DEIS reflects an appreciation of the fact that this one-time input of large and decay resistant CWD is all that the recovering forest ecosystem is going to get for the next 100 to 200 years.

The importance of snags, logs, and other CWD is recognized in FEMAT's (1993) scientific analysis. For example (my underlining for emphasis):

> *Because of the important role of dead wood in late-successional and old-growth forest ecosystems, and because there is much to learn about the role of dead wood in the development of forests, only limited salvage is appropriate in Late-Successional Reserves . . . <u>The Final Draft Recovery Plan [for the NSO] would allow removal of small-diameter snags and logs, but would also require retention of snags and logs likely to persist until the new stand begins to contribute significant quantities of coarse woody debris.</u>"* FEMAT 1993, p. IV-37.

> *Snags provide a variety of habitat benefits for a variety of wildlife species associated with late-successional forests. <u>Accordingly, following stand-replacing disturbances, management should focus on retaining snags that are likely to persist until late-successional conditions have developed and the new stand is again producing large snags.</u>* FEMAT 1993, p. III-37.

> *Following a stand replacing disturbance, management should retain adequate coarse woody debris quantities in the new stand so that in the future it will contain amounts similar to natural regenerated stands. The analysis that determines the amount of coarse woody debris to leave must account for the full period of time before the new stand begins to contribute coarse woody debris....* FEMAT 1993, p. III-37.

In summary, general salvage of large snags and logs is clearly antithetical to the goal of rapid recovery of fully functional late-successional forest habitat and inappropriate within the Late Successional Reserves. If large fuels are viewed as a critical fire control issue, then this could be dealt with by creating appropriate Fuel Management Zones or snag-free corridors.

Northern Spotted Owls

The NSO is a species of special interest and one that almost certainly has been significantly negatively impacted by the 2014 fires. Restoration of suitable habitat for NSO has been used as a justification for intensive salvage and tree planting programs, such as in Alternative #2 of the DEIS. However, there is no scientific evidence to support the hypothesis that either activity will contribute either significantly or positively to a more rapid recovery of NSO habitat or NSO populations than allowing natural recovery processes. In fact, it is certain that salvage will not do so; the potential value of some tree planting could be argued.

Unfortunately, the DEIS also fails to acknowledge some important information with regards to the ecology of the NSO in the Klamath–Siskiyou region, either in the literature review or in analyzing effects of various alternatives. In a study of NSO habitat fitness in relation to landscape conditions, A. Franklin et al. (2000) show that a mosaic of older forest interspersed with early successional vegetation types had the highest fitness for NSO. Landscapes dominated either primarily or exclusively by older forest or primarily by early successional vegetation provided lower levels of fitness than the mosaic based on estimates of survival and fecundity. Hence, landscape mosaics of mature and old forest and early successional habitats, the latter including brush fields, would be appropriate recovery targets for restoration programs focused on NSO habitat.

I also noted that the DEIS does not appear to have fully considered recommendations of the 2011 Final Revised NSO Recovery Plan. Specifically, Recovery Plan Action 10 advises, "Conserve spotted owl sites and high value spotted owl habitat to provide additional demographic support to the spotted owl population", which includes protecting both historically and currently occupied NSO sites (NSO Recovery Plan III-42 – III-47. It appears that numerous sites will be eliminated by the proposed salvage logging (DEIS 148-149). Recovery Action 12 advises, "In lands where management is focused on development of spotted owl habitat, post-fire silvicultural activities should concentrate on conserving and restoring habitat elements that take a long time to develop (e.g., large trees, medium and large snags, downed wood)" (NSO Recovery Plan III-49). LSRs are certainly lands where "management is focused on development of NSO habitat"! As noted in the DEIS, the Westside proposal will remove many of the medium and large snags: "salvage activities will reduce snag densities of trees equal to or greater than 14 inches in diameter at breast height (dbh)" (DEIS 122).

This significant information regarding NSO, as well as impacts of the Barred Owl, needs to be acknowledged and considered in the final EIS. Specific consideration needs to be given to the impacts of: (1) salvage on development of the debris-rich late-successional conditions characteristic of forested NSO (and prey) habitat; and (2) establishment of conifer plantations on the amount and distribution of shrub-dominated early successional habitat in which the woodrat resides.

Reforestation

Extensive reforestation by planting is proposed within the LSRs. Slow natural re-establishment of tree cover is common following natural partial and complete stand replacement disturbances in the Pacific Northwest, however. Two recent studies of Douglas-fir forests in Oregon and Washington document that 40 to 60 years was the average time lapse before closed forest canopies developed following wildfire and sometimes it took as much as 100 years (Freund et al. 2014; Tepley et al. 2014). Therefore, fifty years (a number mentioned in the DEIS) is not a long time to wait for establishment of forest cover where timber production is not a consideration (such as LSRs) and, in fact, it is apparently the norm for nature.

The "delay" in re-establishment of closed forest provides essential habitat for early successional species, including many vertebrate and invertebrate habitat specialists. Species of interest include many lepidoptera (butterflies and moths) and neo-tropical migrant songbirds. One reason for the biological richness of the early successional habitat is the abundant and diverse food sources, including many varieties of nutrient-rich herbage, fruits, seeds, nuts, and pollen and nectar sources, which form the base of numerous complex food webs. A second reason is the abundant snags and logs, which provided shelter, sources of additional food (e.g.,fungi), and critical habitat for both vertebrate and invertebrate animals; for example, many invertebrate pollinators live their larval stages in wood. This is also the habitat favored by dusky-footed woodrats, that important prey of the NSO.

Naturally disturbed habitat undergoing natural reforestation is, in fact, the scarcest type of forest habitat in the Pacific Northwest. I am referring here to naturally disturbed areas that have not undergone salvage logging or artificial reforestation (Franklin et al. 2000). Intensively managed forest lands, which are subject to clearcutting, intensive site preparation, and dense tree planting, provide few of the conditions needed by early-successional organisms. Large, slowly reforesting disturbed areas appear to be very important to maintaining regional biodiversity, as demonstrated by the Mount St. Helens National Volcanic Monument. The monument is the most important hotspot for biological diversity in the Washington Cascade Range, with extraordinary representation of almost all categories of animals, including birds, amphibians, small mammals, and medium-sized predators (Dale, Swanson, and Crisafulli 2005).

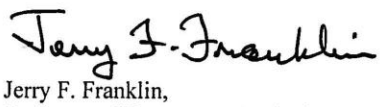
Planting may be appropriate within LSRs to establish tree seed sources for specific species and locations. However, planting should not be done following traditional approaches, which are directed to establishing uniformly stocked forest stands over large areas. Extensive, uniform plantings — even at the relatively low density proposed for some areas (200 trees/acre) — will not simulate the spatially heterogeneous pattern of natural seedling establishment.

Establishment of dense, uniform stands is completely inappropriate in LSRs as well as any PAG identified as fire regime types I and II. We are currently engaged in major programs of variable density thinning in dense plantations in existing LSRs in order to accelerate the development of late-successional structure in these overly dense stands; so, why would we set about creating more acreage of these dense uniform plantations within LSRs? Similarly, establishing uniform stands — even at a relatively low density of 200 trees per acre — on sites characterized by frequent fire is obviously inappropriate; this simply recreates the potential for the next "uncharacteristic" stand replacement fires on these sites!

Conclusion

A summary is provided at the beginning of these comments. I would conclude that the salvage activities proposed within LSRs as part of the Westside Fire Recovery Plan are inconsistent with NWFP intent and direction for management of LSRs, including their treatment following a major disturbance. Salvage will make no positive contribution to the reestablishment of late-successional forest habitat or to the early successional ecosystems that provide habitat for NSO prey species, among many others. Retention of large snags and logs are critical parts of the natural recovery processes and none of this wood legacy can be demonstrated as being in excess to ecological needs on moist forest sites; indeed, all of the scientific evidence is to the contrary. Removal of medium and fine fuels, but not large snags and logs, may be ecologically justifiable on sites characterized by PAGs with Fire Regimes I and II. Issues associated with fire suppression could be addressed by creating snag-free corridors or narrow FMZs. Some limited tree planting may be justified to provide seed sources for tree species otherwise likely to be absent or under-represented but the plantings should be carried out in low numbers and at variable density. Establishment of large areas of plantations, even at low density, is inappropriate within the LSRs or on sites characterized by Fire Regimes I and II. Finally, current knowledge regarding the ecology and recovery of the NSO should be considered during revision of the DEIS.

Sincerely,



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AMERICAN BIRD CONSERVANCY

Shaping the future for birds

February 20, 2015

Doug Krofta
Chief, ESA Listing
U.S. Fish and Wildlife Service
Washington, D.C. 20240

Dear Mr. Krofta,

American Bird Conservancy (ABC) is writing in regard to the petition to the list the California Spotted Owl as threatened or endangered submitted by the Wild Nature Institute and John Muir Project of Earth Island Institute. ABC agrees that a review of the best science and current management practices reveals that the petition has merit and should be considered by the agency.

The petition argues that current land management strategies in California Spotted Owl habitat under the 2004 Sierra Nevada Framework are at the root of continued population declines. The evidence from a significant number of scientific studies cited within the petition is compelling and we urge its consideration.

Recent findings indicate that low and moderate severity fires are not a threat to California Spotted Owl populations, and that owl populations are declining in areas where there is post-fire logging and mechanical fuels treatments. Post-fire logging has been shown to be particularly detrimental to all three owl subspecies' populations by causing abandonment of burned areas that might otherwise remain occupied. The only areas where California Spotted Owl populations are stable are in National Parks.

Information on impacts to the California Spotted Owl should also be considered across the entire range of the species regarding management decisions affecting habitat of the threatened Northern and Mexican Spotted Owl. Based on recent studies, we anticipate current management will lead to a decline of Northern Spotted Owl populations. This comes at a critical population bottleneck for the northern subspecies resulting from historic and ongoing loss of habitat. The Northwest Forest Plan predicted it would not be for another 30 years that sufficient habitat would grow back into large blocks to see owl populations begin to recover.

The invasion of Barred Owl into Spotted Owl's range requires a higher level of protection than previously projected, and more than is being currently afforded by the critical habitat rule's adverse modification policy and post-fire logging of mature and old-growth forests that maintain important biological legacies for owls and a host of prey species found in the ensuing complex early seral and unsalvaged habitat. These activities threaten to undermine the functionality and future extent of the late-successional reserve network envisioned by President Clinton's Northwest Forest Plan.

Risk of fire to the Spotted Owl is being overstated in the Mexican Spotted Owl Recovery Plan, the Northern Spotted Owl Recovery Plan and Final Critical Habitat Rule and the Sierra Nevada Ecosystem Framework of 2004 and aggressive fuels treatments in owl habitat may be counterproductive to recovery. That is because projects now being undertaken in the name of fire prevention in Spotted Owl habitat are often harmful to the owls and require take.

For that reason, we respectfully urge FWS to reexamine this policy and for the land management agencies to avoid Spotted Owl take pending completion of an updated analysis.

We look forward to working with you and the FWS staff to conserve and recover the Spotted Owl.

Sincerely,

Steve Holmer
Senior Policy Advisor
American Bird Conservancy

Cc: Michael Bean, Principal Deputy, Fish, Wildlife and Parks, Department of the Interior
Robert Bonnie, Undersecretary for Natural Resources and the Environment, Department of Agriculture
Tom Tidwell, Chief, U.S. Forest Service
Neil Kornze, Director, Bureau of Land Management

Summary of Wild Nature Institute and John Muir Project Petition

A fundamental premise of the listing petition is that new information merits revisiting the 2006 FWS decision to not list the subspecies based on uncertainties over its population size and response to wildfire and forest management. As the petition notes: "The CSO was denied protection in 2006 based

on the assertion that fire represented the primary threat to its survival, and the threat was being addressed by Forest Service actions."

Analysis of demographic data of five California Spotted Owl populations concludes that since 2006 four out of the five populations' studied are declining. The other population, which inhabits National Parks is stable. Other studies published since 2006 indicate the owls are well-adapted to low and moderate severity fire, and that post-fire logging is likely to be the driver of owl population declines.

There is only an estimated population of the CSO based on the number of known occupied sites. In 2006 there were approximately 1,200 – 1,700 pairs. The demographic study estimates a 10-15% decline since that time so ABC estimates the current population is approximately 1,100 – 1,600 pairs.

The demographic data collection was initiated in the late 1980s and early 90s to estimate the subspecies population. The petitioners reviewed the results of multiple analysis methods to determine population trends in each of the five study areas, Lassen, Eldorado, Sierra, Sequoia-Kings Canyon, and San Bernardino, which total 1.4 million acres.

In two of the study areas in Sierra Nevada national forests, populations have declined approximately 10 percent since 2003 (Conner et al 2013), and the other Sierra Nevada study area has a 20 percent decline (Tempel and Guituerrez 2013, Tempel 2014). Population trends for the Lassen study area showed population declines in 2001, 2010, and 2013 (Blakesley et al, 2001, Blakesley et al 2010, and Conner et al 2013) and Conner et al estimated a 21-22 percent decline over the past 18 years. The Tempel 2014 study found the decline in the El Dorado area was as high as 50 percent from 1990-2012.

Gutierrez et al 2012 confirmed this decline stating "there has been a clear decline in abundance over the last fifteen years." Modeling also indicates that extinction is outpacing colonization leading to reduction in owl sites over time. Tempel and Guitierraz 2013 concluded areas are not being colonized due to habitat alternation.

Keane et al (2012) reported that the Meadow Valley fuels treatment project on the Plumas National Forest conducted from 2006-08. After the logging the number of territorial sites declined from 9 to 4 over a four year period (2007-2011). This was confirmed by Stephens et al (2014) which found a 43% loss of CSO within a few years of mechanical thinning. The authors noted that while the region's overall population is declining, the steep rate of decline in the fuels treatment study area were of "a greater magnitude" than elsewhere on the landscape.

Conner et al 2013 found that the Sequoia-Kings Canyon area analysis indicates a population increase of 16-27 percent over the seventeen year study period. Blakesley et al 2010 reported that at a minimum their analysis showed a stable population with a higher adult survival rate than other study areas. The authors suggested the higher survival rate of adults in the National Park resulted from "differences in habitat quality resulting from differences in forest management both before and during the study period…"

The petitioner's conclude on page 92 that: "the only area in the Sierra Nevada in which California spotted owl populations are known to be stable or slightly increasing is an area with an active mixed-severity fire regime and no mechanical thinning or post-fire logging (Sequoia/Kings-Canyon National Park), while all study areas on national forests and private lands (characterized by aggressive reduction of fire due to fire suppression, landscape-level mechanical thinning, and common post-fire logging) have

declining populations (Conner et al. 2013, Tempel and Gutiérrez 2013, Tempel 2014, Tempel et al. 2014a). These findings indicate that mixed-severity fire (which includes a high-severity fire component) is, on its own, not a significant threat to California spotted owls. Instead, management activities that follow mixed-severity fire (post-fire "salvage" logging), or are conducted ostensibly to "save" owls from higher-severity fire (mechanical thinning), are primary threats to the owl."

The San Bernardino population declined at a 9 percent rate from 1987 to 1998 (LaHaye et al 1999). The region had extensive logging on private lands and the San Bernardino National Forest in response to a bark beetle outbreak.

Other studies have looked into the effect of habitat alteration. Seamans and Guitierrez (2007a) found the probability of territory colonization decreased, and territory occupancy decreased in areas with as little as 40 acres of logging. Bias and Guitierrez (1992) attributed low use of private timberlands by roosting and nesting CSOs to sanitation and high-grade logging that removed potential nest trees.

Clark et al (2013) concluded: "Our results also indicated a negative impact of salvage logging on site occupancy by spotted owls. We recommend restricting salvage logging after fires on public lands within 2.2 km of spotted owl territories (the median home range size in this portion of the spotted owl's range) to limit the negative impacts of salvage logging."

A 2012 Forest Service study (Lee et al) examining 11 years of CSO breeding season survey data from burned and unburned forests found no significant effects of fire on probabilities of local extinction and colonization. Roberts (2008) and Robert et al. 2011 found many Spotted Owl sites continued to be occupied and reproduced successfully after fire burned portions of their home ranges and core area, and Roberts (2008) also found a higher reproduction rate in mixed-severity burn areas over unburned areas. Williams et al (2011) found that owl home ranges in burned areas are similar to unburned areas. Jenness et al (2004) found that numbers of successfully reproducing Mexican Spotted Owls territories did not statistically differ between burned and unburned forests.

In addition, management prescriptions to prevent fire, risk turning viable habitat into areas with less than 40 percent canopy cover which owls are likely to abandon. Under the Defensible Fuel Profile Zones and Strategically Placed Area Treatments, canopies are reduced the 40 percent cover, the minimum usuable by Spotted Owls. Gallagher (2010) found owls avoided foraging in these treatment areas. Bond (2009) found that Spotted Owls forage in all burn severities, and that owls have a slight preference for feeding in burned areas over unburned areas, and unlogged areas over logged forests.

Under the 2004 Framework, the Forest Service is defining suitable habitat too narrowly, automatically disqualifying burned areas even if owls continue to occupy the site. Despite exposure of agency wrongdoing by an Associated Press expose by Scott Sonner in 2004, the agency continues to assume burned habitat, particularly high-severity burn areas, are a complete loss as owl habitat, and therefore, can be opened to logging. This is a result of the 2004 SFNPA that states areas with stand replacing fires can be removed from Protected Activity Centers.

On page 100 the petition notes: In the Power Fire area and the Freds Fire area, the 2004 Sierra Nevada Forest Plan Amendment allowed the Forest Service to treat the higher-severity fire areas within the pre-fire PAC boundaries as being lost/unsuitable, which not only opened the PACs to post-fire logging, but also allowed the Forest Service to misleadingly claim that "0" acres of "suitable habitat" within the PACs would be salvage logged (Bond 2011).

Current policy also promotes landscape level mechanical thinning in spotted owl habitat, even allowing such activities in PACs and HRCAs. As noted above, the 2004 plan also promotes post-fire logging of owl habitat, assuming that it no longer habitat, and mechanical thinning, despite evidence this is causing severe harm to California Spotted Owls. As the petitioners note on page 95:

"Tempel et al. (2014b) found that mechanical thinning is significantly harming California spotted owls. The authors found that the amount of mature forest with high canopy cover (70–100 percent) was a critical variable for California spotted owl viability (survival, territory extinction rates, and territory colonization rates), and determined that "medium-intensity" logging—mechanical thinning under the 2004 Amendment, and earlier prescriptions generally consistent with the 2004 Amendment—significantly adversely affects California spotted owls at all spatial scales by targeting dense, mature forests with high canopy cover, degrading the quality of such habitat by reducing it to moderate canopy cover. This is adversely affecting California spotted owl reproduction (Tempel et al. 2014b)."

The evidence of negative impacts to owls from post-fire logging is of particular concern. Lee et al. (2012) report that mixed-severity (averaging 32 percent high-severity fire effects) did not reduce CSO occupancy. However, sites that were also post-fire logged saw complete abandonment.

It is also important to consider the historic loss of CSO habitat as a result of reduced abundance of large, old trees, and a decline in snag density. It will take many decades to restore late-successional conditions, and a change in post-fire logging policy to restore snags and downed woody debris. A review of Sierra Nevada National Parks by the SNEP Report found 55 percent of forests are in late-successional condition, but on other federal lands such conditions are found on only 19 percent of forest lands. Beardsley et al (1999) estimated that old growth forests declined from 45 percent to 11 percent of the landscape since 1945.

There is concern that the Forest Service is ignoring the available scientific literature to continue this management direction which is harmful to CSO. The 2013 forest plan for the Lake Tahoe Basin Management Unit continues to claim still occupied habitat has been "lost" to fire, reduced canopy cover protection for owls, and allows clearcutting of owl habitat and cutting of large trees over 30-inches. Similarly the scoping document for the three early adapter forests in California promotes mechanical thinning and does not provide any significant protections for CSOs.

Negative Impact of Fire Risk Reduction Needs Further Analysis

There currently is a scientific debate about the role of mixed and high severity fires in providing habitat and nesting structures for Spotted Owls, and the degree to which fire is a threat to owl populations. This debate is a core issue for habitat management of all three subspecies, and aggressive management to reduce fire risk has been incorporated into recovery plans, forest plans, and critical habitat rules.

A number of recent studies (Bond et al, , Ganey et al 2014) indicate owls will forage in moderate and even in high severity burn areas due to an abundance of prey, and that these fires create future nest trees and snags and large wood debris beneficial to owl prey (Baker et al 2012).

Maintaining legacies is essential for future use by owls. North et al. (1999) notes "In our study area, stands with high use by owls typically included many "legacies" that survived a fire or windstorm that destroyed much of the previous stand." So, while fire risk reduction may be necessary to protect human

lives and homes, scientific evidence is lacking that it is a critical conservation need of Spotted Owls.

Recovery Action 12 of the Northern Spotted Owl Recovery Plan recognizes this importance and recommends that ALL structures that take a long time to form such as legacies and large downed trees be retained. But post-fire logging projects such as the Douglass Fire Recovery and Westside Fire Recovery Projects propose to log extensive areas of suitable owl habitat and remove these legacies RA 12 says should be retained. In addition to removing suitable habitat, the Douglass Project proposes to directly take 24 Spotted Owls, and the Westside Fire Recovery project, still in scoping, contains over fifty owl activity centers within the proposed logging area.

A January 13, 2015 objection to the Four-Forest Restoration Initiative submitted by Dr. William Baker concludes that "…new science shows parts of the plan and Final EIS are not scientifically supported." Baker found that fire risks are overstated, in part because new habitat resulting from forest succession is not being considered, and recommended that the Final EIS suspend proposed treatments in MSO habitat until adequate analysis is completed.

"USFWS and the scientific community need to undertake needed analysis to accurately estimate fire risk to MOS relative to benefits of mixed- and high severity fire for MSO and rates at which new habitat is being produced by forest succession. During the suspension, it is important to conduct and complete small-scale experiments to determine the effects of thinning on MSO, since nothing is known about this."

Additional Resources

Conservation in the Sierra Nevada: Issues and Recommendations. Sierra Forest Legacy. 2012.
http://www.sierraforestlegacy.org/FC_ConservationStrategy/FC_ConservationStrategy2.php
Conservation Planning: Strategies for Fisher and California Spotted Owl Now In Development, The Sierra Forest Voice, Vol. 7, No. 4, December 9, 2014,
http://www.sierraforestlegacy.org/NR_SFVoiceNewsletter/SFVN_NewsletterCurrent.php
"*Biologist, others in way of logging plans*," Scott Sonner, Associated Press, August, 2004,
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Forest Brochure Misrepresents Science to Promote Logging Initiative, Union of Concerned Scientists,
http://www.ucsusa.org/center-for-science-and-democracy/scientific_integrity/abuses_of_science/a-to-z/forest-brochure.html#.VNPWHNLF9Fg

Managing Sierra Nevada Forests, Forest Service Technical Report (PSW-GTR-237)
http://www.fs.fed.us/psw/publications/documents/psw_gtr237/psw_gtr237.pdf

An Ecosystem Management Strategy for Sierran Mixed-Conifer Forests (PSW-GTR-220). A Forest Service report from Pacific Southwest Research Station (with addendum, February, 2010),
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November 21, 2013

The Honorable Sally Jewell
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The Honorable Tom Vilsack
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Dear Secretary Jewell and Secretary Vilsack,

The undersigned conservation organizations are writing to request the land management and wildlife conservation agencies under your purview implement the guidance of the Northern Spotted Owl Recovery Plan's Recovery Action 12 regarding post-fire logging on federal forests within the range of the Northern Spotted Owl.

Action is needed as a result of legislative proposals, such as H.R. 1526 and S. 1479, that would expedite post-disturbance logging and because of projects being considered by federal agencies that could potentially degrade or eliminate post-fire habitats important to the threatened Northern Spotted Owl and its prey base.

An October 31 letter endorsed by 250 scientists to each of your Departments states that "legislation to expedite post-disturbance logging is inconsistent with the current state of scientific knowledge, and would seriously undermine the ecological integrity of forest ecosystems on federal lands." The scientists' letter is attached for your consideration.

Furthermore, the Final Revised Northern Spotted Owl Recovery Plan includes Recovery Action 12 to promote the development of spotted owl habitat. The U.S. Fish and Wildlife Service determined that in addition to myriad detrimental ecological effects, post-fire logging is harmful to the Northern Spotted Owl which uses burned habitats but less frequently will use burned and logged habitats. The agency also found evidence that post-fire logging and the resulting creation of tree plantations can increase fire risks.

> ***Recovery Action 12: In lands where management is focused on development of spotted owl habitat, post-fire silvicultural activities should concentrate on conserving and restoring habitat elements that take a long time to develop (e.g., large trees, medium and large snags, downed wood).*** Examples of areas where we believe this recovery action would greatly benefit future spotted owl habitat development include such fire-affected areas as the Biscuit fire, the Davis fire and the B&B complex.
>
> We anticipate many cases where the best approach to retain these features involves few or no management activities. Forests affected by medium- and low-severity fires are still often used by spotted owls and should be managed accordingly (p. III-49, Revised Recovery Plan for the Northern Spotted Owl).

U.S. Fish and Wildlife Service analysis of the Final Northern Spotted Owl Critical Habitat rule identifies the management shifts called for by Recovery Action 12, including the protection of owl habitat in matrix areas and the prohibition of post-fire logging in late-successional reserves:

> Under the auspices of the Revised Recovery Plan's Recovery Action 12 recommendation, critical habitat designation could shift post-fire salvage management guidelines in the matrix from extraction of timber resources to "conserving and restoring habitat elements that take a long time to develop (e.g., large trees, medium and large snags, downed wood). Additionally, under the NWFP, Late Successional Reserves (LSRs) provide for salvage logging after fire events greater than ten acres in size that would likely be inconsistent with this recommendation. (Final Northern Spotted Owl Critical Habitat Economic Analysis p. 4-5)

We urge that the U.S. Fish and Wildlife Service strictly enforce Recovery Action 12 during Section 7 consultation, and that Bureau of Land Management and Forest Service plans and projects within the range the Northern Spotted Owl implement Recovery Action 12 to limit post-fire logging in designated critical habitat of the Northern Spotted Owl.

We would be interested in meeting with your staff to discuss this issue further.

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Open Letter to Members of Congress from 250 Scientists Concerned about Post-fire Logging

October 30, 2013

As professional scientists with backgrounds in ecological sciences and natural resources management, we are greatly concerned that post-disturbance legislation addressed in HR 1526, which passed the House in September 2013, would suspend federal environmental protections to expedite and increase logging of post-fire habitat and mandate increased commercial logging of unburned forests on national forests. In addition, HR 3188, as currently proposed in the House, would override federal environmental laws to mandate post-fire clearcutting operations in national forests, Yosemite National Park, and designated Wilderness areas within the 257,000-acre Rim fire on the Stanislaus National Forest and Yosemite National Park. Both bills ignore the current state of scientific knowledge, which indicates that such activity would seriously undermine the ecological integrity of forest ecosystems on federal lands.

Though it may seem at first glance that a post-fire landscape is a catastrophe ecologically, numerous scientific studies tell us that even in patches where forest fires burned most intensely the resulting post-fire community is one of the most ecologically important and biodiverse habitat types in western conifer forests. Post-fire conditions serve as a refuge for rare and imperiled wildlife that depend upon the unique habitat features created by intense fire. These include an abundance of standing dead trees or "snags" that provide nesting and foraging habitat for woodpeckers and many other wildlife species, as well as patches of native flowering shrubs that replenish soil nitrogen and attract a diverse bounty of beneficial insects that aid in pollination after fire. Small mammals find excellent habitat in the shrubs and downed logs, deer and elk browse on post-fire shrubs and natural conifer regeneration, bears eat the berries often found in substantial quantities after intense fire, and morel mushrooms, prized by many Americans, spring from the ashes in the most severely burned forest patches.

This post-fire habitat, known as "complex early seral forest," is quite simply some of the best wildlife habitat in forests and is an essential stage of natural forest processes. Moreover, it is the least protected of all forest habitat types and is often as rare, or rarer, than old-growth forest, due to damaging forest practices encouraged by post-fire logging policies. While there remains much to be discovered about fire in our forests, the scientific evidence indicates that complex early seral forest is a natural part of historical fire regimes in nearly every conifer forest type in the western U.S. (including ponderosa pine and mixed-conifer forests) and that small and large patches of it occur. Much of the current scientific information on the ecological importance of post-fire habitat can be found in several excellent videos[1].

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[1] http://www.fs.usda.gov/detail/r5/news-events/audiovisual/?cid=stelprdb5431394; https://vimeo.com/75533376; http://vimeo.com/groups/future/videos/8627070; http://www.youtube.com/watch?v=iTl-naywNyY&list=PL7F70F134E853F520&index=15; http://www.youtube.com/watch?v=1BmTq8vGAVo&feature=youtu.be; http://vimeo.com/3428311

Numerous studies also document the cumulative impacts of post-fire logging on natural ecosystems, including the elimination of bird species that are most dependent on such conditions, compaction of soils, elimination of biological legacies (snags and downed logs) that are essential in supporting new forest growth, spread of invasive species, accumulation of logging slash that can add to future fire risks, increased mortality of conifer seedlings and other important re-establishing vegetation (from logs dragged uphill in logging operations), and increased chronic sedimentation in streams due to the extensive road network and runoff from logging operations[2].

We urge you to consider what the science is telling us: that post-fire habitats created by fire, including patches of severe fire, are ecological treasures rather than ecological catastrophes, and that post-fire logging does far more harm than good to the nation's public lands.

Sincerely,

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August 12, 2015

Response To:
Bureau of Land Management
Draft Resource Management Plan
For Western Oregon

The draft EIS in no way, shape or form meets the requirements of the O and C Act. The definition of "sustained yield of timber" has been taken out of the context of the O and C Act. When the act was written, the concerns of Congress were the wanton clear-cutting of thousands of acres in one swath and no replanting occurring. The Act did not intend to define "sustainable" as the protection of every blue-tail slug, pacific salamander, spotted owl or marbled murrelet. Yes, those species need to be considered but not at the expense of 70% of the land base. Your alternatives, at the most, show 30% of the land base available for timber harvest. That is a flagrant violation of the O and C Act and is not acceptable.

Receipts from those lands are supposed to be supporting county governments, county schools and local workers. Those lands were never created to give preservationist a warm fuzzy feeling for having saved the world. And make no mistake, there goal is to stop all activity on public land. They will not be happy with any of the alternatives and will write great volumes telling how and where you errored.

Return to the intent of the O and C Act. Any other direction is a violation of that Act!

On the topic of Off-Highway Vehicles (OHV's), on the Roseburg District. One of the proposed OHV Recreation Management Areas (RMA) is located near White Rock. This area is also listed as a Late Succesional Reserve. The two designations are not compatible in my mind or in the preservationists mind. We have been trying for thirteen years to get an OHV trail system in the area, but designating it as an LSR is a sure way to kill that plan. Get rid of the LSR designation.

In Appendix B there are references to seasonal closures to motorized /OHV use. An example is deer and elk closure November 1 thru April 15. If there is a wolf in the area, closure from April 15 thru August 31, if no wolf there is generally a fire closure from June 15 or 30 to the end of September or longer. The way the closures are set up, there really is very little time that will be open for OHV use. Maybe four months. That is not providing for much needed OHV opportunity on the Roseburg District. This needs to be re-written eliminating the seasonal closures in OHV RMA's. That should include fire closures except in Extreme fire conditions.

On top of that there was a statement made in Appendix P, page1387 that motor vehicle use would be limited to administrative, commercial and passenger vehicle traffic. That implies by omission that OHV would not be allowed on roads. Until OHV riding areas and trails are approved and <u>developed</u>, this restriction should be removed.

In Appendix N, page 1283, the Bohemia Trail Extension is only listed in Alternative D. Since this would be a continuation of the Forest Service's National Historic Trail it should be listed in all Alternatives as a motorized Class III trail.

I understand you are trying to placate the preservation community but you can never do that because their objective is complete termination of any activity on public land. That objective does not fit with the O and C Act. You need to abide by the Act not the whims of the environmental crusaders. It is time BLM got back to managing the lands for the local people who depend on it for their income and community services.

I request you make the changes regarding OHV's to meet the needs of the motorized recreationists.

Sincerely,

Wayne L. Brady

Wayne L. Brady
Trail Officer
Umpqua Lands Trail Riders Association
2165 Wild River Drive
Roseburg, OR 97470

W. Brady
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RMPs for Western Oregon
Bureau of Land Management
P.O. Box 2965
Portland, OR 97208

9720832965

From: fpaulete@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Saturday, August 22, 2015 11:58 AM
To: RMP-Comments@heg-inc.com
Subject: Fwd: Applegate Partnership and Watershed Council Comments on the BLM 2015 RMP
Attachments: Untitled attachment 00012.htm; APWC BLM RMP COMMENTS.doc

---------- Forwarded message ----------
From: **Paulete, Francisca** <fpaulete@blm.gov>
Date: Sat, Aug 22, 2015 at 9:17 AM
Subject: Fwd: Applegate Partnership and Watershed Council Comments on the BLM 2015 RMP
To: BLM_OR RMPWO_Comments <blm_or_rmpwo_comments@blm.gov>

---------- Forwarded message ----------
From: **Mark Brown** <m4brown@blm.gov>
Date: Fri, Aug 21, 2015 at 6:53 PM
Subject: Fwd: Applegate Partnership and Watershed Council Comments on the BLM 2015 RMP
To: Richard Hardt <rhardt@blm.gov>, Francisca Paulete <fpaulete@blm.gov>, Michael Allen <m1allen@blm.gov>

Sent from my iPhone

Begin forwarded message:

> **From:** "Barron, Dayne" <d1barron@blm.gov>
> **To:** Anthony Kerwin <akerwin@blm.gov>, "Mark A. Brown" <m4brown@blm.gov>
> **Subject: Fwd: Applegate Partnership and Watershed Council Comments on the BLM 2015 RMP**
>
> ---------- Forwarded message ----------
> From: Jack Shipley <rockycreekfarms@apbb.net>
> Date: Fri, Aug 21, 2015 at 3:46 PM
> Subject: Applegate Partnership and Watershed Council Comments on the BLM 2015 RMP
> To: blm_or_rmpwo_comments@blm.gov
> Cc: George Mc Kinley <george@jeffnet.org>, "Janelle Dunlevy (APWC)" <coordinator@apwc.info>, Dayne Barron <d1barron@blm.gov>, "John Gerritsma, BLM" <john_gerritsma@blm.gov>, Allen Bollschweiler <abollsch@blm.gov>
>
> RMPs for Western Oregon
> Bureau of Land Management

P.O. Box 2965
Portland, Oregon 97208

Electronic mail (email):
blm_or_rmpwo_comments@blm.gov

Attached please find a copy of our comments on the Bureau of Land Management's 2015 Resource Management Plan
Acknowledgement of receipt of our comments will be appreciated.

Respectfully submitted,

Jack Shipley
Chair and Board Member
Applegate Partnership & Watershed Council
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Jacksonville, OR 97530
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Dayne Barron
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Working together to sustain and enhance resilient landscapes and quality of life in southwest Oregon

--
Panchita Paulete
Associate IDT Lead
Resource Management Plans for Western Oregon

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Jasmine Benjamin

From: fpaulete@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Saturday, August 22, 2015 8:35 AM
To: RMP-Comments@heg-inc.com
Subject: Fwd: Applegate Trails Association RMP Comments
Attachments: ART_20130615-b_with_Wellington.pdf; ART_20130917_with_Connectors.pdf; RMP Comments; ATA Aug 2015.docx; Applegate Community Public Lands Vision.docx

---------- Forwarded message ----------
From: <david@applegatetrails.org>
Date: Thu, Aug 20, 2015 at 8:38 PM
Subject: Applegate Trails Association RMP Comments
To: blm_or_rmpwo_comments@blm.gov
Cc: Joseph Vaile <joseph@kswild.org>, Zach Jarrett <zjarrett@blm.gov>, Zach Million <zmillion@blm.gov>, John Gerritsma <jgerrits@blm.gov>, Dayne Barron <d1barron@blm.gov>, Chad Davis <chad.davis@oregon.gov>, Joel Brumm <jbrumm@blm.gov>

Dear BLM,

Attached is the Applegate Trails Association's (ATA) comments for BLM's Draft Resource Management Plan. This document is signed by the 5 board members of ATA and 45 other citizens who wrote in support and asked to sign onto our comments. Now we can only hope BLM will read our comments, hear our message and act responsibly.

Thank you.

David Calahan
Applegate Trails Association
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Jacksonville, OR 97530
541-899-1226
www.applegatetrails.org

This email has been checked for viruses by Avast antivirus software.
www.avast.com

August 20, 2015
erome . Pere
State Director
Washington/Oregon
Bureau of Land Management
P.O. Box 2 65
Portland, Oregon 7208

ATT : Mar Brown

Submitted via mail: blm_or_rmpwo_comments@blm.gov

RE: Resource Management Plans for Western Oregon Draft Environmental Impact Statement

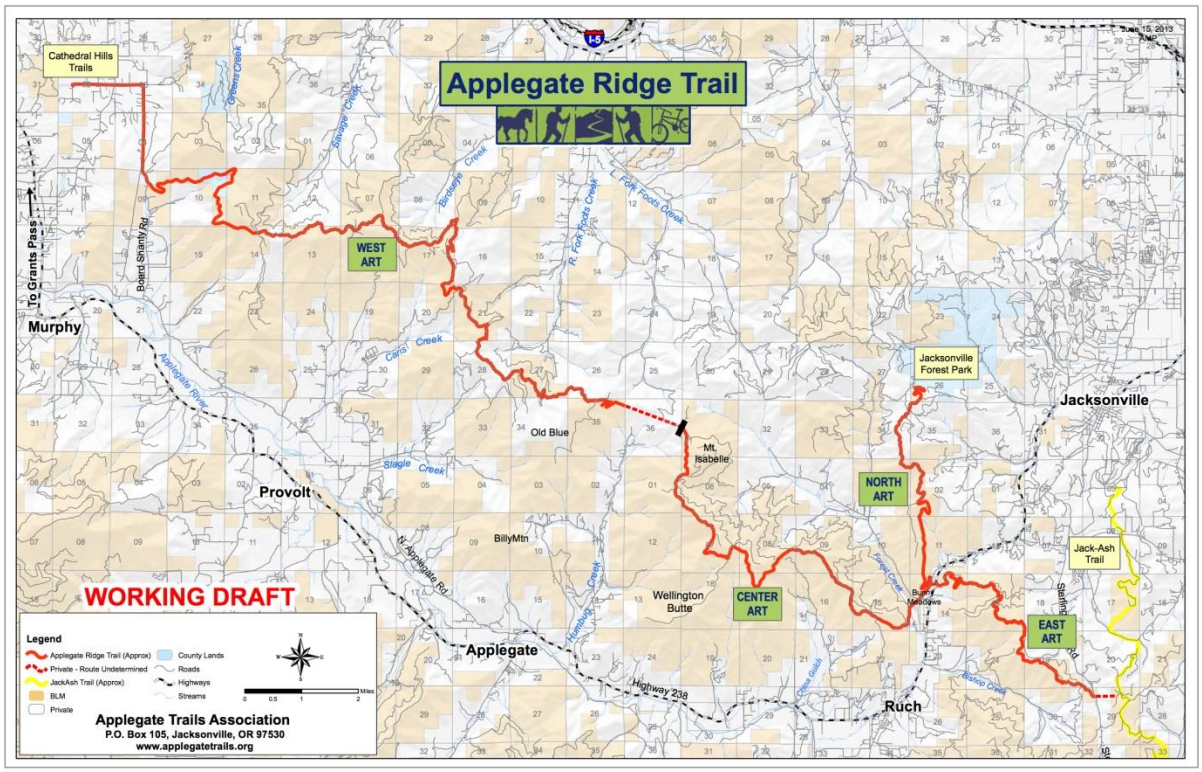
Dear Director Pere :

I, David Calahan, a retired firefighter and the chairman of the Applegate Trails Association (ATA), have lived in the Applegate Valley for 43 years, with the last 38 years in one beautiful location. Like so many places in the Applegate, it is surrounded by BLM lands. They are our watershed, view-shed, and recreation area. On behalf of my own relationship with BLM lands and of ATA, whose relationship is explained below, I offer these comments on the RMP for Western Oregon.

The Applegate Trails Association is a non-profit organization formed by community residents to develop a system of hiking, biking and equestrian trails in the mountains of the Applegate Valley. Our main focus and goal is to create the Applegate Ridge Trail (ART), from the Cathedral Hills trail system in Grants Pass to the Jacksonville Woodlands trails in Jacksonville. This trail would then connect with the proposed Jack-Ash Trail from Jacksonville to the Pacific Crest Trail near Ashland, giving hikers many miles of beautiful ridge-top walking and a potential to hike from Grants Pass to Ashland.

Most of the land the ART passes through belongs to BLM. For this reason and for our general interest in all non-motorized trails in the Applegate, ATA has a deep concern for the BLM's planning for management of Applegate's forested lands.

The map of the proposed ART below clearl depicts 4 sections or projected phases of the ART based on the terrain and t pe of trails. BLM chose to eliminate the Center ART and combine it with the West ART. ATA will follow BLM's lead in this document and not refer to the "Center" ART. The attached map also shows the orth ART, the proposed connection to the ac sonville Forest Par which was overloo ed in the draft RMP.



Below are ATA's key comments about the 2015 RMP. These comments apply to Southern Oregon and more specificall the Applegate alle . The wa the alternatives are proposed in the RMP ma e it difficult to pic an one favorite so these comments will highlight what ATA supports or rejects in this large document.

have divided our comments into four parts:

1. eneral comments applicable to the overall approach of the recreation section of the RMP.
2. Comments regarding Lands with Wilderness Characteristics LWC in the Applegate alle .
3. Specific comments regarding the RMP's proposed recommendations for the ART, other trails and trailheads in the Applegate alle .
4. Comments related to the forestr management component of the RMP.

FOOT OT S: Because ATA is wor ing on a trail s stem within the Rogue and Applegate alle s that will connect with the trails of the Sis i ou pland Trails Association S TA , we have coordinated with S TA on the broad polic recommendations regarding recreation and other issues in the RMP. n addition, each organi ation provides comments specific to its trails.

Before we begin our comments we would li e to ac nowledge the time and effort the BLM staff put into this RMP. To produce a 1500 page document as well as the supporting online

information was not an eas tas and it would be a miracle if no errors or issues were found. owever, because of the importance of these documents to set long-term management direction and polic for Western Oregon, we are submitting comments on an thing we found that might create a problem in the future. We cannot now whether something is a data input error or a planned management approach. So our apologies if some of our comments appear as unfair criticism. That is not our intent. Rather we are hoping to ma e sure management guidelines provide clear, fair, and productive approaches to managing our public lands. Finall , the bul of our specific recreation management comments, especiall in Parts 2 3 are related to the Medford BLM district.

Part One. General Comments applicable to the RMP's proposed management approach to recreation:

Recreation should be a top priority for BLM's management of public lands:

Recreation is of huge importance to Oregon's economy and BLM land in Western Oregon pla s a major role in providing recreational opportunities. Recreation provides extremel important ualit of life benefits to the public and is a sustainable source of jobs and economic growth for Oregon counties. This view guides our recommendations for the management of recreation.

A recent surve b Oregon Par s and Recreation reports that non-motori ed recreation in Oregon represents over 162 million activit da s per ear and contributes 2.1 billion represents over 162 million activit da s per ear and contributes 2.1 billion annuall to the state's economy.[1] This same surve indicates there are 2.6 million activit da s per ear of motori ed activit . Thus the ratio of non-motori ed activit to motori ed activit is 62:1. This is little doubt that non-motori ed recreation is of high value to Oregon's population and econom .

As federal, state and private studies indicate, the economic benefits from recreation far exceed the contribution from timber production to Oregon's employment picture. BLM's own RMP statistics point this out on page 567. et the draft RMP actuall reduces the lands managed for recreation relative to the 1 5 RMP. We do not see an significant indication in the draft RMP that the management focus on timber production is being adjusted to reflect today's economic realities about the most beneficial and sustainable use of these public lands.

We do feel that the RMP's proposed priorities for forestr management are the reverse of what the public wants and what sheer economics would dictate. The public clearl wants

[1] **Oregon Non-Motorized Trail Participation and Priorities,** Report in support of the 2015-2024 Oregon Trails Plan Conducted b Oregon State niversit for the Oregon Par s and Recreation Department , ul 2015, pg. 45

health , fire-resilient forests that are managed to protect a host of important ecological values and provide a rich arra of recreational opportunities appropriate to each area and the specific environmental conditions. A sustainable level of timber production would be the b -product of such an approach, instead of having the driving force be timber production with to en efforts to ma e it appear that it includes consideration of sustainabilit , recreation and other values the public desires.

In light of recreation's growing importance, we urge the BLM in its final Western Oregon RMP to place more emphasis on managing public lands for recreation, especiall b not reducing the acreage of Special Recreation Management Areas SRMA . The RMP calls for this reduction for most districts under all alternatives. The Medford District is one of the few districts where at least one of the alternatives D increases SRMA acreage. While we understand the management realities of not having all non-SRMA lands classified xtensive RMAs RMAs , it appears that the BLM is going in the opposite direction it needs to, b minimi ing or reducing the importance of recreation. We provide specific recommendations for The Medford District SRMAs and RMAs in Section 3.

1. All non-motorized trails and trailheads should be designated Special Recreation Management Areas (SRMA) with a 250' buffer: n light of the public interest in non-motori ed recreational opportunities, ATA encourages the BLM to designate all existing and proposed non-motori ed trails and trailheads as SMRA's in the final RMP. n the Medford BLM District this includes non-motori ed trails such as the proposed ART which consists of the ast, West *and* orth Applegate Ridge Trails and the associated connector trails. Other trails include the Sterling Mine Ditch Trail SMDT , the proposed ac -Ash Trail, the ac sonville Forest Par , the ac sonville Woodlands, the Pacific Crest Trail PCT , the Wellington Mine Trail, the nchanted Forest Trail and the others listed in the RMP. All trails and trailheads should have a meaningful corridor providing a buffer against activities that might degrade the ualit of the recreational experience, such as clearcutting, new roads or target shooting.

For all non-motori ed trails, ATA recommends a 250 foot buffer on each side of the trail that would be subject to specific management treatment including a forest management as detailed below. n addition, the t pe of timber harvest activities on lands adjacent to SRMAs should be carefull selected to minimi e adverse impacts on recreational values. A clear cut in plain view of a popular hi ing trail ma provide short-term economic gain to someone, but in Southern Oregon it would mean an 80-100 ear loss of value from a recreational amenit which compounded over that time period is of a much larger economic significance to the local econom than the value of the timber. f Oregon becomes nown as the state of clear-cuts, our recreation and tourism industries will be

severel adversel impacted. On the other hand, if the RMP advocates forest management policies that enhance forest health, build fire resilienc and re uire the use of sustainable timber harvest management practices both our forests and recreation will flourish and complement each other.

We support the half-mile buffer being proposed b and for the national PCT, to be managed with specific guidelines for various t pes of activities within that buffer.

2. **BLM should commit to completion of Travel Management Plans:** For over a decade we have been promised a Travel Management Plan TMP for the Medford District but none has materiali ed. The proposed RMP states these plans will be completed within five ears. n light of the failure to meet previous deadlines we suggest the final RMP contain a clear schedule showing the list of TMPs needed for each BLM district with their completion dates over the next five ears. TMPs for high priorit areas should be completed as soon as possible but preferabl no later than one ear after the ROD.

For example, for a wide variet of reasons we would highl recommend the ridge complex between Forest Cree and the main Applegate alle be completed within one ear of ROD or no later than December 2017, whichever is earlier. This ridge complex would include the West Applegate Ridge Trail 216 , the nchanted Well RMA 13 , the southern side of the Timber Mtn. Recreation Area 20 and northeast side of the Wellington Butte LWC. Travel management plans for high use recreation areas are particularl important in order to provide all users with certaint about the future of the trails the use.

3. **There should be an environmental review of all trails:** BLM's authorized process for gaining approval of a new trail, the nvironmental Assessment A , has been in place for decades. f BLM would li e to see recreational trails developed in a planned and sustainable fashion, it is important to enforce its re uirements for environmental review of all trails as well as to clear trail design and construction re uirements. This has not been the polic at least in the Medford BLM district, for the past several decades. Because of the BLM's focus on timber production, it is not surprising that little attention has been given to the public s use of these public lands for recreation. owever, times have changed.

As discussed above, recreation of all inds, but especiall non-motori ed recreation, is now more important to Oregon's econom than timber production. Therefore, trail s stems need to be carefull planned in order to minimi e future problems or costs while still meeting recreation needs.

The RMP cannot change whatever has happened with unauthori ed or user-created trails in the past, but BLM's new RMP policy should address how unauthorized trails will be dealt with in the future. There will be some catching up to do to ma e sure all trails meet PA re uirements and have been constructed sustainabl . Some trails will need to be closed, some re-routed. Some ma have their use changed and so forth. t is our strongl held view that pushing responsibilit for addressing this issue into the future is no longer an option. This is wh we insist that a definite schedule and funding commitment be made to completing TMPs for top priorit areas as soon as possible.

ATA strongly objects to "grandfathering" user-created O trails, especiall those created since the 1 5 RMP. Man O trails were once or are still hi ing or e uestrian trails. O users cover up the trac s of hi ers, pac animals, and bic cles effectivel obliterating old non-motori ed trails. ATA would li e to see trails with historic non-motori ed use be restored to non-motori ed status. f BLM recogni es all of the user-created O trails, then the must also recogni e non-motori ed user-created trails. f it had historic hi ing use or ATA has hi ed it, then fair treatment would dictate those trails be "grandfathered" as non-motori ed trails. As it stands, the Medford District BLM has labeled all trails as motori ed as the leave the biggest trac . BLM does not recogni e the previous or current non-motori ed use. ust because hi ing leaves less of a mar does not mean the trail does not exist.

Some trail groups such as ATA and S TA, have chosen to develop trails using BLM's full review process to ensure our trails create minimal environmental damage and meet trail standards. The RMP proposal to allow the unauthori ed user created trails to remain in use until a TMP is developed essentiall rewards illegal and resource damaging behavior. We recogni e that the unauthori ed trails are there and recreation users now have a sense of entitlement about continuing to use them. This is to a large degree because the Medford BLM has essentiall condoned this behavior b not ma ing an serious effort to curb illegal trail building, b not closing at least the trails causing significant resource damage and b not completing the TMP promised for over a decade in the Medford District.

owever, we are now in a new era with a new RMP being drafted and ATA strongl advocates a consistent management approach to all trails – motori ed or non-motori ed. Besides as ing for completion of the travel management plans as soon as possible we would ma e the following recommendations to address these issues while travel management plans are being developed.

a. The final RMP should re uire, retroactivel to April 2015 when the draft RMP was released , that an individuals or groups wishing to build a trail on BLM lands must go through the environmental review process and meet pertinent trail design and construction standards or ris fines for illegall creating new trails. nless there are repercussions to users for violating these policies, the review process and design standards will be meaningless. Therefore for motori ed and non-motori ed users ali e, the creation of an unauthori ed trails after April 2015 would mean closure of all trails for that user group in the affected RMA or if it is outside of an RMA – within the nearest RMA, until the TMP is completed. An illegall created trails should be decommissioned immediatel .

b. BLM should publish an inventor of existing unauthori ed user-created trails as soon as possible motori ed or non-motorized) as a record of what qualifies as "existing" based on what was on the ground on the date the draft RMP was published – April 2015. BLM mapped the O trails in the proposed Timber Mountain O Recreational Area as earl as 2002 and generall updated those maps as needed so this information ma be easil obtained.

c. We recommend that BLM, in consultation with both O riders and other recreation users, immediatel close an trails currentl causing significant degradation of resources such as those with serious erosion or gull creation and those crossing open meadows, wetlands or in other sensitive areas. Trails causing significant conflicts between motori ed and non-motori ed users should be assessed for the most appropriate usage and either relocated or closed permanentl during the relevant travel management period, whichever is more appropriate. These closures should be done within 3 months of the ROD and should be strictl enforced. BLM should obtain help from motori ed and non-motori ed user groups to police these closures. Similar to the recommendation in a. above, for motori ed and non-motori ed users ali e, the continued use of an trail closed temporaril due to resource damage or other problems until the TMP is completed would mean closure of all trails for that user group in the affected or nearest RMA. This will provide peer pressure to stop further illegal trail use or building. This polic needs to be well publici ed and enforced.

4. **Final RMP should designate areas outside of RMAs as Open for BLM designated trails and roads only. All unauthorized trails outside of the designated RMPs should be closed**. Assuming that TMPs first focus on high priorit RMAs, an areas without RMAs ma not see travel management plans for ears. To protect the BLM lands outside of RMAs from continued use of unauthori ed trails and to prevent an unauthori ed trail construction, we recommend the final RMP designate non-RMA areas as open onl on designated trails and roads. Roads in these areas would remain available to O use or non-motori ed users. An recreation user wishing to create a new trail in a non-RMA area or gain approval for an old unauthori ed trail would have to go through the full PA review process and meet relevant design re uirements.

5. **Final RMP should not require a plan amendment for future authorized trails:** We understand that an new trail proposed that is not part of this current RMP would trigger a time-consuming amendment to the RMP. We propose removing obstacles to the development of new, full authori ed trails b re uiring new trails proposed in non-RMA areas go through the full PA review process. This should not re uire a plan amendment to the final RMP. Otherwise, all unauthori ed trails on BLM lands not included in RMAs will be CLOS D to motori ed or non-motori ed users.

6. **The creation of sustainable trails makes economic sense**: ATA strongl supports the creation of sustainable trail s stems – both motori ed and non-motori ed. This means all trails should be subject to PA review to avoid an adverse resource impacts and should be sited, designed and constructed based upon trail standards that produce sustainable trails. Proper trail design will also minimi e user conflicts between motori ed and non-motori ed users. n an era of diminishing funding for recreation, ever effort should be made to ma e sure trails are designed with long-term management in mind. A poorl designed trail that has constant maintenance needs because it is on highl erodible soils, too steep or poorl drained will re uire higher investments of limited paid or volunteer time and re uire on-going financial resources. This will drain limited resources awa from other recreational needs. t is in the interests of the entire recreation communit to ma e sure trails are well designed so that more time can be spent enjo ing the trails than maintaining them. This is particularl true as communit involvement becomes increasingl important to maintaining trails. For this reason, ATA has deliberatel utili ed existing roads for part of the West and orth ART routes. t ma not be our first choice to hi e on a gravel road shared with all other users, but the trade-off is reduced trail maintenance needs.

7. **RMP management guidelines for target shooting need to be more specific:** We are thrilled that BLM has recogni ed the public safet ha ard caused b uncontrolled and unsafe target shooting on BLM lands, especiall around the trailheads and along the roads of the West ART. We strongl support the creation of no-shooting buffers at trail heads and along trail corridors. This protection should appl to both motori ed and non-motori ed trails. owever, this approach addresses onl part of the problem and does not provide specific guidance about how much of a buffer is sufficient when the firearms being discharged are capable of sending bullets thousands of feet and high-powered firearms can shoot rounds that travel more than 2.5 miles.

One of the man management responsibilities on federal lands is ensuring public safet . When an activit represents a ris of death or serious injur to others, causes severe resource damage, destro s the recreational amenities for the majorit of users and creates fire ris and safet ha ards for federal emplo ees, members of the public and adjacent private land owners, it is time to reach a solution. Before someone is seriousl injured or illed, the uncontrolled shooting and explosions at various de-facto shooting areas must be addressed.

ncontrolled target shooting creates significant safet ris s to all motori ed and non-motori ed recreational users, including people simply driving their cars along BLM's roads just for the pleasure. Due to the terrain and vegetation in Southern Oregon, it is often ver difficult to see or now from the sound where shooting is occurring. This means that a bic clist, motorc clist or e uestrian has no idea when the come around a blind corner of a road or trail if the will come face to face with someone shooting illegall across the road or trail, down the road or trail, at a BLM gate or trail sign or safel into a ban . When ou are in woods and hear people shooting immediatel above ou it is impossible to tell if ou are at ris or not. n addition, because of the uncontrolled practice of shooting out over open spaces, particularl from ridgetops and landings such as the uarr above Long ulch 38-3-8 on the northwest boundar of the Wellington Butte LWC , bullets can travel long distances and fall into trail corridors and onto the private properties along the can on bottoms. have even found a spent bullet in m barn gutter. M nearest neighbor is 6/10 mile awa and one can onl guess where it came from but the thought of a stra bullet stri ing one down in our own ard is sobering. had another unnerving experience while doing volunteer wor at the sabelle Trailhead when a target shooter pulled in, bac ed up a short spur road and within a minute proceeded to shoot two rounds bac towards the trailhead before hollered to stop him. He said he didn't see me and was uite apologetic. Apparentl ver few people shooting guns are aware there are miles of trails throughout this region as well as private residences nearb , so the ma thin the are shooting in a safe direction when in fact a trail or home on adjacent private land is within range.

The noise issue is also a serious problem as it significantl degrades the ualit of most recreational experiences to hear an guns being discharged nearb or Tannerite explosions. Another unfortunate result of BLM's uncontrolled polic for firearm use is the amount of resource damage and trash associated with these activities. Again, for other forms of recreation, it is not attractive to hi e, ride or bic cle b scattered T s, appliances, computers, cans, and glass that are shot up or see trees cut off b bullets or blown up b Tannerite explosions. At least during fire season, it is clear that both target shooting and Tannerite can cause fires as alread ampl demonstrated in the 2015 fire season.

n areas close to urban areas with high concentration of recreational use such as Forest Cree and Anderson Butte, the use of firearms needs to be seriousl controlled within an RMA, such as the Bell Forest, nchanted Well, Bald Wagon and Anderson Addition RMAs. ATA has four specific management recommendations related to target shooting:

> *7.1 Designate Safe Target Practice Areas:* We would li e to see the BLM create a special recreation management area s for target shooting completel off the ridgelines and awa from the areas where motori ed and non-motori ed trails are concentrated. This target shooting range should be sited where sound and bullets will not travel as far and adversel impact safet and enjo ment of both public and nearb private lands. One suggestion is for the Medford BLM to organi e a meeting in 2015 including

representatives from ac son Count recreation department, law enforcement officers, State recreation officials, S Forest Service, and representatives of motori ed and non-motori ed recreation interests as well as representatives from the target shooting communit . A group effort is needed to develop a wor able solution where excellent but safe target shooting opportunities can be provided for the region. These target shooting areas do not have to be on BLM land but clearl some solution needs to be found soon.

7.2 Close RMAs containing a concentration of trails or other recreational use to target shooting. While a meaningful si ed buffer of no shooting is a great idea, in the case of the West Applegate Ridge Trail RMA, b the time ou safel buffered ever motori ed and non-motori ed trail and trailhead, there would practicall be no area left where an one could safel shoot - underscoring the need to create target shooting ranges to provide an outlet for this form of recreation. nless an alternative is provided, attempting to create no shooting trail buffers or close the RMAs along the Forest Cree or Anderson Butte complex to all target shooting is li el to be unsuccessful.

7.3 Make a management commitment to significantly increase law enforcement efforts: n the Medford District, a ver small enforcement unit serves the entire district. The RMP should include a commitment to increasing law enforcement in the Medford District and, if needed, in other BLM districts. While it is sad that this matter has to even be raised in a resource management plan, law enforcement is unfortunatel becoming a very key part of BLM's resource management. Regardless of how this is accomplished a budget commitment for hiring either BLM enforcement officers or contracting for law enforcement is needed. f meaningful polic changes with regard to target shooting are to be successful, a clear commitment to provide aggressive and fre uent law enforcement presence in an area such as the Long ulch uarr and Anderson Butte will be absolutel necessar . This will re uire almost dail law enforcement presence for months or more in order to educate the public through fines and citations about the new rules protecting public safet . This polic change also would benefit from a targeted no pun intended public education campaign such as clearl posting target shooting closures and rules on all BLM roads leading to current unsafe target shooting areas.

7.4 Exploding targets such as Tannerite should be banned completely all year round on all Western Oregon BLM lands without exception: This destructive and disruptive form of recreation is creating resource damage, creating a serious noise impact on both federal and private lands and has caused significant fires in the Western S. ATA is a strong advocate for protecting our natural resources. There are some activities that should be prohibited and binar exploding targets is a clear example of one. While one can hope that the use of exploding targets becomes a passing fad, its passing could be helped along if BLM prohibited and enforced prohibition of its use. The Secretar of the nterior has alread used her authorit to ban the use of tracer bullets and exploding targets on

man Western lands during fire season. ATA urges that that ban be extended to ear round.

7.5 Proposed guidelines for hunters and designated non-motorized trails: rrors or inconsistencies exist on BLM data sheets about whether non-motori ed trails are closed or open to shooting. All non-motori ed trails should be closed to all fire-arm shooting with at least a 1,000 foot buffer on either side of the trail and around trailheads and should be open onl to licensed hunters during hunting season. unting rules should clearl re uire no shooting down trails or in an wa that creates public safet issues. While all trail users should be cautious during hunting season, we recommend that trailheads post signs for hunters prohibiting shooting along the trail itself. ATA expects to post hunting seasons at its trailheads and on its website.

8. The RMP should provide r**ecreational management guidelines for preventing trail damage during wet seasons**: The RMA plan for area trails assumes the soil conditions would be wet during the winter and suggests seasonal closures of the trails to prevent damage from e uestrians and bic clists. We strongl recommend that there not be a blan et seasonal closure during the winter for e uestrians and bic clists. As volunteers we are among the first to complain about an user damage to the trails we wor hard to maintain. The var ing weather conditions, at least in Southern Oregon ma e it difficult to sa with certaint that the trails are too wet all winter for e uestrian or bic cle use. t is not unusual to have extended dr periods mid-winter in our area. We recommend that signs be clearl posted at all trailheads and other strategic points along the trails informing users not to ride when we have had recent significant rain or snow. We would urge them to check BLM's, ATA's or SUTA's website during wet periods and before heading out to use the trail. t would also be useful to establish a penalt for causing tread damage - the cost of hiring a crew to repair the tread. n recent ears the winters have been so dr that all users have been able to use the trails with no concern about tread damage. f damage to the tread becomes a more serious problem then we would consider ma ing a broader prohibition on use during the rain season. For now we would recommend altering the language in the proposed RMP management framewor regarding seasonal trail closures for e uestrians and bic cles to read – " uestrians and bic cle use of trails in winter is subject to posted notices at trailheads and website notifications about tread conditions".

The majorit of serious resource damage caused b motori ed users occurs during periods when soils are wet. nfortunatel that is one of the favorite times for riding single trac motorc cles. ATA would recommend that all O motori ed use be subject to similar restrictions as discussed above with posted notices and website notices to not ride when soils are wet and soft and that penalties would be exacted to cover the cost of repairing the damage.

. **Incomplete information and errors make it difficult to submit useful comments about recreation:** n reviewing the recreation section of the RMP, the related trails and travel management section, related appendices and details provided on BLM's website (the interactive maps and each RMA's management framework) we noticed that key information needed to respond to proposed RMAs was missing and there were significant data errors in tables and inconsistent or conflicting management statements – all of which hamper and complicate the abilit of the public to provide useful comments.

.1 Ke nformation Missing: on-motori ed trails are clearl shown on the various interactive maps and their distances are provided although often incorrectl . For the motori ed trails, no similar maps of either designated or the "existing" - a a unauthori ed user created trails - are provided. Since the 1 5 RMP there has been a significant increase in illegal trail creation b O enthusiasts in the Medford District BLM. BLM published a map of the nown O trails in the Timber Mountain/ ohns Pea area as earl as about 2002. ow the public needs to see where all trails are, their length and other important details in order to provide useful comments about the proposed recreation management areas. Simpl providing the acreage associated with each O designation does not offer a useful picture of where and how extensive current O trails are throughout western Oregon. Without an idea of where all the existing unauthori ed trails are let alone designated trails, it is not possible to ma e meaningful comments or recommendations. n light of the multiple steps necessar to compl with BLM standards when pla ing b the rules in building a hi ing trail, man in the non-motori ed community are outraged by this "oversight". This information gap should be remedied as soon as possible and the information included in the final RMP.

.2 Data errors: While data errors are inevitable in documents of this length, the do create uncertaint about which set of information to react to or how to react. An example of a data error that might throw off a comparison between the no-action alternative and the four alternatives proposed is on pg. 636. Table 3-21 shows that under the 1 5 RMP ROD, the Medford district O designations have 13 ,878 acres of OP lands. n fact the ROD for the 1 5 RMP lists on pg. 11, that 3 1,400 acres are designated open for O use. The data for designated and existing O acreage is also incorrect for Medford District. This provides a false comparison of the no-action alternative and the proposed alternatives and raises uestions about where else similar data ma be in error.

On pg. 450 a statement is made that motori ed trail use is slightl greater than non-motori ed trail use in the southern portion of the region. While we reali e this was a self-reported participation surve , there is not even an O trail use categor included in the table. t is far more useful to compare the demand for non-motori ed recreation in each district n the Medford district, adding up all the non-motori ed demand shows that 60

of all recreation demand is for non-motori ed recreation versus motori ed recreation demand of 31 under this self-reporting surve . The statement under the table provides an incorrect view of recreational demand in Southern Oregon. f such statements help guide recreation management, the need to be corrected.

.3 There needs to be consistenc in management direction for each non-motori ed trail**:** While we cannot comment on other BLM districts, the information on the interactive recreation maps and the associated management framewor data sheets in the Medford District was inconsistent even for the same trail resource and has errors. Specific management guidelines are provided for each trail its trailheads and access trails often have individual RMA framewor data sheets. To simplif the final RMP we would recommend that each trail have one management framewor page. Developing individual framewor pages for each trailhead as well as for the trail appears to be unnecessar , since the same management framewor generall applies for the entire length of the trail, including the access trails. xceptions can be noted on the one framewor sheet. But if BLM continues to use different RMA/SRMA framewor sheets for multiple components of a single trail s stem, we recommend that the specific management guidelines for a given trail be consistent for all related framewor data sheets. The currentl var on man details. Since these documents are to guide a future travel management plan we strongl recommend that the be corrected. While we anticipate that the wide differences in the management guidance are probabl due to data input errors, we wanted to point this out lest the final RMP inadvertentl provide conflicting management guidance for different segments of the same trail.

Part Two: Expand the Wellington Butte LWC (Lands with Wilderness Characteristics). The LWCs in the Applegate Valley should be better protected and designated closed to all motorized use in the final RMP and future Travel Management Plans.

11. The RMP **should support and protect the four LWC's in the Applegate Valley: Wellington Butte, Dakubutede, Burton Ninemile and Round Mountain**: All of these LWCs should be closed entirel to O Off ighwa ehicle use and be protected from post fire logging. Since LWC status provides little protection to retain the integrit of these areas from over ealous managers, the should be given protection e uivalent to a Wilderness Stud Areas WSA . This level of protection would maintain an area's character until Congress can decide what to do with it.

11.1 The Wellington Butte LWC represents a uni ue ecological resource that should not be dissected b roads or motori ed trails. This area provides a e attribute to the

wilderness-li e experience found along the ART. ATA strongl supports designating the entire nchanted Well RMA 13 as closed to all motori ed use since most of this area is comprised of the Wellington LWC. The balance of nchanted Well lies between umbug Cree and Slagle Cree , is ver difficult to access, is ver steep and natural and does not have O trails. This O closure would especiall appl to the Wellington Butte LWC and the Wellington Mine Trail 215 . See attached map .

O s should be removed from the ridge-line on the northeast boundar of the Wellington Butte LWC. This gated road nown locall as the Sundown Trail runs along the top of a large mountain meadow in the LWC. vidence shows O intrusion is inevitable here unless BLM ta es positive steps to close this area. The trail allows OHV's to penetrate the LWC on a user created trail nown as the Little tal Trail b the O communit . This illegal trail is unsustainable must be closed to O use.

Long ulch, the jewel of the Wellington Butte LWC, has never been logged nor had a road put into it. t met the relevance and importance criteria re uirements and should be designated an AC C. Long ulch was nominated as an AC C and made all but the final cut in the WOPR. t had too much timber. This rare and pristine can on hides 323 acres of untouched low elevation old growth scattered up the can on bottom and monitored b resident spotted owls. We believe the 1063 acre Long ulch can on more than meets the criteria used for designating a resource as an AC C as defined on pg. 124. Protection is needed for the important values represented b this last remaining intact remnant of low elevation old growth forest. We recommend BLM review the process and determination den ing Long ulch the AC C status it deserves.

<u>11.2 The Wellington Butte LWC should be expanded to include the entire headwaters of China ulch:</u> BLM should add the connected bloc of approximatel 1400 acres of south facing, brush covered slopes located east of the Wellington Butte LWC to create the largest LWC in southern Oregon at around 7111 acres. This would much better reflect the true situation on the ground, as onl a gravel road behind a loc ed BLM gate separates two significant wild areas. ndeed, the nchanted Well RMA 13 reflects this extension of the Wellington Butte LWC perfectl . To obtain maximum si e the small part of the Bell Forest RMA 108 that lies south of the ridge that separated Forest Cree from the Applegate alle must be included in the LWC.

This addition to expand the Wellington Butte LWC would encompass the BLM lands between the BLM road 38-3-16, the land south of the ridge separating Forest Cree and the main Applegate alle and the private lands on the east side of China ulch Road. That would include parts of TS38S, R3WWM, sections 8, , 15, 16, 21 and 22. There is little timber in this bloc of wilderness, just brush and the user created O trails in and around the upland meadow of China ulch. This area has no roads and definitel has the

necessar characteristics to join the Wellington Butte LWC. t just got overloo ed. ow is the time to correct this deficienc .

11.3 China ulch needs an O closure, rehabilitation and protection China ulch is a relativel small south facing drainage, 3 miles long that starts just 1/2 mile west of Ruch. A recent Kic starter campaign generated b Lu e Ruediger for O monitoring in the Applegate got wide communit support and was ver successful. The campaign raised about 1000 more than re uested and we find the reports are extremel well done. Than s to the local citi ens and Lu e we now have the information and documentation of the damage done to our public lands b unchec ed O abuse. China ulch was identified in the BLM report as one of the areas heavil damaged b O s. Most of the headwaters of China ulch are inside the Wellington Butte LWC including all of the meadow which is seriousl damaged from user created trails. umerous unauthori ed, user-created trac s cross the headwaters meadow with deep, compacted ruts and hill climbs emanate from the meadow all the wa to the ridgeline where possible. See https://www.dropbox.com/sh/ ca6 3hns88e3e/AACBo -T40WSbTtSsa oic8Fa dl 0 O Monitoring Reports, page 23. ATA signed onto the petition being circulated re uesting BLM close the most egregious areas from further O abuse in the Medford BLM District.

11.4 China ulch and the Wellington LWC should remain intact The Medford BLM District sa s the next area the intend to visit for timber extraction in the Middle Applegate is in the Forest Cree , China ulch, umbug Cree , Bishop Cree and Slagle Cree areas. This would include the Wellington LWC and over half of the ART. We expect BLM to propose logging/thinning in the China ulch basin and on the north end of the Wellington LWC near Mt. sabelle. An form of logging in a LWC would diminish its future potential as a wilderness and should be prohibited. An attempt to cut timber from the Wellington Butte LWC would be a public relations nightmare for BLM. Our communit is ver strong when it comes to resisting poorl designed timber sales in inappropriate places. Over a decade ago, BLM failed three times to sell scattered patches of trees from the Wellington Butte area in the Ferris Bugman Timber Sale. Than s to the fierce communit resistance, the Wellington LWC exists toda - somewhat tarnished with fading blue rings on selected trees, still standing in this wild place.

Part Three: Comments Related to the Proposed Applegate Ridge Trail and other non-motorized trails and trailheads in the Applegate Valley.

12. **The following will clarify the ART and the associated connector/access trails and trailheads:** The proposed ART is primaril a ridge-top trail running from rants Pass to ac sonville and the proposed ac -Ash Trail. The s stem of trails ma ing up the ART consists of approximatel 40 miles of main trail and 30 miles of connector trails. The ast

and West Applegate Ridge Trails 128 216 and the orth ART no number ma e up the main trail. Trailheads are usuall proposed where another trail will intersect or at the three primar trail ends. Additionall there will also be trailheads at the lower end of each connector/access trail in the Applegate alle . one of the connector/access trails to the ART and onl three of the sixteen total proposed trailheads associated to the ART were shown in this document.

The map attached , shows the proposed connector trails to the ART the proposed connection across Sterling Cree Road between the ac -Ash Trail and the east end of the ast ART. Some of those connector trails, li e the Wellington Mine Trail and the nchanted Forest/Felton Trails, presentl exist. The BLM interactive map should show all of the ART including the connector trails in the final RMP.

The seven trailheads located on the lower end of connector/access trails to the ART are: China ulch two , umbug Cree , orth Applegate Road, Slagle Cree , Board Shant and reens Cree . Onl one connector trail goes north from the ART towards the Rogue River and that is at reens Cree in osephine Count . The other six all terminate in the Applegate alle .

Four of the identified trailheads along the main ART Bunn Meadows 117, China ulch 122, Long ulch and sabelle 158 alread have been improved with a Title grant procured b ATA and with volunteer help. ATA has the funds to complete the fifth trailhead east end of the ast ART when permitted b BLM. The four remaining trailheads along the ART that are et to be formall developed are located at the north end of the orth ART, the west end of the ART at Cathedral ills, the west end of the ast ART at w 238 and at Board Shant Road.

The West ART 216 is listed as “limited to existing” for OHV use. Since BLM has not addressed the proposed ART and the existing O use along this route, this travel management decision is uite worrisome. Parts of the West ART cannot follow the ridgeline due to the steepness of the terrain and therefore new trail construction is proposed, for example inside the Wellington Butte LWC. But other parts of the ART follow existing trails which sometimes are in conflict with O users. nder no circumstances should O s be allowed to dominate the ridge in uestion. There are lots of miles of other trails available to O s in the immediate area which the can get to easil . on-motori ed trail users cannot traverse the steep hillsides with such ease. i ers have an e ual right to have a ualit experience on that ridge as a man on a motorc cle.

The SRMA s 121 Chic en Foot, 122 China ulch, 158 sabella, and 164 Kane Cree , are all trailheads lumped together under Timber Mtn. Rec. Sites that combine motori ed and

non-motori ed users are not ideal but it can wor . China ulch, Bunn Meadows and sabella are part of the ART and those trailheads were recentl improved with grading, boulders, ios s and picnic tables provided b a Title grant obtained b the ATA. But there is another trailhead on the ART between sabella and China ulch that was overloo ed and is missing from this document. The Long ulch trailhead also had the same improvements in une 2014 and is the launching point for the Wellington Mine Trail RMA 215 also known locally as the "Heart Trail". On National Trails Da 2014, ATA had a celebration-dedication and led a hi e from this location.

The trailhead at Bunny Meadows (SMRA #117) lists its purpose as "access for motori ed trails". This trailhead is also used for non-motori ed recreation. t is a launching point for hi ers of the ART and the primar intersection of the ast ART, the West ART and the orth ART. n addition, about a ear ago ATA placed a ios and two picnic tables at this location.

13. **The RMP needs to use consistent Class II Visual Resources Management Classification**: We recommend that the ART and its connector trails be classified and managed as isual Resources Class . The entire ast ART is an unusuall scenic section passing through high mountain meadows offering incredible views of the Bishop Cree watershed, the main Applegate alle and the distant, sometimes snow covered Sis i ou Mountains and the Red Buttes Wilderness. Setting the RM at Class seems completel inappropriate considering the tremendous scenic beaut along this part of the ART. Additionall , approximatel six miles of the West ART either abuts the Wellington Butte LWC or is proposed to be constructed inside the LWC which is a Class visual resource. As the LWC is much of the view shed from this large section of the ART, it further supports the Class designation. We would recommend that the entire ast ART and the eastern half of the West ART from the nchanted Forest Trail be classified as a isual Resource Management Class . The visual view sheds along these trails are one of their greatest assets.

14. **Wellington Mine Trail (SRMA #215);** should be designated as non-motori ed in all the alternatives. This old 2.5 mile long naturall decommissioning miners road cuts right through the middle of the Wellington Butte LWC and is appropriate for non-motori ed activities onl . The encroaching brush and ban detrition ma es this rutted road nearl unusable if not for the efforts of some to eep it open. Additionall the interactive map does not portra this road accuratel as the route depicted includes the proposed non-motori ed connecter trail to the ART from umbug Cree . Presentl the connector trail does not exist although ATA has explored the route.

15. **Recreation management framework data sheet contains errors regarding trails and travel management guidance:** The framewor sheets have conflicting information about whether the ART – a strictl non-motori ed trail – is designated as closed to O s. While we assume this is simpl a data entr error, for the record, all of the ART and all the associated

connector/access trails not on BLM roads should be designated as "closed" to OHV use without exception.

For the sa e of clarit and to avoid future problems we recommend that ALL information in the SRMAs related to the ART and the associated access trails provide consistent information regarding Trails and Travel Management nformation. This also applies to an future additions to this s stem over the ears. The correct trails and travel management planning guidance should sa :

- Open to hi ing
- Open to e uestrians
- Open to bi ing
- Designate trail area CLOS D for O use

16. ATA **supports all non-motorized recreation opportunities:** We recommend these areas be designated SRMAs Special Recreation Management Areas . The following is a partial list of trails or sites mostl described as RMA xtensive Recreation Management Areas :

101 Anderson Little-Apple
120 Cathedral ills Trail S stem
128 ast Applegate Ridge Trail
137 nchanted Forest Felton Trail
146 ra bac Mtn. Trail
153 idden Cree Trail
15 ac -Ash connector trails
160 ac son Cree
162 ac sonville Woodlands Trail
172 La ton Ditch Trail
182 Mountain of the Rogue
188 Provolt Seed Orchard,
203 Sterling Mine Ditch Trail
215 Wellington Mine Trail
216 West Applegate Ridge Trail
connector trails

224 Woodrat Mtn. liding Sites
103 Armstrong ulch Trailhead T
107 Bear ulch T
117 Bunn Meadows
121 Chic en Foot T
122 China ulch T ,
126 Deming ulch uestrian T
127 Deming ulch T
138 nchanted Forest T
147 ra bac Mtn. T
154 idden Cree T
158 sabella T
161 ac sonville Woodlands T
173 La ton Ditch T
175 Little Applegate T
222 Wolf ap T .

- RMA 105 Bald Wagon – 3124 acres this area ma es up a large part of the proposed Timber Mountain/ ohns Pea O Recreation Area. Most of this area is alread severel damaged b man miles of user created O trails, some approved b BLM and some not. But on the far-east side, between the ridge and w 238 and awa from the O s, ATA proposes to build the orth ART. The final draft RMP should recogni e and show the orth ART as a SRMA.
- The nchanted Well 13 RMA should include all of 37S, R3, section 31 as it includes parts of three gated roads that are currentl used for both motori ed and non-motori ed recreation. The view from sabelle Pea is well worth the hi e. The road 38-

3-5 to the uarr is ver peaceful as it gets little use and offers great views of Medford and the Rogue alle . The sabelle Spring Trail southwest corner of section 31 , should be designated non-motori ed as it is a part of the ART. This trail is narrow and steep and it would be ha ardous to meet a motorc cle here. Road 38-3-6 and the sabelle Spring Trail ma e a big loop around the mountain. All these trails should be SRMA's.

- We note the interactive map for the nchanted Well 13 and the Bell Forest 108 RMAs appear to follow the proposed route of the ART where it will be necessar for the new trail to penetrate the Wellington Butte LWC. The boundar should be on the ridge-line. This mapping error should be corrected.
- RMA 208 Thompson Cantrall – 23,317 acres stated purpose is for multiple use with "O s-dual sport (on improved road)". This area includes the Burton inemile LWC which should be closed to O s. ATA proposes the closed and partiall decommissioned roads 3 -4-23 and 3 -4-10 in the Lad bug can on be designated a non-motori ed trail. The Burton inemile area is ver steep and has not seen the usual influx of O s. ATA feels it is inappropriate to encourage off road O intrusion therefore this area should closed to O use except on designated BLM roads.
- RMA 20 Timber Mountain – 10,160 acres stated purpose is for "mountain biking, hiking, equestrian and camping" and "closed to OHVs" yet this is a large part of the area nown as the Timber Mtn./ ohns Pea O Recreation Area. This area is alread hammered b man miles of user created O trails, some approved b BLM and some not. enerall onl motori ed vehicles will tread here except for the part of the ART on the ridge that separates Forest Cree and the Applegate alle . The proposed orth ART when completed will offer some additional non-motori ed recreation in this area although the northern end is a shared BLM road with O traffic which ma es it somewhat less desirable for hi ers or e uestrian use. The final RMP should reflect the onsite realit and correct this data.
- RMA 223 Woodrat – 3876 acres due to the steep terrain this is not a ver usable O area and as such has seen ver limited use but the data sheet has that troubling statement "limited to designated for OHV. There are no designated trails in this area. It would be better stated to be "limited to existing BLM roads".
- SRMA 188 ATA recommends the Provolt Seed Orchard as an excellent place for man forms of non-motori ed recreation. This location is especiall important because public river access is extremel limited on the Applegate River. Currentl this land is fenced and unavailable for public use. With 2 5 acres, there is a great opportunit to include a non-motori ed loop trail on this land. Other forms of recreation include hi ing, running, swimming, fishing, a a ing, rafting, bird watching, bic cling, camping, picnic ing and more.

17. **ATA recommends forest management policies relating to trails:** ATA recommends a consistent set of forest management guidelines be used for all the non-motori ed trails in the Applegate alle . Our recommended forest management practices within trail RMAs are:

- Closed to firewood cutting.
- Allow fuel treatments or other vegetation modifications if the are compatible with meeting recreation objectives, do not interfere with recreation opportunities, and maintain setting characteristics.

- stablish a no harvest buffer of 250 feet on each side off of centerline for all linear trails.
- otif and consult with communit recreation partners ATA and others on the above fuel treatments or vegetation modifications decisions.

Timber harvesting as proposed under this plan - especiall clear cutting - will not onl adversel impact the ualit of the recreational experience but also cause damage to the trail. SUTA's experience on one section of the SMDT in anuar 2015 during the recent Sterling Sweeper Sale timber harvest demonstrates the need to prohibit timber harvest within the buffer. The 75 foot buffer supposedl in place for the Sterling Sweeper timber sale was inade uate and was not enforced. n light of the economic contribution from non-motori ed recreation, the small amount of timber production that might be lost due to providing a no harvest buffer along trails is well justified to maintain the amenities along the trail. n the case of the SMDT, the ac -Ash trail and the ART in particular, few timber harvest opportunities would be lost considering the site conditions along much of these trails. Since the ART runs along the northern side of the valle , the trails fre uentl run on the south side of the slopes through oa woodlands and scrub, along ridgelines or roads. Some areas have had brush fuel treatments completed or have other characteristics that minimi e conflict with timber harvesting potential. The ast ART passes through ver little timber and the West ART is mostl on south facing brush covered slopes or in the Wellington Butte LWC.

18. **ATA recommends RMA management framework for mining activities:** The proposed ART, the proposed ac -Ash Trail, the SMDT and all the associated connector trails should be closed for all mining activit . n light of the fact that the Sterling Mine Ditch Trail is an especiall important cultural resource, no mining activities at or immediatel near this historic trail should be allowed under an circumstances.

1 . **Suggested changes to RMA framework data sheets - Trail Visitor Activities:** For the ART, the Sterling Mine Ditch and the proposed ac -Ash trails we did not see the explanation for wh non-motori ed trail visitor activities varied even within one trail but for the record, ATA would li e the following trail visitor activities identified for all segments of these trails in case this has a bearing on future Travel Management plans.

- i ing
- uestrian
- Mountain bi ing
- nvironmental ducation
- istorical education
- Birdwatching
- Botanical viewing
- Wildlife viewing
- Da se
- Cross Countr S iing/snowshoeing
- Picnic ing

- Overnight camping

20. **There needs to be management provisions for future trail additions**: The final RMP should contain language that reflects the need to allow for the addition of new access trails or loop trails that improve and expand the amenities offered b existing trails such as the proposed ART, SMDT and the proposed ac -Ash. As with all new trails the would be subject to PA review and BLM trail design and construction re uirements. n the interest of gaining the biggest benefit from future investments in recreational trails, adding features or new segments to existing trails that create more loops and options for users would be useful to list as a desired management approach. ATA recommends that an new trails or trail amenities proposed to BLM that will enhance an existing trail s stem not trigger an amendment to the RMP. There ma be instances where these trails are outside an existing RMA but because the will be subject to full PA review, proposals enhancing existing trail s stems should be encouraged, not discouraged b re uiring a RMP amendment for an thing new. The review process should be sufficient to ensure the trail is in eeping with overall RMP recreation policies.

21. **RMP needs to allow for flexibility in the final route for proposed trails:** The ART is being developed in three or four phases depending on how BLM wants to handle it. The trail route for Phase 1 is nearl final, since the A is currentl being written. Because this trail is still proposed the final RMP needs to show and label the proposed trail corridor on maps as "proposed subject to change in final approval" in case the route changes significantl . We are concerned that if the trail corridor is changed significantl to accommodate some need such as resource surve s or other users or private land owners, the RMP should provide sufficient flexibilit to allow such change without amending the final RMP.

22. **The North ART should be added the final RMP:** The orth ART, which was overloo ed in this document, is an important connection as it connects the ART at the Bunn Meadows T Map 117 to the ac sonville Forest Par ac son Cree , Map 160 . The Medford District BLM received the map detailing the entire ART which clearl shows the orth ART, on anuar 20, 2012 and has referred to this map during multiple meetings with the ATA.

The ac sonville Forest Par has over 18 miles of non-motori ed trails. Therefore it is important the ART and this extensive trail s stem ma e a connection. Avoiding the O trails, the orth ART will re uire approximatel 1.5 mile of new trail construction from the Bunn Meadows T north to connect to the existing BLM road 38-3-26.1. The trail will follow this road north approximatel 2 miles to the proposed trailhead located on 40 acres of BLM land in the southwest corner of TS37S, R3WWM, Section 26, immediatel adjacent to the ac sonville Forest Par trail s stem. ATA strongl recommends the inclusion of this non-motori ed

connector trail in the final RMP. t is a large part of the basic framewor for which this trail s stem was envisioned and designed.

23. **The RMP needs to allow overnight camping as a future possibility for backpacking along the proposed ART, the proposed Jack-Ash Trail, the SMDT and all the associated connector trails:** As these trail s stems connect and expand, bac pac ers will want to camp overnight at some of the beautiful places along these routes. This ind of recreational experience should be permissible and these trails would be available generall ear around.

24. **The final RMA should designate the ART and the associated connector trails a Special Recreation Management area (SRMA) for the entire length (East ART, #128 & West ART, #216 & the North ART):** ATA recommends the RMA management framewor for the entire ART provide the same basic management guidelines discussed previousl in this document regarding permitted uses, trail and travel management, shooting and forest management. We expect the ART will have extensive use based on the explosion of user demand in Southern Oregon. t should be subject to the management guidelines and protections provided to SRMAs.

25. **The Enchanted Timber ERMA (#136) should be reclassified to SRMA:** The high intensit of recreation interest on the along and below the ridge complexes justifies designating this area as a SRMA. Both motori ed and non-motori ed trails crisscross this entire area, people hike extensively all over these ridges, the roads are popular for scenic drives, it's a popular hunting area and much more. We strongl recommend changing the designation to SRMA. owever, as noted elsewhere, the nchanted Well RMA 13 should indicate that the portion covering the Wellington Butte LWC is restricted to non-motori ed recreation onl .

Part Four: Forest Management Recommendations

ATA supports forest management practices that promote forest health, fire resilienc through small diameter fuels reduction and other sustainable forest practices appropriate to a specific region provided it protects and enhances all components of a local ecos stem. We are glad to see the RMP reflects the differences in timber production capabilities of wetter parts of Oregon compared to Southern Oregon's dry forests. However, we are strongly opposed to the significant increases in timber extraction under all the alternatives proposed for Western Oregon and feel those levels are unsustainable. We are also opposed to the reduction in the si e of the riparian areas.

 t is extremel unfortunate that federal payments to Oregon's O C counties are lin ed to the level of logging of our forests. This situation has created a sense of entitlement and dependence on short-term economic pa ments regardless of the long-term costs to those same counties. The economy of Oregon's counties has diversified in recent years as amply shown in recent Oregon's Department of conomics studies. mplo ment and revenues from timber now pla a minor role

compared to other sources of economic growth such as recreation, tourism and healthcare. A 2012 stud b BLM cites 223,000,000 of economic benefit from recreation from O C lands in western Oregon while timber contributed 23,000,000 during the same period. While changing the O C Act is clearl not part of the RMP, BLM can bring its forest management policies up to date to reflect the current needs of Western Oregon and set an example of how forests could be managed to provide multiple values to a local econom .

We strongly recommend the BLM eliminate all consideration of clearcutting in Oregon's forests. The findings of scientific research on the adverse environmental impacts of clearcutting or pseudo clearcutting with few green trees retained ma e it surprising that BLM would even consider this approach again. At least for southern Oregon, our steep slopes, low rainfall relative to other parts of Oregon and the tremendous ecological diversit found in this region raise serious uestions about wh BLM would even propose clearcutting. Such a proposal would elicit a strong reaction from a communit that has long expressed an aversion to clearcutting and other destructive timber practices. We see no new research indicating that clearcutting does not increase the ris of soil erosion on steep slopes, cause wildlife habitat loss for a large number of species and degrade water ualit . As a recreation organi ation, we can sa with certaint that clear-cuts will not enhance an of the forms of the non-motori ed recreation we represent. From the perspective of recreation, it will ta e decades before a clear-cut is once again a forest that might provide some attraction for recreation either directl or as a visual resource from a road or trail. o one now wants to hi e an where near a clearcut.

BLM should retain more canop closure when logging. After BLM brings a forest canop down to 30 , the resurgence of brush in our area is dramatic Within 8 to 10 ears the brush will be thic and 10 feet tall. Man times the fire situation is even worse within a decade of logging than when we started.

Re uire post-harvest management ta e actions to reduce the potential of introducing O trails after fuels treatments or thinning. This is an ongoing problem on public lands in Southern Oregon that should be mitigated with the proper management. The official closure of these areas could ma e a difference provided BLM steps up its law enforcement division.

We want BLM to retain the Applegate Adaptive Management Area. This program was innovative and ver much supported b the communit . We support the Applegate Communit Public Lands ision for our forests see attached .

We are concerned the RMP does not accuratel ta e into account the significance of climate change. t appears BLM did not use the best available science. The forests in Southern Oregon will loo vastl different in two more decades. We could sa goodb e to man , man fir trees, and other species will also feel the dr ing trend. The evidence is with us again this ear as can be seen b the rust color of man d ing trees in our surrounding landscape.

Please no new roads The list of issues associated with roads is extensive. We don't need any more no matter how much easier it is to log. ust tr to ta e care of the existing BLM roads in our inventor . BLM roads are wa behind on maintenance, and ATA is tired of competing with BLM road projects ever time we appl for a Title grant.

In Conclusion:

We hope that BLM will re-order its forest management priorities so that our forests and forest ecos stems thrive and a sustainable level of forest products can be harvested over the long term while other interests such as clean water, wildlife and the diversit of our ecos stems are protected and enhanced, not impaired. ATA would li e a more balanced approach to an S, not one which presents onl the data that justifies the predetermined preference of increasing timber production. Such a management approach will also mean recreational opportunities will continue into the future.

Please note the additional signatures of people who have written in support of ATA's comments.

Than ou.

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Applegate Ridge Trail

Sept 17, 2013
AMP

Cathedral Hills Trails

To Grants Pass

Board Shanty Rd

Murphy

Applegate River

Greens Creek

Savage Creek

Birdseye Creek

R. Fork Foots Creek

L. Fork Foots Creek

Galls Creek

WEST ART

Caris Creek

Slagle Creek

Provolt

Old Blue

BillyMtn

N. Applegate Rd

Humbug Creek

Applegate

Highway 238

Wellington Butte

Mt. Isabelle

CENTER ART

China Gulch

Ruch

NORTH ART

Forest Creek

Bunny Meadows

Bishop Creek

EAST ART

Jacksonville Forest Park

Jacksonville

Jack-Ash Trail

I-5

WORKING DRAFT

Legend

- Applegate Ridge Trail (Approx)
- Connector
- Private - Route Undetermined
- JackAsh Trail (Approx)
- BLM
- Private
- Other Public Lands
- Highways
- Roads
- Streams

N W E S

0 0.5 1 2 Miles

Applegate Trails Association
P.O. Box 105, Jacksonville, OR 97530
www.applegatetrails.org

Jasmine Benjamin

From: fpaulete@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Saturday, August 22, 2015 11:41 AM
To: RMP-Comments@heg-inc.com
Subject: Fwd: BRC Comments on Draft Resource Management Plan (DRMP) Revisions and a Draft Environmental Impact Statement (DEIS) for Western Oregon
Attachments: or BLM BRC final comments.8.21.15.pdf..pdf

---------- Forwarded message ----------
From: **Don Amador** <damador@cwo.com>
Date: Fri, Aug 21, 2015 at 2:17 PM
Subject: BRC Comments on Draft Resource Management Plan (DRMP) Revisions and a Draft Environmental Impact Statement (DEIS) for Western Oregon
To: blm_or_rmpwo_comments@blm.gov

Dear Planning Team,

Please accept the attached comments (PDF) from the BlueRibbon Coalition in regards

to the Draft Resource Management Plan (DRMP) Revisions and a Draft Environmental

Impact Statement (DEIS) for Western Oregon.

Best regards,

Don Amador

BlueRibbon Coalition, Inc.

August 21, 2015

BLM-EIS for Western Oregon
1220 SW. 3rd Avenue
Portland, OR 97204;

RE: Draft Resource Management Plan (DRMP) Revisions and a Draft Environmental Impact Statement (DEIS) for Western Oregon

Dear Planning Team:

Please accept this letter as the official comments of the BlueRibbon Coalition, a national trail-based recreation group, in regards to the Draft Resource Management Plan (DRMP) Revisions and a Draft Environmental Impact Statement (DEIS) for Western Oregon. Please consider these comments in conjunction with the comments of BRC individual and organizational members.

This document shall not supplant the rights of other BRC agents and organizational or individual members from submitting their own comments and the agency should consider and appropriately respond to all comments received.

The DEIS states (Vol. 2 – 635), the BLM manages a complex and well-utilized travel system within western Oregon. The BLM owns and manages approximately 15,000 miles of roads and 395 miles of designated trails within the decision area. The primary purpose for the development and uses of the BLM transportation system are access for resource management, recreation use, and the transportation of forest products. Given the BLM's checkerboard land ownership pattern, the road network has developed in concert with neighboring private timberland owners. The result is a joint-use BLM/private road network. The BLM currently has designated a network of trails and travel management areas within the planning area to address particular concerns and prescribe specific management actions for a defined geographic area. Travel management areas are a tool to frame transportation issues and help delineate and manage travel networks to address specific uses and resource concerns.

The DEIS states (Vol. 2 - 636), that in the future, implementation-level travel planning will follow a site-specific process for selecting a final road and trail network. The BLM will make final route designations for the decision area in a comprehensive, interdisciplinary Travel and Transportation Management Plan scheduled to be completed within five years after the completion of the western Oregon RMPs. The BLM's geo-database will provide information for identifying roads and trails for both motorized and non-motorized recreation activities. The BLM began on-the-ground route inventories across the decision during the summer of 2014. Route inventories will continue throughout 2015. The BLM estimates that

there are approximately 1,000 miles of non-designated user created routes within the decision area. The BLM will develop proposed future route designations through public scoping and NEPA analysis, utilizing the draft route inventories to evaluate amendments to the existing travel network during an implementation-level TMP. *Appendix P* includes interim OHV management guidelines that would be implemented in limited to existing designations until subsequent TMPs are complete.

The DEIS states (Vol. 2 – 639), the BLM manages 63 individual trails and trail systems that total over 395 miles in the western Oregon decision area. Trail-based recreation opportunities within the decision area include trail systems for motorized and non-motorized users, providing a range of available activities across various recreation settings. Popular activities include hiking, mountain biking, horseback riding, and OHV use.

BRC appreciates and supports the BLM's effort in Alternative B (preferred alternative) to provide opportunities to use (including OHV recreation) and develop resources within the planning area while ensuring resource protection.

BRC has reviewed the DEIS including Appendix P where the BLM has developed these interim guidelines at the district level, for Recreation Management Areas/Travel Management Areas that contain travel management opportunities (i.e., Class I, II, III, and IV motorized uses, mechanized, foot, and equestrian travel).

Based on our review, BRC would like to offer the following OHV management concepts or strategies for use in a modified Alternative B.

BRC's Overview of Minimization

It is both legally necessary and pragmatically essential that the agency use its discretionary authority to formally establish a functional yet sustainable network of designated routes. It is likely that various preservationist and anti-access special interests will incant a litany of alleged legal violations designed to prevent adoption of or any meaningful network of vehicle routes in the project area. They are certainly entitled to voice their opinions, but the agency should carefully evaluate any such claims and realize they are often thinly veiled efforts to advance an agenda that includes significantly reducing, if not eliminating, recreational use of vehicles on BLM lands. The agency is empowered to reject these anti-access positions through correct interpretation of the law, as reflected in various recent court decisions.

A favored line of present attack will be through the "minimization criteria." The minimization criteria have been around since 1972 and long received only passing interest, but have acquired teeth largely through recent litigation involving similar regulatory language addressing management of the National Forest System or BLM lands. See, 36 CFR § 212.55(b) (requiring agency to "consider effects...with the objective of minimizing" a variety of factors including damage to soil, watershed, vegetation and other forest resources; harassment of wildlife and significant disruption of wildlife habitats; conflicts between motor vehicle and other uses; and conflicts among different classes of motor vehicle uses). In particular, this renewed interest springs in large part from the decision by a U.S. Magistrate declaring invalid the Salmon Challis NF travel decision. This decision was issued in 2011, and is published as Idaho Conservation League v. Guzman, 766 F.Supp.2d 1056 (D.Idaho 2011). In short, that decision rejected the

Forest Service effort to characterize the minimization criteria as providing broad guidance ("consider with objective of minimizing") and interpreted the language as requiring the agency to show, in its NEPA analysis, how it applied the minimization factors in selecting from decision options for specific routes. There have been several more decisions that have followed similar reasoning, which have only come from federal district courts. The 9th Circuit has on three (3) occasions heard cases involving the OHV "minimization criteria" and has declined to follow the Guzman court's reasoning in two of those cases, with the third still under advisement following argument on November 7, 2013.

Ongoing litigation in the District of Utah offers some insight into BLM's minimization duty. The Court found BLM's effort lacking in the Richfield Field Office RMP/Travel Plan, concluding that BLM simply did not provide enough information to explain how it applied or reached decisions under the minimization criteria. Southern Utah Wilderness Alliance v. Burke, 981 F.Supp.2d 1099 (D. Utah 2013). This discussion relies in part on some of the underlying California BLM history outlined in Ctr. for Biological Diversity v. BLM, 746 F.Supp.2d 1055 (N.D. Cal. 2009). The takeaway from these cases should be that BLM needs to do more and err on the side of being thorough in outlining the methods, analysis and conclusions under the minimization criteria. It is worth noting that in the Richfield litigation the Court very recently issued a remedy order on May 15, 2015, which declined to close any areas or modify BLM route designations, even following the Court's ruling on liability on the minimization claims. This development furthers the view that reviewing courts are requiring BLM to display procedural compliance with the minimization duties, but are hesitant to add a concrete substantive component to the duty as is advocated by preservationist interests.

The agency has broad discretion applying the minimization criteria and is certainly not obligated to restrict motorized access, particularly in response to the subjective complaints or other "evidence" provided by self-interested nonmotorized use advocates. Several decisions reflect this important truth, most notably the two (2) 9th Circuit decisions on the topic, both issued in unpublished memorandum dispositions. See, The Pryors Coalition v. Weldon, 803 F.Supp.2d 1184 (D.Mont. 2011), aff'd, 551 Fed.Appx.426 (9th Cir. 2014); The Wilderness Soc'y v. BLM, 822 F.Supp.2d 933, aff'd, 526 Fed.Appx. 790 (2013). Relatedly, nonmotorized recreationists have no inherent "right" to exclusive use, or any use, that exceeds or trumps those of other recreationists. See, Bicycle Trails Council of Marin v. Babbitt, 82 F.3d 1445 (9th Cir. 1994) (rejecting challenge to NPS management plan restrictions on bike access). The agency cannot be strong-armed into motorized use closures or restrictions, and a well-reasoned and documented balance affording reasonable opportunities to a spectrum of recreational uses will be upheld by the courts. BRC was a party in the Pryors case, and a copy of the Circuit's decision can be viewed at:

http://www.sharetrails.org/uploads/54-1-Memorandum_decision_01.07.14.pdf

Another area of frequent preservationist attack, as a subcategory of the minimization arguments or an independent line of attack, is the assertion of "user conflict" which allegedly requires designation of exclusive nonmotorized recreation areas. Again, these claims have been recently and forcefully rejected by the courts, as was recently punctuated by the decision in Wild Wilderness v. Allen, 12 F.Supp.3d 1309 (D.Or. 2014), in which the court found that "tradeoffs between motorized and nonmotorized users have already occurred and will continue in the future. The record demonstrates that the Forest Service is continuing a long, inclusive process to manage winter recreation use on the Cascade Lakes Highway." The court's decision may be viewed at:

http://www.snowmobilers.org/docs/KAPKA-decision-March-2014.pdf

A more recent decision in the 10th Circuit upheld the Forest Service designation of long-existing motorized access along the Albany Trail against preservationist claims of user conflict. Biodiversity Conservation Alliance v. U.S. Forest Service, 765 F.3d 1264, 1275 (10th Cir. 2014). This motorized designation was upheld, even where the Albany Trail traverses an Inventoried Roadless Area which anti-access advocates regularly seek to imbue with quasi-Wilderness status.

Permitted Events

BRC is concerned about the lack of any substantive discussion in the DEIS regarding a strategy for facilitation of special recreation permitted (SRP) OHV events.

BRC believes said lands may be temporarily closed to other uses during recreation performed under a special recreation permit, such as equestrian endurance rides or motorcycle events. Also, recreational use permits should be issued in an equitable manner for specific recreational uses of BLM-administered lands and related waters as a means to manage visitor use; provide for visitor health, safety, and enjoyment; minimize adverse resource impacts; and provide for private and commercial recreational use according to limits or allocations established through the BLM's planning process.

BRC believes the BLM should provide for more intensive visitor management, resource protection, and facility investment where the public has demonstrated its desire to use lands for outdoor recreation; where Congress has determined that the resources present in the area are of national importance; and where it has been determined that outdoor recreation is a high priority.

Recreation resources should be evaluated on an individual basis as part of activity and project level planning. Such evaluations should consider sensitivity, and impacts on recreation resources in the affected area. Stipulations should be attached as appropriate to ensure the compatibility of projects with recreation management objectives.

BRC believes that forward-looking land managers are recognizing the many advantages of including permitted events in both programmatic and project-level planning projects. Specifically, land managers can reduce staff time required to process permits if the activity is considered within the analysis required for a travel management plan and/or land use plan. Impacts associated with most events are well known and extremely similar to most public use. Supplementing the analysis would not be difficult, and it would provide a public benefit to all recreational trail users, both motorized and non-motorized, to approve routes for permitted events in the programmatic and travel planning process.

BLM's SRP requirements for large or organized group activities,(ATV, jeep, mountain bike, hiking and equestrian club rides) can often "trip" SRP rules requiring a permit. Efforts should be made to streamline the permitting process for mountain bike, equestrian, and OHV events.

Where BLM has permitted off highway motorcycle races and other events in the project area where impacts associated with the events are well-known, previous resource inventory and study (cultural and other resource) pursuant to the event permit should be incorporated into the analysis.

Historic and reoccurring dual-sport motorcycle and 4WD club events would benefit from a streamlined permitting process too.

Recommendation: In a modified Alternative B, develop a process to expedite the approval of competitive and other permitted events that are well-known, historic, and reoccurring. This can be accomplished through known "pre-approved" routes from which an event organizer can choose.

Open "Play" Area Designations

BLM planning must recognize and address the need for the "Open" designation where appropriate. These are areas that have long been used for cross-country OHV activities, with little or no significant adverse environmental impacts, such as day-use play areas or kiddie areas.

Alternative B proposes to eliminate all open area designations. BRC believes the agency should grant itself authority to designate well-defined areas that provide an important "Open" play area experience.

Recommendation: The BLM should identify appropriate open play areas in a Modified Alternative B or grant itself authority to allow continued open play riding at appropriate areas on an interim basis and to designate open play or large staging areas in subsequent travel plans.

Designation of OHV Staging Areas

The designation of camping/staging areas for OHV enthusiasts is considered an import element of travel management planning. BRC is concerned the DRMP/DEIS does not clearly codify designations in the document. BRC believes it is important for the agency to describe a strategy for the designation of staging/camping areas. The agency should grant itself broad authority to designate varying acreages (using historical and anticipated use patterns) from 1 to 20 acres or more for said use.

Recommendation: Include designation strategy for camping/staging areas in travel planning.

Consolidation of Lands

BRC supports the BLM's movement toward the consolidation of BLM-administered lands to benefit the public. To achieve this goal, candidates for land tenure adjustment through disposal, sale, exchange, possible special legislation, or acquisition include parcels that are difficult to manage or that do not have

public access, relatively small parcels adjacent to other federal or state-managed lands, parcels that would increase conservation of natural resources, and parcels that increase access/use of BLM-administered lands.

In the West, checkerboard or matrix lands can impede the BLM's effort to provide connectivity for federal maintained roads and trails. Consolidation can improve both motorized and non-motorized recreational opportunities particularly where the public was prohibited from legal egress and ingress by non-federal land owners.

Recommendation: Review consolidation opportunities to enhance recreational opportunity.

Additional TMR Strategies

If not already part of the current plan, BRC believes the agency should develop these travel management strategies at the programmatic level. Here are several additional concepts that should be included in the DRMP/DEIS process:

Roads to Trails – Reclassify higher standard roads to lower standard roads. Manage appropriate lower standard roads as motorized trails.

Conversion of Roads to Trails - Convert "roads-to-single track trails" or "roads-to-motorized trails for ATVs/SxS/jeep-type vehicles." This is a planning tool to help the agency achieve its budget objectives while still providing a substantive and high quality recreational route network.

Single Track Trails – Many planning efforts in Western States have resulted in the loss of many, if not most, of our historic single-track motorcycle trails. Historic and legal motorized single-track opportunities such as enduro trails, old pack-mule/mining or pioneer trails have been eliminated from consideration due to time constraints.

BRC believes that a strategy should be developed to replace the lost single- track experience. Retention or enhancement of high quality single-track dirt-bike trails is no different than keeping or enhancing "quiet" single-track hiking, equestrian, and mountain-bike trails.

Wet Weather Closures – Any travel management-based wet weather closure strategy should allow for native surfaced trails and roads to be open when soil conditions/lack-of-rainfall permits. If a wet weather closure is needed, the implementing directive should be for the shortest period of time rather than a longer time period. In NEPA, it is always easier to extend a short closure versus repealing a longer closure.

Mitigate Trail Impacts from Non-Recreation Projects - The impacts from non-recreation projects often include obliteration of the trail or removal of water control structures such as rolling dips and catch basins. Those soil erosion measures can often cost $15,000 to $20,000/mile to install (or replace). Other

sections such as at-risk species, water quality, and ecosystems have the same recreation mitigation deficiencies. BRC recommends that "trail mitigation" guidelines be added to relevant non-recreation projects.

Review Non-Motorized Land Designations – BRC believes the BLM should review current non-Wilderness areas that could be reclassified, reopened, or have cherry-stemmed routes designated for connectivity and/or touring opportunities.

CONCLUSION

BRC and its partners appreciate the agency's effort to engage the public and we look forward to working with the BLM in future travel planning.

Respectfully submitted,

Don

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From: fpaulete@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Saturday, August 22, 2015 11:57 AM
To: RMP-Comments@heg-inc.com
Subject: Fwd: Camp, O. BLM DEIS NSA Comments 150821
Attachments: Camp, O. BLM DEIS NSA Comments 150821.wpd; Camp, O. BLM DEIS NSA Comments 150821.pdf

---------- Forwarded message ----------
From: **RMPs_WesternOregon, BLM_OR** <blm_or_rmps_westernoregon@blm.gov>
Date: Sat, Aug 22, 2015 at 8:28 AM
Subject: Fwd: Camp, O. BLM DEIS NSA Comments 150821
To: BLM_OR RMPWO_Comments <blm_or_rmpwo_comments@blm.gov>

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Before including address, phone number, email-address, or any other personal identifying information in your comments, be advised that your entire comment, including personal identifying information, may be made publicly available at any time. If you wish us to withhold your personal information you must state this prominently at the beginning of your comment. While individuals may request that the BLM withhold personal identifying information from public view, the BLM cannot guarantee it will be able to do so.

You have received this email because you have previously submitted a request to be on the mailing list, stakeholder list, submitted a comment, feedback or survey response and/or indicated interest in the RMPs for Western Oregon.

---------- Forwarded message ----------
From: **Mary Camp** <mary@campforest.com>
Date: Fri, Aug 21, 2015 at 11:47 PM
Subject: Camp, O. BLM DEIS NSA Comments 150821
To: blm_or_rmps_westernoregon@blm.gov

I inadvertently sent the non-final version of Orville Camp's comments with DCVNRCA comments a half hour ago.
Please accept these comments in their place. The only difference is the cover page and the last page.

Orville works in Word Perfect, so they come out better in their original formatting. The attached documents are identical one is pdf, the other word perfect.
I sent pdf in case you couldn't open wordperfect one.

We sent the word perfect printout attached document by mail today with our comments.

Thank you,
Mary Camp
541=597-4313

U.S. Department of the Interior
Bureau of Land Management

Draft Resource Management Plan/ Environmental Impact Statement

Western Oregon

August 21, 2015

Comments and request to include the *Natural Selection Alternative* to be included as an option to be analyzed in detail in the FEIS for the revised Management Plan for Western Oregon.

By
Orville Camp

[150821_12:07]
[Camp, O. BLM DEIS NSA Comments 150821.wpd]

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INTRODUCTION

Two Relationship Alternatives

There are two basic kinds of relationships used for achieving human needs: 1) The natural selection relationships that species on Earth including humans evolved from and are sustained by, and 2) the managed relationships that BLM is using that causes mass species extinctions. Natural selection relationships is the system that sustained species on Earth for billions of years, the BLM managed relationship system is causing mass species extinctions likely to include humans. BLM decision makers eliminated the natural selection relationship alternative from being assessed without data to support that decision.

VOLUME I / CHAPTER 2 / ALTERNATIVES (Vol I, Pg 79)

> ***"Natural Selection Alternative"* - Harvest Only Dead and Dying Trees"**
> "This alternative would remove only "naturally selected dead and dying trees, conditioned upon meeting the needs of other species." Timber harvesting of such trees would be accomplished with small equipment from a network of narrow roads. The BLM eliminated this alternative from detailed analysis because it would not meet the purpose and need and the basic policy objectives described in the guidance for development of all action alternatives, in that it would not make a substantial and meaningful contribution to proving a sustained yield of timber. As explained in the Purpose and Need for Action in Chapter 1, O&C Act states that "[t]he annual productive capacity for such lands shall be determined and declared ..." And that volume of timber "... shall be sold annually," To limit the harvest of timber to trees that die or are dying would not reflect the annual productive capacity for such lands. Furthermore, the timber thus would not support sustained-yield timber production because the annual volume for such sale would fluctuate unpredictably based on annual conditions. Therefore, limiting the harvest of timber to trees that die or are dying would not be consistent withe the requirements of the O&C Act and would not respond to the purpose for the action."

Incorrect BLM Premises

1. *"The BLM eliminated this alternative from detailed analysis because it would not meet the purpose and need and the basic policy objectives described in the guidance for development of all action alternatives, in that it would not make a substantial and meaningful contribution to proving a sustained yield of timber."*

   The NSA is based on the same relationships that life on Earth evolved from and is currently sustained by. It is the only alternative that can meet BLM's long term Purpose and Need goals. It is also the only alternative that would provide a sustainable yield of timber. An environmental assessment of how much photosynthesis (relative to timber production) occurs under each alternative, demonstrates why the Natural Selection Alternative is a huge winner over other

BLM alternatives.

2. *"To limit the harvest of timber to trees that die or are dying would not reflect the annual productive capacity for such lands."*

   This incorrect premise shows a lack of understanding of how natural community ecosystems produce dead trees. You can't have dead trees without living trees, you can't have living trees without photosynthesis and you can't have either when natural community ecosystems that produce them are destroyed as all other BLM alternatives would do. Every tree needs a certain amount and kind of habitat area. When a tree habitat shrinks because of growth and competition, weaker members die and become dead trees to make room for that growth. Dead trees are key indicators of tree production capacity at any given point in time. The NSA limits harvest of timber to dead and dying trees because it can generate better wood, has hugely less impact on habitats than green tree removal and it retains optimal photosynthesis and tree productivity.

3. *"Furthermore, the timber thus would not support sustained-yield timber production because the annual volume for such sale would fluctuate unpredictably based on annual conditions."*

   This statement doesn't support BLM's preferred alternatives. Being able to predict no timber sale volume for decades because of BLM preferred alternative practices, is a powerful reason to reject them. The NSA retains natural community ecosystems, photosynthesis and timber production across the landscape. The average volume of timber production across the landscape under the NSA is hugely greater than BLM's preferred alternatives because it doesn't produce areas with little or no production. This BLM statement supports the NSA.

4. *"Therefore, limiting the harvest of timber to trees that die or are dying would not be consistent with the requirements of the O&C Act and would not respond to the purpose for the action."*

   Since the NSA produces more timber over the long term than other alternatives because it has no down time, it makes sense that "limiting the harvest of timber to trees that die or are dying" is consistent with the requirements of the O&C Act. This BLM assessment appears to be totally incorrect.

   Eliminating natural community ecosystems that sustain trees and humans, as all other BLM alternatives do, "would not respond to the purpose for the action".

Mark Brown, BLM-RMP Project Manager

"An EIS must rigorously explore and objectively evaluate all reasonable alternatives. The BLM

may eliminate from detailed analysis alternatives that are not reasonable. As explained in the BLM NEPA Handbook (USDI BLM 2008, p. 52), an alternative need not be analyzed in detail if:
** It does not meet the purpose and need (see Chapter 1 for the purpose and need);*

**It is technically or economically infeasible;*

** It is inconsistent with the basic policy objectives for the management of the area (see Chapter 1)*

for the guidance for the formulation of alternatives);

** Its implementation is remote or speculative;*

** It is substantially similar to an alternative being considered in detail; or*

** It would have substantially similar effects to an alternative being considered in detail.*

The BLM considered the following alternatives but eliminated them from detailed analysis, as explained below.

Specifically, on Page 79, "**The BLM eliminated this alternative from detailed analysis because it would not meet the purpose and need and the basic policy objectives described in the guidance for development of all action alternatives, in that it would not make a substantial and meaningful contribution to providing a sustained yield of timber**."

This statement of why BLM eliminated the NSA from detailed analysis lacks data to support that decision. A credible BLM EIS would evaluate the effects of human activities on tree photosynthesis. There's an abundance of evidence that suggests the NSA produces a hugely greater sustained yield of timber than any BLM decision maker preferred alternative. There is no basic life-sustaining Purpose or Need that can't be met under the NSA.

BLM RMP EIS "FORESTLAND" PREMISES

The U.S. Department of the Interior Bureau of Land Management Draft Resource Management Plan/ Environmental Impact Statement for Western Oregon, is based on an incorrect premise: Vol II, Glossary Pg 885 states: "**Forestland –** Land at least 10 percent stocked by forest trees of any size, and including land that formerly had such tree cover and capable of redeveloping forested conditions".

The BLM "forestland" definition, established a **Glossary** of terms premised on managing for "land stocked by forest trees". These definitions disregard the interconnected relationships of millions of species in and around trees that sustain trees and us. Managing for "forestland" status, destroys habitats, reduces wildlife populations and causes mass extinctions.

The BLM Glossary is not a scientifically credible premise for achieving sustainable relationships. BLM decision makers,.are not making sustainable relationship decisions. Converting natural community ecosystems into land at least 10 percent

stocked with trees, may meet BLM decision maker "forested conditions" objectives but no one knows how to manage tree stands in sustainable ways. This BLM definition of "forestland" is a prescription for one forest management catastrophe after another. This BLM forestland definition may serve wood processing industry short term profit driven agendas, but they're causing ever-increasing mass species extinctions..

The NSA is biosphere centered, it relies on the same natural selection relationships that sustained natural community ecosystems, optimal photosynthesis, and tree productivity for millions of years. Humans evolved from and are sustained by this same relationship process. No one at BLM has demonstrated how they will manage to sustain land stocked with trees without the thousands of interconnected species in and around trees that sustain trees and us.

The BLM has huge forest tree management costs, the NSA has none. The BLM externalizes collateral damage costs to human communities for profits, the NSA externalizes collateral benefits to human communities. BLM management practices decrease land and other resource values, the NSA increases them.

RELATIONSHIP PREMISES

Natural Selection Relationships

The human body is like the biosphere in that the parts sustain the whole that sustain the parts. Humans are part of the biosphere, not the center of it, and the NSA accepts that. NSA terminology is centered around natural selection relationships that sustain biosphere subset natural community ecosystems, photosynthesis and species trait-environment compatibility across the landscape. The NSA is premised on evidence in every living organism that shows why BLM decision makers can't manage to achieve forestland status that's sustainable.

BLM GLOSSARY PREMISES

Terminology

The BLM "forest tree" centered Glossary carries management baggage inappropriate for NSA use. Conveying accurate natural selection relationship information requires different terminology. A paradigm shift in language, terminology and communication skills is essential for seeing, understanding and relating to natural community ecosystems in sustainable ways. For example: "**Forestland** – land at least 10 percent stocked by forest trees of any size, and including land that formerly had such tree cover and capable of redeveloping forested conditions."

This "forestland" definition is the outcome of destroying natural community ecosystems, claiming their land, and stocking it with "forest tree species" for the timber industry. It omits more than 99% of the species in and around trees that sustain trees and humans. This "forestland" definition establishes an incorrect

premise for the BLM RMP Glossary and DEIS.

Conservation strategy – "A management plan for a species, group of species, or ecosystem that prescribes standards and guidelines that if implemented provide a high likelihood that the species, groups of species, or ecosystem, with its full complement of species and processes, will continue to exist well distributed throughout a planning area."

The NSA implements a biosphere landscape species conservation relationship strategy, no BLM decision maker selected alternative does.

Cooperating agency – "A tribe or Federal, State, or local government agency that assists the lead federal agency in developing an environmental assessment or environmental impact statement. These can be any agency with jurisdiction by law or special expertise for proposals covered by NEPA (40 CFR 1501.6)."

The Deer Creek Association submitted the Natural Selection Alternative, hugely supported by people and communities around the world. It would seem BLM decision makers would be seeking advice from people on the ground that have been overcoming virtually every major social and environmental issue.

Critical habitat – "Under the Endangered Species Act, critical habitat is defined as: (1) the specific areas within the geographic area occupied by a federally listed species on which are found physical and biological features essential to the conservation of the species, and that may require special management considerations or protection; and (2) specific areas outside the geographic area occupied by a listed species, when it is determined that such areas are essential for the conservation of the species."

Habitats are critical to sustaining species trait-environment compatibilities, the NSA recognizes it and BLM-RMP decision makers are ignoring it. Since the NSA retains natural communities across the landscape, it doesn't require "special management considerations".

Cumulative effect – "The impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time."

BLM-RMP alternatives disregard the cumulative effects to the biosphere that sustains species including humans. The NSA, by design, automatically evaluates each and every on ground action from a cumulative effect.

Desired future condition – "For rangeland vegetation, the condition of rangeland resources on a landscape scale that meet management objectives. It is based on ecological, social, and economic considerations during the land planning process. It is usually expressed as ecological status or management status of vegetation (species composition, habitat diversity, and age and size class of species) and desired soil qualities (soil cover, erosion, and compaction). In a general context, desired
future condition is a portrayal of the land or resource conditions that are expected to result if goals and objectives are fully achieved."

BLM decision maker desired future conditions should include natural selection relationships that sustain natural community ecosystems, optimal photosynthesis and species trait-

environment compatibility, but it doesn't. Instead it promotes desired future crop management objectives. BLM decision maker desired future conditions destroy habitats, reduce wildlife populations and increase species extinctions.

Detrimental soil disturbance – "The limit where the innate soil properties change and the inherent capacity to sustain growth of vegetation is reduced. Detrimental soil disturbance generally represents unacceptable levels of erosion, loss of organic matter, soil compaction, soil heating, or soil displacement."

This BLM premise disregards topsoil community health and its ability to recycle energy to "sustain growth of vegetation" through photosynthesis.

Environmental Impact Statement (EIS) – "A detailed statement prepared by the responsible official in which a major federal action that significantly affects the quality of the human environment is described, alternatives to the proposed action are provided, and effects are analyzed."

This BLM-RMP EIS is "a major federal action", but it fails to identify managed relationships as "a major federal action that significantly affects the quality of the human environment". The NSA automatically identifies actions that significantly affects the quality of the human environment" through natural selection relationship outcome assessments for each and every on ground action. The BLM-RMP EIS failed to recognize, much less analyze, the NSA for its outstanding human environment standards.

Even-aged management – "A *silvicultural system*, which creates forest stands that are primarily of a single age or very narrow range of ages. See *even-aged stand*."

Even-aged management converts natural community ecosystems into "forest stands" that destroy habitats, reduce wildlife populations and cause species extinctions. The NSA doesn't use even-aged management.

Even-aged stand – "A *stand* composed of a single distinct *age class* managed as a discrete operational unit. See *even-aged management*."

Natural community ecosystems can have even-aged trees, but they depend on millions of other species in and around trees to sustain them. Managing for even-aged stands means converting natural community ecosystems into land stocked with tree crops. The NSA doesn't use "even-aged stand" management because it isn't cumulatively sustainable.

Group selection harvest – "In an uneven-aged system, trees are harvested in small groups. Synonymous with "patch cut." See *selection cutting."*

Group selection cutting destroys natural community ecosystems, photosynthesis and productivity wherever they're practiced. Group selection harvest produces multiple-stage clearcuts. The NSA doesn't use group selection harvest.

Harvest land base – "Those lands on which the determination and declaration of the Annual Productive Capacity / Allowable Sale Quantity (ASQ) is based. The ASQ is based on implementing a set of specific timber management activities and assumes those practices will be repeated over time and results in a sustainable harvest level."

BLM ASQ's are not based on natural community ecosystem realities. Dead trees are accurate indicators of natural community ecosystem timber productivity at any given point in time. Annual Productive Capacity under the NSA, depends upon how many dead trees

occur each year. Since dead trees can sustain more life than living trees and do so for as long a period of time, dead tree removal under the NSA is always conditional on meeting other species needs. NSA ASQ, is equal to the quantity of natural community ecosystem produced dead trees, minus those needed for sustaining the millions of species in and around trees that sustain them and us.

Harvesting – "The process of cutting and removing of merchantable trees from a forested area."

The definition of "forested area" and "harvesting" disregards natural community ecosystem products, values and uses. The NSA doesn't manage for forested areas.

Off-Highway Vehicle (OHV) – "Any motorized track or wheeled vehicle designed for cross-country travel over any type of natural terrain."

The NSA doesn't allow off-road vehicle use because of high adverse environmental impacts. Vehicles used for the NSA are required to use predesignated transportation systems.

Outstandingly Remarkable Values – "Values among those listed in Section 1(b) of the Wild and Scenic Rivers Act of 1968: "scenic, recreational, geological, fish and wildlife, historical, cultural, or other similar values...." Other similar values that may be considered include ecological, biological, or botanical."

The NSA considers natural community ecosystems to have the most "outstandingly remarkable values" across the landscape, and it retains them. Virtually every significant scenic, recreational, and biological value is retained on an ongoing basis. None of BLM's decision maker selected alternatives would retain, much less sustain outstandingly remarkable values across the landscape.

Pile burning – "Activity fuels, once piled by machine or by hand, are burned in place."

Pile burning pollutes air, destroys topsoil and costs lots of money. The NSA doesn't do pile burning, instead it uses lop and scatter methods to sustain topsoil communities that plant communities depend on for sustaining them.

Planned ignition – "The intentional initiation of a wildland fire by hand-held, mechanical or aerial device where the distance and timing between ignition lines or points and the sequence of igniting them is determined by environmental conditions (weather, fuel, topography), firing technique, and other factors which influence fire behavior and fire effects."

The NSA doesn't use planned ignition because humans cannot mimic natural fire, it costs lots of money, and there are huge externalized collateral damage costs to both natural and human communities.

Pre-commercial thinning (PCT) – "The practice of reducing the density of trees within a stand by manual cutting, girdling, or herbicides to maintain or promote growth increases of desirable tree species. The trees killed are generally not *merchantable* and not removed from the treated area."

Pre-commercial thinning costs a lot of money "to maintain or promote growth increases of desirable tree species", degrades natural community ecosystem habitats, decreases wildlife populations and causes species extinctions. The NSA doesn't do pre-commercial thinning.

Preferred Alternative – "Term used in the Council on Environmental Quality's implementing regulations of the National Environmental Policy Act (NEPA) and BLM planning regulations. Guidance from the Council on Environmental Quality explains that the preferred alternative is the alternative that the agency believes would fulfill its statutory mission and responsibilities, considering economic, environmental, technical, and other factors."

The NSA should be the preferred alternative for meeting virtually every BLM decision maker stated Purpose and Need. There is no way any BLM decision maker alternative would begin to match the NSA in fulfilling human needs on a sustainable basis.

Prescribed fire – "A wildland fire originating from a planned ignition to meet specific objectives identified in a written, approved, prescribed fire plan for which NEPA requirements have been met prior to ignition. See *planned ignition*."

Prescribed fire doesn't mimic Nature, if it did Nature would have already done it and there would be no need for humans to do it. Prescribed fire doesn't meet natural community ecosystem needs, it isn't needed, it costs time and money and it externalizes huge collateral damage costs to natural and human communities that aren't recovered.

Regeneration – "(n.) Tree seedlings or saplings existing in a stand. (v.) The process of re-establishing trees on a tract of forest land where harvest or some natural event has removed existing trees."

Natural community ecosystems regenerate whatever and whenever it is needed. BLM decision makers are incorrectly depending on humans to establish trees on land that originally included natural community ecosystems with trees. Humans can't mimic natural regeneration processes.

Regeneration harvest(ing) – "Any removal of trees intended to assist regeneration already present or make regeneration possible."

The NSA has no regeneration costs because it leaves regeneration to natural community ecosystems and natural selection relationship processes.

Resource Management Plan (RMP) – "A land use plan as prescribed by the Federal Land Policy and Management Act that establishes, for a given area of land, land-use allocations, management objectives, and management direction."

The NSA meets or exceeds virtually every major social, environmental and economic legal issue. It also meets or exceeds virtually every BLM-RMP EIS identified Purpose and Need. No other alternative listed has the capability to meet even a small portion of these Purpose and Need objectives. We need an environmental assessment of the premises that BLM decision makers used for making this "land-use allocation, management objectives, and management direction". We need an environmental assessment of the premises used for this Resource Management Plan Glossary.

Riparian area – "A geographic area containing an aquatic ecosystem and adjacent upland areas that directly affect it."

The NSA treats watersheds as riparian areas because adjacent upland areas directly affect aquatic systems.

Rotation [age] – "The planned number of years between the establishment of an even-aged or two-aged forest *stand* and its *regeneration harvest*."

Rotation age is relevant to human created forest stands and regeneration harvest. Rotation age is not relevant to the NSA because it depends on natural selection relationships to determine when each and every organism's life ends.

Selection harvest(ing) – "A method of uneven-aged management involving the harvesting of single trees from stands (single-tree selection) or in groups up to four (4) acres in size (group selection) without harvesting the entire stand at any one time."

The term selection harvesting allows uneven-aged harvesting. The NSA doesn't use group selection harvesting because it degrades and destroys natural community ecosystem habitats, photosynthesis, species trait-environment compatibilities, wildlife populations and it causes species extinctions.

Shelterwood harvest(ing) – "A *regeneration* harvest method under an *even-aged* silvicultural system. With this method a portion of the mature stand is retained as a source of protection during the *regeneration* period. The retained trees are removed when protection requirements have been met."

Shelterwood harvesting is a name used to justify the destruction of whole natural community ecosystems. A tree or small group of trees may be left to facilitate regeneration and then later harvesting it, another way of destroying natural community ecosystems in multi steps. The NSA doesn't use shelterwood harvesting, doesn't harvest in ways that require regeneration and it leaves reproduction to natural selection relationship processes.

Silvicultural system – "A planned series of treatments for tending, harvesting, and reestablishing a *stand*. The system name is based on the number of *age classes* managed within a *stand*, e.g., *even-aged*, *two-aged*,
uneven-aged)."

The NSA recognizes that natural community ecosystems are self, defining, designing, organizing, regulating and sustaining systems. Silvicultural systems force people to provide other species needs, defend from their enemies and wage ongoing unwinnable wars against other species we depend on for sustaining us. The NSA doesn't manage, or seek to reestablish stands.

Silvicultural practices (or treatments or system) – "The set of field techniques and general methods used to modify and manage a forest stand over time to meet desires conditions and objectives. Examples include reforestation, precommercial thinning, and commercial thinning."

The NSA doesn't modify or manage for forest stands. The NSA doesn't do precommercial thinning, commercial thinning or reforestation. All of these forest management practices are hugely detrimental to sustaining natural community ecosystem habitats, photosynthesis and species trait-environment compatibility. The NSA allows natural selection relationship processes to sustain natural community ecosystems.

Silvicultural prescription – "A planned series of treatments designed to change current stand structure to one that meets management goals."

The NSA doesn't do a planned series of treatments designed to either create or change stand structures. The NSA, instead, retains natural community ecosystem habitats for optimal productivity with no stand structure management costs.

Special status species – "Plant or animal species in any of the following categories:

Threatened or endangered species. Proposed threatened or endangered species. Candidate species."

BLM decision maker alternatives, would destroy natural community ecosystem habitats and increase special status species, but the NSA would do just the opposite.

Stand conversion – "Converting one type of forest *stand* to another type. Typically refers to changing areas dominated by hardwood species to one dominated by conifer species."

The NSA doesn't convert natural community ecosystems into stands, or change which species has dominance. No one knows how to change natural community ecosystem dominant species in cumulatively sustainable ways, nor can they afford the costs of trying.

Sustained yield – "The board foot volume of timber that a forest can produce in perpetuity at a given intensity of management; the achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources without impairment of the productivity of the land."

BLM decision makers incorrectly defined sustained yield in terms of timber from managed tree stands, not from natural selection relationships that sustain natural community ecosystem sustained yields. No one knows how to manage "forest tree species" in ways that equal natural selection relationships that sustain natural community ecosystems ability to achieve sustained yields. "The board foot volume of timber that a forest can produce in perpetuity", is in no way equal to that of a natural community ecosystem, nor do they produce a sustained yield. Forestland stocked with forest tree species don't produce sustained yields. The NSA depends on natural community ecosystems for "sustained yield".

Thinning – "A silvicultural treatment made to reduce the density of trees primarily to improve tree/stand growth and vigor, and/or recover potential mortality of trees, generally for commodity use. See *precommercial thinning*, *commercial thinning*, *variable-density thinning*."

Thinning shifts photosynthesis from trees cut down to the remaining trees, but it also destroys natural community ecosystem habitats, reduces wildlife populations, causes species extinctions and produces less valuable wood. The NSA achieves optimal growth and vigor through natural selection relationships that sustain natural community ecosystems, photosynthesis and species trait-environment compatibility.

Two-aged stand – "A stand composed of two (2) distinct age classes intimately mixed and/or in aggregated groups producing a two-story structure managed as a discrete operational unit."

The NSA evaluates natural community ecosystems from species trait-environment compatibility relative to structural environments and the biosphere as a whole. The NSA doesn't manage for a "discrete operational unit".

Uneven-aged management – "A *silvicultural system* that simultaneously maintains high degree of tall forest cover, recurring *regeneration* of desirable species, and the orderly growth and development of trees through a range of diameter or *age classes*. *Harvesting* methods that develop and maintain uneven-aged stands are *single-tree selection*, *group selection*, and *thinning*."

The NSA doesn't manage for uneven-aged stands because no one knows how to do it in cumulatively sustainable ways. The NSA depends on natural selection relationships to sustain natural community ecosystems that sustain humans.

Variable-density thinning (VDT) – "A *thinning* method where two or more densities of retained trees are used to promote *stand* heterogeneity through the development of *multi-layered canopies*. Provision of conditions conducive to the initiation and growth of *regeneration* is usually an objective of VDT."

This incorrectly assumes that humans know better about how to manage natural community ecosystems than other species. It also demonstrates a lack of understanding of how life is sustained on Earth. Managing natural community ecosystems for the "development of multi-layered canopies" doesn't achieve optimal stand growth or wildlife populations. The NSA doesn't use variable-density thinning.

Visual Resource Management (VRM) – "The inventory and planning actions to identify values and establish objectives for managing those values and the management actions to achieve those objectives."

The NSA retains optimal visual resource objectives because there is no better way to achieve them than through natural selection relationships.

Wilderness characteristics – "These attributes include the area's size, its apparent naturalness, and outstanding opportunities for solitude or a primitive and unconfined type of recreation. They may also include supplemental values. Lands with wilderness characteristics are those lands that have been inventoried and determined by the BLM to contain wilderness characteristics as defined in section 2(c) of the Wilderness Act."

Forest management practices don't sustain wilderness characteristics, the NSA does.

Wildfire risk – "The likelihood and susceptibility for a wildfire to adversely affect human values (e.g. life, property, ecological functions and resources, etc.)."

Converting natural late successional communities into earlier ones makes environments hugely more susceptible to fire. Forest management practices, is a leading cause of increased wildfire risks because they convert natural late successional communities with low wildfire risks, into earlier successional communities with high wildfire risks. The NSA retains lowest wildfire risks because it retains natural late successional communities, BLM decision maker alternatives don't.

Wildland Urban Interface (WUI) – "The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetation fuels."

The NSA retains highest level of wildland wilfire urban interface protection.

MY BIOGRAPHY

I started implementing natural selection relationships on the ground in 1967. In 1978, my success at implementing natural selection relationships was acknowledged by the Illinois Valley Soil and Water Conservation District when they awarding me the "Farmer of the Year" award for outstanding woodland management. In 1979, I was named "Tree Farmer of the Year" for Josephine and Jackson Counties. In 1981, at the request of numerous forest land owners, I started setting up transportation systems to accommodate the full range of natural selection relationship values and uses. In 1984, I wrote my first book on how to apply natural selection relationships, The Forest Farmer's Handbook, A Guide to Natural Selection Forest Management. I later wrote

chapters in Restoration Forestry, an international Guide to Sustainable Forestry Practices, Clearcut (solution chapter), International Journal of Ecoforestry, and Ecoforestry, The Art and Science of Sustainable Forest Use. In 2005, I authored the Natural Selection Alternative for the BLM 7,400 acre South Deer Landscape Management Project in Selma, Oregon. I'm working on another book, Ecostry: The Art of Seeing through Nature's Eyes , The Natural Selection Alternative to Forestry Management.

ECOSTRY

Ecostry is based on the same natural selection relationships that species evolved from, the same ones that sustain life on Earth today.

Managed relationship terminology doesn't work for conveying natural selection relationship information.

The name, ecostry, evolved out of a sequence of previously failed attempts to use variations of farming and forestry names such as *forest farming*, *natural selection forest management* and *ecoforestry*. The problem with trying to uses farming and forestry terminology to convey natural selection relationships is, they carry managed relationship baggage.

In 1995 I finally figured out how to make a term work for describing natural selection relationships. I extracted 'forest' out of the term, ecoforestry, that I had coined for the Ecoforestry Institute in 1992 and transformed it into ecostry. This successfully avoided having people think natural selection relationships is some form of farming or forestry managed relationships. Now people are beginning to understand what I'm talking about when I discuss natural selection relationships.

In 1991, I started a new book. In 1995 I had a name for it, *ECOSTRY, The Art of Seeing Through Nature's Eyes; The Natural Selection Alternative to Forestry Managed Relationships*. In this book I define ecostry.

> **Ecostry –** The philosophy, science, art and occupation of seeing, understanding and relating to natural community ecosystems through natural selection relationships that sustain photosynthesis and species trait-environment compatibility.

"The subtitle, *Natural Selection Alternative*, was used to describe the 2005 BLM South Deer Landscape Management Project plan submitted by the Deer Creek Association. This is the same alternative that BLM RMP decision makers are now rejecting without data to support it..

CAMP ECOSTERY

Wilderness Characteristics
Camp Ecostery, is a place where natural selection relationships have been observed, learned, practiced and taught since 1967. Visitors are challenged to identify where trees have been harvested and few do. Camp Ecostery provides visitors wilderness experiences.

Community Service
I've been conducting tours and workshops on natural selection relationships at Camp Ecostery since 1975. In 1978, my success at implementing natural selection relationships was acknowledged by the Illinois Valley Soil & Water Conservation District, that awarded me the "Farmer of the Year" award for outstanding woodland management. In 1979, I was "Tree Farmer of the Year" for both Josephine and Jackson Counties. In 1980, I became president of the newly formed Illinois Valley Forest Farm Association, a position I held until 1983. At the same time, in 1981, I served as President of the Jackson-Josephine Forest Farm Association. I have continued being active in organizations.

Transportation System Efficient
Forestry transportation systems serve forestry tree stand management practices, but they don't generally work for ecostry because they're not designed for all products, values and uses. Furthermore, forestry serving transportation systems are costly to build, maintain and they're ongoing liabilities. It soon became apparent to me that a different kind of transportation system was needed for ecostry. I abandoned my forestry road system and replaced it with one that served natural selection relationships. Other woodland owners took notice and requested that I do the same thing for them. Several years later I submitted to their requests. I went on to design and construct more than 200 miles of roads on more than 30 places in the U.S. and Canada so that other woodland owners could practice ecostry.

Optimizes Wood Production
Ecostry transportation systems serve virtually every BLM-RMP Purpose and Need and it does it far better than any BLM decision maker Alternative could, including optimal wood production. The NSA produces far more wood on a sustainable annual basis than any green tree focused BLM decision maker proposed alternative. The reason is obvious, extracting only dead and dying trees retains optimal tree photosynthesis and wood production.

Evidence Supported
Forty eight years of on the ground natural selection relationship practice evidence, suggests the NSA is the only Alternative that would, or could, achieve the BLM-RMP Purpose and Need. The NSA has on the ground success far exceeding any BLM DEIS Alternative.

TIMBER PRODUCING REALITIES

Energy Transformations
Life depends on sun energy. Photosynthesis transforms sun energy into plant living energy systems, such as trees. Each peculiar plant species sustains a peculiar array of animal living energy systems. Animal living energy systems sustain an array of other animal living. Organism death converts living energy into forms that sustain topsoil communities. Topsoil communities transform energy into topsoil that sustain plants. Plant roots enable plants to recycle topsoil energy back into plant living energy systems. No human can manage to perform natural community ecosystem species functions. Everything is connected and ecostry's natural selection relationships keep it that way, but BLM-RMP DEIS Alternatives don't..

Four Life-Sustaining Relationship Essentials
1. **Organism trait diversity**, inherited and learned, is essential to enabling species to adapt to ever-changing environments.
2. **Organisms are tested for trait-environment compatibility**.
3. **Recombining and reproducing compatible traits**, is essential to sustaining future generations.
4. **Adapting to ever-changing environments**, is achieved through natural selection relationships.

   No one knows how to manage organism relationships in sustainable ways. BLM decision maker Alternatives would manage to destroy diversity, habitats that sustain trait-environment compatibility, reproduction of organisms with trait-environment compatibility, and the ability of species to adapt to ever-changing environments through natural selection relationships. BLM decision maker Alternatives are prescriptions for increased mass species extinctions. Ecostry's Natural Selection Alternative is a sustainable solution to BLM decision maker Alternatives.

Five Natural Community Ecosystem Structural Layers
1. **Canopy layer**, defines up to four layers below.
2. **Understory layer**
3. **Shrub layer**
4. **Herb layer**
5. **Topsoil layer**

   Ecostry retains structures, BLM decision maker Alternatives would not.

Ten Species Trait-Environment Compatibility Ingredients
1. **Photosynthesis**
2. **Climate**
3. **Water**
4. **Air**
5. **Fire**

6. **Food**
7. **Shelter**
8. **Habitat**
9. **Reproduction**
10. **Living Energy Transformations**

Each Peculiar Layer has a peculiar set of ingredients that determine which peculiar organism traits are compatible with that peculiar environment. No one knows how to manage natural community ecosystem structural layers for species trait-environment compatibility. Natural selection relationships enable species to adapt and sustain trait-environment compatibility with each peculiar layer. BLM decision maker Alternatives would manage to render habitats incompatible with species traits and cause species extinctions, the NSA does not..

Succession
Everything is constantly changing the environment. Succession occurs when one community of species changes the environment enough to make it more compatible with another community of species. Early successional communities establish environments more compatible for later successional community species. BLM decision maker Alternatives would manage to cause late successional communities to revert to earlier ones.

Regression
Regression occurs when natural community ecosystems are destroyed, such as by forest management practices. Forest management practices cause natural community ecosystem environments to become more compatible with earlier successional community species traits. Forest management is the leading cause of community regression. BLM decision maker Alternatives don't manage to retain, sustain or restore natural late successional community ecosystem environments.

Restoration
Only the species that defined, designed, organized, regulated and sustained a natural community ecosystem environment can restore them. BLM decision maker Alternatives would manage to natural community ecosystems and convert them into forest tree stands, none would manage to retain them. Species extinctions makes restoration impossible.

BLM Decision Maker Management Contradictions
Natural community ecosystems are self, defined, designed, organized, regulated, regenerated and sustained by their community, but BLM's "forestland" is defined, designed, organized, regulated and managed by humans. Natural community ecosystems sustain wildlife populations and species, but BLM decision maker Alternatives would manage to destroy habitats, inflict wildlife population declines and cause species extinctions.

AGRICULTURE

"Forest Tree" crops

Forestry is the division of agriculture that serves land and resource conquering wood processing industries. Agriculture manages to destroy natural community ecosystems, claim their land and enslave species in the form of land stocked with crops (including trees). BLM decision maker Alternatives would continue to manage for "forest tree" crops that destroy habitats, reduce wildlife populations and cause mass species extinctions.

Human Relationships Change

Agriculture forces humans to shift from natural selection relationships that sustain species, to managing for species necessities and defending from enemies so that human needs can be met. Agriculture and forestry force people to excercise dominion over every living thing, but not how to manage for other species needs in sustainable ways. BLM decision makers are incorrectly assuming they can manage for dominion over every living thing in sustainable ways.

Humans Wage War Against Nature

When other species try to reclaim their land, humans wage an ongoing unwinnable war against them. The human war against other species can't be won because we depend on them to sustain us. If we win our war against other species humans will go extinct. BLM decision maker Alternatives would destroy habitats, inflict ever-decreasing wildlife populations and increase species extinctions, the NSA would not.

LAND OWNERSHIPS

Forced Trading

Enslaving other species, through agriculture and forestry, replaces natural selection relationship freedoms with land ownership "rights" that force humans to trade for necessities that other people own. Land ownerships obstruct natural selection relationship freedoms that sustain natural community ecosystems, photosynthesis and species trait-environment compatibility. Ecostry reconnects natural community ecosystems and reestablishes natural selection relationships that sustain species. BLM decision maker Alternatives would further disconnect humans from having natural selection relationships that sustain life.

TRANSPORTATION SYSTEMS

Accessing Necessities

Accessing traded necessities requires transportation systems. Agriculture and forestry transportation systems serve lands managed for crops that aren't cumulatively sustainable. Agriculture and forestry roads not only serve management practices that destroy natural communities, they also become ongoing liabilities to natural community

ecosystems.

A sustainable transportation system, if there is any such thing, must serve natural selection relationships that sustain natural community ecosystems, photosynthesis and species trait-environment compatibility across the landscape. Ecostry relies on a special transportation system that retains natural community ecosystem structures and functions that provide a full range of products, values and uses.

Ecostry serving transportation systems are hugely less adversely impacting than forestry serving transportation systems.

RELATIONSHIPS

From Natural Selection to Managed Relationships

Species, including humans, evolved and are sustained through natural selection relationships. Managed relationships are causing mass species extinctions. Humans are the first and only species to implement relationships that cause mass species extinctions. BLM decision maker Alternatives would manage to further destroy habitats, reduce species populations and cause increased species extinctions.

BLM Rejects Life-Sustaining Solutions

BLM decision maker Alternatives, are variations of agriculture/forestry management practices that cause wildlife population declines and mass species extinctions. The NSA that doesn't cause mass species extinctions. BLM decision makers need to assess Alternatives from a biosphere life-sustaining perspective.

Restoration

The only way BLM will be able to restore sustainable relationships is through the same natural selection relationships we evolved from, the same relationships that the NSA is based on. There is a lack of credible evidence to suggest sustainable relationships can be achieved other than through natural selection relationships. The NSA is the only BLM Alternative that has the potential to restore sustainable human relationships.

Solutions

All BLM alternatives would manage to destroy habitats, decrease wildlife populations and increase species extinctions. The NSA does just the opposite, its natural selection relationships retain natural community ecosystem habitats, wildlife populations and species. The NSA is also the only alternative that provides a sustainable predictable supply of timber and countless other natural resources. The NSA is the only alternative that sustains natural community ecosystems across the landscape, essential to producing a sustainable predictable supply of timber, and countless other life-sustaining resources.

Evidence Needed

BLM rejected the NSA without credible data to support that decision. This BLM decision could bring about the final destruction of Oregon's natural community ecosystems and leave humans looking at how to survive without other species.

ECOSTRY ASSESSES BLM-RMP EIS

Alternatives Without Solutions

All BLM decision maker Alternatives rely on managed relationships. Ignoring the NSA with a sustainable solution, does not allow for a sustainable option. Establishing a set of Glossary definitions and premises based on the definition of "forestland", renders the BLM-RMP EIS assessment arbitrary and capricious. Since all biosphere subset natural community ecosystem species are sustained through natural selection relationships, BLM decision makers should have assessed Oregon's natural resources from biosphere natural community ecosystem relationship perspectives.

Externalized Costs

All BLM alternatives would externalize management costs to natural and human communities. These externalized costs should be evaluated from a replacement cost perspective, but they're not even assessed. Ecostry assesses natural selection relationship costs from externalized effects on species populations, especially secondary consumers such as spotted owls and salmon. BLM decision makers failed to assess any of their Alternatives for externalized collateral damage costs to Nature or humans.

CIVILIZATION

It's Our Culture

Civilization is rooted in agriculture. The U.S. Department of the Interior Bureau of Land Managements Draft Resource Management Plan/Environmental Impact Statement is premised on agriculture and forestry management practices. Agriculture and forestry destroy wildlife habitats, cause wildlife population decreases and increase mass species extinctions likely to include humans.

Agriculture

Agriculture and forestry management practices are causing Earth's first and only species-caused mass extinctions. Human survival necessitates restoration of natural selection relationships that sustain natural community ecosystems, photosynthesis and species trait-environment compatibility. All BLM decision maker Alternatives would further contribute to Earth's biosphere destruction.

It Can't Be Fixed

Civilization agriculture and forestry management practices can't be fixed because they never worked. The U.S. Department of the Interior Bureau of Land Management's Draft Resource Management Plan/Environmental Impact Statement is rooted in

agriculture and forestry management practices that aren't cumulatively sustainable. BLM can't use the same agriculture and forestry management practices that got us into this mess and expect to get us out of it.

CATASTROPHIC EFFECTS

Mass Species Extinctions

Scientists claim Earth has lost more than 50% of its wildlife populations within the past four decades. I've personally observed at least a 50% decline in wildlife populations in my Deer Creek Watershed area within the last five years. This huge population decline appears to be the result of rapidly increasing forest management practices. Increased forest management practices include such things as larger and more plentiful clearcuts under a variety of other names, herbicide applications on a broad scale, and liquidation of wildlife habitats under such names as fuel and fire hazard reduction.

Camp Ecostery Environment

The Camp Ecostery environment is being threatened by forest management practices that cause species depended on for sustaining it to go extinct. No amount of money can buy back the externalized collateral damage costs being inflicted by forest management practices. BLM decision maker Alternatives would hugely increase the threat to Camp Ecostery because they would destroy habitats, reduce populations and cause increased species extinctions.

Deadly Chemicals

In 2011, I was poisoned by nearby forest management herbicide applications. My liver enzymes suddenly skyrocketed from normal to extreme. It took 3 years to get my liver back to normal, but I still have other persistent problems with no apparent cure. These are but a few of the ever growing sickness problems being caused by forest management practices.

Operator Accountability Denied

Oregon and Federal laws protect forestland Operators from being held accountable for externalized collateral damage costs for profits, but they don't protect natural community ecosystems or the people who depend on them. The sole purpose of the State and Federal authorities seems to be that of shielding and protecting those who destroy habitats, cause wildlife population declines and species extinctions. Civilization laws aren't allowing victims to hold law-makers and authorities personally accountable for externalized collateral damage costs. We're not holding authorities personally accountable for externalized collateral damage costs and that problem continues to worsen

We have at Camp Ecostery, for example, two separate spring drinking water sources for two separate family dwellings. One drinking water source was completely destroyed by Oregon Department of Forestry approved forestry management practices, the other

has not recovered, nor is it likely to. Both springs provide water for coho salmon habitats. Water runoff from one spring killed fish and vegetation. The Oregon Department of Forestry shielded and protected the operators, not the victims. When an Operator files for an operations permit and the Oregon Department of Forestry Forester signs off on it, it shifts liability and accountability to the State of Oregon that has none. The Department does little if anything to protect wildlife, including spotted owls. The BLM is performing the same catastrophic role with public lands. Accountability is essential to human survival and the NSA achieves it.

ECOSTRY SOLUTIONS

Relationships

"Ecostry is the philospophy, science, art and occupation of seeing understanding and relating to natural community ecosystem environments through natural selection relationships that sustain biosphere photosynthesis and species trait–environment compatibility." The U.S. Department of the Interior Bureau of Land Managements Draft Resource Management Plan/Environmental Impact Statement doesn't do this.

Transportation

Ecostry's "Natural Selection Alternative", has been demonstrating sustainable relationship solutions since 1967, special concentric-contour-looping-access systems are are allowing it to achieve a full range of values and uses. Many people recognize this fact, BLM RMP decision makers need to.

Purpose & Need

Ecostry achieves U.S. Department of the Interior Bureau of Land Managements Draft Resource Management Plan/Environmental Impact Statement Purpose and Need, BLM needs to acknowledge this and make it happen.

Sincerely,

Orville Camp, as an individual, and
natural-community-ecosystem advisor for
Deer Creek Valley Natural Resources Conservation Association
2100 Thompson Creek Road
Selma, OR 97538
541-507-4313

Lirain Urreiztieta

From:	fpaulete@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent:	Saturday, August 22, 2015 11:57 AM
To:	RMP-Comments@heg-inc.com
Subject:	Fwd: Comments on BLM Draft RMP/EIS for Western Oregon
Attachments:	BLM EIS NSA Solutions 150820.pdf; DCVNRCA BLM RMP DEIS Comments Part 1 & CovLtb.pdf; DCVNRCA BLM RMP DEIS Comments Part 1 & CovLt.Ammended.pdf; DCA BLM RMP DEIS Comments Pt 2-NSA 150821.pdf; DCA BLM RMP DEIS Comments Part 3.pdf

---------- Forwarded message ----------
From: **RMPs_WesternOregon, BLM_OR** <blm_or_rmps_westernoregon@blm.gov>
Date: Sat, Aug 22, 2015 at 8:28 AM
Subject: Fwd: Comments on BLM Draft RMP/EIS for Western Oregon
To: BLM_OR RMPWO_Comments <blm_or_rmpwo_comments@blm.gov>

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Resource Management Plans for Western Oregon
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web: www.blm.gov/or/plans/rmpswesternoregon

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Before including address, phone number, email-address, or any other personal identifying information in your comments, be advised that your entire comment, including personal identifying information, may be made publicly available at any time. If you wish us to withhold your personal information you must state this prominently at the beginning of your comment. While individuals may request that the BLM withhold personal identifying information from public view, the BLM cannot guarantee it will be able to do so.

You have received this email because you have previously submitted a request to be on the mailing list, stakeholder list, submitted a comment, feedback or survey response and/or indicated interest in the RMPs for Western Oregon.

---------- Forwarded message ----------
From: **Mary Camp** <mary@campforest.com>
Date: Fri, Aug 21, 2015 at 11:11 PM

Subject: Comments on BLM Draft RMP/EIS for Western Oregon
To: blm_or_rmps_westernoregon@blm.gov

Attached please find our comments for the Draft RMP/EIS for Western Oregon. They include

Part 1 & Cover Letter (printout sent by mail) and attached

Part 1 & Cover Letter Amended attached only

Part 2 (printout sent by mail) and attached

Part 3 (printout sent by mail) and attached

Attached also are comments by Orville Camp in behalf of himself and in behalf of DCVNRCA (printout sent by mail) and attached

The following are being submitted with these comments (sent by mail):

1. **DVD** (DCVNRCA Comments for BLM Draft RMP EIS WO); and Printed Index of Documents included on the DVD

2. **DVD**: Niemi, Ernie. 2015 *Oregon's Forest Economy* (video of presentation)

Also available on line (Rogue Valley Community Television):
http://vp.telvue.com/preview?id=T01550&video=238025

3. **DVD**: *Call of Life* film

4. **Book**: DellaSala, Dominick A. and Hanson, Chad T. 2015 The Ecological Importance of Mixed-Severity Fires: Natures Phoenix

5. Siskiyou Field Institute **Catalogue and Rack Card**

I accidentally omitted the book intended to be included in the package that I sent today with our comments and other enclosures. The book (DellaSala, Dominick A. and Hanson, Chad T. 2015, The Ecological Importance of Mixed-Severity Fires: Natures Phoenix) will be sent by overnight mail on Monday.

I have attached two versions of part 1 of our comments (the first version is the one sent in the packet by mail today, and the other is an amended version). Part 1 was completed after the DVD was made, so did not get included on the DVD of documents I sent in the mail.

Thank you,

Mary Camp

Deer Creek Valley Natural Resources Conservation Association (DCA)

Selma, OR 97538

541-597-4313

U.S. Department of the Interior
Bureau of Land Management

Draft Resource Management Plan/ Environmental Impact Statement

Western Oregon

August 20, 2015

COMMENTS

By
Orville Camp

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[BLM EIS NSA Revolution w Solutions 150818.wpd]

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INTRODUCTION

Two Relationship Alternatives

There are two basic kinds of relationships used for achieving human needs: 1) The natural selection relationships that species on Earth including humans evolved from and are sustained by, and 2) the managed relationships that BLM is using that causes mass species extinctions. Natural selection relationships is the system that sustained species on Earth for billions of years, the BLM managed relationship system is causing mass species extinctions likely to include humans. BLM decision makers eliminated the natural selection relationship alternative from being assessed without data to support that decision.

VOLUME I / CHAPTER 2 / ALTERNATIVES (Vol I, Pg 79)

> ***"Natural Selection Alternative"* - Harvest Only Dead and Dying Trees"**
> "This alternative would remove only "naturally selected dead and dying trees, conditioned upon meeting the needs of other species." Timber harvesting of such trees would be accomplished with small equipment from a network of narrow roads. The BLM eliminated this alternative from detailed analysis because it would not meet the purpose and need and the basic policy objectives described in the guidance for development of all action alternatives, in that it would not make a substantial and meaningful contribution to proving a sustained yield of timber. As explained in the Purpose and Need for Action in Chapter 1, O&C Act states that "[t]he annual productive capacity for such lands shall be determined and declared ..." And that volume of timber "... shall be sold annually," To limit the harvest of timber to trees that die or are dying would not reflect the annual productive capacity for such lands. Furthermore, the timber thus would not support sustained-yield timber production because the annual volume for such sale would fluctuate unpredictably based on annual conditions. Therefore, limiting the harvest of timber to trees that die or are dying would not be consistent withe the requirements of the O&C Act and would not respond to the purpose for the action."

Incorrect BLM Premises

1. *"The BLM eliminated this alternative from detailed analysis because it would not meet the purpose and need and the basic policy objectives described in the guidance for development of all action alternatives, in that it would not make a substantial and meaningful contribution to proving a sustained yield of timber."*

   The NSA is based on the same relationships that life on Earth evolved from and is currently sustained by. It is the only alternative that can meet BLM's long term Purpose and Need goals. It is also the only alternative that would provide a sustainable yield of timber. An environmental assessment of how much photosynthesis (relative to timber production) occurs under each alternative, demonstrates why the Natural Selection Alternative is a huge winner over other

BLM alternatives.

2. *"To limit the harvest of timber to trees that die or are dying would not reflect the annual productive capacity for such lands."*

   This incorrect premise shows a lack of understanding of how natural community ecosystems produce dead trees. You can't have dead trees without living trees, you can't have living trees without photosynthesis and you can't have either when natural community ecosystems that produce them are destroyed as all other BLM alternatives would do. Every tree needs a certain amount and kind of habitat area. When a tree habitat shrinks because of growth and competition, weaker members die and become dead trees to make room for that growth. Dead trees are key indicators of tree production capacity at any given point in time. The NSA limits harvest of timber to dead and dying trees because it can generate better wood, has hugely less impact on habitats than green tree removal and it retains optimal photosynthesis and tree productivity.

3. *"Furthermore, the timber thus would not support sustained-yield timber production because the annual volume for such sale would fluctuate unpredictably based on annual conditions."*

   This statement doesn't support BLM's preferred alternatives. Being able to predict no timber sale volume for decades because of BLM preferred alternative practices, is a powerful reason to reject them. The NSA retains natural community ecosystems, photosynthesis and timber production across the landscape. The average volume of timber production across the landscape under the NSA is hugely greater than BLM's preferred alternatives because it doesn't produce areas with little or no production. This BLM statement supports the NSA.

4. *"Therefore, limiting the harvest of timber to trees that die or are dying would not be consistent with the requirements of the O&C Act and would not respond to the purpose for the action."*

   Since the NSA produces more timber over the long term than other alternatives because it has no down time, it makes sense that "limiting the harvest of timber to trees that die or are dying" is consistent with the requirements of the O&C Act. This BLM assessment appears to be totally incorrect.

   Eliminating natural community ecosystems that sustain trees and humans, as all other BLM alternatives do, "would not respond to the purpose for the action".

Mark Brown, BLM-RMP Project Manager

"An EIS must rigorously explore and objectively evaluate all reasonable alternatives. The BLM

may eliminate from detailed analysis alternatives that are not reasonable. As explained in the BLM NEPA Handbook (USDI BLM 2008, p. 52), an alternative need not be analyzed in detail if:
** It does not meet the purpose and need (see Chapter 1 for the purpose and need);*

**It is technically or economically infeasible;*

** It is inconsistent with the basic policy objectives for the management of the area (see Chapter 1)*

for the guidance for the formulation of alternatives);

** Its implementation is remote or speculative;*

** It is substantially similar to an alternative being considered in detail; or*

** It would have substantially similar effects to an alternative being considered in detail.*

The BLM considered the following alternatives but eliminated them from detailed analysis, as explained below.

Specifically, on Page 79, "**The BLM eliminated this alternative from detailed analysis because it would not meet the purpose and need and the basic policy objectives described in the guidance for development of all action alternatives, in that it would not make a substantial and meaningful contribution to providing a sustained yield of timber**."

This statement of why BLM eliminated the NSA from detailed analysis lacks data to support that decision. A credible BLM EIS would evaluate the effects of human activities on tree photosynthesis. There's an abundance of evidence that suggests the NSA produces a hugely greater sustained yield of timber than any BLM decision maker preferred alternative. There is no basic life-sustaining Purpose or Need that can't be met under the NSA.

BLM RMP EIS "FORESTLAND" PREMISES

The U.S. Department of the Interior Bureau of Land Management Draft Resource Management Plan/ Environmental Impact Statement for Western Oregon, is based on an incorrect premise: Vol II, Glossary Pg 885 states: "**Forestland –** Land at least 10 percent stocked by forest trees of any size, and including land that formerly had such tree cover and capable of redeveloping forested conditions".

The BLM "forestland" definition, established a **Glossary** of terms premised on managing for "land stocked by forest trees". These definitions disregard the interconnected relationships of millions of species in and around trees that sustain trees and us. Managing for "forestland" status, destroys habitats, reduces wildlife populations and causes mass extinctions.

The BLM Glossary is not a scientifically credible premise for achieving sustainable relationships. BLM decision makers,.are not making sustainable relationship decisions. Converting natural community ecosystems into land at least 10 percent

stocked with trees, may meet BLM decision maker "forested conditions" objectives but no one knows how to manage tree stands in sustainable ways. This BLM definition of "forestland" is a prescription for one forest management catastrophe after another. This BLM forestland definition may serve wood processing industry short term profit driven agendas, but they're causing ever-increasing mass species extinctions..

The NSA is biosphere centered, it relies on the same natural selection relationships that sustained natural community ecosystems, optimal photosynthesis, and tree productivity for millions of years. Humans evolved from and are sustained by this same relationship process. No one at BLM has demonstrated how they will manage to sustain land stocked with trees without the thousands of interconnected species in and around trees that sustain trees and us.

The BLM has huge forest tree management costs, the NSA has none. The BLM externalizes collateral damage costs to human communities for profits, the NSA externalizes collateral benefits to human communities. BLM management practices decrease land and other resource values, the NSA increases them.

RELATIONSHIP PREMISES

Natural Selection Relationships

The human body is like the biosphere in that the parts sustain the whole that sustain the parts. Humans are part of the biosphere, not the center of it, and the NSA accepts that. NSA terminology is centered around natural selection relationships that sustain biosphere subset natural community ecosystems, photosynthesis and species trait-environment compatibility across the landscape. The NSA is premised on evidence in every living organism that shows why BLM decision makers can't manage to achieve forestland status that's sustainable.

BLM GLOSSARY PREMISES

Terminology

The BLM "forest tree" centered Glossary carries management baggage inappropriate for NSA use. Conveying accurate natural selection relationship information requires different terminology. A paradigm shift in language, terminology and communication skills is essential for seeing, understanding and relating to natural community ecosystems in sustainable ways. For example: "**Forestland** – land at least 10 percent stocked by forest trees of any size, and including land that formerly had such tree cover and capable of redeveloping forested conditions."

This "forestland" definition is the outcome of destroying natural community ecosystems, claiming their land, and stocking it with "forest tree species" for the timber industry. It omits more than 99% of the species in and around trees that sustain trees and humans. This "forestland" definition establishes an incorrect

premise for the BLM RMP Glossary and DEIS.

Conservation strategy – "A management plan for a species, group of species, or ecosystem that prescribes standards and guidelines that if implemented provide a high likelihood that the species, groups of species, or ecosystem, with its full complement of species and processes, will continue to exist well distributed throughout a planning area."

The NSA implements a biosphere landscape species conservation relationship strategy, no BLM decision maker selected alternative does.

Cooperating agency – "A tribe or Federal, State, or local government agency that assists the lead federal agency in developing an environmental assessment or environmental impact statement. These can be any agency with jurisdiction by law or special expertise for proposals covered by NEPA (40 CFR 1501.6)."

The Deer Creek Association submitted the Natural Selection Alternative, hugely supported by people and communities around the world. It would seem BLM decision makers would be seeking advice from people on the ground that have been overcoming virtually every major social and environmental issue.

Critical habitat – "Under the Endangered Species Act, critical habitat is defined as: (1) the specific areas within the geographic area occupied by a federally listed species on which are found physical and biological features essential to the conservation of the species, and that may require special management considerations or protection; and (2) specific areas outside the geographic area occupied by a listed species, when it is determined that such areas are essential for the conservation of the species."

Habitats are critical to sustaining species trait-environment compatibilities, the NSA recognizes it and BLM-RMP decision makers are ignoring it. Since the NSA retains natural communities across the landscape, it doesn't require "special management considerations".

Cumulative effect – "The impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time."

BLM-RMP alternatives disregard the cumulative effects to the biosphere that sustains species including humans. The NSA, by design, automatically evaluates each and every on ground action from a cumulative effect.

Desired future condition – "For rangeland vegetation, the condition of rangeland resources on a landscape scale that meet management objectives. It is based on ecological, social, and economic considerations during the land planning process. It is usually expressed as ecological status or management status of vegetation (species composition, habitat diversity, and age and size class of species) and desired soil

qualities (soil cover, erosion, and compaction). In a general context, desired future condition is a portrayal of the land or resource conditions that are expected to result if goals and objectives are fully achieved."

BLM decision maker desired future conditions should include natural selection relationships that sustain natural community ecosystems, optimal photosynthesis and species trait-environment compatibility, but it doesn't. Instead it promotes desired future crop management objectives. BLM decision maker desired future conditions destroy habitats, reduce wildlife populations and increase species extinctions.

Detrimental soil disturbance – "The limit where the innate soil properties change and the inherent capacity to sustain growth of vegetation is reduced. Detrimental soil disturbance generally represents unacceptable levels of erosion, loss of organic matter, soil compaction, soil heating, or soil displacement."

This BLM premise disregards topsoil community health and its ability to recycle energy to "sustain growth of vegetation" through photosynthesis.

Environmental Impact Statement (EIS) – "A detailed statement prepared by the responsible official in which a major federal action that significantly affects the quality of the human environment is described, alternatives to the proposed action are provided, and effects are analyzed."

This BLM-RMP EIS is "a major federal action", but it fails to identify managed relationships as "a major federal action that significantly affects the quality of the human environment". The NSA automatically identifies actions that significantly affects the quality of the human environment" through natural selection relationship outcome assessments for each and every on ground action. The BLM-RMP EIS failed to recognize, much less analyze, the NSA for its outstanding human environment standards.

Even-aged management – "A *silvicultural system*, which creates forest stands that are primarily of a single age or very narrow range of ages. See *even-aged stand*."

Even-aged management converts natural community ecosystems into "forest stands" that destroy habitats, reduce wildlife populations and cause species extinctions. The NSA doesn't use even-aged management.

Even-aged stand – "A *stand* composed of a single distinct *age class* managed as a discrete operational unit. See *even-aged management*."

Natural community ecosystems can have even-aged trees, but they depend on millions of other species in and around trees to sustain them. Managing for even-aged stands means converting natural community ecosystems into land stocked with tree crops. The NSA doesn't use "even-aged stand" management because it isn't cumulatively sustainable.

Group selection harvest – "In an uneven-aged system, trees are harvested in small

groups. Synonymous with "patch cut." See *selection cutting."*

Group selection cutting destroys natural community ecosystems, photosynthesis and productivity wherever they're practiced. Group selection harvest produces multiple-stage clearcuts. The NSA doesn't use group selection harvest.

Harvest land base – "Those lands on which the determination and declaration of the Annual Productive Capacity / Allowable Sale Quantity (ASQ) is based. The ASQ is based on implementing a set of specific timber management activities and assumes those practices will be repeated over time and results in a sustainable harvest level."

BLM ASQ's are not based on natural community ecosystem realities. Dead trees are accurate indicators of natural community ecosystem timber productivity at any given point in time. Annual Productive Capacity under the NSA, depends upon how many dead trees occur each year. Since dead trees can sustain more life than living trees and do so for as long a period of time, dead tree removal under the NSA is always conditional on meeting other species needs. NSA ASQ, is equal to the quantity of natural community ecosystem produced dead trees, minus those needed for sustaining the millions of species in and around trees that sustain them and us.

Harvesting – "The process of cutting and removing of merchantable trees from a forested area."

The definition of "forested area" and "harvesting" disregards natural community ecosystem products, values and uses. The NSA doesn't manage for forested areas.

Off-Highway Vehicle (OHV) – "Any motorized track or wheeled vehicle designed for cross-country travel over any type of natural terrain."

The NSA doesn't allow off-road vehicle use because of high adverse environmental impacts. Vehicles used for the NSA are required to use predesignated transportation systems.

Outstandingly Remarkable Values – "Values among those listed in Section 1(b) of the Wild and Scenic Rivers Act of 1968: "scenic, recreational, geological, fish and wildlife, historical, cultural, or other similar values...." Other similar values that may be considered include ecological, biological, or botanical."

The NSA considers natural community ecosystems to have the most "outstandingly remarkable values" across the landscape, and it retains them. Virtually every significant scenic, recreational, and biological value is retained on an ongoing basis. None of BLM's decision maker selected alternatives would retain, much less sustain outstandingly remarkable values across the landscape.

Pile burning – "Activity fuels, once piled by machine or by hand, are burned in place."

Pile burning pollutes air, destroys topsoil and costs lots of money. The NSA doesn't do pile burning, instead it uses lop and scatter methods to sustain topsoil

communities that plant communities depend on for sustaining them.

Planned ignition – "The intentional initiation of a wildland fire by hand-held, mechanical or aerial device where the distance and timing between ignition lines or points and the sequence of igniting them is determined by environmental conditions (weather, fuel, topography), firing technique, and other factors which influence fire behavior and fire effects."

The NSA doesn't use planned ignition because humans cannot mimic natural fire, it costs lots of money, and there are huge externalized collateral damage costs to both natural and human communities.

Pre-commercial thinning (PCT) – "The practice of reducing the density of trees within a stand by manual cutting, girdling, or herbicides to maintain or promote growth increases of desirable tree species. The trees killed are generally not *merchantable* and not removed from the treated area."

Pre-commercial thinning costs a lot of money "to maintain or promote growth increases of desirable tree species", degrades natural community ecosystem habitats, decreases wildlife populations and causes species extinctions. The NSA doesn't do pre-commercial thinning.

Preferred Alternative – "Term used in the Council on Environmental Quality's implementing regulations of the National Environmental Policy Act (NEPA) and BLM planning regulations. Guidance from the Council on Environmental Quality explains that the preferred alternative is the alternative that the agency believes would fulfill its statutory mission and responsibilities, considering economic, environmental, technical, and other factors."

The NSA should be the preferred alternative for meeting virtually every BLM decision maker stated Purpose and Need. There is no way any BLM decision maker alternative would begin to match the NSA in fulfilling human needs on a sustainable basis.

Prescribed fire – "A wildland fire originating from a planned ignition to meet specific objectives identified in a written, approved, prescribed fire plan for which NEPA requirements have been met prior to ignition. See *planned ignition*."

Prescribed fire doesn't mimic Nature, if it did Nature would have already done it and there would be no need for humans to do it. Prescribed fire doesn't meet natural community ecosystem needs, it isn't needed, it costs time and money and it externalizes huge collateral damage costs to natural and human communities that aren't recovered.

Regeneration – "(n.) Tree seedlings or saplings existing in a stand. (v.) The process of re-establishing trees on a tract of forest land where harvest or some natural event has removed existing trees."

Natural community ecosystems regenerate whatever and whenever it is needed.

BLM decision makers are incorrectly depending on humans to establish trees on land that originally included natural community ecosystems with trees. Humans can't mimic natural regeneration processes.

Regeneration harvest(ing) – "Any removal of trees intended to assist regeneration already present or make regeneration possible."

The NSA has no regeneration costs because it leaves regeneration to natural community ecosystems and natural selection relationship processes.

Resource Management Plan (RMP) – "A land use plan as prescribed by the Federal Land Policy and Management Act that establishes, for a given area of land, land-use allocations, management objectives, and management direction."

The NSA meets or exceeds virtually every major social, environmental and economic legal issue. It also meets or exceeds virtually every BLM-RMP EIS identified Purpose and Need. No other alternative listed has the capability to meet even a small portion of these Purpose and Need objectives. We need an environmental assessment of the premises that BLM decision makers used for making this "land-use allocation, management objectives, and management direction". We need an environmental assessment of the premises used for this Resource Management Plan Glossary.

Riparian area – "A geographic area containing an aquatic ecosystem and adjacent upland areas that directly affect it."

The NSA treats watersheds as riparian areas because adjacent upland areas directly affect aquatic systems.

Rotation [age] – "The planned number of years between the establishment of an even-aged or two-aged forest *stand* and its *regeneration harvest*."

Rotation age is relevant to human created forest stands and regeneration harvest. Rotation age is not relevant to the NSA because it depends on natural selection relationships to determine when each and every organism's life ends.

Selection harvest(ing) – "A method of uneven-aged management involving the harvesting of single trees from stands (single-tree selection) or in groups up to four (4) acres in size (group selection) without harvesting the entire stand at any one time."

The term selection harvesting allows uneven-aged harvesting. The NSA doesn't use group selection harvesting because it degrades and destroys natural community ecosystem habitats, photosynthesis, species trait-environment compatibilities, wildlife populations and it causes species extinctions.

Shelterwood harvest(ing) – "A *regeneration* harvest method under an *even-aged* silvicultural system. With this method a portion of the mature stand is retained as a source of protection during the *regeneration* period. The retained trees are removed when protection requirements have been met."

Shelterwood harvesting is a name used to justify the destruction of whole natural community ecosystems. A tree or small group of trees may be left to facilitate regeneration and then later harvesting it, another way of destroying natural community ecosystems in multi steps. The NSA doesn't use shelterwood harvesting, doesn't harvest in ways that require regeneration and it leaves reproduction to natural selection relationship processes.

Silvicultural system – "A planned series of treatments for tending, harvesting, and reestablishing a *stand*. The system name is based on the number of *age classes* managed within a *stand*, e.g., *even-aged*, *two-aged*, *uneven-aged*)."
The NSA recognizes that natural community ecosystems are self, defining, designing, organizing, regulating and sustaining systems. Silvicultural systems force people to provide other species needs, defend from their enemies and wage ongoing unwinnable wars against other species we depend on for sustaining us. The NSA doesn't manage, or seek to reestablish stands.

Silvicultural practices (or treatments or system) – "The set of field techniques and general methods used to modify and manage a forest stand over time to meet desires conditions and objectives. Examples include reforestation, precommercial thinning, and commercial thinning."

The NSA doesn't modify or manage for forest stands. The NSA doesn't do precommercial thinning, commercial thinning or reforestation. All of these forest management practices are hugely detrimental to sustaining natural community ecosystem habitats, photosynthesis and species trait-environment compatibility. The NSA allows natural selection relationship processes to sustain natural community ecosystems.

Silvicultural prescription – "A planned series of treatments designed to change current stand structure to one that meets management goals."

The NSA doesn't do a planned series of treatments designed to either create or change stand structures. The NSA, instead, retains natural community ecosystem habitats for optimal productivity with no stand structure management costs.

Special status species – "Plant or animal species in any of the following categories: Threatened or endangered species. Proposed threatened or endangered species. Candidate species."

BLM decision maker alternatives, would destroy natural community ecosystem habitats and increase special status species, but the NSA would do just the opposite.

Stand conversion – "Converting one type of forest *stand* to another type. Typically refers to changing areas dominated by hardwood species to one dominated by conifer species."

The NSA doesn't convert natural community ecosystems into stands, or change which species has dominance. No one knows how to change natural community ecosystem dominant species in cumulatively sustainable ways, nor can they afford the costs of trying.

Sustained yield – "The board foot volume of timber that a forest can produce in perpetuity at a given intensity of management; the achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources without impairment of the productivity of the land."

BLM decision makers incorrectly defined sustained yield in terms of timber from managed tree stands, not from natural selection relationships that sustain natural community ecosystem sustained yields. No one knows how to manage "forest tree species" in ways that equal natural selection relationships that sustain natural community ecosystems ability to achieve sustained yields. "The board foot volume of timber that a forest can produce in perpetuity", is in no way equal to that of a natural community ecosystem, nor do they produce a sustained yield. Forestland stocked with forest tree species don't produce sustained yields. The NSA depends on natural community ecosystems for "sustained yield".

Thinning – "A silvicultural treatment made to reduce the density of trees primarily to improve tree/stand growth and vigor, and/or recover potential mortality of trees, generally for commodity use. See *precommercial thinning*, *commercial thinning*, *variable-density thinning*."

Thinning shifts photosynthesis from trees cut down to the remaining trees, but it also destroys natural community ecosystem habitats, reduces wildlife populations, causes species extinctions and produces less valuable wood. The NSA achieves optimal growth and vigor through natural selection relationships that sustain natural community ecosystems, photosynthesis and species trait-environment compatibility.

Two-aged stand – "A stand composed of two (2) distinct age classes intimately mixed and/or in aggregated groups producing a two-story structure managed as a discrete operational unit."

The NSA evaluates natural community ecosystems from species trait-environment compatibility relative to structural environments and the biosphere as a whole. The NSA doesn't manage for a "discrete operational unit".

Uneven-aged management – "A *silvicultural system* that simultaneously maintains high degree of tall forest cover, recurring *regeneration* of desirable species, and the orderly growth and development of trees through a range of diameter or *age classes*. *Harvesting* methods that develop and maintain uneven-aged stands are *single-tree selection*, *group selection*, and *thinning*."

The NSA doesn't manage for uneven-aged stands because no one knows how to do it in cumulatively sustainable ways. The NSA depends on natural selection

relationships to sustain natural community ecosystems that sustain humans.

Variable-density thinning (VDT) – "A *thinning* method where two or more densities of retained trees are used to promote *stand* heterogeneity through the development of *multi-layered canopies*. Provision of conditions conducive to the initiation and growth of *regeneration* is usually an objective of VDT."

This incorrectly assumes that humans know better about how to manage natural community ecosystems than other species. It also demonstrates a lack of understanding of how life is sustained on Earth. Managing natural community ecosystems for the "development of multi-layered canopies" doesn't achieve optimal stand growth or wildlife populations. The NSA doesn't use variable-density thinning.

Visual Resource Management (VRM) – "The inventory and planning actions to identify values and establish objectives for managing those values and the management actions to achieve those objectives."

The NSA retains optimal visual resource objectives because there is no better way to achieve them than through natural selection relationships.

Wilderness characteristics – "These attributes include the area's size, its apparent naturalness, and outstanding opportunities for solitude or a primitive and unconfined type of recreation. They may also include supplemental values. Lands with wilderness characteristics are those lands that have been inventoried and determined by the BLM to contain wilderness characteristics as defined in section 2(c) of the Wilderness Act."

Forest management practices don't sustain wilderness characteristics, the NSA does.

Wildfire risk – "The likelihood and susceptibility for a wildfire to adversely affect human values (e.g. life, property, ecological functions and resources, etc.)."

Converting natural late successional communities into earlier ones makes environments hugely more susceptible to fire. Forest management practices, is a leading cause of increased wildfire risks because they convert natural late successional communities with low wildfire risks, into earlier successional communities with high wildfire risks. The NSA retains lowest wildfire risks because it retains natural late successional communities, BLM decision maker alternatives don't.

Wildland Urban Interface (WUI) – "The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetation fuels."

The NSA retains highest level of wildland wilfire urban interface protection.

MY BIOGRAPHY

I started implementing natural selection relationships on the ground in 1967. In 1978, my success at implementing natural selection relationships was acknowledged by the Illinois Valley Soil and Water Conservation District when they awarding me the "Farmer of the Year" award for outstanding woodland management. In 1979, I was named "Tree Farmer of the Year" for Josephine and Jackson Counties. In 1981, at the request of numerous forest land owners, I started setting up transportation systems to accommodate the full range of natural selection relationship values and uses. In 1984, I wrote my first book on how to apply natural selection relationships, The Forest Farmer's Handbook, A Guide to Natural Selection Forest Management. I later wrote chapters in Restoration Forestry, an international Guide to Sustainable Forestry Practices, Clearcut (solution chapter), International Journal of Ecoforestry, and Ecoforestry, The Art and Science of Sustainable Forest Use. In 2005, I authored the Natural Selection Alternative for the BLM 7,400 acre South Deer Landscape Management Project in Selma, Oregon. I'm working on another book, Ecostry: The Art of Seeing through Nature's Eyes , The Natural Selection Alternative to Forestry Management.

ECOSTRY

Ecostry is based on the same natural selection relationships that species evolved from, the same ones that sustain life on Earth today.

Managed relationship terminology doesn't work for conveying natural selection relationship information.

The name, ecostry, evolved out of a sequence of previously failed attempts to use variations of farming and forestry names such as *forest farming*, *natural selection forest management* and *ecoforestry*. The problem with trying to uses farming and forestry terminology to convey natural selection relationships is, they carry managed relationship baggage.

In 1995 I finally figured out how to make a term work for describing natural selection relationships. I extracted 'forest' out of the term, ecoforestry, that I had coined for the Ecoforestry Institute in 1992 and transformed it into ecostry. This successfully avoided having people think natural selection relationships is some form of farming or forestry managed relationships. Now people are beginning to understand what I'm talking about when I discuss natural selection relationships.

In 1991, I started a new book. In 1995 I had a name for it, *ECOSTRY, The Art of Seeing Through Nature's Eyes; The Natural Selection Alternative to Forestry Managed Relationships*. In this book I define ecostry.

> **Ecostry –** The philosophy, science, art and occupation of seeing, understanding and relating to natural community ecosystems through natural selection relationships that sustain photosynthesis and species trait-environment

compatibility.

"The subtitle, *Natural Selection Alternative*, was used to describe the 2005 BLM South Deer Landscape Management Project plan submitted by the Deer Creek Association. This is the same alternative that BLM RMP decision makers are now rejecting without data to support it..

CAMP ECOSTERY

Wilderness Characteristics

Camp Ecostery, is a place where natural selection relationships have been observed, learned, practiced and taught since 1967. Visitors are challenged to identify where trees have been harvested and few do. Camp Ecostery provides visitors wilderness experiences.

Community Service

I've been conducting tours and workshops on natural selection relationships at Camp Ecostery since 1975. In 1978, my success at implementing natural selection relationships was acknowledged by the Illinois Valley Soil & Water Conservation District, that awarded me the "Farmer of the Year" award for outstanding woodland management. In 1979, I was "Tree Farmer of the Year" for both Josephine and Jackson Counties. In 1980, I became president of the newly formed Illinois Valley Forest Farm Association, a position I held until 1983. At the same time, in 1981, I served as President of the Jackson-Josephine Forest Farm Association. I have continued being active in organizations.

Transportation System Efficient

Forestry transportation systems serve forestry tree stand management practices, but they don't generally work for ecostry because they're not designed for all products, values and uses. Furthermore, forestry serving transportation systems are costly to build, maintain and they're ongoing liabilities. It soon became apparent to me that a different kind of transportation system was needed for ecostry. I abandoned my forestry road system and replaced it with one that served natural selection relationships. Other woodland owners took notice and requested that I do the same thing for them. Several years later I submitted to their requests. I went on to design and construct more than 200 miles of roads on more than 30 places in the U.S. and Canada so that other woodland owners could practice ecostry.

Optimizes Wood Production

Ecostry transportation systems serve virtually every BLM-RMP Purpose and Need and it does it far better than any BLM decision maker Alternative could, including optimal wood production. The NSA produces far more wood on a sustainable annual basis than any green tree focused BLM decision maker proposed alternative. The reason is obvious, extracting only dead and dying trees retains optimal tree photosynthesis and

wood production.

Evidence Supported
Forty eight years of on the ground natural selection relationship practice evidence, suggests the NSA is the only Alternative that would, or could, achieve the BLM-RMP Purpose and Need. The NSA has on the ground success far exceeding any BLM DEIS Alternative.

TIMBER PRODUCING REALITIES

Energy Transformations
Life depends on sun energy. Photosynthesis transforms sun energy into plant living energy systems, such as trees. Each peculiar plant species sustains a peculiar array of animal living energy systems. Animal living energy systems sustain an array of other animal living. Organism death converts living energy into forms that sustain topsoil communities. Topsoil communities transform energy into topsoil that sustain plants. Plant roots enable plants to recycle topsoil energy back into plant living energy systems. No human can manage to perform natural community ecosystem species functions. Everything is connected and ecostry's natural selection relationships keep it that way, but BLM-RMP DEIS Alternatives don't..

Four Life-Sustaining Relationship Essentials
1. **Organism trait diversity**, inherited and learned, is essential to enabling species to adapt to ever-changing environments.
2. **Organisms are tested for trait-environment compatibility**.
3. **Recombining and reproducing compatible traits**, is essential to sustaining future generations.
4. **Adapting to ever-changing environments**, is achieved through natural selection relationships.

   No one knows how to manage organism relationships in sustainable ways. BLM decision maker Alternatives would manage to destroy diversity, habitats that sustain trait-environment compatibility, reproduction of organisms with trait-environment compatibility, and the ability of species to adapt to ever-changing environments through natural selection relationships. BLM decision maker Alternatives are prescriptions for increased mass species extinctions. Ecostry's Natural Selection Alternative is a sustainable solution to BLM decision maker Alternatives.

Five Natural Community Ecosystem Structural Layers
1. **Canopy layer**, defines up to four layers below.
2. **Understory layer**
3. **Shrub layer**
4. **Herb layer**

5. **Topsoil layer**

   Ecostry retains structures, BLM decision maker Alternatives would not.

Ten Species Trait-Environment Compatibility Ingredients

1. **Photosynthesis**
2. **Climate**
3. **Water**
4. **Air**
5. **Fire**
6. **Food**
7. **Shelter**
8. **Habitat**
9. **Reproduction**
10. **Living Energy Transformations**

    Each Peculiar Layer has a peculiar set of ingredients that determine which peculiar organism traits are compatible with that peculiar environment. No one knows how to manage natural community ecosystem structural layers for species trait-environment compatibility. Natural selection relationships enable species to adapt and sustain trait-environment compatibility with each peculiar layer. BLM decision maker Alternatives would manage to render habitats incompatible with species traits and cause species extinctions, the NSA does not..

Succession

Everything is constantly changing the environment. Succession occurs when one community of species changes the environment enough to make it more compatible with another community of species. Early successional communities establish environments more compatible for later successional community species. BLM decision maker Alternatives would manage to cause late successional communities to revert to earlier ones.

Regression

Regression occurs when natural community ecosystems are destroyed, such as by forest management practices. Forest management practices cause natural community ecosystem environments to become more compatible with earlier successional community species traits. Forest management is the leading cause of community regression. BLM decision maker Alternatives don't manage to retain, sustain or restore natural late successional community ecosystem environments.

Restoration

Only the species that defined, designed, organized, regulated and sustained a natural community ecosystem environment can restore them. BLM decision maker Alternatives would manage to natural community ecosystems and convert them into forest tree

stands, none would manage to retain them. Species extinctions makes restoration impossible.

BLM Decision Maker Management Contradictions
Natural community ecosystems are self, defined, designed, organized, regulated, regenerated and sustained by their community, but BLM's "forestland" is defined, designed, organized, regulated and managed by humans. Natural community ecosystems sustain wildlife populations and species, but BLM decision maker Alternatives would manage to destroy habitats, inflict wildlife population declines and cause species extinctions.

AGRICULTURE

"Forest Tree" crops
Forestry is the division of agriculture that serves land and resource conquering wood processing industries. Agriculture manages to destroy natural community ecosystems, claim their land and enslave species in the form of land stocked with crops (including trees). BLM decision maker Alternatives would continue to manage for "forest tree" crops that destroy habitats, reduce wildlife populations and cause mass species extinctions.

Human Relationships Change
Agriculture forces humans to shift from natural selection relationships that sustain species, to managing for species necessities and defending from enemies so that human needs can be met. Agriculture and forestry force people to excercise dominion over every living thing, but not how to manage for other species needs in sustainable ways. BLM decision makers are incorrectly assuming they can manage for dominion over every living thing in sustainable ways.

Humans Wage War Against Nature
When other species try to reclaim their land, humans wage an ongoing unwinnable war against them. The human war against other species can't be won because we depend on them to sustain us. If we win our war against other species humans will go extinct. BLM decision maker Alternatives would destroy habitats, inflict ever-decreasing wildlife populations and increase species extinctions, the NSA would not.

LAND OWNERSHIPS

Forced Trading
Enslaving other species, through agriculture and forestry, replaces natural selection relationship freedoms with land ownership "rights" that force humans to trade for necessities that other people own. Land ownerships obstruct natural selection relationship freedoms that sustain natural community ecosystems, photosynthesis and species trait-environment compatibility. Ecostry reconnects natural community

ecosystems and reestablishes natural selection relationships that sustain species. BLM decision maker Alternatives would further disconnect humans from having natural selection relationships that sustain life.

TRANSPORTATION SYSTEMS

Accessing Necessities

Accessing traded necessities requires transportation systems. Agriculture and forestry transportation systems serve lands managed for crops that aren't cumulatively sustainable. Agriculture and forestry roads not only serve management practices that destroy natural communities, they also become ongoing liabilities to natural community ecosystems.

A sustainable transportation system, if there is any such thing, must serve natural selection relationships that sustain natural community ecosystems, photosynthesis and species trait-environment compatibility across the landscape. Ecostry relies on a special transportation system that retains natural community ecosystem structures and functions that provide a full range of products, values and uses.

Ecostry serving transportation systems are hugely less adversely impacting than forestry serving transportation systems.

RELATIONSHIPS

From Natural Selection to Managed Relationships

Species, including humans, evolved and are sustained through natural selection relationships. Managed relationships are causing mass species extinctions. Humans are the first and only species to implement relationships that cause mass species extinctions. BLM decision maker Alternatives would manage to further destroy habitats, reduce species populations and cause increased species extinctions.

BLM Rejects Life-Sustaining Solutions

BLM decision maker Alternatives, are variations of agriculture/forestry management practices that cause wildlife population declines and mass species extinctions. The NSA that doesn't cause mass species extinctions. BLM decision makers need to assess Alternatives from a biosphere life-sustaining perspective.

Restoration

The only way BLM will be able to restore sustainable relationships is through the same natural selection relationships we evolved from, the same relationships that the NSA is based on. There is a lack of credible evidence to suggest sustainable relationships can be achieved other than through natural selection relationships. The NSA is the only BLM Alternative that has the potential to restore sustainable human relationships.

Solutions
All BLM alternatives would manage to destroy habitats, decrease wildlife populations and increase species extinctions. The NSA does just the opposite, its natural selection relationships retain natural community ecosystem habitats, wildlife populations and species. The NSA is also the only alternative that provides a sustainable predictable supply of timber and countless other natural resources. The NSA is the only alternative that sustains natural community ecosystems across the landscape, essential to producing a sustainable predictable supply of timber, and countless other life-sustaining resources.

Evidence Needed
BLM rejected the NSA without credible data to support that decision. This BLM decision could bring about the final destruction of Oregon's natural community ecosystems and leave humans looking at how to survive without other species.

ECOSTRY ASSESSES BLM-RMP EIS

Alternatives Without Solutions
All BLM decision maker Alternatives rely on managed relationships. Ignoring the NSA with a sustainable solution, does not allow for a sustainable option. Establishing a set of Glossary definitions and premises based on the definition of "forestland", renders the BLM-RMP EIS assessment arbitrary and capricious. Since all biosphere subset natural community ecosystem species are sustained through natural selection relationships, BLM decision makers should have assessed Oregon's natural resources from biosphere natural community ecosystem relationship perspectives.

Externalized Costs
All BLM alternatives would externalize management costs to natural and human communities. These externalized costs should be evaluated from a replacement cost perspective, but they're not even assessed. Ecostry assesses natural selection relationship costs from externalized effects on species populations, especially secondary consumers such as spotted owls and salmon. BLM decision makers failed to assess any of their Alternatives for externalized collateral damage costs to Nature or humans.

CIVILIZATION

It's Our Culture
Civilization is rooted in agriculture. The U.S. Department of the Interior Bureau of Land Managements Draft Resource Management Plan/Environmental Impact Statement is premised on agriculture and forestry management practices. Agriculture and forestry destroy wildlife habitats, cause wildlife population decreases and increase mass species extinctions likely to include humans.

Agriculture
Agriculture and forestry management practices are causing Earth's first and only species-caused mass extinctions. Human survival necessitates restoration of natural selection relationships that sustain natural community ecosystems, photosynthesis and species trait-environment compatibility. All BLM decision maker Alternatives would further contribute to Earth's biosphere destruction.

It Can't Be Fixed
Civilization agriculture and forestry management practices can't be fixed because they never worked. The U.S. Department of the Interior Bureau of Land Management's Draft Resource Management Plan/Environmental Impact Statement is rooted in agriculture and forestry management practices that aren't cumulatively sustainable. BLM can't use the same agriculture and forestry management practices that got us into this mess and expect to get us out of it.

CATASTROPHIC EFFECTS

Mass Species Extinctions
Scientists claim Earth has lost more than 50% of its wildlife populations within the past four decades. I've personally observed at least a 50% decline in wildlife populations in my Deer Creek Watershed area within the last five years. This huge population decline appears to be the result of rapidly increasing forest management practices. Increased forest management practices include such things as larger and more plentiful clearcuts under a variety of other names, herbicide applications on a broad scale, and liquidation of wildlife habitats under such names as fuel and fire hazard reduction.

Camp Ecostery Environment
The Camp Ecostery environment is being threatened by forest management practices that cause species depended on for sustaining it to go extinct. No amount of money can buy back the externalized collateral damage costs being inflicted by forest management practices. BLM decision maker Alternatives would hugely increase the threat to Camp Ecostery because they would destroy habitats, reduce populations and cause increased species extinctions.

Deadly Chemicals
In 2011, I was poisoned by nearby forest management herbicide applications. My liver enzymes suddenly skyrocketed from normal to extreme. It took 3 years to get my liver back to normal, but I still have other persistent problems with no apparent cure. These are but a few of the ever growing sickness problems being caused by forest management practices.

Operator Accountability Denied
Oregon and Federal laws protect forestland Operators from being held accountable for externalized collateral damage costs for profits, but they don't protect natural

community ecosystems or the people who depend on them. The sole purpose of the State and Federal authorities seems to be that of shielding and protecting those who destroy habitats, cause wildlife population declines and species extinctions. Civilization laws aren't allowing victims to hold law-makers and authorities personally accountable for externalized collateral damage costs. We're not holding authorities personally accountable for externalized collateral damage costs and that problem continues to worsen

We have at Camp Ecostery, for example, two separate spring drinking water sources for two separate family dwellings. One drinking water source was completely destroyed by Oregon Department of Forestry approved forestry management practices, the other has not recovered, nor is it likely to. Both springs provide water for coho salmon habitats. Water runoff from one spring killed fish and vegetation. The Oregon Department of Forestry shielded and protected the operators, not the victims. When an Operator files for an operations permit and the Oregon Department of Forestry Forester signs off on it, it shifts liability and accountability to the State of Oregon that has none. The Department does little if anything to protect wildlife, including spotted owls. The BLM is performing the same catastrophic role with public lands. Accountability is essential to human survival and the NSA achieves it.

ECOSTRY SOLUTIONS

Relationships

"Ecostry is the philospophy, science, art and occupation of seeing understanding and relating to natural community ecosystem environments through natural selection relationships that sustain biosphere photosynthesis and species trait–environment compatibility." The U.S. Department of the Interior Bureau of Land Managements Draft Resource Management Plan/Environmental Impact Statement doesn't do this.

Transportation

Ecostry's "Natural Selection Alternative", has been demonstrating sustainable relationship solutions since 1967, special concentric-contour-looping-access systems are are allowing it to achieve a full range of values and uses. Many people recognize this fact, BLM RMP decision makers need to.

Purpose & Need

Ecostry achieves U.S. Department of the Interior Bureau of Land Managements Draft Resource Management Plan/Environmental Impact Statement Purpose and Need, BLM needs to acknowledge this and make it happen.

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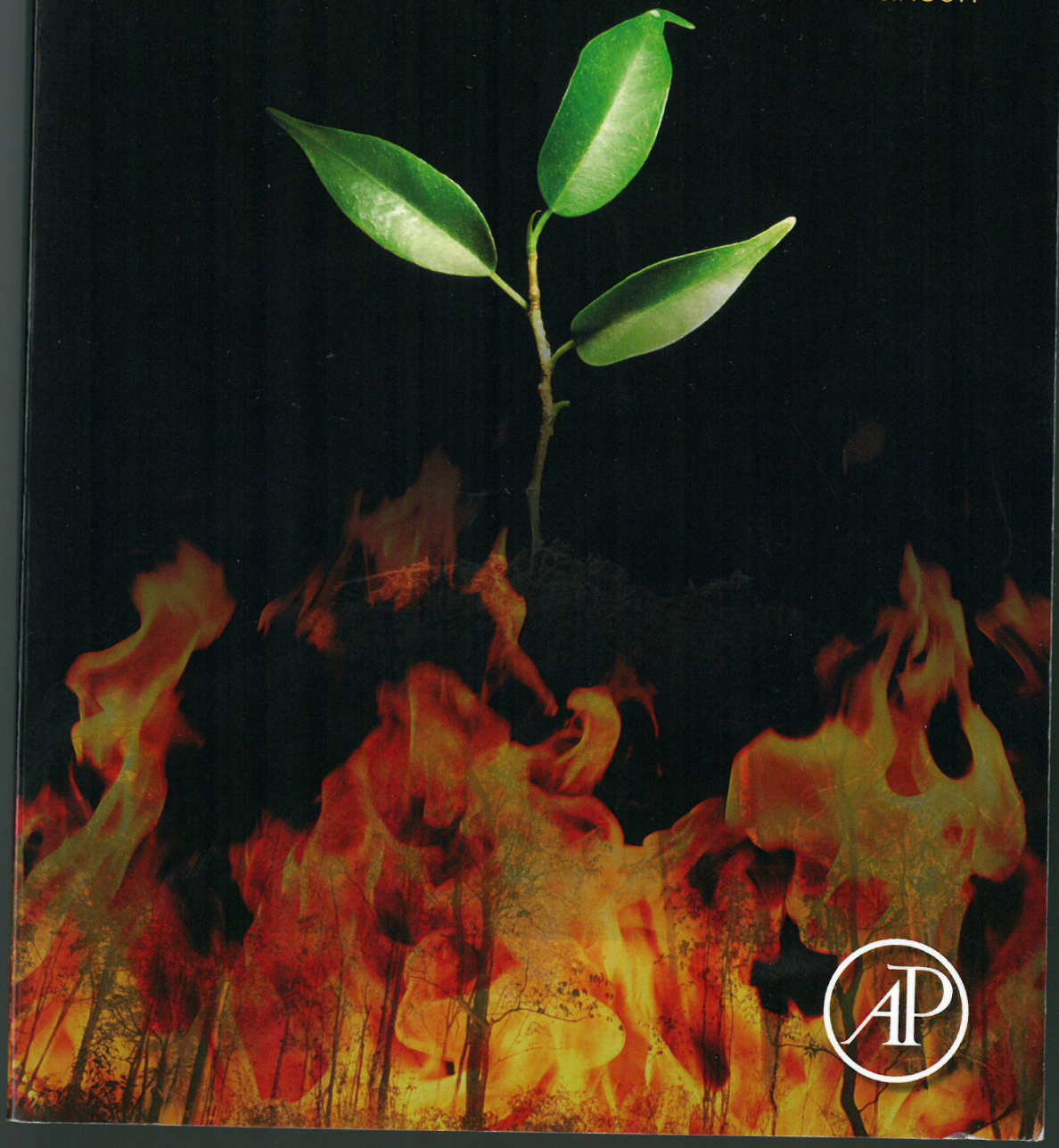
THE ECOLOGICAL IMPORTANCE OF MIXED-SEVERITY FIRES

NATURE'S PHOENIX

Edited by Dominick A. DellaSala and Chad T. Hanson



Deer Creek Valley Natural Resources Conservation Association
PO Box 670, Selma, OR 97538
541-597-4313

August 21, 2015

Jerome E Perez, State Director
Mark Brown, Project Manager
BLM Planning Team
RMPs for Western Oregon
Bureau of Land Management
P.O. Box 2965
Portland, Oregon 97208
m4brown@blm.gov
blm_or_rmps_westernoregon@blm.gov

Re: Comments on the Draft Resource Management Plan/Environmental Impact Statement for Western Oregon and Request to include the Natural Selection Alternative as an option to be analyzed in detail in the EIS.

Dear Director Perez, Mr. Brown and Planning Team,

I am submitting the comments in behalf of Deer Creek Valley Natural Resources Conservation Association, the Rogue Group of the Oregon Sierra Club, the Illinois Valley Section of the Rogue Group, our members, John Gardiner, and many other supporters of the Natural Selection Alternative for our public lands.

Deer Creek Valley Natural Resources Conservation Association (DCVNRCA) and is an all volunteer community organization, as are all of those signing onto these comments. DCVNRCA a sustainable solution for our public lands, that offers a way that we may all be part of the solution to the many serious challenges facing all of us on Earth today, challenges of a seriousness unlike we have ever experienced.

DCVNRCA We have commented extensively on the Revised Plans for Western Oregon and include them by reference: *Natural Selection Alternative for the Medford District BLM South Deer Landscape Management Project*, 2005 (EA# OR110-05-10); DCVNRCA July 5, 2012, *RMP Scoping comments*; Dennis Odion, August 6, 2005 *Comment Letter for the South Deer Landscape Management Project*; DCVNRCA March 19, 2014, DCVNRCA March 31, 2014 *Planning Criteria Comments*; and all correspondence with BLM during this planning process

Our past comments have requested the BLM include the *Natural Selection Alternative* (NSA) be fully evaluated in the RMP/EIS. These comments will respond to BLM's decision not to include the NSA in the RMP/DEIS for detailed analysis and provide further information in support of the NSA as to why it should be included for detailed analysis.

These comments consist of Part 1; Part 2; Part 3 and an index of documents included on DVD (DCVNRCA Comments for BLM Draft RMP EIS WO). We are also including comments from Orville Camp, DCVNRCA advisor, on the on the Draft RMP/EIS which responds to page 79 regarding the NSA, and to Draft RMP/EIS premises. We are submitting these documents in printed form in a binder and on DVD.

Many conservation organizations have provided a comprehensive, well informed and documented, group response to the DEIS. We include by reference the comments and documentation being submitted for the Resource Management Plans for Western Oregon Draft Environmental Impact Statement, this August 21, in behalf of these many conservation organizations, including DCVNRCA.

Our comments speak to our own personal relationship to natural-community ecosystems in Deer Creek watershed, to those of our neighbors and local community; we also speak to relationships of people throughout Oregon, our nation and our planet have with our natural-community-ecosystems.

The following are being submitted with these comments (sent by mail):

1. **DVD** (DCVNRCA Comments for BLM Draft RMP EIS WO)
2. **DVD**: Niemi, Ernie. 2015 *Oregon's Forest Economy* (video of presentation)
    a. Also available on line (Rogue Valley Community Television): http://vp.telvue.com/preview?id=T01550&video=238025
3. **DVD**: *Call of Life* film; literature
4. **Book**: DellaSala, Dominick A. and Hanson, Chad T. 2015 The Ecological Importance of Mixed-Severity Fires: Natures Phoenix
5. Siskiyou Field Institute Catalogue and Rack Card

We appreciate your consideration of these comments.

We are available, and would appreciate the opportunity to discuss any concerns or issues with your planning staff regarding our request to include the *NSA* as an option to be fully analyzed in the EIS for the Revised Resource Management Plans for Western Oregon. We invite you or your planning team to come out and visit the home of the *Natural Selection Alternative* at Camp Ecostery, Selma, Oregon.

Sincerely,

Mary Camp, President
Deer Creek Valley Natural Resources Conservation Association
Selma, Oregon
541-597-4313

Orville Camp, Natural Community Ecosystem Advisor
Deer Creek Valley Natural Resources Conservation Association
Selma, Oregon

Frederick Mittleman, Chair
Illinois Valley Activity Section Sierra Club
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Dr. John L. Gardiner MBE, PE(Oregon),
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PO Box 2451,
Cave Junction, OR 97523
cell: 541 415 2613

INTRODUCTION

On Pg xxi RMP/DEIS, The BLM encourages the public to review this Draft RMP/EIS and provide comments pertaining to the alternatives and analysis. Comments will be most useful to the BLM to the extent that they

- present new information relevant to the analysis;
- present reasonable alternatives other than those analyzed in the Draft RMP/EIS
- make suggestions, with a reasoned basis, for the development of a proposed RMP
- question, with a reasoned basis, the adequacy of, methodology for, or assumptions used for the analysis; or
- question, with a reasoned basis, the accuracy or information in the Draft RMP/EIS

NEW INFORMATION RELEVANT TO THE ANALYSIS OF THE RMP

Accelerated modern human–induced species losses: Entering the sixth mass extinction

Gerardo Ceballos, Paul R. Ehrlich, Anthony D. Barnosky, Andrés García, Robert M. Pringle, Todd M. Palmer, 2015, *Accelerated modern human–induced species losses: Entering the sixth mass extinction*
http://advances.sciencemag.org/content/advances/1/5/e1400253.full.pdf

Abstract
The oft-repeated claim that Earth's biota is entering a sixth "mass extinction" depends on clearly demonstrating that current extinction rates are far above the "background" rates prevailing between the five previous mass extinctions. Earlier estimates of extinction rates have been criticized for using assumptions that might overestimate the severity of the extinction crisis. We assess, using extremely conservative assumptions, whether human activities are causing a mass extinction. First, we use a recent estimate of a background rate of 2 mammal extinctions per 10,000 species per 100 years (that is, 2 E/MSY), which is twice as high as widely used previous estimates. We then compare this rate with the current rate of mammal and vertebrate extinctions. The latter is conservatively low because listing a species as extinct requires meeting stringent criteria. Even under our assumptions, which would tend to minimize evidence of an incipient mass extinction, the average rate of vertebrate species loss over the last century is up to 100 times higher than the background rate. Under the 2 E/MSY background rate, the number of species that have gone extinct in the last century would have taken, depending on the vertebrate taxon, between 800 and 10,000 years to disappear. These estimates reveal an exceptionally rapid loss of biodiversity over the last few centuries, indicating that a sixth mass extinction is already under way. Averting a dramatic decay of biodiversity and the subsequent loss of ecosystem services is still possible through intensified conservation efforts, but that window of opportunity is rapidly closing

***Discussion* excerpt:**

The evidence is incontrovertible that recent extinction rates are unprecedented in human history and highly unusual in Earth's history. Our analysis emphasizes that our global society has started to destroy species of other organisms at an accelerating rate, initiating a mass extinction episode unparalleled for 65 million years. If the currently elevated extinction pace is allowed to continue, humans will soon (in as little as three human lifetimes) be deprived of many biodiversity benefits. On human time scales, this loss would be effectively permanent because in the aftermath of past mass extinctions, the living world took hundreds of thousands to millions of years to rediversify. Avoiding a true sixth mass extinction will require rapid, greatly intensified efforts to conserve already threatened species and to alleviate pressures on their populations—notably habitat loss, overexploitation for economic gain, and climate change (31–33). All of these are related to human population size and growth, which increases consumption (especially among the rich), and economic inequity (6). However, the window of opportunity is rapidly closing.[1]

Excelling supporting information may be found in **Call of Life: Facing the Mass Extinction**, Film Produced by Species Alliance; Ulansey, David, Executive Producer**:**

Today, scientists believe that we are entering the 6th Mass Extinction. But unlike the previous five, this one will not take centuries to unfold—in fact, it will take place in our lifetimes. As scientists begin to realize the severity of the crisis and new worldwide assessments are made, the news is difficult to believe. At least half of all plant and animal species are likely to disappear in the wild within the next 30-40 years, including many of the most familiar and beloved large mammals: elephants, polar bears, chimpanzees, gorillas and all the great apes, all the big cats, and many, many others. Bird species are similarly imperiled, songbird populations have declined by 50% in the last 40 years. One out of every eight species of plant life worldwide and almost one third of the plant species within the United States already face extinction. Populations of large ocean fish have declined by 90% since the 1950s. All around the world, birds, reptiles, mammals, amphibians, fish, and invertebrates, as well as trees, flowering plants, and other flora, are all in steep decline. The rate of extinction today could be as much as 10,000 times greater than the expected natural or background extinction rate. Scientists estimate that tens of thousands of species are vanishing every year, including many

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[1] *Accelerated modern human–induced species losses: Entering the sixth mass extinction*

Gerardo Ceballos1,*, Paul R. Ehrlich2, Anthony D. Barnosky3, Andrés García4, Robert M. Pringle5 and Todd M. Palmer6

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4Estación de Biología Chamela, Instituto de Biología, Universidad Nacional Autónoma de México, Jalisco 48980, México.

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Science Advances 19 Jun 2015:Vol. 1, no. 5, e1400253 DOI: 10.1126/sciadv.1400253

that have yet to be discovered or named.

We depend on many species directly for our basic human needs such as food, clothing, fuel, shelter, and medicine, but the complex network of all species is necessary to support those species that we depend upon directly. Ecosystems are intricately interdependent—species depend on each other for survival in complex and subtle ways that science is only beginning to understand. Biologically diverse ecosystems provide indispensable ecosystem services that we often take for granted, including purification of the air and water, climate regulation, nutrient cycling in the soil, disease control, pollination, seed dispersal, biological pest control, and prevention of erosion, to name just a few. We cannot live without these essential services that healthy ecosystems provide.

Land animals populations down 28% since 1970; marine bird populations down 30% since 1995; big ocean fish populations down 90% since 1950; freshwater fish populations down 50% since 1987; marine animals populations down 28% since 1970; songbirds populations down 50% since 1965. If current trends continue, within decades HALF or MORE of all plant and animal species will disappear forever.[2]

PRESIDENT BARACK OBAMA: "Climate change is no longer just about the future that we're predicting for our children or our grandchildren; it's about the reality that we're living with every day, right now. The Pentagon says that climate change poses immediate risks to our national security. While we can't say any single weather event is entirely caused by climate change, we've seen stronger storms, deeper droughts, longer wildfire seasons. Charleston and Miami now flood at high tide. Shrinking ice caps forced National Geographic to make the biggest change in its atlas since the Soviet Union broke apart. Over the past three decades, nationwide asthma rates have more than doubled, and climate change puts those Americans at greater risk of landing in the hospital. As one of America's governors has said, we're the first generation to feel the impact of climate change and the last generation that can do something about it. And that's why I committed the United States to leading the world on this challenge, because I believe there is such a thing as being too late." March 1st 2014

We are including the newly released book:
DellaSala, Dominick A. and Hanson, Chad T. 2015 <u>The Ecological Importance of Mixed-Severity Fires: Natures Phoenix</u>.

<u>Global synthesis of large wildland fires shows they are ecologically beneficial</u>. Jul 01, 2015,

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[2] *Call of Life, Facing the Mass Extinction*, 2010 film by Species Alliance, a nonprofit organization formed in 2005 to raise public awareness of the impending mass extinction and the threat to Earth's life support systems due to the loss of biodiversity. http://calloflife.org/p-story.htm Film included in DCVNRCA comments as enclosure.

08:05 et from geos institute (pr newswire, a ubm pk company):

ASHLAND, Ore., July 1, 2015 /PRNewswire-USNewswire/ -- Twenty-five leading fire scientists from around the world released a new synthesis "The Ecological Importance of Mixed-Severity Fires: Nature's Phoenix" published by Elsevier, a world-leading provider of scientific, technical and medical information products and services.

> *For the first time extensive documentation from around the world reveals that forests and other plant communities need a variety of different types of fires, including severe ones, to rejuvenate over the long-term. These findings are timely as Members of Congress propose to weaken environmental laws based on the assumption that fires are damaging to forests, and logging is needed to reduce fire effects.*

According to Dominick A. DellaSala, Chief Scientist of the Ashland-based Geos Institute and co-editor, "This is the first global synthesis of the countless ecosystem benefits of large and severe fires. Simply put, fire is to dry forests as rain is to rainforests, both are needed for vibrant forest ecosystems to remain that way."

Chad Hanson, director and ecologist of John Muir Project, Earth Island Institute, and co-editor added: "The research compiled in this book provides strong evidence that when large fires burn through a forest they enrich fire-dependent communities and provide habitat for scores of plant and wildlife species that rival the more celebrated old-growth forests. Although it makes many uncomfortable, it is time that we recognize the important role that fire plays in renewing forests."

Researchers compiled findings from western North America, central Europe, southeast Australia, and sub-Saharan Africa, summarized as:

Forest thinning in the backcountry does not improve homeowner safety, and does not meaningfully influence large, weather-driven fires.

The mosaic of fire patches in large fires (unburned to severely burned areas) produces ideal habitat for scores of plants and animals.

Large, severe fires restore habitats for a fire-dependent web-of-life. Post-fire logging, tree planting, and herbicides most often degrade the rich post-fire landscape and increases future fire risks.

Contrary to what many think, large and severe fires are not currently increasing in western North America compared to historical times.

Climate change in dry regions may increase the frequency and extent of large fires this century eventually closing the gap in historical acres burned.

People can live safely with fire in the backcountry by building with fire-resistant materials and reducing flammable vegetation nearest homes.

Large severe fires contribute much less carbon dioxide to global warming than the burning

of fossil fuels or forest thinning over large landscapes.
Record fire suppression is doing little to stop large fires during extreme weather events. It is best to prepare for fire by reducing risks to homes and proper zoning that limits sprawl into fire-prone areas.

DellaSala added, "In the 1940s when the Forest Service started its fire suppression policy, it made sense to put out fires for public safety. The truth is, large fires are not going away no matter what we do to try to stop them, so we need to do a better job of investing scarce public resources in protecting lives and homes."

This major fire reference includes nearly 400 pages of science-based accounts of large and severe fires that have shaped the ecology of plant and wildlife communities for millions of years. So called "mixed-severity fires" burn in a mosaic (quilt-like) pattern of small to large patches of low (ground burning) to high-severity (most trees killed) burns that resembles a living kaleidoscope of plants and wildlife. This is in stark contrast to logging after a fire.

As scientists warn 2015 is on pace to become the Earth's hottest year on record, President Obama has unveiled his long-awaited plan to slash carbon emissions from U.S. power plants. During a speech at the White House, Obama said no challenge poses a greater threat to future generations than a changing climate.

An important finding relative to Climate Change; Fire Plans; Species Extinctions and the *Natural Selection Alternative:* ***Rate of tree carbon accumulation increases continuously with tree size***

CORVALLIS, Ore. – In a finding that overturns the conventional view that large old trees are unproductive, scientists have determined that for most species, the biggest trees increase their growth rates and sequester more carbon as they age.

In a letter published today in the journal Nature, an international research group reports that 97 percent of 403 tropical and temperate species grow more quickly the older they get. The study was led by Nate L. Stephenson of the U.S. Geological Survey Western Ecological Research Center. Three Oregon State University researchers are co-authors: Mark Harmon and Rob Pabst of the College of Forestry and Duncan Thomas of the College of Agricultural Sciences.

The researchers reviewed records from studies on six continents. Their conclusions are based on repeated measurements of 673,046 individual trees, some going back more than 80 years.

This study would not have been possible, Harmon said, without long-term records of individual tree growth. "It was remarkable how we were able to examine this question on a global level, thanks to the sustained efforts of many programs and individuals.

Extraordinary growth of some species, such as Australian mountain ash – also known as eucalyptus – (Eucalyptus regnans), and the coast redwood (Sequoia sempervirens) is not limited to a few species, the researchers said. 'Rather, rapid growth in giant trees is the global norm and can exceed 600 kg (1,300 pounds) per year in the largest individuals,' they wrote.

'In human terms, it is as if our growth just keeps accelerating after adolescence, instead of slowing down," said Stephenson.' By that measure, humans could weigh half a ton by middle age, and well over a ton at retirement.

The report includes studies from the Pacific Northwest. Harmon and his colleagues worked in forest plots – some created as early as the 1930s – at the H.J. Andrews Experimental Forest east of Eugene and Mount Rainier National Park. Researchers measured growth in Douglas-fir, western hemlock, Sitka spruce, western red cedar and silver fir. The National Science Foundation and the Pacific Northwest Research Station of the USDA Forest Service provided funding.[3]

The *Natural Selection Alternative* is a Reasonable Alternative Other than Those Analyzed in the Draft Rmp/EIS

NSA was considered but not analyzed in detail, as described on Page 79 of the Draft RMP/EIS. Specifically, on Page 79,

> "The BLM eliminated this alternative from detailed analysis because it would not meet the purpose and need and the basic policy objectives described in the guidance for development of all action alternatives, in that it would not make a substantial and meaningful contribution to providing a sustained yield of timber."

I am requesting the full ID Team documentation of the analysis and the criteria BLM used to make the determination on (DEIS p 79), in behalf of myself and the Deer Creek Valley Natural Resources Conservation Association. Documentation we are requesting , but not limited to: Documentation that provides the rationale (including the ecological basis) BLM used to determine that the NSA does not "reflect the annual productive capacity for such lands;" how BLM made the determination that the annual productive capacity for such lands would not be reflected in harvest of timber limited to those dead or dying, that the timber would not support sustained-yield capacity for such land; how the predictable volume for such sale

[3] N. L. Stephenson, A. J. Das, R. Condit, S. E. Russo, P. J. Baker, N. G. Beckman, D. A. Coomes, E. R. Lines, W. K. Morris, N. Rüger, E. Álvarez, C. Blundo, S. Bunyavejchewin, G. Chuyong, S. J. Davies, Á. Duque, C. N. Ewango, O. Flores, J. F. Franklin, H. R. Grau, Z. Hao, M. E. Harmon, S. P. Hubbell, D. Kenfack, Y. Lin, J.-R. Makana, A. Malizia, L. R. Malizia, R. J. Pabst, N. Pongpattananurak, S.-H. Su, I-F. Sun, S. Tan, D. Thomas, P. J. van Mantgem, X. Wang, S. K. Wiser, M. A. Zavala. Rate of tree carbon accumulation increases continuously with tree size. Nature, 2014; DOI: 10.1038/nature12914

compares in predictability in perpetuity without impairment of the productivity of the land, to the alternatives analyzed in the DEIS (see Sustained yield-DEIS p 892); how BLM accounts for the other purposes and needs set forth relative to the NSA.

Please see attached comments by Orville Camp regarding the BLM decision on page 79 of the Draft RMP/EIS. Also see comments on the interpretation of the O&C act and sustained yield made in our earlier comments and in the extensive comments included in those of the conservation organizations group comments.

I was hopeful that I would receive reply to my FOIA requesting documentation of the analysis and the criteria BLM used to make the below determination (DEIS p 79), (FOIA requests and communication with BLM staff is included on enclosed DVD) to include further discussion in these comments. It would seem that by postponing reply until the release of the FEIS, our ability to participate in a meaningful way in the planning process not possible.

We object to the data-free-analysis and decision not to include the NSA in the EIS. We provided logical reasoning that the NSA is superior to the BLM alternatives providing a predictable, sustainable yield in perpetuity without impairment of the land. BLM has not provided rational as to why it does not agree with rational submitted (repeatedly) to BLM, BLM has not provided any data to support claims that this is not the case.

I inquired of the NEPA specialist and computer program modeling person at the Medford District RMP open house about computer program modeling for the RMP. It is my understanding that you do not have programs that will incorporate the full natural community ecosystem species in terms of productivity and volume of board feet in comparison to tree based management practices (that include clearcuts, thinning, etc).

The original Natural Selection Alternative was authored by Orville Camp, in behalf of the Deer Creek Valley Natural Resources Conservation Association (DCVNRCA) in collaboration with the Medford District BLM South Deer Landscape Management Project, 2005.

The Natural Selection Alternative has been proposed for implementation on our public lands since its release in 2005. It has been supported and endorsed by hundreds of individuals, community leaders and organizations from diverse interests and backgrounds.

DCVNRCA requested that the Natural Selection Alternative be included for detailed analysis for the revised RMP's during Scoping, and Planning Criteria comment periods. While the alternative was originally developed for South Deer Project, it is a universal plan. The NSA for the South Deer Project completed the NEPA process, and was included in the Environmental Assessment and Decision as the best alternative for a section of BLM land and although it is universal plan, this version gives a good illustration of what it would look like applied for a specific project in a specific area. We are in addition submitting the attached *Discussion and*

Supporting Documentation Regarding the Natural Selection Alternative for the BLM Plan Revisions for Western Oregon, to assist the BLM in understanding in the *Natural Selection Alternative*, the rational, basic assumptions and criteria for implementation on BLM lands in western Oregon, in our request to include it as an option for detailed analysis in the Final RMP/EIS. This document is identified as Part 2 of these comments. The NSA is able to meet the RMP Purpose and Need, and the only action alternative able to do so. (The no harvest alternative would also meet the Purpose and Need). We request to enter into a MOU as we did with BLM in the South Deer Project, to work together with BLM to and or have a liaison/advocate who will fully understand the NSA assisting DCVNRCA develop the Natural Selection Alternative to meet technical requirements, while remaining true to the principles and concepts of the Natural Selection Alternative, to be included in the FEIS of the revised RMP for Western Oregon.

RMP fails to recognize and needs to recognize "temperate and boreal rainforests are biogeographically unique. Compared to their tropical counterparts, they are rarer and at least as endangered."

(Temperate and Boreal Rainforests of the World, GEOS institute:
http://www.geosinstitute.org/maps/TemperateRainforests/index.html

"Because most temperate and boreal rainforests are marked by the intersection of marine, terrestrial, and freshwater systems, their rich ecotones are among the most productive regions on Earth. Many of them store more carbon per hectare than even tropical rainforests, contain some of the oldest and largest trees on the planet, and provide habitat for scores of rare and unique species including some with affinities dating back to the supercontinent Gondwanaland and when dinosaurs were king.

In spite of their global significance, however, protection levels for these remarkable rainforests are far too low to sustain them under a rapidly changing global climate and ever expanding human footprint. And because they have been ignored in recent efforts to curtail greenhouse gas pollutants from deforestation, they are destined to become the world's forgotten rainforests in global efforts to stem global warming pollution. Fortunately, a global campaign is underway to step up conservation of these remarkable rainforests ranging from an end to logging of native forests in Tasmania to new restrictions on logging designed to protect up to 70% of the Great Bear Rainforest in British Columbia."

Much of the project area includes these rainforests.

THE METHODOLOGY AND ASSUMPTIONS FOR THE ANALYSIS IN THE RMP DEISARE NOT BASED ON BEST AVAILABLE SCIENCE.

The science used in the RMP analysis is timber industry forestry and not evolutionary biology.

Addressing natural-community-ecosystem issues using forestry management science instead of evolutionary biology science will not sustain natural community ecosystem species or a sustained predictable yield of timber in perpetuity.

THE METHODOLOGY AND ASSUMPTIONS FOR THE ANALYSIS OF "FIRE AND FUELS" ARE NOT BASED ON BEST AVAILABLE SCIENCE.

The RMP addresses fire issues using fundamentally flawed forestry management science The RMP/DEIS fire and fuels treatments are based on faulty premises. instead of evolutionary fire science and understanding of natural fire regimes from which native plants and animals evolved and of their importance to sustain natural community ecosystems. The approach to fire in all alternatives proposed, perpetuates unsustainable and destructive timber industry driven forestry management paradigm.

DCVNRCA requested *the NSA be included and fully evaluated in the RMPs for Western Oregon EIS. Because it is a new and innovative approach for public lands (although with a 45 year old track record on private lands), we have asked that a NSA team participate in the EIS process.* (See attached DVD (DCVNRCA Comments for BLM Draft RMP EIS WO)," DCVNRCA BLM correspond" folder.

August 8, 2014 Mark Brown email to Mary Camp/DCVNRCA:

> *Thank you for your offer to have direct participation and interaction with the Interdisciplinary Team (IDT). I would like to briefly explain why we are respectfully declining your offer, and why it would not be possible for us to have an "NSA team fully participate in the EIS process along with the BLM Interdisciplinary Team." Including an "NSA team" would be problematic in a number of ways. First, we need to be fair to all stakeholders by providing information and the opportunity for input to all non-governmental entities at the same time. I hope you will appreciate the significant challenges that would present as there are numerous stakeholders involved in this planning effort. Also, engaging with a particular group of non-governmental entities could be inconsistent with the Federal Advisory Committee Act, which provides limitations on how federal agencies such as the BLM are able to receive advice and participation from non-governmental groups.*

The fire and fuels portion of the RMP (Pgs 1113-1136) relies heavily on information from a NGO, The Nature Conservancy, and at the same time BLM states as noted above, "we need to be fair to all stakeholders by providing information and the opportunity for input to all non-governmental entities at the same time." That is not fair and equal, nor does it allow for best science.

I was informed at a BLM RMP/DEIS open house in Medford that the approach to fire was not included in the analysis because BLM would continue to use the current practices in all of their proposed actions.

For this reason the BLM needs to revise the RMP/DEIS because it did not consider a range of alternatives for fire, instead relied upon an approach which has been widely contested by the public and hundreds of highly credible scientists with backgrounds in ecological sciences and natural resource management. For example:

Frost, Evan J. and Sweeney, Rob. 2002. Fire Regimes, Fire History and Forest Conditions in the Klamath-Siskiyou Region: An Overview and Synthesis of Knowledge:

> *The current popular and frequently repeated hypothesis about fires in the Klamath Mountains is that – as a result of fire suppression and other human activities – large fires are occurring more frequently and are larger and more intense than they were in the past (Atzet et al. 1988, USDA Forest Service 1994, 1995, 1996, 1998b, Brookes 1996). This position is predicated on assertions, that, because of fire suppression: 1) the number of fires in the region has declined over time, 2) fires are substantially larger today than in the past, and 3) large, intense fires are the results of unnaturally high levels of fuels accumulation. However, none of these assertions have been supported with empirical data from the Klamath Mountains or by analysis demonstrating that a change in fire frequency, size or severity has occurred from historic to present. If this hypothesis is not true, it may lead to inappropriate forest management and adverse impacts to regional biodiversity.*

October 30, 2013, 250 scientists with backgrounds in ecological sciences and natural resource management stated in an open letter to members of congress:

> *This post-fire habitat, known as "complex early seral forest," is quite simply some of the best wildlife habitat in forests and is an essential stage of natural forest processes. Moreover, it is the least protected of all forest habitat types and is often as rare, or rarer, than old-growth forest, due to damaging forest practices encouraged by post-fire logging policies. While there remains much to be discovered about fire in our forests, the scientific evidence indicates that complex early seral forest is a natural part of historical fire regimes in nearly every conifer forest type in the western U.S. (including ponderosa pine and mixed-conifer forests) and that small and large patches of it occur.*
>
> *Fire is an inherent part of natural community ecosystems and their frequency is variable. Conversion of late successional forests to early successional tree plantations have caused the risk for increased fire size, intensity, and severity; it isn't because of fire suppression and it isn't in our legacy old natural community ecosystems.*

Numerous studies also document the cumulative impacts of post-fire logging on natural ecosystems, including the elimination of bird species that are most dependent on such conditions, compaction of soils, elimination of biological legacies (snags and downed logs) that are essential in supporting new forest growth, spread of invasive species, accumulation of logging slash that can add to future fire risks, increased mortality of conifer seedlings and other important re-establishing vegetation (from logs dragged uphill in logging operations), and increased chronic sedimentation in streams due to the extensive road network and runoff from logging operations. [Hutto, R. L. 2006. Toward meaningful snag-management guidelines for postfire salvage logging in North American conifer forests. Conservation Biology 20:984-993. Beschta, R.L. et al. 2004. Postfire management on forested public lands of the western USA. Conservation Biology 18:957-967. Lindenmayer, D.B. et al. 2004. Salvage harvesting policies after natural disturbance. Science 303:1303. Karr, J. et al. 2004. The effects of postfire salvage logging on aquatic ecosystems in the American West. Bioscience 54:1029-1033. DellaSala, D.A., et al. 2006. Post-fire logging debate ignores many issues. Science 314-51-52. Donato, D.C. et al. 2006. Post-wildfire logging hinders regeneration and increases fire risk. Science 311 No. 5759:352.]

We urge you to consider what the science is telling us: that post-fire habitats created by fire, including patches of severe fire, are ecological treasures rather than ecological catastrophes, and that post-fire logging does far more harm than good to the nation's public lands. [4]

BLM FAILED TO USE SCIENCE BASED ECONOMIC ANALYSIS

May 11, 2015 Forest Service and BLM issued their 20-year assessment of the Northwest Forest Plan. http://www.reo.gov/monitoring/reports/20yr-report/ . The following are key findings not reflected in the BLM's in the BLM's EIS:

- Total employment in forest products industries, including logging, primary and secondary wood manufacturing has been variable and has declined overall by forty percent since 2001 (figure 2-2). However, employment in forest products industries related to Forest Service and BLM harvests increased between 2001 and 2012.

- From 2005 to 2009, timber harvest levels declined sharply. Timber harvested from federal forests increased nearly 70 percent between 2009 and 2012. Most of this decline can be attributed to reductions in timber harvests on non-federal lands. After 2009, timber harvests levels increased. Timber harvested from federal forests has reached volumes not seen since shortly after the adoption of the NWFP. However, timber harvested from non-federal forests remains below the 1995 to 2005 average.

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[4] DellaSala, et al., Open Letter to Members of Congress from 250 Scientists Concerned about Post-fire Logging, October 30, 2013.

- Recreation visitor spending is the largest single source of economic activity associated with NFS and BLM management in the NWFP area.

We have enclosed the video *Oregon's Forest Economy– For This and Future Generations,* of a presentation given by Ernie Nieme, on May 6, 2015. This presentation contains data, fact based economic analysis of the RMP DEIS. We have also included the presentation notes in our documentation.

Ernie Niemi referenced the following document in his presentation:

Summary of Federal Forest Carbon Coalition's "Accounting for Climate-related Risks In Federal Forest-Management Decisions

Actions that reduce the amount of carbon stored in federal forests contribute to disruption of the global climate by increasing atmospheric concentrations of carbon dioxide. The climate disruption raises the risk of economic harm—locally, nationally, and globally—from extreme weather events, higher temperatures, changes in precipitation, rising sea levels, acidification of
oceans, and changes in ecosystems. Laws and executive orders require managers of federal forests to account for these risks. This paper describes the recent failure of the Bureau of Land Management (BLM), to satisfy the requirements. It also describes the steps the BLM must take
to meet its obligations, and illustrates the method the BLM and other federal forest management agencies should use to account for carbon-related risks in the future.

The BLM failed to account for climate-related risks when it selected its Preferred Alternative for managing federal forests in western Oregon. If implemented, this alternative would yield more timber but less forest carbon than another alternative. Using old data and a conservative view of risk, the BLM provided information that indicates the additional climate-related costs may:

- *Outweigh the additional timber-related benefits by 2-to-1.*
- *Equal $91,000 per additional timber-related job.*
- *Equal $4 for every $1 of additional timber-related payments to local counties.*

Current data, plus a widely accepted view of risk indicates the additional climate-related costs may:

- *Outweigh the additional timber-related benefits by more than 30-to-1*
- *Equal $1.6 million per additional timber-related job.*
- *Equal $68 for every $1 of additional timber-related payments to local counties.*

The BLM disregarded this information when choosing its Preferred Alternative. To satisfy its

legal and administrative requirements, the BLM should fully and clearly describe the climate related risks that accompany the Preferred Alternative, and explain its justification for imposing these risks on the individuals, households, businesses, and communities that would bear them. This justification should address both the reduction in overall economic wellbeing that would result from implementing the Preferred Alternative and the moral issues that arise from imposing climate-related risk on those that would not enjoy the timber benefits.[5]

We hope these comments help in identifying our concerns; our major effort for these comments is in part 2.

Thank you,
Mary Camp

[5]

Deer Creek Valley Natural Resources Conservation Association
PO Box 670, Selma, OR 97538
541-597-4313

August 21, 2015

Jerome E Perez, State Director
Mark Brown, Project Manager
BLM Planning Team
RMPs for Western Oregon
Bureau of Land Management
P.O. Box 2965
Portland, Oregon 97208
m4brown@blm.gov
blm_or_rmps_westernoregon@blm.gov

Re: Comments on the Draft Resource Management Plan/Environmental Impact Statement for Western Oregon and Request to include the Natural Selection Alternative as an option to be analyzed in detail in the EIS.

Dear Director Perez, Mr. Brown and Planning Team,

I am submitting the comments in behalf of Deer Creek Valley Natural Resources Conservation Association, the Rogue Group of the Oregon Sierra Club, the Illinois Valley Section of the Rogue Group, our members, John Gardiner, and many other supporters of the Natural Selection Alternative for our public lands.

Deer Creek Valley Natural Resources Conservation Association (DCVNRCA) and is an all volunteer community organization, as are all of those signing onto these comments. DCVNRCA a sustainable solution for our public lands, that offers a way that we may all be part of the solution to the many serious challenges facing all of us on Earth today, challenges of a seriousness unlike we have ever experienced.

DCVNRCA We have commented extensively on the Revised Plans for Western Oregon and include them by reference: *Natural Selection Alternative for the Medford District BLM South Deer Landscape Management Project*, 2005 (EA# OR110-05-10); DCVNRCA July 5, 2012, *RMP Scoping comments*; Dennis Odion, August 6, 2005 *Comment Letter for the South Deer Landscape Management Project*; DCVNRCA March 19, 2014, DCVNRCA March 31, 2014 *Planning Criteria Comments*; and all correspondence with BLM during this planning process

Our past comments have requested the BLM include the *Natural Selection Alternative* (NSA) be fully evaluated in the RMP/EIS. These comments will respond to BLM's decision not to include the NSA in the RMP/DEIS for detailed analysis and provide further information in support of the NSA as to why it should be included for detailed analysis.

These comments consist of Part 1; Part 2; Part 3 and an index of documents included on DVD (DCVNRCA Comments for BLM Draft RMP EIS WO). We are also including comments from Orville Camp, DCVNRCA advisor, on the on the Draft RMP/EIS which responds to page 79 regarding the NSA, and to Draft RMP/EIS premises. We are submitting these documents in printed form in a binder and on DVD.

Many conservation organizations have provided a comprehensive, well informed and documented, group response to the DEIS. We include by reference the comments and documentation being submitted for the Resource Management Plans for Western Oregon Draft Environmental Impact Statement, this August 21, in behalf of these many conservation organizations, including DCVNRCA.

Our comments speak to our own personal relationship to natural-community ecosystems in Deer Creek watershed, to those of our neighbors and local community; we also speak to relationships of people throughout Oregon, our nation and our planet have with our natural-community-ecosystems.

The following are being submitted with these comments:

1. **DVD** (DCVNRCA Comments for BLM Draft RMP EIS WO)
2. **DVD**: Niemi, Ernie. 2015 *Oregon's Forest Economy* (video of presentation)
    a. Also available on line (Rogue Valley Community Television): http://vp.telvue.com/preview?id=T01550&video=238025
3. **DVD**: *Call of Life* film; literature
4. **Book**: DellaSala, Dominick A. and Hanson, Chad T. 2015 The Ecological Importance of Mixed-Severity Fires: Natures Phoenix
5. Siskiyou Field Institute Catalogue and Rack Card

We appreciate your consideration of these comments.

We are available, and would appreciate the opportunity to discuss any concerns or issues with your planning staff regarding our request to include the *NSA* as an option to be fully analyzed in the EIS for the Revised Resource Management Plans for Western Oregon. We invite you or your planning team to come out and visit the home of the *Natural Selection Alternative* at Camp Ecostery, Selma, Oregon.

Sincerely,

Mary Camp, President
Deer Creek Valley Natural Resources Conservation Association
Selma, Oregon

541-597-4313

Orville Camp, Natural Community Ecosystem Advisor
Deer Creek Valley Natural Resources Conservation Association
Selma, Oregon

Frederick Mittleman, Chair
Illinois Valley Activity Section Sierra Club
Selma, Oregon

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Rogue Group, Oregon Chapter Sierra Club
P.O. Box 727
Ashland, OR 97520

Dr. John L. Gardiner MBE, PE(Oregon),
Siskiyou Alpaca
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Cave Junction, OR 97523
cell: 541 415 2613

INTRODUCTION

On Pg xxi RMP/DEIS, The BLM encourages the public to review this Draft RMP/EIS and provide comments pertaining to the alternatives and analysis. Comments will be most useful to the BLM to the extent that they

- present new information relevant to the analysis;
- present reasonable alternatives other than those analyzed in the Draft RMP/EIS
- make suggestions, with a reasoned basis, for the development of a proposed RMP
- question, with a reasoned basis, the adequacy of, methodology for, or assumptions used for the analysis; or
- question, with a reasoned basis, the accuracy or information in the Draft RMP/EIS

NEW INFORMATION RELEVANT TO THE ANALYSIS OF THE RMP

Accelerated modern human–induced species losses: Entering the sixth mass extinction

Gerardo Ceballos, Paul R. Ehrlich, Anthony D. Barnosky, Andrés García, Robert M. Pringle, Todd M. Palmer, 2015, *Accelerated modern human–induced species losses: Entering the sixth mass extinction*
http://advances.sciencemag.org/content/advances/1/5/e1400253.full.pdf

Abstract
The oft-repeated claim that Earth's biota is entering a sixth "mass extinction" depends on clearly demonstrating that current extinction rates are far above the "background" rates prevailing between the five previous mass extinctions. Earlier estimates of extinction rates have been criticized for using assumptions that might overestimate the severity of the extinction crisis. We assess, using extremely conservative assumptions, whether human activities are causing a mass extinction. First, we use a recent estimate of a background rate of 2 mammal extinctions per 10,000 species per 100 years (that is, 2 E/MSY), which is twice as high as widely used previous estimates. We then compare this rate with the current rate of mammal and vertebrate extinctions. The latter is conservatively low because listing a species as extinct requires meeting stringent criteria. Even under our assumptions, which would tend to minimize evidence of an incipient mass extinction, the average rate of vertebrate species loss over the last century is up to 100 times higher than the background rate. Under the 2 E/MSY background rate, the number of species that have gone extinct in the last century would have taken, depending on the vertebrate taxon, between 800 and 10,000 years to disappear. These estimates reveal an exceptionally rapid loss of biodiversity over the last few centuries, indicating that a sixth mass extinction is already under way. Averting a dramatic decay of biodiversity and the subsequent loss of ecosystem services is still possible through intensified conservation efforts, but that window of opportunity is rapidly closing

Discussion excerpt

The evidence is incontrovertible that recent extinction rates are unprecedented in human history and highly unusual in Earth's history. Our analysis emphasizes that our global society has started to destroy species of other organisms at an accelerating rate, initiating a mass extinction episode unparalleled for 65 million years. If the currently elevated extinction pace is allowed to continue, humans will soon (in as little as three human lifetimes) be deprived of many biodiversity benefits. On human time scales, this loss would be effectively permanent because in the aftermath of past mass extinctions, the living world took hundreds of thousands to millions of years to rediversify. Avoiding a true sixth mass extinction will require rapid, greatly intensified efforts to conserve already threatened species and to alleviate pressures on their populations—notably habitat loss, overexploitation for economic gain, and climate change (31–33). All of these are related to human population size and growth, which increases consumption (especially among the rich), and economic inequity (6). However, the window of opportunity is rapidly closing.[1]

Excelling supporting information may be found in **Call of Life: Facing the Mass Extinction**, Film Produced by Species Alliance; Ulansey, David, Executive Producer**:**

Today, scientists believe that we are entering the 6th Mass Extinction. But unlike the previous five, this one will not take centuries to unfold—in fact, it will take place in our lifetimes. As scientists begin to realize the severity of the crisis and new worldwide assessments are made, the news is difficult to believe. At least half of all plant and animal species are likely to disappear in the wild within the next 30-40 years, including many of the most familiar and beloved large mammals: elephants, polar bears, chimpanzees, gorillas and all the great apes, all the big cats, and many, many others. Bird species are similarly imperiled, songbird populations have declined by 50% in the last 40 years. One out of every eight species of plant life worldwide and almost one third of the plant species within the United States already face extinction. Populations of large ocean fish have declined by 90% since the 1950s. All around the world, birds, reptiles, mammals, amphibians, fish, and invertebrates, as well as trees, flowering plants, and other flora, are all in steep decline. The rate of extinction today could be as much as 10,000 times greater than the expected natural or background extinction rate. Scientists estimate that tens of thousands of species are vanishing every year, including many

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[1] *Accelerated modern human–induced species losses: Entering the sixth mass extinction*

Gerardo Ceballos1,*, Paul R. Ehrlich2, Anthony D. Barnosky3, Andrés García4, Robert M. Pringle5 and Todd M. Palmer6

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Science Advances 19 Jun 2015:Vol. 1, no. 5, e1400253 DOI: 10.1126/sciadv.1400253

that have yet to be discovered or named.

We depend on many species directly for our basic human needs such as food, clothing, fuel, shelter, and medicine, but the complex network of all species is necessary to support those species that we depend upon directly. Ecosystems are intricately interdependent—species depend on each other for survival in complex and subtle ways that science is only beginning to understand. Biologically diverse ecosystems provide indispensable ecosystem services that we often take for granted, including purification of the air and water, climate regulation, nutrient cycling in the soil, disease control, pollination, seed dispersal, biological pest control, and prevention of erosion, to name just a few. We cannot live without these essential services that healthy ecosystems provide.

Land animals populations down 28% since 1970; marine bird populations down 30% since 1995; big ocean fish populations down 90% since 1950; freshwater fish populations down 50% since 1987; marine animals populations down 28% since 1970; songbirds populations down 50% since 1965. If current trends continue, within decades HALF or MORE of all plant and animal species will disappear forever.[2]

PRESIDENT BARACK OBAMA: "Climate change is no longer just about the future that we're predicting for our children or our grandchildren; it's about the reality that we're living with every day, right now. The Pentagon says that climate change poses immediate risks to our national security. While we can't say any single weather event is entirely caused by climate change, we've seen stronger storms, deeper droughts, longer wildfire seasons. Charleston and Miami now flood at high tide. Shrinking ice caps forced National Geographic to make the biggest change in its atlas since the Soviet Union broke apart. Over the past three decades, nationwide asthma rates have more than doubled, and climate change puts those Americans at greater risk of landing in the hospital. As one of America's governors has said, we're the first generation to feel the impact of climate change and the last generation that can do something about it. And that's why I committed the United States to leading the world on this challenge, because I believe there is such a thing as being too late." March 1st 2014

We are including the newly released book:
DellaSala, Dominick A. and Hanson, Chad T. 2015 <u>The Ecological Importance of Mixed-Severity Fires: Natures Phoenix</u>.

<u>Global synthesis of large wildland fires shows they are ecologically beneficial</u>. Jul 01, 2015,

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[2] *Call of Life, Facing the Mass Extinction*, 2010 film by Species Alliance, a nonprofit organization formed in 2005 to raise public awareness of the impending mass extinction and the threat to Earth's life support systems due to the loss of biodiversity. http://calloflife.org/p-story.htm Film included in DCVNRCA comments as enclosure.

08:05 et from geos institute (pr newswire, a ubm pk company):

“ASHLAND, Ore., July 1, 2015 /PRNewswire-USNewswire/ -- Twenty-five leading fire scientists from around the world released a new synthesis "The Ecological Importance of Mixed-Severity Fires: Nature's Phoenix" published by Elsevier, a world-leading provider of scientific, technical and medical information products and services.

> For the first time extensive documentation from around the world reveals that forests and other plant communities need a variety of different types of fires, including severe ones, to rejuvenate over the long-term. These findings are timely as Members of Congress propose to weaken environmental laws based on the assumption that fires are damaging to forests, and logging is needed to reduce fire effects.

According to Dominick A. DellaSala, Chief Scientist of the Ashland-based Geos Institute and co-editor, "This is the first global synthesis of the countless ecosystem benefits of large and severe fires. Simply put, fire is to dry forests as rain is to rainforests, both are needed for vibrant forest ecosystems to remain that way."

Chad Hanson, director and ecologist of John Muir Project, Earth Island Institute, and co-editor added: "The research compiled in this book provides strong evidence that when large fires burn through a forest they enrich fire-dependent communities and provide habitat for scores of plant and wildlife species that rival the more celebrated old-growth forests. Although it makes many uncomfortable, it is time that we recognize the important role that fire plays in renewing forests."

Researchers compiled findings from western North America, central Europe, southeast Australia, and sub-Saharan Africa, summarized as:

Forest thinning in the backcountry does not improve homeowner safety, and does not meaningfully influence large, weather-driven fires.

The mosaic of fire patches in large fires (unburned to severely burned areas) produces ideal habitat for scores of plants and animals.

Large, severe fires restore habitats for a fire-dependent web-of-life. Post-fire logging, tree planting, and herbicides most often degrade the rich post-fire landscape and increases future fire risks.

Contrary to what many think, large and severe fires are not currently increasing in western North America compared to historical times.

Climate change in dry regions may increase the frequency and extent of large fires this century eventually closing the gap in historical acres burned.

People can live safely with fire in the backcountry by building with fire-resistant materials and reducing flammable vegetation nearest homes.

Large severe fires contribute much less carbon dioxide to global warming than the burning of

fossil fuels or forest thinning over large landscapes.

Record fire suppression is doing little to stop large fires during extreme weather events. It is best to prepare for fire by reducing risks to homes and proper zoning that limits sprawl into fire-prone areas.

DellaSala added, "In the 1940s when the Forest Service started its fire suppression policy, it made sense to put out fires for public safety. The truth is, large fires are not going away no matter what we do to try to stop them, so we need to do a better job of investing scarce public resources in protecting lives and homes."

This major fire reference includes nearly 400 pages of science-based accounts of large and severe fires that have shaped the ecology of plant and wildlife communities for millions of years. So called "mixed-severity fires" burn in a mosaic (quilt-like) pattern of small to large patches of low (ground burning) to high-severity (most trees killed) burns that resembles a living kaleidoscope of plants and wildlife. This is in stark contrast to logging after a fire.

As scientists warn 2015 is on pace to become the Earth's hottest year on record, President Obama has unveiled his long-awaited plan to slash carbon emissions from U.S. power plants. During a speech at the White House, Obama said no challenge poses a greater threat to future generations than a changing climate.

An important finding relative to Climate Change; Fire Plans; Species Extinctions and the *Natural Selection Alternative:*

"CORVALLIS, Ore. – In a finding that overturns the conventional view that large old trees are unproductive, scientists have determined that for most species, the biggest trees increase their growth rates and sequester more carbon as they age.

In a letter published today in the journal Nature, an international research group reports that 97 percent of 403 tropical and temperate species grow more quickly the older they get. The study was led by Nate L. Stephenson of the U.S. Geological Survey Western Ecological Research Center. Three Oregon State University researchers are co-authors: Mark Harmon and Rob Pabst of the College of Forestry and Duncan Thomas of the College of Agricultural Sciences.

The researchers reviewed records from studies on six continents. Their conclusions are based on repeated measurements of 673,046 individual trees, some going back more than 80 years.

This study would not have been possible, Harmon said, without long-term records of individual tree growth. "It was remarkable how we were able to examine this question on a global level, thanks to the sustained efforts of many programs and individuals.

Extraordinary growth of some species, such as Australian mountain ash – also known as

eucalyptus – (Eucalyptus regnans), and the coast redwood (Sequoia sempervirens) is not limited to a few species, the researchers said. 'Rather, rapid growth in giant trees is the global norm and can exceed 600 kg (1,300 pounds) per year in the largest individuals,' they wrote.

'In human terms, it is as if our growth just keeps accelerating after adolescence, instead of slowing down," said Stephenson.' By that measure, humans could weigh half a ton by middle age, and well over a ton at retirement.

The report includes studies from the Pacific Northwest. Harmon and his colleagues worked in forest plots – some created as early as the 1930s – at the H.J. Andrews Experimental Forest east of Eugene and Mount Rainier National Park. Researchers measured growth in Douglas-fir, western hemlock, Sitka spruce, western red cedar and silver fir. The National Science Foundation and the Pacific Northwest Research Station of the USDA Forest Service provided funding."

The *Natural Selection Alternative* is a Reasonable Alternative Other than Those Analyzed in the Draft Rmp/EIS

NSA was considered but not analyzed in detail, as described on Page 79 of the Draft RMP/EIS. Specifically, on Page 79,

> "The BLM eliminated this alternative from detailed analysis because it would not meet the purpose and need and the basic policy objectives described in the guidance for development of all action alternatives, in that it would not make a substantial and meaningful contribution to providing a sustained yield of timber."

I am requesting the full ID Team documentation of the analysis and the criteria BLM used to make the determination on (DEIS p 79), in behalf of myself and the Deer Creek Valley Natural Resources Conservation Association. Documentation we are requesting , but not limited to: Documentation that provides the rationale (including the ecological basis) BLM used to determine that the NSA does not "reflect the annual productive capacity for such lands." How BLM made the determination that the annual productive capacity for such lands would not be reflected in harvest of timber limited to those dead or dying, that the timber would not support sustained-yield capacity for such land. How the predictable volume for such sale compares in predictability in perpetuity without impairment of the productivity of the land, to the alternatives analyzed in the DEIS (see Sustained yield-DEIS p 892). How BLM accounts for the other purposes and needs set forth relative to the NSA.

Please see attached comments by Orville Camp regarding this BLM decision. Also see comments on the interpretation of the O&C act and sustained yield made in our earlier

comments and in the extensive comments included in those of the conservation organizations group comments.

I was hopeful that I would receive reply to my FOIA requesting documentation of the analysis and the criteria BLM used to make the below determination (DEIS p 79), (FOIA requests and communication with BLM staff is included on enclosed DVD) to include further discussion in these comments. It would seem that by postponing reply until the release of the FEIS, our ability to participate in a meaningful way in the planning process not possible.

We object to the data-free-analysis not to include the NSA in the EIS. We provided logical reasoning that the NSA is superior to the BLM alternatives providing a predictable, sustainable yield in perpetuity without impairment of the land. BLM has not provided rational as to why it does not agree with rational submitted (repeatedly) to BLM, BLM has not provided any data to support claims that this is not the case.

I inquired of the NEPA specialist and computer program modeling person at the Medford District RMP open house about computer program modeling for the RMP. It is my understanding that you do not have programs that will incorporate the full natural community ecosystem species in terms of productivity and volume of board feet in comparison to tree based management practices (that include clearcuts, thinning, etc).

The original Natural Selection Alternative was authored by Orville Camp, in behalf of the Deer Creek Valley Natural Resources Conservation Association (DCVNRCA) in collaboration with the Medford District BLM South Deer Landscape Management Project, 2005.

The Natural Selection Alternative has been proposed for implementation on our public lands since its release in 2005. It has been supported and endorsed by hundreds of individuals, community leaders and organizations from diverse interests and backgrounds.

DCVNRCA requested that the Natural Selection Alternative be included for detailed analysis for the revised RMP's during Scoping, and Planning Criteria comment periods. While the alternative was originally developed for South Deer Project, it is a universal plan. The NSA for the South Deer Project completed the NEPA process, and was included in the Environmental Assessment and Decision as the best alternative for a section of BLM land and although it is universal plan, this version gives a good illustration of what it would look like applied for a specific project in a specific area. We are in addition submitting the attached *Discussion and Supporting Documentation Regarding the Natural Selection Alternative for the BLM Plan Revisions for Western Oregon,* to assist the BLM in understanding in the *Natural Selection Alternative*, the rational, basic assumptions and criteria for implementation on BLM lands in western Oregon, in our request to include it as an option for detailed analysis in the Final RMP/EIS. This document is identified as Part 2 of these comments. The NSA is able to meet the RMP Purpose and Need, and the only action alternative able to do so. (The no harvest

alternative would also meet the Purpose and Need). We request to enter into a MOU as we did with BLM in the South Deer Project, to work together with BLM to and or have a liaison/advocate who will fully understand the NSA assisting DCVNRCA develop the Natural Selection Alternative to meet technical requirements, while remaining true to the principles and concepts of the Natural Selection Alternative, to be included in the FEIS of the revised RMP for Western Oregon.

RMP fails to recognize and needs to recognize "temperate and boreal rainforests are biogeographically unique. Compared to their tropical counterparts, they are rarer and at least as endangered."

(Temperate and Boreal Rainforests of the World, GEOS institute:
http://www.geosinstitute.org/maps/TemperateRainforests/index.html

"Because most temperate and boreal rainforests are marked by the intersection of marine, terrestrial, and freshwater systems, their rich ecotones are among the most productive regions on Earth. Many of them store more carbon per hectare than even tropical rainforests, contain some of the oldest and largest trees on the planet, and provide habitat for scores of rare and unique species including some with affinities dating back to the supercontinent Gondwanaland and when dinosaurs were king.

In spite of their global significance, however, protection levels for these remarkable rainforests are far too low to sustain them under a rapidly changing global climate and ever expanding human footprint. And because they have been ignored in recent efforts to curtail greenhouse gas pollutants from deforestation, they are destined to become the world's forgotten rainforests in global efforts to stem global warming pollution. Fortunately, a global campaign is underway to step up conservation of these remarkable rainforests ranging from an end to logging of native forests in Tasmania to new restrictions on logging designed to protect up to 70% of the Great Bear Rainforest in British Columbia."

Much of the project area includes these rainforests.

THE METHODOLOGY AND ASSUMPTIONS FOR THE ANALYSIS IN THE RMP DEISARE NOT BASED ON BEST AVAILABLE SCIENCE.

The science used in the RMP analysis is timber industry forestry and not evolutionary biology.

1. To address natural community ecosystem issues using forestry management science instead of evolutionary biology will not sustain natural community ecosystem species or a sustained predictable yield of timber in perpetuity.

THE METHODOLOGY AND ASSUMPTIONS FOR THE ANALYSIS OF "FIRE AND FUELS" ARE NOT BASED ON BEST AVAILABLE SCIENCE.

The RMP addresses fire issues using fundamentally flawed forestry management science The RMP/DEIS fire and fuels treatments are based on faulty premises. instead of evolutionary fire science and understanding of natural fire regimes from which native plants and animals evolved and of their importance to sustain natural community ecosystems. The approach to fire in all alternatives proposed, perpetuates unsustainable and destructive timber industry driven forestry management paradigm.

DCVNRCA requested *the NSA be included and fully evaluated in the RMPs for Western Oregon EIS. Because it is a new and innovative approach for public lands (although with a 45 year old track record on private lands), we have asked that a NSA team participate in the EIS process.* (See attached Exhibit A)

August 8, 2014 Mark Brown (BLM/RMP/DEIS project manager) replied:

> *Thank you for your offer to have direct participation and interaction with the Interdisciplinary Team (IDT). I would like to briefly explain why we are respectfully declining your offer, and why it would not be possible for us to have an "NSA team fully participate in the EIS process along with the BLM Interdisciplinary Team." Including an "NSA team" would be problematic in a number of ways. First, we need to be fair to all stakeholders by providing information and the opportunity for input to all non-governmental entities at the same time. I hope you will appreciate the significant challenges that would present as there are numerous stakeholders involved in this planning effort. Also, engaging with a particular group of non-governmental entities could be inconsistent with the Federal Advisory Committee Act, which provides limitations on how federal agencies such as the BLM are able to receive advice and participation from non-governmental groups.*

The fire and fuels portion of the RMP (Pgs 1113-1136) use information from a NGO The Nature Conservancy (TNC), and at the same time states as noted above, "we need to be fair to all stakeholders by providing information and the opportunity for input to all non-governmental entities at the same time." T hat does not incorporate best science.

I was informed at a BLM RMP/DEIS open house in Medford that the approach to fire was not included in the analysis because BLM would continue to use the current practices in all of their proposed actions.

For this reason the BLM needs to revise the RMP/DEIS because it did not consider a range of alternatives for fire, instead relied upon an approach which has been widely contested by the public and hundreds of highly credible scientists with backgrounds in ecological sciences and natural resource management.

Frost, Evan J. and Sweeney, Rob. 2002. Fire Regimes, Fire History and Forest Conditions in the Klamath-Siskiyou Region: An Overview and Synthesis of Knowledge:

The current popular and frequently repeated hypothesis about fires in the Klamath Mountains is that – as a result of fire suppression and other human activities – large fires are occurring more frequently and are larger and more intense than they were in the past (Atzet et al. 1988, USDA Forest Service 1994, 1995, 1996, 1998b, Brookes 1996). This position is predicated on assertions, that, because of fire suppression: 1) the number of fires in the region has declined over time, 2) fires are substantially larger today than in the past, and 3) large, intense fires are the results of unnaturally high levels of fuels accumulation. However, none of these assertions have been supported with empirical data from the Klamath Mountains or by analysis demonstrating that a change in fire frequency, size or severity has occurred from historic to present. If this hypothesis is not true, it may lead to inappropriate forest management and adverse impacts to regional biodiversity.

October 30, 2013, 250 scientists with backgrounds in ecological sciences and natural resource management stated in an open letter to members of congress:

This post-fire habitat, known as "complex early seral forest," is quite simply some of the best wildlife habitat in forests and is an essential stage of natural forest processes. Moreover, it is the least protected of all forest habitat types and is often as rare, or rarer, than old-growth forest, due to damaging forest practices encouraged by post-fire logging policies. While there remains much to be discovered about fire in our forests, the scientific evidence indicates that complex early seral forest is a natural part of historical fire regimes in nearly every conifer forest type in the western U.S. (including ponderosa pine and mixed-conifer forests) and that small and large patches of it occur.

Fire is an inherent part of natural community ecosystems and their frequency is variable. Conversion of late successional forests to early successional tree plantations have caused the risk for increased fire size, intensity, and severity; it isn't because of fire suppression and it isn't in our legacy old natural community ecosystems.

Numerous studies also document the cumulative impacts of post-fire logging on natural ecosystems, including the elimination of bird species that are most dependent on such conditions, compaction of soils, elimination of biological legacies (snags and downed logs) that are essential in supporting new forest growth, spread of invasive species, accumulation of logging slash that can add to future fire risks, increased mortality of conifer seedlings and other important re-establishing vegetation (from logs dragged uphill in logging operations), and increased chronic sedimentation in streams due to the extensive road network and runoff from logging operations. [Hutto, R. L. 2006. Toward meaningful snag-management guidelines for postfire salvage logging in North American conifer forests. Conservation Biology 20:984-993. Beschta, R.L. et al. 2004. Postfire management on forested public lands of the western USA. Conservation Biology 18:957-967. Lindenmayer, D.B. et al. 2004. Salvage

harvesting policies after natural disturbance. Science 303:1303. Karr, J. et al. 2004. The effects of postfire salvage logging on aquatic ecosystems in the American West. Bioscience 54:1029-1033. DellaSala, D.A., et al. 2006. Post-fire logging debate ignores many issues. Science 314-51-52. Donato, D.C. et al. 2006. Post-wildfire logging hinders regeneration and increases fire risk. Science 311 No. 5759:352.]

We urge you to consider what the science is telling us: that post-fire habitats created by fire, including patches of severe fire, are ecological treasures rather than ecological catastrophes, and that post-fire logging does far more harm than good to the nation's public lands

BLM FAILED TO USE SCIENCE BASED ECONOMIC ANALYSIS

We have enclosed the video *Oregon's Forest Economy– For This and Future Generations,* of a presentation given in Grants Pass, AnnBasker Auditorium on May 6, 2015. We have also included the presentation notes in our documentation.

We hope these comments help in identifying our concerns; our major effort for these comments is in part 2.

Thank you,
Mary Camp

August 21, 2015, DCVNRCA Draft RMP/EIS comments and request to include the *Natural Selection Alternative* as an option to be analyzed in detail in the FEIS for the revised Management Plan for Western Oregon, Part 3.

The Deer Creek Watershed, of the
Illinois River Watershed, of the Rogue River Watershed

Home of Camp Ecostery and the *Natural Selection Alternative*
and Gateway to the Kalmiopsis Wilderness

Deer Creek natural-community-ecosystems on public BLM-administered lands, shelter important salmon streams, provide critical habitats for threatened wildlife, offer incredible recreation opportunities, provide wild scenic backdrops, and supply drinking water. All residents of Deer Creek watershed are dependent upon springs or groundwater wells for domestic use.

Rare low elevation natural community ecosystems in Deer Creek watershed BLM checkerboard public land, provide critical east-west habitat connecting blocks to mountainous Siskiyou National Forests for terrestrial species, especially late successional dependent species such as northern spotted owl, red tree vole, bald eagle and aquatic ecosystems that native salmonid species depend upon. These BLM lands are home to some of the most environmentally diverse and threatened environments on the planet. Deer Creek is one of the major tributaries of the Illinois River. Important spawning habitat for Illinois and Rogue River Basin's wild salmon and steelhead populations are among the most genetically intact of any major populations remaining in the Pacific Northwest.

Most DCA members live adjoining to or near O&C lands that were set aside to protect and preserve natural community ecosystems for all of their values and uses so that they can and will continue to sustain themselves and us. We rely on these natural communities to sustain our nature-based economy, to moderate climate extremes, provide clean water, air and countless other life-sustaining essentials. We use these public lands for such things as gathering edibles, firewood, educational, aesthetic, spiritual, recreational, and economic values. We've learned how to have sustainable relationships with natural communities which we believe is essential to human survival.This is the second year that Deer Creek watershed residents are suffering with extreme drought and struggling to deal with the inability to meet a most basic and critical need for domestic water. Many of our neighbors had water trucked in for the first time last year, and for a span of many months; and it is worse this year. The creeks are low and the fish holes are drying up.

See attached declaration by Gordon R. Lyford, Declaration for the Deer North Timber Sale

(Selma), Medford District BLM, February 2013.[1] Here is an excerpt:

> "14. The BLM lands are some of the most important and intact forestlands remaining in the Deer Creek watershed. In the natural state the entire Deer Creek watershed was heavily forested in both the riparian and upland areas. As such, those BLM have taken on an increased importance in the Deer Creek watershed for wildlife habitat and stream flow regulation because the function of the private lands have been severely degraded.
>
> 15. Those BLM lands are Oregon and California (O&C) railroad lands. According to the O&C Act those BLM lands are to be managed "for permanent forest production, and the timber thereon shall be sold, cut, and removed in conformity with the principal for sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities". Regulating stream flow is an old term-of-art which means to slow runoff and erosion.
>
> 16. A definition of sustained yield is that "it can be done forever". Permanent forests are not tree farms like those found on the private industrial forests lands. If the BLM were to properly manage the O&C lands, then the natural forest character will remain with a diverse mix of tree and forb species of all age classes.
>
> 17. In resource management, whether it is of water, fisheries, grazing land, or forests, a smaller harvest or use is always more sustainable, fewer shortages occur, and the economic benefits are more

My husband, Orville Camp and I live at Camp Ecostery (a place where sustainable relationships are observed, learned, practiced and taught) on Thompson Creek in the McMullin subwatershed, where my husbands great grandparents homesteaded in 1918. It is surrounded by BLM on three sides and corporate land on the other. Water in the creeks and springs on and near our land have never been this low/dry in my husbands 80 year lifetime.

These water problems are the combined result of climate change and forestry practices. They are being exacerbated by massive amounts of clearcutting by large corporate land owners (especially Swanson and Indian Hill and Perpetua [Rough & Ready mill owners]) in the Deer Creek watershed. Seasonal rainwater that previously percolated into underground reservoirs and provided for year round water flow, now runs off the surface causing flooding and erosion, while creeks, springs and wells run dry in the dry seasons.

Residents of the Deer Creek watershed have been suffering from destructive forest

---

[1] Lyford, Gordon R., Declaration for the Deer North Timber Sale (Selma), Medford District BLM, February 2013.

management practices, not only on corporate timber land, but also by BLM timber sales that are degrading and destroying the last intact late successional natural community ecosystems that provide for clean water, wildlife and nature based economy.

Much of the Deer Creek Watershed would be designated "harvest land base". There is no justification to reduce protections to reduce current insufficient protections of Deer Creek Watershed. [2] The following is an excerpt from the Coast Range Association new science and report to help agency managers and the public assess proposals such as the BLM revised RMP:

> "Conclusion
> We conclude that attempts to reduce protections to watershed, riparian, and freshwater ecosystems by weakening major components of the ACS and other related conservation elements of the Northwest Forest Plan are not justified by new and emerging science. Improved ecosystem protections–and better monitoring of outcomes–are warranted across all land ownerships, including federal forest lands, if freshwater ecosystems and their biota, including salmon and other sensitive species are to be effectively conserved in an era of increased ecological stress and changing climate."
>
> "Fish species found in the Deer Creek Watershed include coho salmon, fall chinook salmon, winter steelhead trout and resident cutthroat trout. Fall chinook are only found in the Deer Creek mainstem. Nongame species such as speckled dace, Pacific lamprey, sculpin, and redside shiner also inhabit streams within the watershed....
> The conditions leading to water quality limitations and 303(d) listing have accumulated over many decades. Management measures to address these factors will be carried out over an extended period of time. Furthermore, once restorative actions and protection practices achieve desired results, continued vigilance will be required to maintain water quality standards." P 14 [3]

It makes little sense to degrade and destroy the headwaters of the Illinois Valley Basin, where the coho spawn and water flow and quality is regulated. The RMP would put coho at hugely increased risk of extinction. I personally observe the coho in Camp Creek, tributary of Thompson Creek, in our front yard spawn and thrive and at times disappear. I observe springs and water holes in the creeks dry up that didn't in the past. Regional climate change models predict floods, droughts, and challenges to fish to adapt to these changes; and impacts to

---

[2] Frissell, Christopher A. et al., *CONSERVATION OF AQUATIC AND FISHERY RESOURCES IN THE PACIFIC NORTHWEST: Implications of New Science for the Aquatic Conservation Strategy of the Northwest Forest Plan*. 2014 Coast Range Association

[3] Water Quality Restoration Plan. Deer Creek Watershed HUC 1710031105 Prepared by: Medford District Bureau of Land Management, Grants Pass Resource Area December 2011

domestic surface spring and well water sources. Scientists have testified that more protections are required on these O&C lands to maintain riverscape connectivity, mitigate flood damage and anticipated erosion, and allow fish to adapt to cumulative impacts and channel migration.

It is ecologically and socially unjustifiable to weaken protective provisions of the NWFP, and the ACS. BLM RMP DEIS alternatives would violate the O&C Act, ESA, CWA, NEPA; alter local, regional and global climate, and elevate carbon dioxide emissions. Deer Creek residents are legally and morally justified in our opposition to the proposed RMP and it's alternatives and in our request to protect our watershed and water flow.

DCVNRCA formed over 30 years ago, because of harmful forestry management practices prior to the NWFP, that were causing catastrophic water problems to landowners, farmers and other residents. Our community is no longer dependent on timber jobs, we have adapted and changed to be a nature dependent community living in peace. We live here because of the beauty and ecosystem service values on our public lands, not for timber jobs. Recreation, tourism, carbon storage, most importantly water, are our wealth and our future.

The Deer Creek Watershed is the Gateway to the Kalmiopsis Wilderness, it is our pride, our livelihood, our home it provides some of the last rare habitat for Northern Spotted Owls. We demand full protections provided by all current environmental laws and refuse to accept continued degraded conditions and harms to the quality of our lives and other species.

DCVNRCA and our community have developed and proposed a sustainable solution, socially, environmentally and economically for our public lands, the *Natural Selection Alternative*. I am including a few photos to better illustrate the outcome of these practices on previously cutover land, where it has been implemented for 45 years at Camp Ecostery. I am also including photos to better illustrate what I have discussed in this letter. We would appreciate the opportunity to have you come out and see for yourself our concerns and solutions.

Please let me know if I may provide further assistance.

Sincerely,

Mary Camp, President in behalf of
Deer Creek Valley Natural Resources Conservation Association (DCA)
other signers to these comments and our community
Selma, OR
541-597-4313
maryc@rogueriver.net

All of the following photos have been taken within the Deer Creek Watershed.

1. Location: T38S-R7W-S26; Date: 2005
   Overlooking South Deer Creek Watershed to Coast Range. Deer Creek feeds the Illinois which fees the Rogue River. Photos show several Deer Creek Watershed tributaries including Thompson Creek, McMullin Creek, Reeves Creek and Kalmiopsis Wilderness area.

2. Location: T38S-R8W-S9 Date: 2010
   Overlooking Deer Creek Watershed toward the east/Siskiyou National Forest. Little Grayback mountain range is in the background on the right. This photo was taken from the front porch of Deer Creek Center during a nature course at the Siskiyou Field Institute, located at the Deer Creek Center: http://www.thesfi.org/ . Siskiyou Field Institute's mission is to introduce people to one of the most diverse and intriguing bioregions in the world - the Klamath-Siskiyou Mountains - through field-based natural history classes.

3. Location: T38S-R7W-Sec27 Date: 2005
   BLM O&C land, Thompson Creek Overlook Trail. This is a popular hiking and educational trail in a never logged natural community ecosystem. Designated NSO Critical Habitat Unit under 1995 NWFP.

4. Location: T37S-R7W-S21 Date: 2005
   BLM O&C land in the Thompson Creek watershed. Countless late successional species live here. Drainage feeds into nearby coho habitat. (Harvest Land Base designation in BLM RMP DEIS).

5. Location: T37S- R7W- S07 Date: 2012
   Davis Creek Drainage in the Draper Creek subwaterhsed of Deer Creek watershed. BLM O&C public lands prior to BLM's *Deer North Timber Sale* to a large lumber corporation. This is was (prior to logging) spotted owl habitat with many documented red tree vole nests, located adjacent to popular tourist attraction, *Deer Creek Vineyards*. (Harvest Land Base designation in BLM RMP DEIS).

6. Location: T37S, R7W, S07 Date: 2013
   Post logging of unit 7-11 *Deer North Timber Sale* photo taken in same location as photo 5. See the same orange marked tree in both photos. This illustrates forestry management practices that cause the destruction of the last of Deer Creek's late successional natural community ecosystems and normal hydrological functions and on our public land. Illustrates that corporate timber companies are getting the last of this big, old timber under current laws. (Harvest Land Base designation in BLM RMP DEIS).

7. Location: T37S-R7W-S32 Date: 2014
Davis Ck headwaters, a tributary to Deer Creek. Corporate timber industry land, clearcut in 2013. (same drainage, same year as logging in photo 6)

8. Location: T38S-R7W-S22 Date: 2008
Corporate clearcut located at the headwaters of two different domestic spring water sources on Thompson Ck (located in McMullin subwatershed of Deer Ck watershed). One domestic spring water system, designed to enhance coho salmon habitat, was rendered completely dysfunctional, the other system required a lot of work at the expense of the owner, but couldn't be fully restored. Prior to clearcut this was spotted owl nesting habitat. (adjacent to "Owl Core" and 1995 Critical Habitat Unit for NSO).

9. Location: T38W-R7W-S06 Date: 2014
Corporate timber industry land, clearcut in 2013. McMullin Ck headwaters that feeds Lake Selmac, the most popular fishing and recreational lakes in SW Oregon: http://www.lakeselmac.com/ http://www.co.josephine.or.us/Page.asp?NavID=492. Since this and other recent clearcuts in the drainage, the lake has become loaded with silt and unknown amounts of toxins and disappearance of previously abundant water foul. BLM O&C land on three sides of this county park and local business/resort, includes a Bald Eagle nest, horseback riding trails and picturesque views.

10. Location: T38S- R7W-S22 Date: 2009
Runoff from clearcut on corporate land; headwaters of domestic spring water source destroyed on Thompson Ck. Water that used to provide year round, underground cool, clean and pure spring water prior to logging, filled with silt, and unknown amount of toxins, flows over the surface during heavy rains, and dries up in the summer. Received a "take permit" for Northern Spotted Owl and had huge ancient trees prior.

11. Location: T38S-R7W-S27 Date: 2005
Road/trail access system designed to retain the integrity of the natural community ecosystem used under the Natural Selection Alternative. Located at Camp Ecostery in the Thompson Creek drainage.

12. Location: T38S-R7W-S27 Date: 2012
Coho spawning at Camp Ecostery (where natural selection relationships and species trait-environment compatibility are retained) in Camp Creek, tributary to Thompson Creek. There are two spring fed Creeks at Camp Ecostery, which are leading contributors to coho habitat on Thompson Creek drainage.

13. Location: T38S-R7W-S27 Date: 2007
A northern spotted owl that finds refuge and makes it's home at Camp Ecostery and rare adjoining BLM remaining intact late successional ecosystem communities.

14. Location: T38S-R7W-S27 Date: 2006
BLM O&C land. Thompson Creek Overlook Trail is visited by people from around the world. This is a school with youth from across America & Canada often come to visit this ancient never-logged natural late successional community ecosystem with large trees.

Above 14 photos and 6 maps from the 1997 Grants Pass Resource Area BLM's Deer Creek Watershed Analysis (last 6 attachments) are submitted is printed copies and DCA comments DVD. The Deer Ck Watershed Analysis is also included in our DVD of attachments and can be found here: http://www.blm.gov/or/districts/medford/plans/files/DeerCreekWA_acc.pdf (these versions don't include the maps; however it is BLM produced document.)

Here is the link to the 2011 Deer Creek Watershed Water Quality Restoration Plan BLM prepared to fulfill a requirement of the Clean Water Act: http://www.blm.gov/or/districts/medford/plans/files/deerckwqrp.pdf It is also included in our DVD of attachment. It includes a map of the Deer Ck watershed (pg 2), identifying BLM lands. McMullin, a sub watershed was not included in this plan because it was prepared separately. The 2005 McMullin Creek Watershed Water Quality Restoration Plan is here: http://www.blm.gov/or/districts/medford/plans/files/wqrpmcmullinck.pdf

August 21, 2015, DCVNRCA Draft RMP/EIS comments and request to include the *Natural Selection Alternative* as an option to be analyzed in detail in the FEIS for the revised Management Plan for Western Oregon, Part 2.

This portion of our comments continues our discussion and rational, detailing each component of the Natural Selection Alternative presenting a reasoned basis, how the Natural Selection Alternative addresses the RMP revisions for Western Oregon: The Natural Selection Alternative is a reasonable alternative that is a scientifically credible, legally responsible and economically viable method to achieve the conservation and recovery of threatened and endangered species, protect watersheds, regulate stream flow, restore fire-adapted ecosystems, provide for recreation opportunities, and socioeconomic goals stated in the RMP, including provide a permanent and sustained yield of timber. This discussion explains with reasoned basis why BLM proposed alternatives would have significant harmful environmental impacts and not meet the purpose and goals of the RMP. The Natural Selection would retain and restore natural-community-ecosystems, and greatly contribute to long term economic stability of the communities in the BLM Western Oregon.

August 21, 2015
Discussion and Supporting Documentation Regarding the

Natural Selection Alternative

for the
U.S. Department of the Interior
Bureau of Land Management
Draft Resource Management Plan/
Environmental Impact Statement
for
Western Oregon

by

Mary Camp in behalf of
Deer Creek Valley Natural Resource Conservation Association
P.O. Box 670
Selma, Oregon 97538

Background

The original *Natural Selection Alternative* was authored by Orville Camp, in behalf of the Deer Creek Valley Natural Resources Conservation Association (DCVNRCA) in collaboration with the Medford District BLM as an alternative, included in the Environmental Assessment[1] and Decision[2] for the South Deer Landscape Management Project, 2005.

The *Natural Selection Alternative* support for implementation on our public lands has continued since its release in 2005. It has been supported and endorsed by hundreds of individuals, community leaders and organizations from diverse interests and backgrounds.

DCVNRCA requested that the *Natural Selection Alternative* be included for detailed analysis for the revised RMP's during Scoping, and Planning Criteria comment periods. While the alternative was originally developed for South Deer Project, it is a universal plan.[3] We are submitting this version to assist the BLM in understanding the *Natural Selection Alternative* for implementation on BLM lands in Western Oregon with regards to our request to include it as an option for detailed analysis in the FEIS.

The fundamental concepts and philosophy regarding this *Natural Selection Alternative* were developed by and are copyrighted by Orville Camp. Premises and *criteria* for sustainability were developed for the purpose of evaluating proposed forest practices before action is taken. Natural selection relationship concepts were first implemented at Camp Forest by Orville Camp in 1967. These concepts have since been implemented by many people in several countries.

Purpose and Need of the BLM Resource Management Plan Revisions for Western Oregon
The *Natural Selection Alternative* is an innovative and sustainable alternative to meet the Purpose and Need of the Resource Management Plan revision for BLM-administered lands in Western Oregon to: "provide a sustained yield of timber, contribute to the conservation and recovery of threatened and endangered species, provide clean water in watersheds, restore fire-adapted ecosystems, providing for recreation opportunities, and coordinate management of lands surrounding the Coquille Forest with the Coquille Tribe." The *Natural Selection Alternative* offers scientifically sound, ecologically credible and legally responsible solutions to the critical issues of the 21st century including, global climate change, species extinctions and social-economic conditions.

The *Natural Selection Alternative* utilizes natural selection relationships to natural-community-ecosystems that optimize photosynthesis and species trait–environment compatibility. *The Natural Selection Alternative*

(1) Provides a variety of commodities and uses while allowing natural selection processes to retain and restore species, habitats, functions, and natural-community-ecosystem health across the landscape.

(2) Provides scientifically sound and ecologically credible relationships and practices that are sustainable, and legally responsible.

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[150821_10:37]

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Introduction

The *Natural Selection Alternative* is based on the principle that nature knows best how to sustain natural-community-ecosystems

The *Natural Selection Alternative* uses natural selection relationships that species on Earth evolved from and are sustained by. The *Natural Selection Alternative* retains natural-community-ecosystems, photosynthesis and productivity across the landscape. The average volume of timber production across the landscape under the *Natural Selection Alternative* is hugely greater than traditional forestry management alternatives such as those proposed in the BLM RMP/DEIS because it doesn't produce areas with little or no production. The volume of removal is restricted to what the natural-community-ecosystem is naturally able to produce at any given time. There is no "down time", so the natural-community-ecosystem is always in full productivity. The total biomass and solar conversion process of a natural-community-ecosystem is retained at optimal levels and natural biological genetic diversity and ecological functions are protected and preserved.[4]

The *Natural Selection Alternative* recognizes that natural-community-ecosystems contain ecological, economic, recreational, aesthetic, spiritual, cultural and historical values. It sustains these values while sustaining the natural-community-ecosystem and human community.

The *Natural-Selection-Relationship* perspective recognizes that many ecosystems, especially non-entered ancient late-successional natural-community-ecosystems, should not be entered for resource extraction. It recognizes the need to restore natural-community-ecosystems damaged by human mismanagement, including tree plantations. It also recognizes that human needs require removing products from natural-community-ecosystem lands. It rejects agricultural models of forest management that impoverish genetic diversity and undermines rural, natural-community-ecosystem–based economies of human communities.

Natural Selection Assessments

Natural-selection-relationship literacy is essential to understanding why and how humans destroy wildlife habitats, reduce other species populations and cause mass extinctions likely to include humans.

1. Natural-selection-relationship assessments, provide the kind of information needed to understand who we are, how we got here, where we're going, and the relationships that will be needed to survive.
2. *The Natural Selection Alternative* relies on ***natural-selection-relationship assessments*** for establishing ***Premises*** and ***Criteria for Sustainable Relationships***.
3. *The Natural Selection Alternative* prioritizes retaining natural-community-ecosystem biological and ecological health in meeting human resource needs.
4. *Natural Selection Alternative* terminology is centered around natural selection

relationships that sustain biosphere subset natural-community-ecosystems, photosynthesis and species trait–environment compatibility across the landscape.

Premises for Sustainable Relationships

The biosphere is the natural community ecosystem organism surrounding Earth. Natural-community-ecosystems consist of all living and non-living things and their relationships. Each species has interconnected relationships that contribute to sustaining overall ecosystem health. The biosphere is sustained through natural selection relationships that optimize photosynthesis and sustain species trait–environment compatibility. Humans are the first and only species to implement relationships that render natural selection relationships dysfunctional for sustaining species.[5]

Sustainable human relationships necessitate natural-selection-relationship assessments. Natural-selection-relationship s require biosphere centered philosophy, science, and occupations which sustain species–trait environment compatibility across the landscape.

Energy Transformations

We need to understand how energy is transformed from one state to another through natural selection relationships, so that we can restore relationships that will sustain species that sustain us.

Life: Depends on sun energy.
Photosynthesis: Transforms sun energy into plant living energy systems.
Each peculiar plant species: Sustains a peculiar web of animal living energy systems.
Death: Transforms living energy systems into forms that sustain topsoil communities.
Topsoil Communities: Recycle energy back into plants that transform sun energy into living energy.

Organisms

- An organism is a contiguous living energy system.
- Individual organisms sustain groups of organisms.
- Groups of organisms sustain individual organisms.
- The biosphere organism, sustains individuals and groups of organisms.

Species

A species is a group of organisms with similar enough traits to be naturally recombined and reproduced into future generations.

Ecosystems

An ecosystem is an individual, or community of organisms, with self, defining, designing, organizing, regulating and sustaining living energy systems.

Four Life-Sustaining Relationship Essentials

- **Trait diversity**, inherited & learned.
- **Organism** trait-environment compatibility testing.
- **Recombined and reproduced** environmentally compatible traits.
- **Adapting species** to ever-changing natural-community-ecosystem environments through natural selection relationships.

Natural Selection Relationships

- **Organism trait diversity** (inherited & learned): Is essential for keeping species compatible with ever-changing environments.
- **Ever-Changing Environments:** Test organisms for trait–environment compatibility.
- **Reproduction:** Enables species with organism trait-environment compatibility to recombine and regenerate them into future generations.
- **Natural selection relationships:** Enable species to survive and adapt to ever-changing environments.

Five Natural-community-ecosystem Structural Layers

Five levels include: Canopy, understory, shrub, herbs and topsoil. Each peculiar layer sustains species trait–environment compatibility through natural selection relationships: Natural-community-ecosystem structures are self defined, designed, organized regulated and regenerated. Humans can't manufacture structures that sustain species trait–environment compatibility.

Canopy

- **The canopy:** Determines species trait–environment compatibility essentials for each and every peculiar understory, shrub, herb and topsoil layer below.
- **Each peculiar structural layer:** Has a peculiar set of essentials that must remain compatible with species traits for them to survive.
- **Removal of the canopy:** Renders environments below incompatible with species that sustain them.
- **Killing species below:** Kills species in the canopy above.

Topsoil

- **Topsoil communities:** Depend on non-living energy.
- **Plants:** Depend on topsoil communities for recycled energy.
- **Photosynthesis:** Depends on plants, animals, topsoil communities and recycled energy.
- **Biomass extraction:** Removes living and non-living energy, reduces photosynthesis, topsoil energy recycling, and the ability of humans to survive

Natural-community-ecosystems

Natural-community-ecosystems require no management because they're self defining, designing, organizing, regulating, regenerating and sustaining through natural selection relationships that sustain species trait–environment compatibility.

Ten Species Trait–environment Compatibility Ingredients

- **Photosynthesis**
- **Climate**
- **Water**
- **Air**
- **Fire**
- **Food**
- **Shelter**
- **Habitat**
- **Reproduction**
- **Energy Recycling**

Succession

- Succession occurs when one community of species renders their environment more compatible with another, later successional community environment.
- Succession requires trait diversity, compatibility testing, recombining and reproduction of compatible traits, and natural selection relationships that allow species to adapt to ever-changing environments.

Natural-community-ecosystems, which are hundreds of years old, are necessary for sustaining younger natural, and human, communities. There is no need to artificially create more early successional ecosystems but there is a huge need to retain and restore later natural-community-ecosystems and allow natural processes such as fire, insect outbreaks, drought, climate change, etc., to provide for regeneration and early successional natural-community-ecosystems.

Restoration

Restoration means to restore degraded or destroyed ecosystems with all of their original species. Restoration occurs when all of the species that created each layer, of each successional stage, are available to restore them. Late seral stages of succession can only be restored if all the species that created them are available. Sustainable relationships don't cause natural later successional communities to regress to earlier ones.

Criteria for Sustainable Relationships

Species sustainability relies on reproduction of organisms with trait–environment compatibility. Naturally evolved environments allow species to adapt traits to them. Natural-selection-relationship extraction retains best traits for all species.

> ***Biosphere criteria:*** *Resource extraction must retain biosphere natural-community-ecosystem subsets, and optimal photosynthesis and species trait–environment compatibility. Nothing should be done that will degrade species' habitats, populations or relationship functions.*

Natural Selection

Trees Naturally Die

Natural selection resource extraction removes only the dying and dead to serve human needs. The dead and dying (including snags and woody material of the natural-community-ecosystem floor) sustain the living. To extract sustainedly (both green and dead), humans must share these resources with all naturally evolved species. The more trees extracted the less snags and woody material will be left to serve other species needs. The *Natural Selection Alternative*, by design, extracts resources at sustainable levels.

> **Tree extraction criteria:**
> *Extract only dead or dying (within a year); and removal is conditional upon retaining natural community ecosystems that sustain species trait–environment compatibility. "When in doubt, don't extract*."

Sustainable extraction levels require trustees with fundamental understanding of how ecosystems function, and how resource extraction will affect each of the "ten essentials": Photosynthesis, climate, water, air, fire, food, shelter, habitat, reproduction and energy recycling necessities that determine which species can survive. When there is uncertainty about resource extraction, those in question will be left until doubts are resolved. *The Natural Selection Alternative* offers high skill natural-community-ecosystem work to qualified trustees that adhere to natural-selection-relationship criteria.

Since no trees are removed before they have been naturally selected, the volume of removal is restricted to what the natural-community-ecosystem is naturally able to produce. Retaining natural-community-ecosystem structure and functions at all times means no natural-community-ecosystem "down time" so it is always in full productivity.[6] No down time, means no restoration costs.

The *Natural Selection Alternative* allows natural community ecosystems to recover to natural

late successional climax conditions, where they are far more productive in accumulating wood fiber than tree plantations. The quality of wood produced is superior in density and strength.

Every part of the natural-community-ecosystem landscape including meadows, aquatic, and riparian areas, remain or become a corridor for evolved species. The *Natural Selection Alternative* leaves habitats intact so early and late successional ecosystems can evolve to their natural conclusions. The *Natural Selection Alternative* retains naturally evolved successional habitats across the landscape.

In natural-selection-relationship practices, the term 'restoration,' or 'recovery', means to allow natural-community-ecosystems to restore their original natural late successional community condition.

The *Natural Selection Alternative* allows other naturally evolved species to restore late successional natural community ecosystem, if all of the species needed to restore them are still around, there are suitable habitats, and there are high enough populations to do so. Restoration will take at least as long as the oldest trees cut down, and there is no shortcut. There is no extraction from the last remaining natural-community-ecosystems, at least until those cut down have been naturally restored. Early successional species are allowed to evolve and adapt to later successional communities.

Scientists are predicting global warming will cause enormous climate changes and catastrophic consequences within the next century. Retaining and restoring late successional natural community ecosystems is one of the best things that we can do to stop global warming.[7] Scientists believe we are entering the 6th Mass Extinction and it will take place in our lifetimes.

> "Avoiding a true sixth mass extinction will require rapid, greatly intensified efforts to conserve already threatened species and to alleviate pressures on their populations—notably habitat loss, overexploitation for economic gain, and climate change." [8]

There are only a few small islands of natural un-entered late successional natural-community-ecosystems remaining in the planning area watersheds. They are now critically fragmented to the point that they will be very difficult to restore. To see a natural-community-ecosystem restored we must know what a natural community ecosystem looks like and how it functions. Trustees, scientists and many others will find these areas invaluable for reference.

Late successional natural community ecosystems provide insurance against irrevocable natural-community-ecosystem failure. The *Natural Selection Alternative* will retain the few remaining small islands of natural late successional and legacy natural-community-ecosystems in the planning area to 1) sustain late successional species, 2) provide wildlife reservoirs for restoring early successional plantations that currently encompass much of the planning area, 3) moderate climate locally, regionally and globally, 4) store and filter high quality water, 5)

provide wildlife corridors across the landscape, 6) understand the meaning of natural-community-ecosystem recovery by showing what they look like and how they function, and 7) serve human visual, spiritual, educational, natural history, recreation and tourism needs. [9]

Resource extraction will occur in early successional ecosystems where past extraction has occurred and be such that young natural-community-ecosystems will be allowed to evolve to late successional community conditions. Legacy, and structurally intact late successional natural-community-ecosystems, will not have resource extraction, at least until those cut down are fully restored.

> **Succession and restoration criteria**:
> *Seral stages of ecological succession must be retained across the landscape; older natural-community-ecosystems must not be converted to younger ones; early successional communities will be allowed to naturally evolve to late successional communities.*

Fire Plan
Premises and Criteria for Sustainable Relationships

Fire Plan Premise for Sustainable Relationships

Natural selection relationships recognize both pre- and postfire natural-community-ecosystem landscapes as irreplaceable habitat for fire-associated biodiversity.

> "*With the addition of ongoing pre- and postfire logging in forests and other development pressures, particularly in shrublands, this is having a combined negative impact on native biodiversity associated with both complex early seral and old-growth forest and chaparral ecosystems... in general, for ecological acceptance of postfire landscapes to translate into improved management practices, a prerequisite fire ecologists, land managers, and the general public all must recognize both pre- and postfire landscapes as irreplaceable habitat for fire-associated biodiversity* (DellaSala and Hanson 2015)*."* [10]

A sustainable ecosystem fire plan must retain the naturally evolved natural community ecosystem biological and ecological components across the landscape.

What is Fire?

Photosynthesis transforms sun energy into plant living energy systems. Photosynthesis is reversed when plants are heated enough to give off gases that ignite in the form of fire. How fast fuel burns, depends on how long it will take to get hot enough to produce and burn released gases. Fuel size determines how much heat is necessary to ignite it, and after ignition, the speed at which it will burn.

Three Essentials for Fire

The three essentials to fire are, (1) fuel, (2) heat, and (3) oxygen. If a natural community ecosystem fire starts, and one of these is low, it will be a relatively cool burn. When all three essentials are favorable to fire there is a high risk of fire that will burn fast and hot.

Fuel

In a healthy natural community ecosystem, fuel is always present in a variety of sizes. The larger fuel sizes store more water than smaller sizes, and they retain more moisture through the dry season. Thus, larger fuel sizes are less susceptible to burning than are smaller sizes.

When largest trees are removed natural-community-ecosystems regenerate small stemmed trees and other plants. Small diameter surface fuels are the primary carriers of fire.

Past forest-management practices often removed largest fire resistant trees and left the smallest trees and small stemmed plants least resistant to fire. During the dry season, the stored moisture content is less, and fire risk is greater. Past resource extraction rates have caused highly flammable natural community ecosystem conditions.

Heat

Natural community ecosystems with large trees, substantially reduce peak high temperatures. Removing biggest trees causes natural community ecosystem climate changes with peak temperatures on the natural-community -ecosystem floor often rising by as much as forty degrees. Higher natural-community -ecosystem temperatures mean higher evaporation of moisture from wood. Less moisture makes natural-community -ecosystems more vulnerable to fire, and hotter fires.

Oxygen

A natural-community-ecosystem with large trees and a closed canopy restricts the amount of oxygen flow to a fire. When largest trees are removed, the canopy is opened, oxygen flow is enhanced, like a stove damper left wide open.

Management practices cause increase small-sized fuel, heat, or oxygen flow levels, increase fire hazard conditions. Natural selection relationships do not do this.

> **Fire hazard criteria:**
> *Retain late successional ecosystems with lowest fire hazards.*

Fire Temporal and Spacial Natural Relationships

> *"The Natural Selection Alternative recognizes and uses science and data backed studies for the region that support its practices. The Natural Selection Alternative recognizes that we currently have a very incomplete understanding of the role of fire in these natural-*

community-ecosystems and the significant risks to natural-community-ecosystem and community health associated with intrusive treatments in the face of this high level of uncertainty." [11]

"Most fire projection studies use a short historical baseline spanning the past few decades, which does not provide a useful context for determining whether projected changes fall within the range of historical variability." [12]

"Understanding the causes and effects of wildland fire in forest ecosystems depends on the temporal and spatial scale of interest." [13]

"Understanding past human-vegetation-climate linkages of fire regimes has gained wider attention and appreciation in the face of projected future climate change. Although many definitions of a fire baseline implicitly consider time, historical data are rarely used to define a fire envelope. More often, baselines rest on recent fire statistics that are at best imprecise and at worst inaccurate in capturing fire activity over long time scales. What may seem like a stationary response on short time scales is often nonstationary when viewed on longer time scales and over a broader range of bioclimatic forces (Swetnam, 1993). In many parts of the western United States, for example, current levels of fire are considerably less than what climate would predict based on long-term linkages. This notion of present-day fire deficit in many forest types implies that current fire management is decoupling the natural relationship between area burned and climate (Marlon et al., 2012). "[14]

Historical Perspectives and the Ecological Importance of Natural Fire, including Large Mixed-and High-Severity Fires

Significant numbers of fire studies and empirical data refute the dominant fire paradigm that large mixed- and high severity fires are ecologically destructive. Green tree natural-community- ecosystems that burn into a charred natural community ecosystem and grow into a green one are important interconnected stages in the ongoing cycle of life and death and agents of natural heterogeneity in fire-dynamic ecosystems (DellaSala and Hanson 2015).[15]

Natural-community-ecosystem Fire Conditions

Fire is an inherent part of natural community ecosystems and their frequency is variable. [16]

"*Historical forest structure and fire regimes in mixed-conifer and ponderosa pine forests of western North America were far more variable than current management regimes assume, and mixed- and high-severity fires are a natural and ecologically beneficial part of many forests and shrublands. Yet the unique and ecologically rich habitat created by such fire remains demonized and, in nearly all places, is a habitat threatened by fire suppression, postfire logging (Chapter 11), and prefire management designed to reduce further the creation of postfire habitat. Ecologists are increasingly urging a shift in policies that would*

allow more mixed- and high-severity fire in the wildlands away from homes, while focusing on fuel reduction and fire suppression activities adjacent to homes to provide for public safety (Gibbons et al., 2012; Calkin et al., 2014; Moritz et al., 2014; see also Chapter 12). A paradigm shift in land management policies is needed to restore mixed-severity fire by allowing wildland fires to burn safely in the backcountry while protecting postfire habitat from the ecologically damaging practices of postfire logging, shrub removal, and artificial plantation establishment (Lindenmayer et al., 2004; Bond et al., 2012; DellaSala et al., 2014; Hanson, 2014)" [17]

Restoration of Fire Regimes

A series of "forest" Condition Classes have been developed to describe how far from "normal" current fire regimes are. Fire history studies done in the region have found a wide range in fire intervals and it would be unnatural to rationalize timber harvest as a means to return to a regime of relatively frequent fire at regular intervals and would not allow for the landscape diversity that has existed historically.[18]

Ecosystem Resilience

"Ecological resilience is essentially the opposite of "engineering resilience," which pertains to the suppression of natural disturbance to achieve stasis and control or resources (Thompson et al., 2009)." [19]

Natural selection relationships retain ecosystem resilience.

Lowest Fire Hazards in Late Successional Ecosystems

Late successional natural-community-ecosystems with large old trees and closed canopies have lowest fire hazards because they: (1) retain much higher moisture content in burnable materials on natural-community-ecosystem floor, (2) keep temperatures cool, and (3) canopy cover reduces the amount of oxygen available to a fire on the natural-community-ecosystem floor, and (4) thick fire resistant bark on old trees help to keep them from catching on fire.

"Multi-aged, closed forests become less combustible with time since fire, and therefore become more likely to persist when fire does occur following a long fire-free interval."... "In our study area, harvest treatments to reduce fire severity based on a model of fuel build-up in the absence of fire would be misdirected because long-unburned areas exhibited the lowest fire severity." [20]

Natural fires in natural late successional natural-community-ecosystems are likely to be beneficial. Converting late successional natural-community-ecosystems to young tree plantations dramatically increases fire hazards while decreasing natural biological genetic diversity and ecological functions.

Climate Affects Risk

A cool damp climate has less fire risk than a hot dry one. A late successional natural-community-ecosystem with a closed canopy will have a cooler climate and more moisture.

The cumulative effect of natural-community-ecosystem canopy removal can dramatically change the climate of an entire area. Canopy removal can cause an entire watershed to have hotter peak temperatures, and less moisture. This in turn increases fire risks in the entire watershed. The adverse cumulative effect of individual actions on the climate of our watershed, our continent, and the entire world, is what we are seeing today.

Increase Carbon Storage While Reducing Fuels and Fire Risk

The *Natural Selection Alternative* balances carbon storage with reducing fuels and fire risk. Natural-community ecosystems with large old trees have lowest fire hazard conditions. When a natural-community-ecosystem with trees hundreds of years old is cut, fire hazard conditions increase.

The cumulative effect of cutting down the largest trees in natural-community-ecosystems, are long-term high fire-hazard conditions and increased carbon pollution.

The *Natural Selection Alternative* addresses climate change issues through optimal green plant and carbon storage[21] and reduced fire risk.[22]

> **Largest trees criteria:**
> *Retain lowest fire hazard conditions and optimal carbon sequestration by retaining largest best trait trees.*

Late Successional Natural-community-ecosystems Provide Better Firefighter Safety

Late successional natural-community-ecosystems with large trees provide best firefighter safety, early successional natural-community-ecosystems provide the least. Removing the canopy increases temperatures, lowers fuel moisture, and exposes the surface fuels to high wind, high fire intensity, and greater fire fighting risk. Firefighters are often overrun by fire racing through fine fuels in dense brush fields, rarely from crown fires in closed canopy natural-community-ecosystems.

As a natural-community-ecosystem fire gets bigger, it sucks in more oxygen to feed the fire and creates high velocity winds. These winds carry burning embers that sometimes fall on the ground miles downwind from the main fire and set more fires.

High Fire Hazard Fuels, Cause Crown Fires in Low Fire Hazard Areas

Crown fires are often denounced as primary fuel hazards, but this is not true in late-

successional natural-community-ecosystems with large, old, fire resistant trees. Crown fires in old natural-community-ecosystems occur when earlier successional natural-community-ecosystems or young tree plantation crown fires get hot enough to ignite the crowns of the larger trees. Early succession tree plantations are primary fuel hazards.

Increased Fire Hazards and Biodiversity Loss in Tree Plantations, "Fuels Reduction" and "Restoration" Forest Management Practices

Hottest fires occur where biggest trees have been removed and the area is "reforested" with tree plantations. Managed plantations comprised of densely-stocked, even-aged stands of young trees are extremely flammable and vulnerable to catastrophic fire. When these plantations burn they normally result in 100% mortality, have no native seed sources to naturally regenerate them, and result in serious soil degradation.

Timber Harvest and Fire

Timber sales often remove the least flammable portion of trees (their main stems), while leaving behind their most flammable portions (their limbs and needles). This reduction of canopy and small woody material buildup can adversely affect fire behavior for decades.

> *"…timber harvest can sometimes elevate fire hazard by increasing dead-ground fuel, removing larger fire-resistant trees, and leaving an understory of ladder fuels."*
> — US Forest Service. Roadless Area Conservation: Final Environmental Impact Statement Fuel Management and Fire Suppression Specialist's Report, p. 18, 2000

> *"Timber harvest, through its effects on forest structure, local microclimate, and fuels accumulation, has increased fire severity more than any other recent human activity".*
> *— Sierra Nevada Ecosystem Project, 1996. Final Report to Congress*

> *"Logged areas generally showed a strong association with increased rate of spread and flame length. . . . As a by-product of clearcutting, thinning, and other tree-removal activities, activity fuels create both short- and long-term fire hazards to ecosystems."*
> *— (US Forest Service, Historical and Current Forest Landscapes in Eastern Oregon and Washington. Part II: Linking Vegetation Characteristics to Potential Fire Behavior and Related Smoke Production [PNW-GTR-355]).*

Prescribed Fire

The least common approach to prescribed burning is that of trying to mimic natural fire. The most common approach is prescribed burning of logging slash.

Prescribed fire versus natural fire

From an ecosystem perspective prescribed burning should mimic natural fire. This means knowing when, where, and how natural fire would occur. But humans have an incomplete

understanding of the role of fire in natural-community-ecosystems. Humans do not know the formula for balancing needs of species that depend on fire with those that do not.[23] [24]

Prescribed burning may temporarily reduce fire hazards, but there are long term costs. When it involves canopy removal, in a few years, young vegetative growth often creates greater fire hazards. Prescribed burning removes the protective layer of dead decaying matter on the natural-community-ecosystem floor, pollutes the air, kills plants and animals, releases carbon dioxide into the atmosphere, increases global warming, burns up top soil needed to sustain new plant growth, causes increased soil temperature extremes, and causes human health problems.[25] [26] [27] [28]

Prescribed burning is economically and biologically costly. It doesn't provide a good long term solution. The best solution is to restore and retain healthy late successional natural-community-ecosystems with large dominant trees and low fire hazard conditions.

> **Prescribed burning criteria:**
> *Avoid prescribed burning. Avoid practices that result in a need for it.*

Down Woody Material

"Fuel and Fire hazard reduction" conflicts with natural-community-ecosystem health
Small dead dry wood creates the highest fire hazards, but dead wood also provides many species needs, including those of natural-community-ecosystem topsoil decomposers. Green plants depend upon natural-community-ecosystem floor decomposers for nutrients and other necessities.

When dead woody material is removed from natural-community-ecosystem energy recycling, there is degradation in natural-community-ecosystem health. How much small woody material can be removed without significantly degrading natural-community-ecosystems? This must be evaluated at all scales, microsite, local, landscape, and regional levels.

Natural-community-ecosystem floor woody material
Natural accumulation of debris on the natural-community-ecosystem topsoil is naturally balanced to overall ecosystem needs. Management practices that change the natural level of natural-community-ecosystem topsoil woody material, unbalances and degrades ecosystem health.[29] Natural selection relationships do not result in significant reduction or additional accumulation of down woody material.

Slash Burning

Slash burning destroys nutrients to support topsoil communities that recycle wood energy needed for new plant growth. Slash created by forest management practices is either piled and burned, or chipped. Piling and burning, creates hot fires, burns up the top-soil, pollutes

the atmosphere, and contributes to global warming. Chipping changes soil characteristics, and eliminates habitats for many species. Neither piling and burning nor chipping, retain or restore natural-community-ecosystem health. Both are economically costly, as well.[30]

Slash is a fire hazard

> *"It appears significant that many large fires in the western United States have burned almost exclusively in slash. Some of these fires have stopped when they reached uncut timber; none has come to attention that started in green timber and stopped when it reached a slash area."* — G.R. Fahnestock, 1968

The *Natural Selection Alternative* doesn't do slash burning and there is no need to. The *Natural Selection Alternative* doesn't leave large amounts of slash.

Thinning

"Thinning from the canopy down" allows growth rates to be shifted from biggest best-trait "marketable" trees to "less desirable" smaller trees. This degrades natural-community-ecosystem health and productivity. The biological and economic costs of aggressive thinning can be extremely high: unnatural fire conditions and outcomes, contribution to carbon pollution and climate change, contribution to loss of water flow and drought, loss of fish and wildlife habitat, compaction and degrade topsoil and impacts to natural recycling processes.

Opening Canopies

Reducing crown closure doesn't reduce fire hazards

Opening up the canopy trades lateral canopy fire spread risks for greater early successional fire risks. The practice of leaving only thirty to forty percent crown closure creates high fire hazard conditions on the natural-community-ecosystem floor and encourages high intensity wildfires. Retaining canopy closure reduces fire hazards. Natural-selection-based extraction retains full canopy closure.

Slash Busters

Heavy equipment

Mechanical treatments to reduce "fuel hazards" can be effective, but heavy equipment compacts the soil, kills species it shouldn't, creates conditions better suited for earlier succession communities, and encourages non native plants to invade the area.

"Full utilization"

"Full utilization" of natural-community-ecosystem fuel hazard material (biomass utilization), removes wildlife habitat necessities, and is not sustainable. Chipping degrades habitats.

Postfire Logging

Research and case studies show that costs of postfire logging far exceed the benefits. Documented effects are summarized in *The Ecological Importance of Mixed-Severity Fires: Natures Phoenix*, (DellaSala and Hanson 2015):

- *Extensive degradation of stand structure and function*
  - *Loss of soil nutrients*
  - *Chronic sedimentation and erosion*
  - *Reduction in carbon storage*
  - *Increased fine fuel loads and potential reburn severity*
  - *Degradation of habitat for threatened, endangered, and sensitive species*
  - *Reduced habitat and prey for apex predators and forest carnivores*
  - *Greatly reduced snag densities for cavity-nesting birds and mammals*
  - *Exotic species invasions*
  - *Reduced resilience and resistance fo postfire landscapes to future disturbances*.

"Nearly unanimous results like those presented in Appendix 11.1 and illustrated in Figure 11.2 show a widespread and consistent pattern of postfire logging impacts across taxa and regions; that is, this type of logging has arguably more severe adverse impacts than logging in green forests. In addition, a feedback loop exists whereby areas burn in a fire, are logged and planted with commercial species, only to burn more intensely in the next fire, and then are logged again later (Figure 11.3). Exacerbating this cycle, the combination of postfire logging and removal of native shrubs through herbicides—as is commonly practiced in the western United States—dramatically increases the spread of invasive (and often highly combustible weeds (McGinnis et al., 2010). The fire/postfire logging/intense-fire feedback may accelerate in a changing climate in places where more fires are expected to trigger more logging, which already is occurring in the western United States." [31]

"*Based on a review of the literature and the case studies presented from four regions, postfire logging impedes natural postfire processes by removing some of the rarest and most biodiverse wildlife habitat in many forest ecosystems, compacting soils, causing chronic erosion, delaying natural succession, and introducing or spreading invasive species...*

Further, rather than jump-starting forests as claimed, postfire logging damages or removes complex early seral forests and inhibits the return of ecosystem conditions over time by removing the very components (large dead and dying, and downed trees) crucial to their development and by eradicating core components of biodiversity, such as native shrub patches. Postfire logging can also elevate fine fuels by removing the least combustible portion of trees (trunks) and leaving logging slash (in places where logging slash is treated with pile burning, damage to soils can have long-term consequences). Naturally regenerating landscapes following fire are biologically rich and need to be conserved for their unique ecological value." [32]

Postfire criteria:
Postfire landscapes are biologically rich and their unique ecological values must be retained.

Natural Fire Frequency Assessments

Conversion of late successional natural-community-ecosystems to early successional tree plantations have caused the risk for increased fire size, intensity, and severity. Increased fire isn't because of fire suppression and it isn't in our legacy old natural community ecosystems.

Long fire frequency areas tend to allow natural-community-ecosystems to evolve to later successional conditions with low fire hazard conditions. They tend to burn cooler. Short fire frequency areas tend to have higher fire hazard conditions and hotter, faster moving fires. Ecosystem species health is best retained by retaining natural fire frequencies.

Forest management-based practices do not achieve and maintain low fire hazard conditions, natural-selection-relationships practices do.

Natural-Selection-Relationship Practices

Natural-selection-relationship Fuels Reduction Prioritizes Natural-community-ecosystem Health

Some areas of the planning area may involve natural-selection-relationship fuels reduction in the defensible space, home-ignition zone (approximately 100 feet), around dwellings and are not appropriate outside these areas. Reducing home ignition risks involves minimizing the ability of fire in a natural-community-ecosystem from being able to ignite a dwelling.

> *"The home ignition zone extends to a few tens of meters around a home not hundreds of meters or beyond. Home ignitions and thus, the W-UI fire loss problem principally depend on home ignitability."* [33]

Reducing high fire-hazards in the home-ignition zone involves removing small dead limbs and shrubs that are easy to ignite and that will then likely spread to green foliage. It may also involve removing dead woody material and some living trees and other plants that have been naturally selected for removal. Canopy closure is retained.

This removes habitats for some species, but allows those needs to be met at some future date when the canopy is established far enough above the natural-community-ecosystem topsoil to become a low fire hazard canopy. Stronger dominants, with best survival traits, are left. When the objective is that of reducing fire hazards at the expense of natural-community-ecosystems, the issue becomes that of weighing human needs against other species needs. This requires learning how natural selection relationships sustain natural community ecosystems.

"Treating the home-ignition zone as described by Cohen (2002) can almost eliminate the possibility of homes burning in wildfires. This would increase fire-management options and perhaps ultimately further conservation goals in the Klamath-Siskiyou ecoregion." [34]

The *Natural Selection Alternative* does not manage for fire hazard reduction outside the "home ignition zone". Instead it has natural selection relationships that provide late successional ecosystems with lowest fire hazards.

Natural-selection-relationship Resource Extraction

Natural Selection Alternative resource extraction allows us to obtain necessities from natural-community-ecosystems without increasing long-term fire hazard conditions, fire risks, or suppression costs.

Natural Selection Alternative extraction practices allow early successional natural-community-ecosystems to evolve through the various stages of succession until they reach late successional low fire hazard conditions.

"Selection" and "regenerative [clear] cutting" are not the same as natural-selection-based resource extraction. In natural-selection-based resource extraction, the smallest highest fire hazard trees, and other vegetation are removed. This addresses human needs for reducing natural-community-ecosystem fire hazards, retains best traits, retains species trait–environment compatibility, optimal productivity, and is the least costly and economical way to extract resources.

Natural-selection-based resource extraction retains natural-community-ecosystem health, minimizes fire severity, and allows natural fire frequency to occur without increasing fire hazard conditions. [35]

Non-Native Plants
Premises and Criteria for Sustainable Relationships

The invasion of non native species is related to globalization and management practices.

Forestry management practices have encouraged the invasion of non-natives by making environments more suitable for them. Once the large timber is removed it environments more compatible with invasive species.

Whenever animals or plants are introduced into an ecosystem they did not evolve from, there can be enormous consequences. Natural-selection-relationship extraction retains naturally evolved species environments and prevents many foreign species from establishing

themselves. Retaining natural late successional natural-community-ecosystems deters invasion of non-native species.

The *Natural Selection Alternative* retains environments best suited for native species, which preempts invasions of non-native species through: 1) canopy coverage that retains climate, soil and water conditions not favorable to non-native species (one-lane roads will help retain or achieve canopy coverage), 2) minimize soil disturbance (through use of rubber-tired resource extraction equipment on roads and restriction of off-road heavy equipment; 3) no off-road vehicles; 4) on-site trustees to defer illegal OHV use; 5) no resource extraction in structurally intact late successional natural community ecosystems; 6) end the massive and misguided thinning and harvest operations that are being done in the name of fire and fuels reduction, and 7) minimal fire.

Visual Resources and Recreation
Premises and Criteria for Sustainable Relationships

Visual, Spiritual, Historical and Recreational National Treasures

Western Oregon RMP planning area is nationally and globally treasured for its ancient natural-community-ecosystems and recreation and tourism opportunities. Natural-community-ecosystems have far greater visual, spiritual, historical, educational, recreational and tourism values than managed "forests." Natural-selection-relationship resource extraction respects visual, spiritual, recreational, educational, cultural, historical, and tourism values. Natural-community-ecosystem and hiker-friendly trails and roads for community and tourism uses would be developed. The *Natural Selection Alternative* retains and restores natural community ecosystem environments across the landscape, the untrained eye is generally unaware that products are being removed on an ongoing basis.

Some of the last remaining late successional legacy natural-community-ecosystems are located in the planning area. All of the last remaining natural late successional natural-community-ecosystems would be preserved and protected for community visual, spiritual, historical, cultural, scientific research, recreational and tourism values and uses. Few people have seen a natural late successional legacy natural-community-ecosystem. Almost no one knows how they function.

Greatest Scarcity Is Greatest Need

Recreation opportunities on the approximately 2.5 million acres of BLM-administered land in Western Oregon is not limited to certain areas. Recreation use is widely dispersed because many of those who participate in recreation activities seek access to secluded sites and late successional natural-community-ecosystems provided by even small and isolated patches of BLM lands in an otherwise heavily logged landscape for uses such as wildlife viewing, camping,

hunting, and nature study. Recreation value is spread out on all BLM lands, included those allocated to timber management. Clearcutting and other forestry management practices, as planned under all BLM RMP action alternatives, destroys recreational values. Clearcut and highly impacting forestry managed areas are in abundance while late successional natural-community-ecosystems are increasingly scarce. The greatest scarcities in the western Oregon region are for camping, trails, and other recreation opportunities that bring people closest to nature and provide solitude. [36] The kind of plan implemented on these lands will greatly affect all of these values and uses, and future opportunities. The *Natural Selection Alternative* would retain and restore all of these values and uses.

Human–Nature Connection

One of the most effective ways of dealing with species extinction, fire and climate change issues, is through education and public engaging directly with natural-community-ecosystems. The *Natural Selection Alternative* would protect long cherished connections people have with these public lands and create increased opportunities for people to.

Transportation System
Premises and Criteria for Sustainable Relationships

Natural Selection Alternative transportation System:

- **Serves natural selection relationships** that sustain natural-community-ecosystems, photosynthesis and species trait-environment compatibility.
- **Overcomes forestry transportation system ongoing liabilities** to natural and human communities.
- **Retains natural-community-ecosystem structural integrity**, connectivity, visual and spiritual values across the landscape.
- **Provides for Optimal values/products/uses**

Transportation System Problems

Transportation systems designed for forestry have enormous long term adverse impacts and liabilities. They do not work for natural selection relationships that sustain natural community ecosystems. Shifting from forest tree species management that isn't sustainable, to natural selection relationships that are, requires transportation systems that allow it.

Transportation System Solutions

The *Natural Selection Alternative* has a transportation solution for overcoming forestry habitat destruction, wildlife population declines and mass extinctions. *Natural Selection Alternative* transportation systems serve human needs on an ongoing basis, in ways that retain natural community ecosystem species, that sustain us.

Accommodate Natural Selection Relationships

The *Natural Selection Alternative* contour-concentric-loop-access-system, is designed to accommodate natural selection relationships that sustain natural community ecosystems. It allows economically efficient removal of products in ways that retain visual, spiritual, recreational and educational values and uses across the landscape.

Trail and Road Design

Contour-concentric-looping-access-systems traverse landscapes perpendicular to natural water flows to minimize water diversion and erosion. The main difference between trails (for hiking) and roads (for vehicles) is width, otherwise the same basic design principles apply to both. Its low-cost design, construction, and maintenance permits upgrading without major costs of road relocation. The last remaining islands of uncut natural late successional community ecosystems will not have products removed from them, they will have roads only when necessary to connect to areas beyond them. Roads on extremely steep slopes, unstable soils, swamps, alongside streams, and special habitats are avoided.

Fire Access

The *Natural Selection Alternative* contour-concentric-loop-access-system provides quick access for early response to fire, effective fire breaks and have alternate entrance and escape routes.

System Design

Overall contour-concentric-loop-access-system density is typically less than current skid, temporary and permanent road density.

Road Decommissioning

Existing roads are analyzed for low impacts and effectiveness at achieving optimal values and uses. They will continue to be used where practicable. All skid roads will be eliminated. Natural decommissioning is used when natural community ecosystems are able to restore themselves, active decommissioning is used when natural recovery is unlikely.

New contour-concentric-looping-access-roads are predominantly ten feet wide with curve widening. Roads generally parallel each other at 300 to 600 feet and have grades of three to ten percent where practicable. Existing dead-end roads will be converted into loop roads where practicable.

Where practicable, double-wide roads will be reduced to ten-feet wide road surfaces to reconnect canopy for wildlife corridors and to reduce erosion. Roads with existing reciprocal agreements are negotiated with party holders on a case by case basis. Road widths are allowed to naturally decommission themselves to 10 foot wide surfaces for canopy closure and less erosion.

Access and Vehicles

Resources not hand carried are lined to the road. Rubber tired equipment used for resource extraction is kept on roads. No heavy equipment is allowed off-road. No track vehicles are used for resource extraction.

Cultural and Socioeconomic Conditions

The *Natural Selection Alternative* would provide for a wide variety of market and non-market goods and services from BLM-administered lands, such as amenity based economic stability, recreation and tourism values, carbon storage, source water protections, species and habitat protection and a sustainable supply of timber and other resources. The benefits of the *Natural Selection Alternative* exceed the costs for all resource uses and services.

The healthier the natural-community-ecosystem, the healthier the job market will be. The *Natural Selection Alternative* prioritizes natural community health. It creates an opportunity for a full range of natural-community-ecosystem commodities and uses, which opens possibilities of far more values and jobs for people in the communities of western Oregon that any current or proposed forestry management option.

Timber Harvests and Jobs

Harvest Volumes

Past forest management practices have substantially reduced the supply of timber available. Ecosystem productivity is now far below historic levels. No human has ever restored a late successional ecosystem, and no human ever will because it takes the species that created these ecosystems to restore them and many are now either extinct or in danger of becoming extinct. Some species are barely existing due to few remaining islands of late successional natural-community-ecosystems. The *Natural Selection Alternative* would protect and preserve these last remaining late successional community islands until those that have been cut down are restored

Natural-selection-relationship Timber yields.

Human created or managed natural-community-ecosystems never equal the natural-selection-relationship yields from naturally evolved ecosystem communities. A naturally evolved ecosystem community has hugely greater yields on a sustainable basis than a human created "forest".

Naturally evolved species habitats are retained. Natural-community-ecosystem resource and community health values have priority over timber and other commodity sales volume.

Jobs

Timber Jobs are tailored for sustainable local operations that contribute to stable local economies. Natural and human communities would both be better off for this reciprocity. Contracts would focus on operations where the people/trustees doing the actual work; are held personally accountable for their actions; and retain long term, renewal options if certification standards are adhered to.

The *Natural Selection Alternative* does not have forestry management costs. Management costs are related to resource extraction. Permanent, all purpose, low maintenance, low impact contour access systems cost about the same per acre as one forestry fuel and fire hazard treatment. The environmental assessment for the BLM's South Deer Landscape Management Project stated regarding the *Natural Selection Alternative*, *"Short and Long Term Effects: Due to the inclusion and implementation of the project design features there should be no direct or indirect effects to Special Status plants. The alternative would not contribute to the listing of vascular plants, non-vascular plants, or fungi."* The *Natural Selection Alternative* would reduce costly consultations with other agencies. The *Natural Selection Alternative* is a universal plan, simple to implement with low administrative costs.

A wide range of economic opportunity ("jobs") would spring up from enterprising community members in creating a network of community entrepreneurial relationships relative to marketing, processing products, etc. The *Natural Selection Alternative* would provide community stability by retaining biological equity, the full productive capacity of natural "capital", providing sustainable yields in perpetuity; while sustaining all non-extractive natural-community-ecosystems economic activities; and retaining and restoring non-market ecosystem services, values and uses.

Markets would be based on what the true costs are, not subsidized by externalizing costs such as diminished recreational and fishing opportunities, polluted streams, increased flooding, loss of water quality, increased habitat restoration costs, loss of tourism revenues, and social costs of carbon emissions, to name a few.

Recreation and Amenity Driven Jobs and Economic Opportunities

The *Natural Selection Alternative* would become a national and global showcase for sustainable relationships, practices, jobs and local economies. It would demonstrate an economic solution to environmental and job dilemmas.

The *Natural Selection Alternative* would open the door to added value local enterprises sustainable cottage industries such as hardwood processing, pole processing, wood molding, rails, wood crafting, florals, medicinals, herbs, mushrooms. The *Natural Selection Alternative* would retain and expand visual, spiritual, recreational, educational, historical and tourism values and opportunities in the RMP project area and Western Oregon. Such recreation and

tourism opportunities include trails and camping that bring people closest to nature; wildlife viewing, arts and photography; nature study and research opportunities; nature healing, spiritual retreats; etc. Tourism would provide opportunities to sell food, lodging, local arts and crafts, etc. The *Natural Selection Alternative* opens the door to these and whatever else one's creativity arises from communities developing natural selection relationships with our natural-community-ecosystems.

The *Natural Selection Alternative* is able to respond to the economic realities of Western Oregon. The *Natural Selection Alternative* would provide cultural links from past timber-culture relationships that aren't sustainable, to future sustainable natural community ecosystem relationships that are sustainable. Results of an extensive study done in 2000 found:

> ***"In Oregon, the relationship between the environment and the economy is changing.*** *Industries that extract raw materials are stagnating, while industries that benefit from the presence of environmental amenities are growing rapidly."* [37]

In Oregon's economy, timber harvests have stabilized since the Northwest Forest Plan in the early 1990's; log exports have increased to one in five; and wood products are down to 1% of Oregon GDP; timber jobs per log are declining; while expected job growth in Oregon 2015-2022 is 277,000, wood products jobs expected loss is 200; timber's wage premium has evaporated; and the timber industry got rid of Oregon's timber harvest tax (with Washington's system, O&C counties would receive $40 million/year) contributing to income equality between the top 1% and the 99%.[38]

It has been clear from economic analysis for over two decades, that more logging will not stimulate economic growth or generate stable, high-wage jobs. A better way is *amenity-driven growth*. People are attracted to places where nature and communities are having sustainable relationships. The *Natural Selection Alternative* would allow for all product and uses, supporting diverse enterprises and meaningful work, while retaining ecosystem services and Oregon's natural-community-ecosystem economy *for this and future generations.*[39]

Certification and Accountability

Educational

Decision makers must understand how natural-selection-relationships overcome our forest management caused catastrophes and why. An educational program is an essential part of the *Natural Selection Alternative*. An educational program with experienced teachers would be established to educate workers on how to implement natural-selection-relationship concepts. The program would involve on-ground training, apprenticeships and certification. Recreation would be part of the educational program.

Accountability through Certification

- Accountability is essential to overcoming prescriptions for mass species extinctions likely to include humans
- Managers and trustees must be responsible for practicing relationships that sustain humans, natural-community-ecosystems, photosynthesis, and species trait-environment compatibility.
- Managers and trustees must be held accountable for relationships that externalize costs to natural and human communities.

There is inherent cultural conflict between making money and retaining resource values and making money. There are huge incentives to destroy natural-community-ecosystem values for money. These priorities must be reversed.

The people performing natural-community-ecosystem activities such as product removal, must be held personally accountable for having relationships that retain biological, ecological, environmental, social and economical values.

Retaining Checks and Balances

Natural-community-ecosystem health priorities would be built into the resource chain-of-custody. The people removing resource commodities or conducting services would have incomes relative to retaining natural-community-ecosystem health. Processors of resources would have their incomes tied to retaining natural-community-ecosystem health. Certification of resources extracted in a sustainable way will allow the consumers to support healthy natural-community-ecosystem practices.

Accountability criteria:
Products removed must meet natural-selection-relationship Criteria for Sustainability.

Conflict-resolution criteria:
Ecosystem health must have priority over economic health.

Contractor Land Allocation

Long range natural-selection-relationship extraction and restoration projects would be developed. Contracts would have renewal options, relative to how well they retain natural-community-ecosystem health.

Natural Selection Alternative Glossary

across the landscape – all inclusive, micro and macro scale without exclusion.

forest – land stocked with trees (this definition omits the thousands of species in and around trees that sustain them and the natural-community-ecosystem)

"forestland – land at least 10 percent stocked by forest trees of any size, and including land that formerly had such tree cover and capable of redeveloping forested conditions."

forestry management – anthropocentric relationships that enslave other species, force humans to provide other species needs, defend from their enemies, engage in an unwinnable war against other species that try to reclaim their land, and self enslaves in the form of land ownerships.

Four life-sustaining relationship essentials – 1) trait diversity, 2) organism trait–environment compatibility testing, 3) reproduction of compatible traits, and 4) natural selection relationships that adapt species to ever-changing environments.

natural-community-ecosystem – natural as opposed to artificial; community, in that the parts sustain the whole, that sustain the parts; and ecosystem, in that it is self defining, designing, organizing, regulating, regenerating and sustaining (a self defining, organizing, regulating, regenerating and sustaining system).

natural selection relationships (natural-selection-relationship) – relationships that sustain natural-community-ecosystem species, including humans through natural selection.

natural selection – the outcome of organism testing for trait–environment compatibility.

natural selection extraction - the process of extracting dead and dying trees in a way that retains natural-community-ecosystem photosynthesis and species trait–environment compatibility.

natural-selection-outcome - the result of organism diversity, environmental testing, reproduction and adapting to ever-changing environments.

organism – a naturally connected living energy system.

photosynthesis – transformation of sun energy into plant living energy systems.

restoration – to bring back through natural selection relationships, all of the species that

created a former natural-community-ecosystem condition.

species – a group of organisms with traits compatible enough to be able to recombine and reproduce them into future generations.

succession – one community rendering their environment more compatible for another, later successional community through natural selection process.

ten essentials – each natural-community-ecosystem has a peculiar set of essentials (photosynthesis, climate, water, air, fire, food, shelter, habitat, reproduction, energy, recycling) Each species traits must be compatible within each natural-community-ecosystem (micro to macro layer) to survive.

trait–environment compatibility – an organism's ability to survive long enough to reproduce.

Literature Cited

1. *Environmental Assessment for the South Deer Landscape Management Project*, U.S. Department of the Interior, Bureau of Land Management, Medford District, Grants Pass Resource Area, July 2005. (EA# OR110-05-10)

2. United States Department of the Interior Bureau of Land Management, Medford District Office, *South Deer Landscape Management Project Decision Record/Rationale/Fonsi*, September 2005.

3. Hammond, Herb. 1991. Seeing the Forest Among the Trees, The Case for Wholistic Forest Use, p 209

"Many foresters and timber managers would claim that it is not possible to develop broad principles for timber management–everything is site specific. In Part IV we discussed the current misuse of site specific management. However, the most important flaw in this argument is that a set of broad ecological principles exists which apply to virtually ***all forests****, whether the temperate rainforest on the west coast of British Columbia, the boreal forests across northern Canada, or the Acadean forest of eastern Canada. With regard to timber management, the foremost principle is this:* ***we need to have forests to have trees****. Whole forests, from the largest tree to the smallest bacteria, from vibrant life to death and decay–all are required to produce the timber yields that humans desire and claim to sustain.*

The other important ecological principles which must be respected are not numerous, but from them we can derive ecologically responsible timber management practices for any forest stand:

The cutting and removal of even one tree is an unnatural event*. Large old trees require hundreds, perhaps thousands of years to grow. Once cut, you can't stand them back up again. Orville Camp, well-known advocate of selection systems of timber management, says, "When in doubt, don't!" Good advice for ensuring that both forests and human options are maintained. I am not suggesting here that we should not cut trees. However, I believe it is important to remember that nature never removes the bodies. If we intend to "mimic nature." we must do it humbly and we must start here.*

Each forest stand needs old trees, snags, and fallen trees*.....*
Disease and insects are essential parts of a fully functioning forest*...*
Over time, all forest phases must occupy every forest site*...*
Sustainable timber yields require sustainable forests*...*

4. Hammond, Herb. 1991. Seeing the Forest Among the Trees, The Case for Wholistic Forest Use, Pg 74.

"..old-growth forests develop the highest quality wood fibre which will ever be produced in our forests...The rotation period of time at which a forester considers a tree to be "mature" is between 60 and 120 years for most species...Therefore managers of tree plantations plan to never again permit the growth of ancient forests and the development of the high quality, fine-grained wood they contain."

5. Gerardo Ceballos, Paul R. Ehrlich, Anthony D. Barnosky, Andrés García, Robert M. Pringle, Todd M. Palmer, 2015, *Accelerated modern human–induced species losses: Entering the sixth mass extinction*.

"The evidence is incontrovertible that recent extinction rates are unprecedented in human history and highly unusual in Earth's history. Our analysis emphasizes that our global society has started to destroy species of other organisms at an accelerating rate, initiating a mass extinction episode unparalleled for 65 million years. If the currently elevated extinction pace is allowed to continue, humans will soon (in as little as three human lifetimes) be deprived of many biodiversity benefits. On human time scales, this loss would be effectively permanent because in the aftermath of past mass extinctions, the living world took hundreds of thousands to millions of years to rediversify. Avoiding a true sixth mass extinction will require rapid, greatly intensified efforts to conserve already threatened species and to alleviate pressures on their populations—notably habitat loss, overexploitation for economic gain, and climate change (31–33). All of these are related to human population size and growth, which increases consumption (especially among the rich), and economic inequity (6). However, the window of opportunity is rapidly closing."

6. Hammond, Herb. 1991. Seeing the Forest Among the Trees, The Case for Wholistic Forest Use, p 74.

"Foresters have explained that decadent trees are rotting faster than they are growing, thereby "wasting" forest space...According to Dr. Jerry Franklin, Wood accumulations in old growth forests are usually stable over the long run. Stands generally will not disappear in decades or even centuries as a result of mortality and diseased."

7. Hammond, Herb. 1991. Seeing the Forest Among the Trees, The Case for Wholistic Forest Use, Pg 32

"Old growth forests are much more than sources of timber. They play an important role in the carbon dioxide/oxygen balance by fixing immense quantities of carbon through photosynthesis. They are some of the world's greatest carbon storage reservoirs, buffering against global climate change. They provide critical fish and wildlife habitat, which is not replicated in young managed forests. They are the home of specialist organisms, such as certain mycorrhizal fungi and predator insects, which are necessary to protect young forests. They store and filter high quality water, an ever dwindling resource as we degrade more and more forest habitat. They furnish increasingly valuable public recreation and wilderness tourism destinations, supporting entire tourism industries in remote locations."

8. Gerardo Ceballos, Paul R. Ehrlich, Anthony D. Barnosky, Andrés García, Robert M. Pringle, Todd M. Palmer, *2015, Accelerated modern human–induced species losses: Entering the sixth mass extinction* *http://advances.sciencemag.org/content/advances/1/5/e1400253.full.pdf*

Abstract

The oft-repeated claim that Earth's biota is entering a sixth "mass extinction" depends on clearly demonstrating that current extinction rates are far above the "background" rates prevailing between the five previous mass extinctions. Earlier estimates of extinction rates have been criticized for using assumptions that might overestimate the severity of the extinction crisis. We assess, using extremely conservative assumptions, whether human activities are causing a mass extinction. First, we use a recent estimate of a background rate of 2 mammal extinctions per 10,000 species per 100 years (that is, 2 E/MSY), which is twice as high as widely used previous estimates. We then compare this rate with the current rate of mammal and vertebrate extinctions. The latter is conservatively low because listing a species as extinct requires meeting stringent criteria. Even under our assumptions, which would tend to minimize evidence of an incipient mass extinction, the average rate of vertebrate species loss over the last century is up to 100 times higher than the background rate. Under the 2 E/MSY background rate, the number of species that have gone extinct in the last century would have taken, depending on the vertebrate taxon, between 800 and 10,000 years to disappear. These estimates reveal an exceptionally rapid loss of biodiversity over the last few centuries, indicating that a sixth mass extinction is already under way. Averting a dramatic decay of biodiversity and the subsequent loss of ecosystem services is still possible through intensified conservation efforts, but that window of opportunity is rapidly closing.

9. DellaSala, Dominick and Strittholt, James. Nd (recent). *Importance of Roadless Areas in Biodiversity Conservation: A Scientific Perspective, Executive Summary.*

"Small roadless areas share many of attributes in common with larger ones, including:

- *Essential habitat for species key to the recovery of forests following disturbance such as herbaccous plants, lichens, and mycorrhizal fungi*
- *Habitat refugia for threatened species and those with restricted distributions (endemics)*
- *Aquatic strongholds for salmonids*
- *Undisturbed habitats for mollusks and amphibians*
- *Remaining pockets of old-growth forests*
- *Overwintering habitat for resident birds and ungulates*
- *Dispersal"stepping stones" for wildlife movement across fragmented landscapes"*

10. The Ecological Importance of Mixed-Severity Fires: Natures Phoenix DellaSala, Dominick A. and Hanson, Chad T. 2015 p 372-374.

11. Odion, Dennis C. 2005. *Comments on the South Deer Landscape Management Project, Medford District BLM, Environmental Assessment*

12. DellaSala, Dominick A. and Hanson, Chad T. 2015 The Ecological Importance of Mixed-Severity Fires: Natures Phoenix p 280.

13. DellaSala, Dominick A. and Hanson, Chad T. 2015 The Ecological Importance of Mixed-Severity Fires: Natures Phoenix p 2 81.

14. DellaSala, Dominick A. and Hanson, Chad T. 2015 The Ecological Importance of Mixed-Severity Fires: Natures Phoenix pp 282

15. DellaSala, Dominick A. and Hanson, Chad T. 2015 The Ecological Importance of Mixed-Severity Fires: Natures Phoenix p 12, 13.

> *Ecologists now conclude that in vegetation types with mixed- and high-severity fire regimes, fire-mediated age-class diversity is essential to the full complement of native biodiversity and fosters ecological resilience and integrity in montane forests of North America. (Hutto, 1995, 2008; Swanson et al., 2011; Bond et al., 2012; Williams and Baker, 2012a; DellaDala et al., 2014). Ecological resilience is essentially the opposite of 'engineering resilience,' which pertains to the supression of natural disturbance to achieve stasis and control of resources (Thompson et al., 2009). Ecological resilience is the ability to ultimately return to predisturbance vegetation types after a natural disturbance, including higher-severity fire. This sort of dynamic equilibrium, where a varied spectrum of succession stages is present across the larger landscape, tends to maintain the full complement of native biodivesity on the landscape (Thompson et al., 2009).*
>
> *In conifer forests of North America, higher-severity fire patches create a habitat type, known as complex early seral forest (DellaSala et al., 2014) that supports levels of native biodiversity, species richness, and wildlife abundance that are generally comparable to, or even higher than those in unburned old forest (Raphael et al., 1987; Hutto, 1995; Schieck and Song, 2006; Haney et al., 2008; Donato et al., 2009; Burnett et al., 2010; Malison and Baxter 2010; Sestrich et al., 2011; Swanson et al., 2011; DellaSala et al., 2014). Many rare, imperiled, and declining wildlife species depend on this habitat (Hutto, 1995, 2008; Kotliar et al., 2002; Conway and Kierkpatrick, 2007; Hanson and North, 2008; Bond et al., 2009; Buchalski et al., 2013; Hanson, 2013; 2014; Rota, 2013; Siegel et al., 2013; DellaSala et al., 2014; Baker, 2015; xdd zlxo hzpgdfx 2–6) The scientific literature reveals the naturalness and ecological importance of multiple age classes and successional stages following higher-severity fire, as well as the common and typical occurrence of natural forest regeneration after such fire (Shatford et al., 2007; Donato et al., 2009; Crotteau et al., 2013; Cocking et al., 2014; Odion et al., 2014). These and other studies suggest that mixed-severity fire, including higher-severity fire patches, is part of the intrinsic ecology of these forests and has been shaping fire dependent biodiversity and diverse landscapes for millennia.*

16. Frost, Evan J and Sweeney, Rob. 2002. *Fire Regimes, Fire History and Forest Conditions in the Klamath-Siskiyou Region: An Overview and Synthesis of Knowledge*.

> *"The current popular and frequently repeated hypothesis about fires in the Klamath Mountains is that – as a result of fire suppression and other human activities – large fires are occurring more frequently and are larger and more intense than they were in the past (Atzet et al. 1988, USDA Forest Service 1994, 1995, 1996, 1998b, Brookes 1996). This position is predicated on assertions, that, because of fire suppression: 1) the number of fires in the region has declined over time, 2) fires are substantially larger today than in the past, and 3) large, intense fires are the results of unnaturally high levels of fuels accumulation.*

However, none of these assertions have been supported with empirical data from the Klamath Mountains or by analysis demonstrating that a change in fire frequency, size or severity has occurred from historic to present. If this hypothesis is not true, it may lead to inappropriate forest management and adverse impacts to regional biodiversity."

17. DellaSala, Dominick A. and Hanson, Chad T. 2015 The Ecological Importance of Mixed-Severity Fires: Natures Phoenix p 15, 16.

18. Odion, Dennis C. 2004. *Comments on the Biscuit Post-Fire Logging Draft Environmental Impact Statement. "However, all fire history studies that have been done in the region, based on scarred trees, have found a wide range in fire intervals, long fire fee periods, and that the range in fire intervals is a more important property than the mean (summarized by Frost and Sweeney 2000). Agee (1991) found a pre-settlement fire-free period greater than 100 years at nearby Oregon Caves. Over time scales beyond the last few centuries, there has not been any stationary amount of charcoal accumulation (Mohr et al. 2000), a measure of fire's importance on the landscape over time. Fire has been both more and less common over meaningful time scales compared to recent centuries; there is no average tendency because of climatic variability. The description of historic fire intervals in the DEIS needs to be rewritten to accurately reflect high variability and non-equilibrium tendencies. These properties are associated with high levels of biodiversity (Odion et al. In Press).*

The Tree-based fire history studies have ignored the longest fire intervals experienced by most trees, the one prior to the first fire scar on sampled trees, which can only be estimated (Baker and Ehle 2001). These fire history studies also use methods that extrapolate fire from a point location across space, which further over estimates fire frequency. Finally, areas sampled in fire scar studies cannot be assumed to represent the entire landscape; they are the locations where fire has operated in a way that has allowed for concentrations of trees scarred by low severity fires to develop. These may be unique locations where lightning and human ignitions were frequent, and fire size small." ... "Most importantly the DEIS rationalizes timber harvest as a means to return a regime of relatively frequent fire at regular intervals. This fire regime would be unnatural, and would not allow for the landscape diversity that has existed historically."

19. DellaSala, Dominick A. and Hanson, Chad T. 2015 The Ecological Importance of Mixed-Severity Fires: Natures Phoenix p 12

20. Odion, Dennis C.; Frost, evan J.; Strittholt, James R.; Jiang, Hong; DellaSalla, Dominick A., and Moritz, Max A. 2003/2004. *Patterns of Fire Severity and Forest Conditions in the Western Klamath Mountains, California*, Conservation Biology, Pages 927-936, Volume 18, No 4

21. Stephenson, NL, AJ Das, R Condit, SE Russo, PJ Baker, NG Beckman, DA Coomes, ER Lines, WK Morris, N Rüger, E Álvarez, C Blundo, S Bunyavejchewin, G Chuyong, SJ Davies, Á Duque, CN Ewango, O Flores, JF Franklin, HR Grau, Z Hao, ME Harmon, SP Hubbell, D Kenfack, Y Lin, JR Makana, A Malizia, LR Malizia, RJ Pabst, N Pongpattananurak, SH Su, IF Sun, S Tan, D Thomas, PJ van Mantgem, X Wang, SK Wiser, MA Zavala. 2014. *Rate of tree carbon accumulation increases continuously with tree size*. Nature, 507. doi: 10.1038/nature12914

Abstract:

Forests are major components of the global carbon cycle, providing substantial feedback to atmospheric greenhouse gas concentrations. Our ability to understand and predict changes in the forest carbon cycle—particularly net primary productivity and carbon storage—increasingly relies on models that represent biological processes across several scales of biological organization, from tree leaves to forest stands. Yet, despite advances in our understanding of productivity at the scales of leaves and stands, no consensus exists about the nature of productivity at the scale of the individual tree, in part because we lack

a broad empirical assessment of whether rates of absolute treemass growth (and thus carbon accumulation)decrease, remain constant, or increase as trees increase in size and age. Here we present a global analysis of 403 tropical and temperate tree species, showing that for most species mass growth rate increases continuously with tree size. Thus, large, old trees do not act simply as senescent carbon reservoirs but actively fix large amounts of carbon compared to smaller trees; at the extreme, a single big tree can add the same amount of carbon to the forest within a year as is contained in an entire mid-sized tree. The apparent paradoxes of individual tree growth increasing with tree size despite declining leaf-level and stand-level productivity can be explained, respectively, by increases in a tree's total leaf area that outpace declines in productivity per unit of leaf area and, among other factors, age-related reductions in population density. Our results resolve conflicting assumptions about the nature of tree growth, inform efforts to understand and model forest carbon dynamics, and have additional implications for theories of resource allocation and plant senescence.

22. Rapp, Valerie. 2004. *Western Forests, Fire Risk, and Climate Change*, USDA Pacific Northwest Research Station, Science Update, Issue 6

"Enhanced carbon storage in ecosystems is, in fact, a major goal of the federal program to address climate change. But another forest policy is to reduce fuels and thus fire risk in the West, a policy that can release stored carbon. This key observation links the fire and fuels issue in the West to the global carbon change issue. The two issues are fundamentally coupled, yet the proposed solutions are seemingly opposed."

"Two ways exist to limit the amount of carbon in the atmosphere, and thus reduce global warming. One way is to limit carbon dioxide emissions generated from burning fossil fuels. The second way is to sequester more carbon in ecosystems or bury it in geologic structures. In the Western United States, however, the conundrum would be how to balance carbon storage with reducing fuels and fire risk."

23. Frost, Evan J and Sweeney, Rob. 2002. Fire Regimes, Fire History and Forest Conditions in the Klamath-Siskiyou Region: An Overview and Synthesis of Knowledge.

"Lastly, it is important to recognize that the insights offered here represent a poorly developed "state of the art" because we currently have a very incomplete understanding of the role of fire in these forests, how this role has changed over time, and the most effectual means for restoring forests degraded by past management. There are significant risks associated with decisions made in the face of this high level of uncertainty. While ecosystem management plans will be developed in the absence of complete understanding, widespread application of highly intrusive treatments under the auspices of restoration could lead to further damage of the Klamath-Siskiyou region's forest ecosystems."

24. Tiedemann, Arthur R., Klemmedson, James O., and Bull, Evelyn L. *Solution of forest health problems with prescribed fire: are forest productivity and wildlife at risk?* Forest Ecology and Management 127 (2000) Pg 4

"The next question is about the feasibility of returning these stands to a condition that emulates presettlement species composition and spacing (even if we knew what they were). Emerging ecological theory on community thresholds, stable states, and succession (Laycoff, 1991; Tausch et al., 1993) suggests that this task may not be simple. Nearly 100 years of fire exclusion, possible climate changes, and past management practices may have caused these communities to cross thresholds and to reside now in different steady states. If so, returning to some previous condition may be difficult to achieve, expensive to maintain, or both. Baker (1992) is straightforward in his conclusion that "landscapes that have been altered by settlement and fire suppression cannot be restored using traditional methods of prescribed burning, which will simply produce further alteration."

25. Tiedemann, Arthur R., Klemmedson, James O., and Bull, Evelyn L. *Solution of forest health problems with prescribed fire: are forest productivity and wildlife at risk?* Forest Ecology and Management 127 (2000) Pg 6

"The forest floor is a key component in the biology of forest ecosystems, but it is probably more affected and more likely to be lost by fire than any other component of forest ecosystems (Page-Dumroese et al.,

1991). According to McNabb and Cromack (1990), "The most important criterion for reducing nutrient losses from prescribed burning is to minimize the loss of the forest floor." With low intensity wildfires and, in many prescribed fires, the forest floor may be the only part of the forest to burn. If forest floor is viewed only as the annual accumulations of dead plant and animal remains, loss of forest floor may seem inconsequential, even when fire is used frequently in pursuit of short-term goals of productivity or naturalness (Sackett et al., 1993; Covington et al., 1997). But, when viewed in terms of the complex chemical, physical, and biological processes that take place during decomposition of these dead organic resources (Swift et al., 1979), loss of forest floor by burning does have consequences that warrant careful consideration. Decomposition in the forest floor performs two major functions — mineralization of nutrients and the formation of soil organic matter (Swift et al., 1979); both are key to long-term ecosystem productivity and stability. When the forest floor is burned too frequently, nutrient replenishment and organic matter formation are diminished. Other roles and attributes ascribed to the forest floor are that it serves as the essential linkage between nutrient cycling processes, both above- and belowground; provides protection to the soil surface and improves soil architecture; facilitates water absorption and retention; and moderates soil temperatures (Kittredgê, 1.948; Harvey et al., 1976; Wells et al.. 1979; Page-Dumroese et al., 1991)."

26. Baker, William L. September 1994. *Restoration of Landscape Structure Altered by Fire Restoration,* Conservation Biology, Vol 8 No 3. Pg 763-769

"Unusually large fires would probably hasten the restoration of landscape structure, while small prescribed fires will not restore the landscape, but instead will produce further alteration."

27. Odion, Dennis C. 2004. *Comments on the Biscuit Post-Fire Logging Draft Environmental Impact Statement*.

"Prescribed burning following a fire free period of 40 years was found to eliminate the non-sprouting manzanita (Arctostaphylos morroensis (Odion and Tyler 2002). The same immaturity risk has also been described for knobcone pine (Keeley et al 1999). It may apply to a number of species in the Biscuit Fire area. Because this risk is a widespread phenomenon, excess fire is generally more of a threat to biodiversity than a lack of fire, and this threat has been realized in much of the world due to human ignitions (Bond and van Wilgen 1996)."

28. Baker, William L. September 1994. *Restoration of Landscape Structure Altered by Fire Restoration,* Conservation Biology, Vol 8 No 3. Pg 763-769

"... Small prescribed fires should be used only in special circumstances to accomplish species-level restoration goals, recognizing that repeated use of such fires will have a cumulative adverse effect on restoration goals at the landscape levels."

29. Tiedemann, Arthur R., Klemmedson, James O., and Bull, Evelyn L. *Solution of forest health problems with prescribed fire: are forest productivity and wildlife at risk?* Forest Ecology and Management 127 (2000) Pg 7

"...With maturity and later successional stages, the forest floor becomes an increasingly significant pool of nutrients in the cycling process (Rodin and Bazilevich. 1967; Odum, 1969; Page-Dumroese et al., 1991)."

30. Hammond, Herb. 1991. Seeing the Forest Among the Trees, The Case for Wholistic Forest Use, Pgs 66-67

"The Ministry's claim that slash burning releases nutrients to support new growth is plainly at odds with natural processes. The foliage, branches, and stems of trees–whether logged or naturally fallen–serve as a storehouse of nutrients for a new community of forest plants. This storehouse is designed to be released slowly, over centuries. Once nutrients are released from this woody debris in a form available to plants, they are no longer stored for a long period. Nutrients are water soluble, and many leach rapidly through the forest soil and away from the site. Slash burning releases a "flush" of nutrients which does indeed produce a short-term "flush" of growth. The ultimate result, however, is a longterm reduction in the nutrient pool available for tree growth.

The final purpose for slash burning, according to the Ministry , is to reduce fire hazard. However, the actual level of fire hazard created by unburned slash must be weighed against the very real damage done by slash burns which escape into living forests and burn out of control every year....."

31. DellaSala, Dominick A. and Hanson, Chad T. 2015 The Ecological Importance of Mixed-Severity Fires: Natures Phoenix p 315-318.

32. DellaSala, Dominick A. and Hanson, Chad T. 2015 The Ecological Importance of Mixed-Severity Fires: Natures Phoenix p 338.

33. Cohen, Jack D. 2000. *What is the Wildland Fire Threat to Homes?* USDA Rocky Mountain Research Station, Fire Sciences Laboratory, Missoula, MT. Lecture presented to School of Forestry, Northern Arizona University, Flagstaff, AZ on April 10, 2000

34. Odion, Dennis C.; Frost, evan J.; Strittholt, James R.; Jiang, Hong; DellaSala, Dominick A., and Moritz, Max A. 2003/2004. *Patterns of Fire Severity and Forest Conditions in the Western Klamath Mountains, California*, Conservation Biology, Pages 927-936, Volume 18, No 4

35. Odion, Dennis C. 2005. *Comments on the South Deer Landscape Management Project, Medford District BLM, Environmental Assessment*

The natural selection alternative is supported by science and would avoid many of the impacts of alternatives 2 and 3. The following is a brief summary of the merits of the natural selection alternative:
1) The Natural Selection Alternative would retain and restore late successional forest ecosystems, which, as discussed above, have the lowest fire hazard conditions, but also have the greatest value for old-growth associated wildlife.
2) The Natural Selection Alternative does not target the most important species and resources for wildlife.
3) The Natural Selection Alternative would remove many of the same forest resources for products that alternatives 2 & 3 slash and burn without creating openings in the canopies that will increase shrubs and brush and heat up surface fuels.
4). Stewards on site with fire tankers will increase immediate response to fire. This can have a greater effect in terms of fire safety than any type of fuel treatment.
5) The Natural Selection Alternative recognizes and uses science and data backed studies for the region that support its practices.
6) The Natural Selection Alternative recognizes that we currently have a very incomplete understanding of the role of fire in these forests and the significant risks to forest and community health associated with intrusive treatments in the face of this high level of uncertainty.
7). The Natural Selection Alternative places more emphasis on protecting people and property by focusing on the home ignition zone.
8). The Natural Selection Alternative eliminates the potential harm to wildlife, native seed banks, etc. from unnatural prescribed burning.
9). The Natural Selection Alternative does not confuse the issues of fuel hazard reduction with forest product removal.

The South Deer Watershed management could become a great example of collaboration between community and government stakeholders leading to sound management balancing ecological and economic goals. I believe it is in the best interest of BLM as a manager of public lands to seriously consider the well-informed and well-intentioned Natural Selection Alternative.

36. ECONorthwest. 2015. Outdoor Recreation Scarcity and Abundance in Western Oregon: A Spatial Analysis. Portland, OR: ECONorthwest

37. Lorah, Paul and Southwick, Rob and Southwick Associates. 2000. *Historical Economic Performance of Oregon and Western Counties Associated with Roadless and Wilderness Areas*

38. See -Niemi, Ernie 2015, *Oregon's Forest Economy–For This and Future Generations,* Natural Resource Economics (video attached and here: http://vp.telvue.com/preview?id=T01550&video=238025; and notes attached)

39. Niemi, Ernie 2015, *Oregon's Forest Economy–For This and Future Generations,* Natural Resource Economics Notes supplemental to above video (included in attached DVD).

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Deer Creek Valley Natural Resources Conservation Association
PO Box 670, Selma, OR 97538
541-597-4313

August 21, 2015

Jerome E Perez, State Director
Mark Brown, Project Manager
BLM Planning Team
RMPs for Western Oregon
Bureau of Land Management
P.O. Box 2965
Portland, Oregon 97208

Re: Book, DellaSala, Dominick A. and Hanson, Chad T. 2015 The Ecological Importance of Mixed-Severity Fires: Natures Phoenix to be included in our comments (package) on the Draft Resource Management Plan/Environmental Impact Statement for Western Oregon.

Dear Director Perez, Mr. Brown and Planning Team,

This book, was accidentally omitted from the package I sent by mail today with our comments on the Draft Resource Management Plan/Environmental Impact Statement for Western Oregon. I have attached the email message I sent along with comments I submitted online tonight, which included a note regarding this oversight.

Thank you,

Mary Camp

Mary Camp, President
Deer Creek Valley Natural Resources Conservation Association
Selma, Oregon
541-597-4313

Note: Book will be sent by overnight mail, Monday August 24, 2015

Copy of email message sent along with the comments I submitted online Aug 21.

Mary Camp

Subject: FW: Comments on BLM Draft RMP/EIS for Western Oregon
Attachments: BLM EIS NSA Solutions 150820.pdf; DCVNRCA BLM RMP DEIS Comments Part 1 & CovLtb.pdf; DCVNRCA BLM RMP DEIS Comments Part 1 & CovLt.Ammended.pdf; DCA BLM RMP DEIS Comments Pt 2-NSA 150821.pdf; DCA BLM RMP DEIS Comments Part 3.pdf

From: Mary Camp [mailto:mary@campforest.com]
Sent: Friday, August 21, 2015 11:11 PM
To: 'blm_or_rmps_westernoregon@blm.gov'
Subject: Comments on BLM Draft RMP/EIS for Western Oregon

Attached please find our comments for the Draft RMP/EIS for Western Oregon. They include

Part 1 & Cover Letter (printout sent by mail) and attached
Part 1 & Cover Letter Amended attached only
Part 2 (printout sent by mail) and attached
Part 3 (printout sent by mail) and attached

Attached also are comments by Orville Camp in behalf of himself and in behalf of DCVNRCA (printout sent by mail and attached)

The following are being submitted with these comments (sent by mail): Sent certified mail 8-21-15

1. **DVD** (DCVNRCA Comments for BLM Draft RMP EIS WO); and Printed Index of Documents included on the DVD
2. **DVD**: Niemi, Ernie. 2015 *Oregon's Forest Economy* (video of presentation) Also available on line (Rogue Valley Community Television): http://vp.telvue.com/preview?id=T01550&video=238025
3. **DVD**: *Call of Life* film
4. **Book**: DellaSala, Dominick A. and Hanson, Chad T. 2015 The Ecological Importance of Mixed-Severity Fires: Natures Phoenix * Acidentally omitted - This is it -
5. Siskiyou Field Institute **Catalogue and Rack Card**

* I accidentally omitted the book intended to be included in the package that I sent today with our comments and other enclosures. The book (DellaSala, Dominick A. and Hanson, Chad T. 2015, The Ecological Importance of Mixed-Severity Fires: Natures Phoenix) will be sent by overnight mail on Monday.

I have attached two versions of part 1 of our comments (the first version is the one sent in the packet by mail today, and the other is an amended version). Part 1 was completed after the DVD was made, so did not get included on the DVD of documents I sent in the mail.

Thank you,
Mary Camp
Deer Creek Valley Natural Resources Conservation Association (DCA)
Selma, OR 97538
541-597-4313

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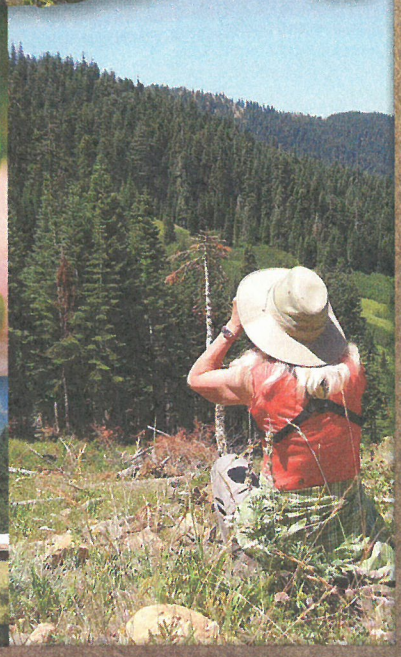


From: fpaulete@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Saturday, August 22, 2015 11:53 AM
To: RMP-Comments@heg-inc.com
Subject: Fwd: Comments on BLM Western Oregon Plan Revision
Attachments: Comments BLM DEIS Cathedral Hills 8-21-2015 final.pdf

---------- Forwarded message ----------
From: **Barbara Ullian** <barbaraullian@charter.net>
Date: Fri, Aug 21, 2015 at 8:31 PM
Subject: Comments on BLM Western Oregon Plan Revision
To: blm_or_rmpwo_comments@blm.gov

Dear BLM Planner,

Attached as a pdf file are comments on BLM's Western Oregon Plan Revision DEIS.

If you have any problems opening the file please let me know.

Also would appreciate an acknowledgement that the comments were received.

Thank you.

Barbara Ullian

Barbara Ullian, Coordinator
Friends of the Kalmiopsis
541-474-2265
KalmiopsisWild.org
KalmiopsisRivers.org

August 21, 2015

Draft EIS for Western Oregon
P.O. Box 2965
Portland, OR 9720
blm_or_rmpwo_comments@blm.gov

Re: Comments on the Draft Environmental Impact Statement for BLM Western Oregon Plan Revision specific to the Cathedral Hills Park and trail system, proposed Cathedral Hill Recreation Management Area and proposed Cathedral Hills Natural and Recreation Area on the Medford District of the BLM

Dear Bureau of Land Management Western Oregon Planners:

These comments on the Draft Environmental Impact Statement for the BLM's Western Oregon Plan Revision are specific to an area on the Medford District of the BLM, immediately south of Grants Pass, known as Cathedral Hills Park or trail system. Cathedral Hills is a unique BLM-managed area that is for Grants Pass, what Central Park is for New York City. See map 1.

BLM's Cathedral Hills Park is surrounded by the city's urban growth boundary, subdivisions and the Grants Pass Golf Course. It's a priceless and ecologically unique open space in a sea of development that's vital to the health and well being of a great many residents of the greater Grants Pass area.[1]

Unfortunately, BLM's management of Cathedral Hills has not alway reflected the area's core value to the public as open space and a recreation area. For example, the agency with little documentation and relatively no public outreach granted a right of way that could now impact the park, its users and the surrounding property owners.

In 2005, the BLM rightly concluded that the demand for recreation opportunities in the Grants Pass Area was increasing and would continue to increase.[2] Reflecting the truth of this prediction, in 2011, Cathedral Hills Park was the highest used trail system in all of Southern Oregon, outside of the National Monuments.[3] Despite this the Medford District's land management allocations were not reflective of the ever increasing popularity and public use of Cathedral Hills and the need to provide more and quality recreational opportunities in Southern Oregon. See photos 1, 2, 3 & 5).

---

[1] See Cathedral Hills, far better than treadmills and the Friends of Cathedral Hills on Facebook.

[2] USDI, Bureau of Land Managment, 2005, Cathedral Hills Hazardous Fuel Reduction and Recreation Management Environmental Assessment and Decision Memo, Medford District,Grants Pass Resource Area. August 2005. and September 2005 - http://www.blm.gov/or/plans/nepa-details.php?id=148

[3] USDI, Medford District BLM 2011, Determination of NEPA Adequacy, Cathedral Hills Park Trail relocation, decommissioning and rehabilitation. October 2011.

Photo No 1 - Child rides mountain bike while mom watches at Cathedral Hills' Espy Road entrance on a busy January Sunday.

Using BLM's data Senator Wyden's O&C Land Grant Act of 2014 allocated all parts of Cathedral Hills Park to the legislation's "forestry emphasis areas." See map 2. Representative Greg Walden's O&C Trust, Conservation and Jobs Act, which has passed the House of Representatives, would turn the Wild Rose and Sky Crest parts of the Cathedral Hills trail system over to what is often called a "timber trust" to be managed basically under the Oregon Forest Practices Act as industrial forest land. Managing Cathedral Hills for timber production would be like managing New York City's Central Park for timber production

Senator Ron Wyden and Senator Jeff Merkley have sought to remedy the error, to provide permanent protection for Cathedral Hills and to expand recreation opportunities to 560 acres in their O&C Land Grant Act of 2015 (Act).

Section 10 (e) (12) of the Act would establish the Cathedral Hills Natural and Recreation Area. See the official congressional map (map 3) of the proposed Natural and Recreation Area on page 8.

Photos 2 and 3 - Cathedral Hills is an outdoor classroom and a way to stay fit and vital for retirees.

While BLM's interactive map is very helpful, it lumps all recreation management areas together in one color so we can't quite tell for sure if the area the DEIS is proposing for Cathedral Hills includes the full extent of the Cathedral Hills Natural and Recreation Area as proposed by Senators Wyden and Merkley.

Alternatives B, C & D do appear to allocate approximately 560 acres of BLM-managed lands as a "recreation management area." However, given the importance of Cathedral Hills Park, we suggest that the final environmental impact statement provide a map showing BLM's proposal for Cathedral Hills.

Photo 4 - A trail in Cathedral Hills and an example of the diverse oak, pine, madrone and manzanita woodlands of the area.

At least one or more alternatives should propose and analyze area boundaries and a management regime for Cathedral Hills consistent with the O&C Land Grant Act of 2015.

In addition, we urge BLM to manage Cathedral Hills consistent with the Act until Congress has had time to fully consider the permanent protection proposed for this cherished park and trail system.

Cathedral Hills has high ecological values in addition to it's importance for providing for recreation and health benefits to Southern Oregon residents. For example, the Park is host to two Oregon State champion trees. The largest known knobcone pine and white leaf manzanita in Oregon were recently discovered in Cathedral Hills. The knobcone pine turned out to be a national champion tree. See references below for more information on Cathedral Hills' champion trees.

The identification of the champion trees were relatively recent discoveries made not by the BLM, but by citizens. We sure that analysis would find Cathedral Hills

Photo 5 - A warm sunny January Sunday filled the parking area at the Cathedral Hills' Espy Road Entrance to overflowing. Cars and horse trailers parked along the entrance road.

has many other values meeting the criteria of an Area of Critical Environmental Concern (ACEC). We therefore ask that BLM designate the Cathedral Hills Park and trail system as an ACEC.

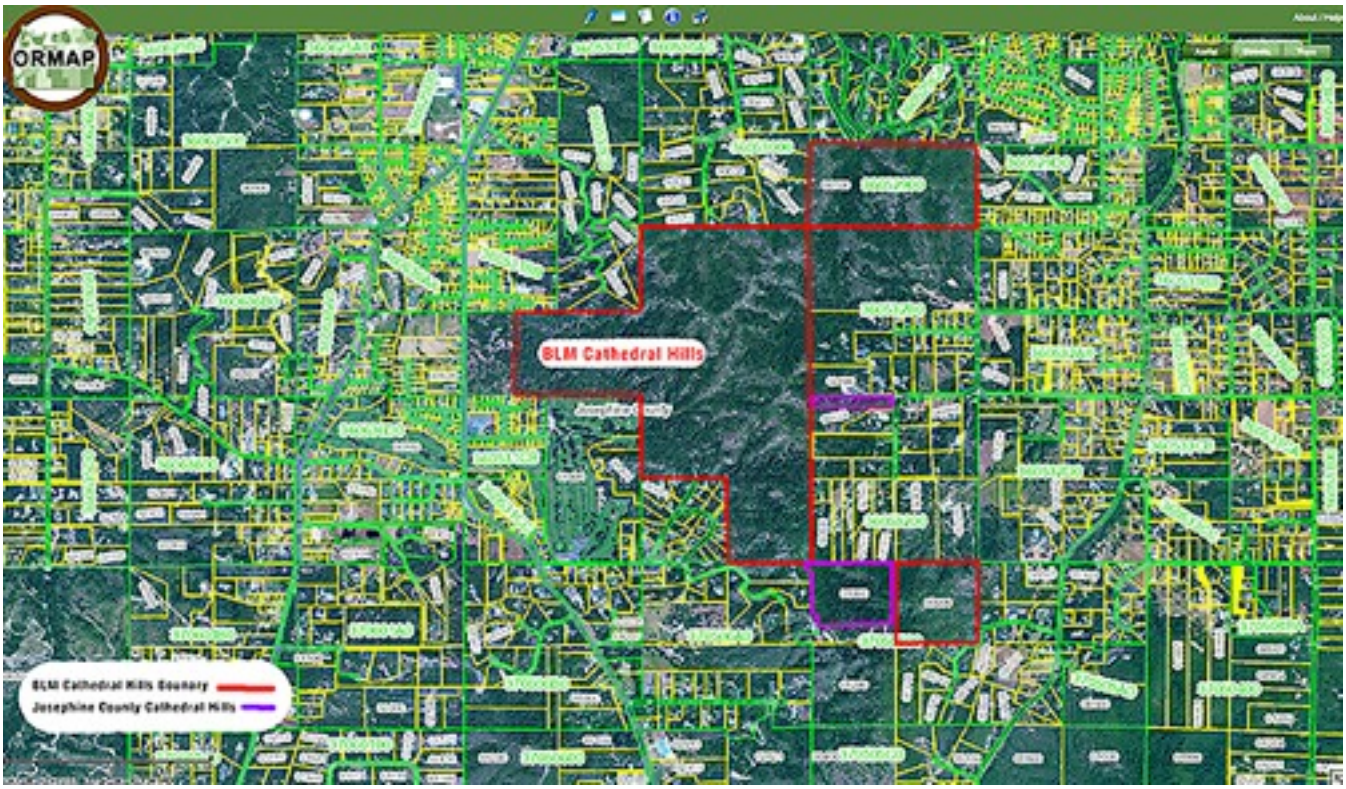
Thank you for considering these comments on Cathedral Hills and BLM's Western Oregon Plan Revision.

Sincerely,

Barbara Ullian
1134 S. E. Allenwood Drive
Grants Pass, Oregon 97527

Karin Leson
2881 Coach Drive
Grants Pass, Oregon 97527

CC: Senator Ron Wyden
Senator Jeff Merkley
Representative Greg Walden



Map 1 - Land ownership of the Grants Pass area south of the Rogue River. BLM's Cathedral Hills is the area within red boundary line. Area within purple boundary is Josephine County lands that are part of the trail system. Note - this map does not show the southern most extent of the proposed Cathedral Hills Natural and Recreation Area

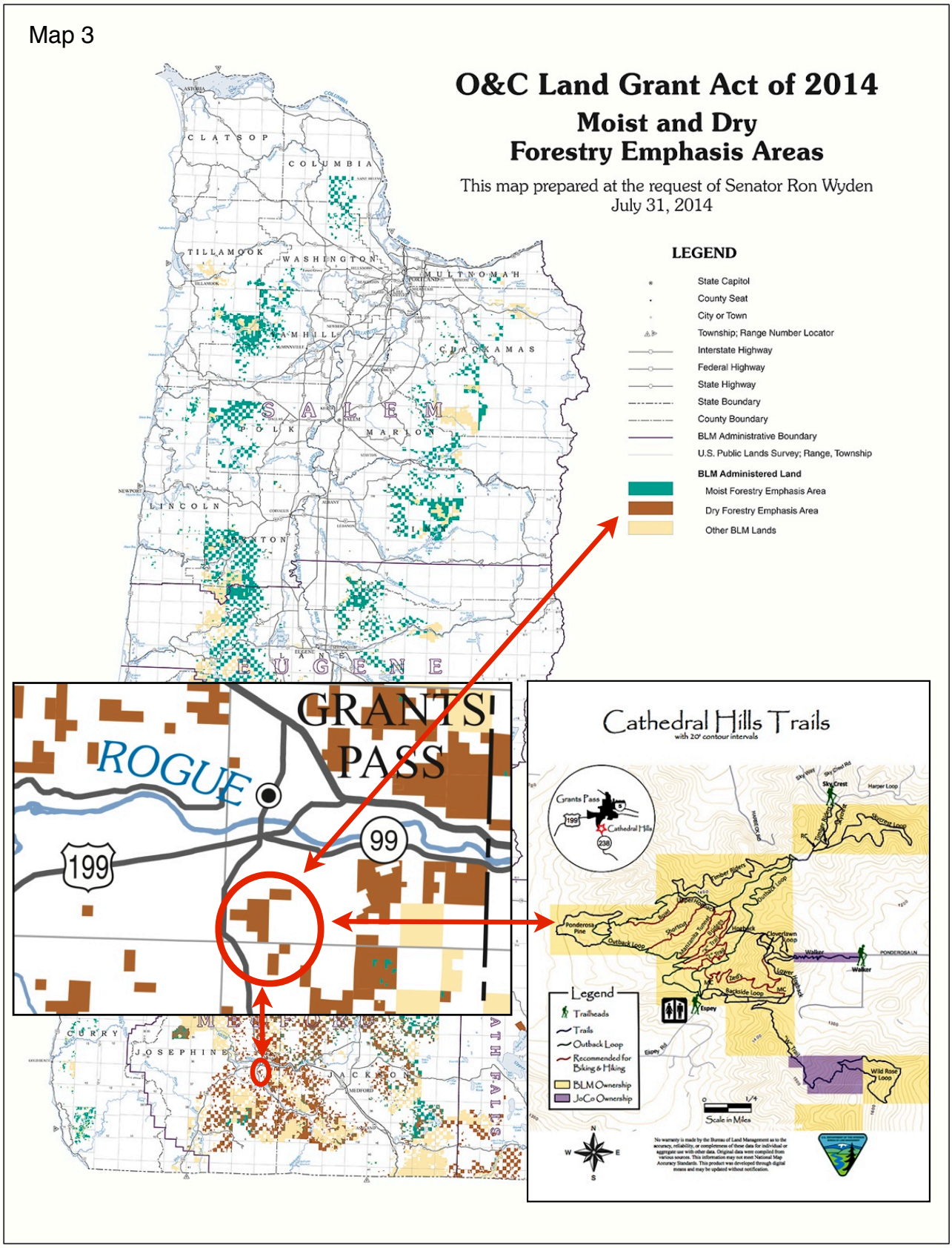
Photo 7 - Old growth manzanita, Indian warriors (*Pedicularis densiflora)* and in the foreground, *a* California ground cone *(Boschniakia strobilacea)* at Cathedral Hills.

Photo 6 - Cathedral Hills is an ecological oasis surrounded by development. It provides examples of relatively undisturbed ponderosa pine, oak and manzanita woodlands and a glimpse of what the Grants Pass area must have once looked like prior the rapid growth of the Grants Pass Area.

Additional information and references

- BLM webpage for Cathedral Hills Trail System - http://www.blm.gov/or/resources/recreation/site_info.php?siteid=360
- BLM Fuel Hazard Reduction and Recreation Management Project - http://www.blm.gov/or/plans/nepa-details.php?id=148
- Friends of Cathedral Hills Facebook Page - https://www.facebook.com/friendsofcathedralhills?ref=stream
- Cathedral Hills on the Trail Dog Forum - http://www.traildogforum.org/forum/index.php?p=/discussion/89/southern-oregon-hike-cathedral-hills/p1
- Yelp - Cathedral Hills Trail - http://www.yelp.com/biz/cathedral-hills-trails-grants-pass
- Champion Trees highlight Cathedral Hills - The Daily Courier - http://web.thedailycourier.com/zachsadventures/stories/adventure.html?h=tree
- About Cathedral Hills National Champion knobcone pine - http://web.thedailycourier.com/zachsadventures/stories/adventure.html?h=bigtreesjo
- Cathedral Hills far better than treadmills - The Daily Courier - http://web.thedailycourier.com/zachsadventures/stories/adventure.html?h=cathedral
- Cathedral Hills - The Daily Courier - http://web.thedailycourier.com/zachsadventures/hikes/hikes.html?i=24

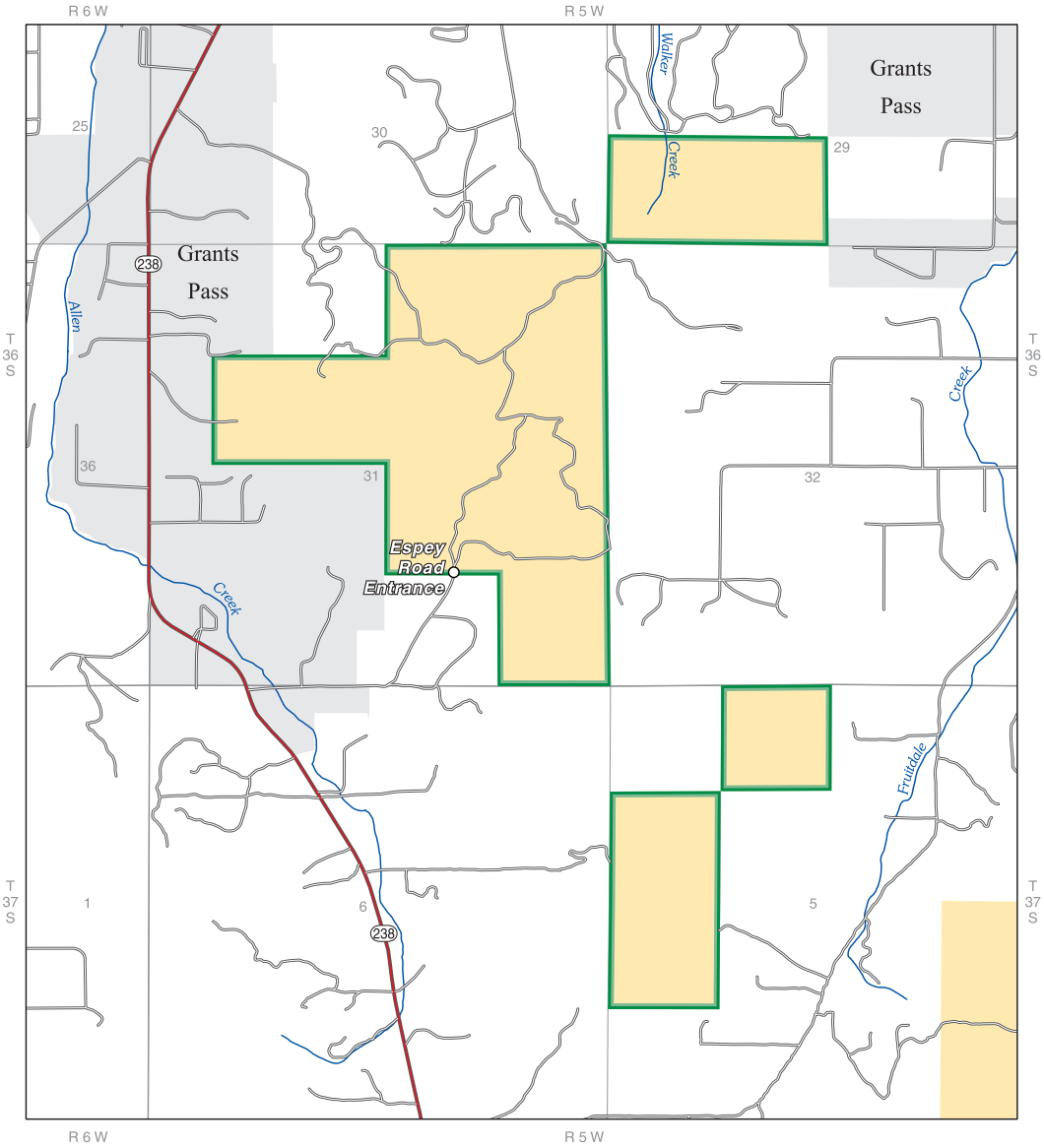
Map 3


O&C Land Grant Act of 2014
Moist and Dry
Forestry Emphasis Areas
This map prepared at the request of Senator Ron Wyden
July 31, 2014
LEGEND
State Capitol
County Seat
City or Town
Township; Range Number Locator
Interstate Highway
Federal Highway
State Highway
State Boundary
County Boundary
BLM Administrative Boundary
U.S. Public Lands Survey; Range, Township
BLM Administered Land
Moist Forestry Emphasis Area
Dry Forestry Emphasis Area
Other BLM Lands
CLATSOP
COLUMBIA
TILLAMOOK
WASHINGTON
MULTNOMAH
CLACKAMAS
SALEM
POLK
MARION
LINCOLN
EUGENE
GRANTS PASS
ROGUE
199
99
Cathedral Hills Trails
with 20' contour intervals
Legend
Trailheads
Trails
Outback Loop
Recommended for Biking & Hiking
BLM Ownership
JoCo Ownership
Scale in Miles
CURRY
JOSEPHINE
JACKSON

Cathedral Hills Natural and Recreation Area

Medford District

This map prepared at the request of Senator Ron Wyden
January 5, 2015



LEGEND

- Cathedral Hills Natural and Recreation Area
- 238 State Highway
- Other Road
- BLM Administered Land

N
W E
S

Scale 1: 15,000 when plotted at 11x17

0.25 0 0.25 0.5
Miles
0.25 0 0.25 0.5
Kilometers
Albers Equal Area Projection
North American Datum of 1983

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Jasmine Benjamin

From: fpaulete@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Saturday, August 22, 2015 11:34 AM
To: RMP-Comments@heg-inc.com
Subject: Fwd: Comments on the Draft RMP for Western Oregon
Attachments: RMP Coalition Comments FINALsm.pdf

---------- Forwarded message ----------
From: **Joseph Vaile** <joseph@kswild.org>
Date: Fri, Aug 21, 2015 at 10:36 AM
Subject: Re: Comments on the Draft RMP for Western Oregon
To: blm_or_rmpwo_comments@blm.gov
Cc: Joseph Vaile <joseph@kswild.org>, Michael Dotson <michael@kswild.org>

BLM -

We have an additional signer to our comments. Please see the revised version attached.

On Thu, Aug 20, 2015 at 11:14 AM, Joseph Vaile <joseph@kswild.org> wrote:
To Mark Brown, Interdisciplinary Team and State Director Jerome Perez,

Thank you for the opportunity to comment on the BLM's Draft Resource Management Plan/Environmental Impact Statement for Western Oregon. We appreciate all the time and effort that the BLM put into the analysis. Herein are comments from several river and forest conservation organizations representing hundreds of thousands of members and supporters from Oregon and across the nation along with input from economists, forest scientists and others.

In addition to this email submission we will be sending a hardcopy of these comments with the associated supporting materials, including the referenced documents and copies of reports and peer reviewed materials for the BLM to consider as it formulates the Final EIS.

Sincerely,

--
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--
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August 20, 2015

Jerome E. Perez
State Director
Washington/Oregon
Bureau of Land Management
P.O. Box 2965
Portland, Oregon 97208

ATTN: Mark Brown
Submitted via Email: <blm_or_rmpwo_comments@blm.gov>

RE: Resource Management Plans for Western Oregon Draft Environmental Impact Statement

Dear Director Perez:

On behalf of our thousands of members and supporters throughout Oregon and the nation, our conservation organizations submit these comments concerning the Draft Environmental Impact Statement (DEIS) for the Resource Management Plans (RMP) for BLM forests and watersheds in Western Oregon.

Western Oregon's BLM lands support salmon, steelhead, and wildlife while delivering outstanding watershed and recreational values to the public. These forests are source-drinking watersheds for hundreds of thousands of Oregonians; they sequester large amounts of carbon; and they provide crucial ecological functions. The natural amenities found on these public lands are highly valued and sought after, from local residents to tourists from around the world.

We are pleased that the RMP recognizes that recreation is the means by which most Americans experience these lands, and that recreation provides the greatest economic benefits to local communities. Our members and supporters want the important natural amenities and environmental services to exist for future generations on BLM lands in western Oregon. However, we are concerned that the Draft RMP promotes plans that would resume clearcut logging, reduce streamside buffers, increase road construction, and reward damaging motorized off-road recreation on BLM forests.

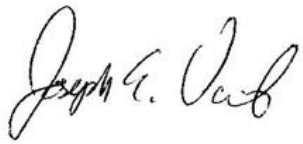
We are particularly concerned that BLM is proposing to disengage from the coordinated interagency federal land management plan embodied in the Northwest Forest Plan. Specifically, we are alarmed by the BLM's proposals to reduce riparian forest protections, eliminate the Aquatic Conservation Strategy, abandon protections for Key Watersheds, minimize green tree and down wood retention standards, abandon the Applegate Adaptive Management Area, and drop the Survey and Manage program for rare plants and animals. This profound shift away from a unified federal management strategy for lands within the range of the Northern spotted owl threatens to unravel the certainty and legal assurances relied upon by BLM and Forest Service

project planners across 25 million acres of federal land as well as assurances provided to adjacent private and state land managers throughout the Pacific Northwest.

As stated on page 21 of the DEIS, the purpose and need for the NWFP was guided by a presidential directive to the BLM and Forest Service to adopt a "comprehensive …common management approach to the [federal] lands administered throughout the entire region." The BLM has not provided a compelling reason for rejecting the comprehensive and unified approach to federal forest management that is abandoned in all of the action alternatives developed and considered in the DEIS.

We look forward to discussing these comments with your planning staff prior to the development of a Final Environmental Impact Statement and Record of Decision.

Sincerely,



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THE PURPOSE AND NEED

During the late 1980s and early 1990s, a series of lawsuits uncovered "*a remarkable series of violations of the environmental laws*," and "*a deliberate and systematic refusal … to comply with the laws protecting wildlife.*" [1] To end the gridlock, President Clinton directed the Forest Service and BLM to craft a comprehensive, long-term management strategy that is "*scientifically sound, ecologically credible, and legally responsible*." [2] The agencies assembled a team of leading scientists, called the Forest Ecosystem Management Assessment Team ("FEMAT"), to develop ecosystem management strategies that would meet this goal.[3] The final result was the Northwest Forest Plan, an ecosystem management plan that contained standards and guidelines for managing Forest Service and BLM public lands, created old-growth and riparian reserves, and provided for continued timber harvest. The Northwest Forest Plan has been upheld by the federal courts in challenges both from the timber industry and from conservation groups. The Ninth Circuit Court of Appeals also rejected the BLM's prior attempt to revise its RMPs to achieve the same objectives as earlier flawed attempts to revise the Northwest Forest Plan.[4] This DEIS marks the fourth major attack on the Northwest Forest Plan.

The range of reasonable alternatives to be considered in an environmental impact statement depends on the purpose of the project.[5] However, an agency's discretion to determine the purpose and need of a project is not unfettered. Courts require an agency's definition of purpose to be reasonable.[6]

Courts impose this standard to ensure that agencies do not avoid NEPA's requirements by defining a project's purpose so narrowly as to preclude consideration of reasonable alternatives.[7] Consideration of alternatives is "the heart of the environmental impact statement."[8]

For the Resource Management Plan for Western Oregon, BLM describes the purpose and need of the proposed action in the following way:

> *The BLM conducted plan evaluations in accordance with its planning regulations, which require that RMPs "shall be revised as necessary based on monitoring and evaluation*

---

[1] *Seattle Audubon Soc'y v. Evans*, 771 F. Supp. 1081, 1089-90 (W.D. Wash.), *aff'd*, 952 F.2d 297 (9th Cir. 1991).
[2] Northwest Forest Plan Record of Decision at 3.
[3] . *Seattle Audubon Soc'y v. Lyons*, 871 F. Supp. 1291, 1303 (W.D. Wash. 1994), *aff'd*, 80 F.3d 1401 (9th Cir. 1996); FEMAT Report at I-1, II-36 to-37, ch. V.
[4] *Pac. Rivers Council v. Shepard*, No. 03:11-CV-00442-HU, 2011 WL 7562961 (D. Or. Sept. 29, 2011), *report and recommendation adopted as modified*, No. 03:11-CV-442-HU, 2012 WL 950032 (D. Or. Mar. 20, 2012); *Pac. Rivers Council v. Shepard*, No. 12-35570 (9th Cir. March 1, 2013) (opinion and order dismissing appeal by timber Intervenors for lack of jurisdiction and upholding district court decision in its entirety).
[5] *Methow Valley Citizens Council v. Regional Forester*, 833 F.2d 810, 815-16 (9th Cir. 1987) (impact statements must consider all reasonable alternatives that accomplish project purpose, but need not consider alternatives not reasonably related to the purpose).
[6] *City of Carmel-by-the-Sea v. United States Dep't of Transp.*, 123 F.3d 1142, 1155 (9th Cir. 1997); *Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 195-96 (D.C. Cir. 1991).

[7] *Simmons v. United States Army Corps of Eng'rs*, 120 F.3d 664, 666 (7th Cir. 1997); *City of New York v. United States Dep't of Transp.*, 715 F.2d 732, 743 (2d Cir. 1983); *Citizens Against Burlington*, 938 F.2d at 196.
[8] *Simmons v. United States Army Corps of Eng'rs*, 120 F.3d 664, 666 (7th Cir. 1997); *City of New York v. United States Dep't of Transp.*, 715 F.2d 732, 743 (2d Cir. 1983); *Citizens Against Burlington*, 938 F.2d at 196.

findings, new data, new or revised policy and changes in circumstances affecting the entire plan or major portions of the plan" (43 CFR 1610.5-6). These evaluations concluded that "[a] plan revision is needed to address the changed circumstances and new information that has led to a substantial, long-term departure from the timber management outcomes predicted under the 1995 RMPs*"* [9] *These evaluations also concluded that the management direction for most of the other resource management programs need to be modified or updated because of changed circumstances and new information. These evaluations concluded that changes are particularly indicated for the fisheries, aquatics, recreation, off-highway vehicle, and fire and fuels programs.*

Moreover, the BLM needs to revise existing plans to replace the 1995 RMPs' land use allocations and management direction because of new scientific information and policies related to the northern spotted owl. Since the 1995 RMPs were approved, there have been analyses on the effects of land management on northern spotted owl habitat, demographic studies, and analyses of the effects of barred owls on northern spotted owls. In addition, since that time, new policies for northern spotted owls have been put in place, including a revised recovery plan and a new designation of critical habitat.[10]

The DEIS goes on to note that this purpose and need includes providing a sustained yield of timber, conservation and recovery of listed species, providing clean water, restoring fire-adapted ecosystems, providing for recreational opportunities, and coordinating management of lands surrounding the Coquille Forest.[11]

While these goals are laudable, the resulting alternatives do not comport with these objectives because each alternative includes components that would threaten wildlife, watershed, and recreational values in an attempt to increase timber production. BLM has steadfastly maintained that the Northwest Forest Plan has failed to produce "enough" timber from O&C lands, but in fact, timber production has produced a relatively constant – if lower than historic highs – harvest level. *See infra*. Moreover, all of the "new information" BLM references demonstrates that the Northwest Forest Plan is working to achieve the remaining stated "needs" for action. Monitoring of implementation of the NFP has demonstrated that more species are better protected under the NFP than without it; watersheds are in better condition than they were prior to the implementation of the NFP; water is cleaner and cooler with the ACS, riparian reserves, and a program of watershed restoration than without the NFP; more people recreate on BLM lands than use them for timber harvest; and recreationalists contribute more money to local economies than does timber harvest. While "restoring fire-adapted ecosystems" is part of the stated purpose and need, BLM acknowledges that it has little ability to do so on its lands due to the checkerboard pattern of federal and nonfederal ownership on the O&C lands.[12] BLM has also not demonstrated that the status quo has precluded coordination with the Coquille Tribe regarding management of their lands adjacent to federal lands.[13]

---

[9] (USDI BLM 2012a, p. 12).
[10] DEIS at 5.

[11] DEIS at 6-10.
[12] DEIS at 181, 212.
[13] *See generally*, Regional Ecosystem Office, *20 Year Reports for the Northwest Forest Plan* (July 8, 2015),http://www.reo.gov/monitoring/reports/20yr-report/.

Given that available information indicates that the Northwest Forest Plan is working, the stated purpose and need for action are impermissibly flawed, leading to alternatives that are trying to solve imaginary problems with the status quo.

I. THE SUSTAINED YIELD PURPOSE AND NEED SHOULD BE SECONDARY, NOT PRIMARY.

BLM cites as its first purpose of the RMP revision to "Provide a sustained yield of timber." (DEIS at 6). The DEIS shows that regeneration is not needed to restore early seral-habitat, because early seral habitat is already over-abundant and likely to increase in the future as a result of climate change.

Regeneration harvest is not needed for "community stability" because the DEIS admits that the timber industry is inherently volatile and has been for decades. Increasing regeneration harvest will actually reduce not increase community stability. And, regeneration harvest is not needed for fire hazard reduction, because the DEIS shows that young forests resulting from such logging are more hazardous than mature forests.

What is the real purpose of sustained yield? The O&C Act says that sustained yield is sought *"for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities"* [14]

BLM should structure the analysis so that these enumerated purposes are primary, and sustained yield is sought to the extent it fulfills these purposes. The analysis shows that pursuing a higher and more certain sustained yield will degrade watersheds and destabilize communities. This makes no sense. Is BLM seeking sustained yield for its own sake? Such a tautological approach is deeply flawed.

The DEIS at 6 concludes:

> *FLPMA specifically provides that if there is any conflict between its provisions and the O&C Act related to management of timber resources or the disposition of revenues from the O&C lands and resources, the O&C Act prevails (i.e., takes precedence) (43 U.S.C. 1701 note (b)). Thus, the multiple-use management direction of the FLPMA does not apply to the O&C lands that are suitable for timber production.*

BLM has jumped to a conclusion that there is a conflict between multiple use and lands suitable for timber production. BLM has not shown any such a conflict exists. In fact, the DEIS shows that forest conservation is highly compatible with the O&C Act purposes, including watershed protection and community stability.

BLM cannot rely on an interpretation of sustained yield that conflicts with its obligation to protect watersheds, regulate water flow, conserve endangered species, or maintain and restore water quality. BLM must use a rational definition of sustained yield that is qualified by conservation values. A consensus definition of the term is: "The sustainable yield of natural capital is the ecological yield that can be extracted without reducing the base of capital itself, i.e.

[14] 43 U.S.C. 1181a.

the surplus required to maintain nature's services at the same or increasing level over time. This yield usually varies over time with the needs of the ecosystem to maintain itself, e.g. a forest that has recently suffered a blight or flooding or fire will require more of its own ecological yield to sustain and re-establish a mature forest. While doing so, the sustainable yield may be much less."[15]

BLM should also interpret sustained yield in light of current scientific understandings of non-linearity of ecological process that sustain forests.

SUSTAINED YIELD FORESTRY IN BRITISH COLUMBIA by Lois Dellert is the definitive academic study of Sustained Yield in B.C. The report describes the evolution of Sustained Yield from 1900 to 1990 emphasizing the fear of scarcity and the hoped for improvement of timber production by scientific reordering of forests. From MacMillan through Sloan and Pearse to the present her central purpose is to examine the development of forest policy and,

> *...explore why it has been so difficult for forestry to achieve conservation in British Columbia.*
>
> *Forestry was motivated by scarcity and its goal was to support a forest-based economy by maximizing production and regulating the forest to provide a continuous supply of wood. Its policy of sustained yield was influenced by the scientific movement which believed the world operated according to universal rules and could be efficiently and rationally managed to capture its full potential and re-structured to achieve stability through order. The core ideas were efficiency and stability.*

The simple Newtonian universe of linear cause and effect and equilibrium dominant when Sustained Yield was developed no longer exists. Developments in non-equilibrium thermodynamics, in complexity and chaos theory, and in systems thinking about ecology and uncertainty have awoken science from Newton's sleep[16].

Recognizing that sustained yield must be achieved within some social and environmental constraints, the real goal is better conceived as sustainable forest management.

The Forest Service explored the definitions of sustainable forestry in a 2004 report called "National Report on Sustainable Forests—2003" (FS-766): The *Dictionary of Forestry* (Helms 1998) offers this description of forest sustainability:

> *....the capacity of forests, ranging from stands to ecoregions, to maintain their health, productivity, diversity, and overall integrity, in the long run, in the context of human activity and use.*

The *Dictionary of Forestry* also states that sustainable forest management is an evolving concept:

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[15] http://en.wikipedia.org/wiki/Sustainable_yield.

[16] http://www.pacificfringe.net/sustainedyield/ See also, Dellert, Lois. 1998. "Sustained Yield: Why Has It Failed to Achieve Sustainability?" in The Wealth of Forests: Markets, Regulation and Sustainable Forestry. Chris Tollefson, ed., UBC Press, Vancouver, B.C.

> *The stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality, and potential to fulfill, now and in the future, relevant ecological, economic, and social functions at local, national, and global levels, and that does not cause damage to other ecosystems–note criteria for sustainable forestry include (a) conservation of biological diversity, (b) maintenance of productive capacity of forest ecosystems, (c) maintenance of forest ecosystem health and vitality, (d) conservation and maintenance of soil and water resources, (e) maintenance of forest contribution to global carbon cycles, (f) maintenance and enhancement of long-term multiple socioeconomic benefits to meet the needs of societies, and (g) legal, institutional, and economic framework for forest conservation and sustainable management.*

Other definitions particularly stress the importance of recognizing environmental limits. One example is the following statement[17] from the book *Defining Sustainable Forestry*:

> *Since sustainable forest management is only possible within the ultimate constraints and limits imposed by the ecosystem, sustainability should be viewed as the degree of overlap between ecological possibilities and socially desired benefits of forests.*
>
> *The concept of sustainable forest management is related to but different in significant ways from an earlier concept of sustained yield—the amount of wood that a forest can produce on a continual basis. The concept of sustained yield, dating back to the Middle Ages in Europe, was brought to the United States in the late 1800s by early forestry leaders such as Bernhard Fernow and Gifford Pinchot. It was expanded over time to include the perpetual production of other forest outputs in addition to timber supply, including water, recreation, fish and wildlife, and livestock forage—the expanded concept is often referred to as the "multiple-use sustained-yield" principle. This principle was enshrined in law in 1960 for national forests. The concept of sustainable forest management, however, includes managing the forest for more than outputs; it focuses on maintaining processes and seeking to sustain communities, economies, and all the elements of a forest (Floyd 2002).*

When one views the multiple objectives of the O&C Act as modified by the Federal Land Policy and Management Act, Endangered Species Act, and Clean Water Act, there is clearly no significant difference between sustained yield, multiple-use sustained-yield, and sustainable forest management.

II. BLM FAILED TO HARMONIZE ITS LEGAL MANDATES.

The DEIS states that FLPMA's multiple use mandate does not apply to lands suitable for timber production because there is a conflict between the mandates of FLMPA and the O&C Act. This is an unsupported assumption. Before finding a conflict, BLM must first try to harmonize the objectives of these Acts, which is what the Northwest Forest Plan did, and there is no reason to conclude that this was an error.

[17] Noss 1993.

In the 1944 Sustained Yield Act, Congress articulated a vision of sustained yield that encompassed, *"... maintenance of water supply, regulation of stream flow, prevention of soil erosion, amelioration of climate, and preservation of wildlife.*"[18] Congress clearly does not see a conflict between sustained yield timber production and water quality or wildlife habitat. The Gang of Four also cautioned that there is "no free lunch." To reconcile these, one must conclude that as long as the timber yield is low enough, other resources can also be sustained.

BLM has the cart before the horse. Any acre that is suitable for timber production is accorded a special status that causes BLM to reject other potential uses of those lands. The DEIS fails to recognize that timber production conflicts with other public benefits that flow from BLM lands.

Before designating lands suitable for timber production, BLM should first determine whether those lands are more suited for other public purposes including, but not limited to: water quality, hydrologic function, slope stability, soil conservation, species recovery, keeping species off of the ESA list, carbon storage/climate stability, recreation, community stability, and quality of life.

In responding to public comments on the Northwest Forest Plan EIS, the agencies concluded that the Northwest Forest Plan, including the reserve system was <u>consistent</u> with the O&C Act.

> ***Comment****: The SEIS fails to acknowledge the Oregon and California (O&C) Lands Act (43 USC Sec. 1181a) as a constraint on the management of O&C lands. Alternative 9 violates the dominant use of O&C lands, and fails to acknowledge that these lands are the subject of special legislation that dedicates them primarily to timber production rather than ecologic (including wildlife) uses. The Endangered Species Act does not require the enormous land set-asides for wildlife which are being proposed, and the magnitude of the exclusion of the timber use must be submitted for congressional review under Section 202(e) of FLPMA.*
>
> ***Response****: The management of the O&C lands is governed by a variety of statutes, including the O&C Lands Act, FLPMA, the Endangered Species Act, and the Clean Water Act. The O&C Lands Act requires the Secretary of the Interior to manage O&C lands for permanent forest production; however, such management must also be in accord with sustained-yield principles. Further, that Act requires that management of O&C lands protect watersheds, regulate streamflow, provide for recreational facilities, and contribute to the economic stability of local communities and industries. <u>The Act does not require the Secretary to harvest all old-growth timber or all commercial timber as rapidly as possible or according to any particular schedule</u>. The Secretary has discretion to determine how to manage the forest on a sustained-yield basis that provides for permanency of timber production over a long-term period. The Secretary must necessarily make judgments, informed by as much information as possible, about what kind of management will lead to permanent forest production that satisfies the principle of sustained yield.*
>
> O&C lands must also be managed in accordance with other environmental laws such as the Endangered Species Act and the Clean Water Act. Some provisions of these laws take predominance over the O&C Lands Act. For instance, the Endangered Species Act (ESA)

[18] 16 U.S.C. § 583.

> requires the Secretary to insure that management of O&C lands will not likely result in jeopardy to listed species or destruction or adverse modification of critical habitat. The ESA directs the Secretary and all federal agencies to utilize their authorities to carry out programs for the conservation and recovery of listed species. Although several owl recovery plans have been proposed, the Secretary has not yet adopted final recovery plans for either the northern spotted owl or the marbled murrelet. Alternative 9's Late-Successional and Riparian Reserve concepts are important building blocks in the development of recovery plans to achieve the conservation and recovery of those species.
>
> One of the purposes of the Endangered Species Act is the preservation of ecosystems upon which endangered and threatened species depend. Certainly, a forward-looking land management policy would require that federal lands be managed in a way to minimize the need to list species under the ESA. Additional species listings could have the effect of further limiting the O&C Lands Act's goals of achieving permanent forest production, which would contribute to the economic stability of local communities and industries. The O&C Lands Act ought not be interpreted in such a manner that limits the Secretary's ability to take steps now that would avoid future listings, and additional disruptions, in the future.
>
> Moreover, the concept of creating a set of reserves in which timber harvest is substantially circumscribed across a portion of the landscape, such as the proposed Late Successional Reserves, is consistent with the O&C Lands Act. The Secretary has discretion under the O&C Lands Act to determine the length of harvest rotations on O&C lands or whether any particular tract should be subject to harvest, as well as the intensity of harvest activities, which should occur. From a practical point of view, there is little or no on-the-ground difference between a management strategy that provides for a deferred harvest for 80 years on Old-Growth Emphasis Areas as proposed in BLM's Draft Resource Management Plans, and one that sets aside reserves in order to restore and maintain a healthy old-growth forest ecosystem, over the time of the deferred harvest. Regardless of approach, FLPMA requires the Secretary to monitor and revise Resource Management Plans in light of changed circumstances or new information generated through the adaptive management process.
>
> The lands included in the reserves under the preferred alternative greatly constrain, but do not exclude timber use. Silvicultural treatments, such as thinnings, consistent with the objectives for the reserves will be allowed. Since this use is not totally eliminated, this management decision will not be subject to the reporting requirement in Sec. 202(e) of FLPMA.[19]

The BLM must recognize the timber production is embedded within and dependent upon a complex ecological system. Timber production is based on the growth of trees, which is based on the existence of a complex soil food web, a wide variety of nitrogen fixing species, nutrient cycling, fungal abundance and diversity, etc. The USDA Committee of Scientists (COS) recognized that "*without ecologically sustainable systems, other uses of the land and its*

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[19] 1994 NWFP SEIS pp F-114-115 (emphasis added).

resources could be impaired." [20] The BLM must strive to achieve ecologically sustainable forests, not just sustained production of timber based on simple agricultural models. "Ecological sustainability" means maintaining the composition, structure and processes of an ecological system within certain acceptable bounds typically described as the natural of historic range of variability. A modern and scientifically credible approach to sustained yield will require BLM to consider[21]:

- the dynamic nature of ecological systems,
- the role of natural functions and processes,
- uncertainty and variability of ecological systems,
- an integrated assessment of feedbacks and cumulative effects,
- how to preserve options, and
- the historic range of variability.

In the O&C Act, Congress did not require BLM to apply a one-dimensional view of sustained yield equating maximum tree growth rates with sustained yield. Congress explicitly required BLM to account for water resources, recreation, community stability, and later passed superseding legislation requiring conservation of water quality and imperiled fish and wildlife. The BLM must adopt a modern view of sustained yield.

Landscape ecology has lead to a new appreciation of the importance of disturbance agents such as fire and disease and insect outbreaks in maintaining forest health at the landscape level. Unfortunately, the sustained yield forestry approach still regards forests as timber supply areas where fire and pathogens destroy (waste) valuable timber.

Fire suppression in particular has had a very detrimental impact on habitat for biodiversity. Furthermore, the legacy of problems caused by fire suppression including the increased potential for devastating large scale forest fire will bedevil forest managers far into the future.

A particular revealing criticism of Sustained Yield management is that we are creating forests that need humans to take care of them. Fire and disease suppression as well as changed age class and species distribution has altered the dynamics of forest evolution that have been developing over millennia, creating conditions potentially overwhelming to established natural defense dynamics. Global warming and other anthropogenic changes will probably further exacerbate these problems.[22]

BLM must provide room for the entire suite of structures, functions, and processes that integrate to create and maintain healthy forest ecosystems. Disturbance agents such as fire, insects, and disease must be allowed to operate. The full suite of biodiversity must be preserved, including non-vertebrates that play such crucial roles in soil ecology and nutrient cycling.

Some observers warn, "*Distrust claims of sustainability. Because past resource exploitation has seldom been sustainable, any new plan that involves claims of sustainability should be suspect. One should inquire how the difficulties that have been encountered in past resource exploitation*

[20] COS p xvi.
[21] See Committee of Scientists pp 19-40. http://web.archive.org/web/20030212110159/www.fs.fed.us/news/science/
[22] http://www.pacificfringe.net/sustainedyield/index.htm

are to be overcome." [23] One of the main authors of the Northwest Forest Plan reinforced this same point.

Jack Ward Thomas, one of the main authors of the NWFP, also cautions against an outdated view of sustained yield timber production:

> *The vision that I was taught in school of the "regulated forest" and the resultant predictable outputs of commodities has turned out to have been a dream. And a dream that could only be realized in a time of seemingly boundless virgin forests. This vision held only so long as, no matter what the circumstances, there was more timber available over the next ridge. And, that timber was relatively cheap--easy to access and long--and environmental risks were either less appreciated or more palatable than at present. Further, it was assumed that good forestry was--as a matter of course--good wildlife management, good watershed and management, etc.*
>
> *By now it is becoming obvious that this dream was built on the pillars of the seemingly boundless virgin forest and an ethic of manifest destiny coupled with hubris of being able to predict the response of nature and humans. This was coupled with an inflated sense of understanding of forested ecosystems and of human control. Perhaps it is time to recognize that such stability is not attainable in any western region except for relatively short periods of years or decades.*
>
> *Why? Consider the variables that interact to affect long-term stability of the supply of timber. Each variable is subject, more or less independently, to considerable variation over the longer term. Taken together, in terms of their interactions, these variables are guaranteed to produce varying levels of uncertainty and makes attainment of stability unlikely.*
>
> *Oscillations in timber supply can be moderated by taking a conservative view of "annual sale quantity" projections as opposed to the tendency to make overly optimistic projections such as those that resulted in the first forest planning efforts of a decade or so ago.*
>
> *Insanity has been defined as doing the same things over and over and expecting a different result. Decidedly, optimistic outcomes were the trademark of the first generation of forest plans. With decided regularity, this optimism has not been justified and only reluctantly recognized and abandoned. This caused the agency(s) performance, in terms of commodity production, to consistently come in at below anticipated levels--i.e., the predictions were not valid and belated recognition of that fact, in turn, caused additional instability because of accumulated effects. More conservative approaches are more apt to produce predictable results. And, if results exceed those anticipated, it is easier to adjust commodity yields upward than to deal with the social and political consequences of short fall.*

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[23] Donald Ludwig, Ray Hilborn, Carl Walters. 1993. Uncertainty, Resource Exploitation, and Conservation: Lessons from History. Science 260(2):17, April 2, 1993.
http://www.envsci.nau.edu/sisk/courses/env555/Readings/ludwig1.pdf

> *While the search for new understanding through science may produce short-term instability [sic] in commodities such as timber supply as managers react to new information, such efforts are essential to long-term stability if renewable natural resources are to be managed in a sustainable fashion. In the end, there can be no turning back from science--no matter now politically [sic] expedient that may seem in the short run.*
>
> *In summary, the timber supply from federal lands is one drought, one insect and disease outbreak, one severe fire season, one election, one budget, one successful appeal, one loss in court, one listing of a threatened or endangered species, one new piece of pertinent scientific information, one change in technology, one shift in public opinion, one new law, one loss of a currently available technological tool, one change in market, one shift in interest rates, et al, away from "stability" at all times. And, these changes do not come one at a time, they come in bunches like banannas and the bunches are always changing. So, stability in timber supply from the public lands is simply a myth, a dream that was never founded in reality. It is time to stop pretending.*[24]

BLM must respond to opposing viewpoints by taking a hard look at the core issue of sustained yield as the primary purpose of the RMP revision.

THE O&C ACT

I. MULTIPLE USE MANDATE OF THE O&C ACT

Given that the only apparent "problem" with the NFP is that it hasn't produced "enough" timber off O&C lands, it is clear that the real objective of the RMP revisions is to increase timber harvest. However, the O&C Act does not require maximum timber production from every acre all the time; the *Headwaters* case upon which BLM relies itself involved a land management plan with no-cut reserves; and the courts have already ruled that the Northwest Forest Plan does not violate the O&C Act. BLM is choosing to re-do its management plans, and that choice reflects only one true purpose – BLM's desire to increase logging on federal public lands in Oregon.[25]

The Oregon and California Lands Act ("O&C Act") governs railroad grant lands that revested in the federal government due to the railroad company's breach of its statutory duties. In the O&C Act, Congress sought to put an end to wasteful and destructive logging practices that clearcut large forest areas for short-term gains without safeguarding the forests and other resources. The

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[24] Jack Ward Thomas, *The Instability of Stability*. Pacific Northwest Regional Economic Conference. Regions in Transition. Spokane. April 1997 http://www.pnrec.org/pnrec97/thomas2.htm

[25] It is not even clear that the O&C Act applies to BLM lands currently governed by the Northwest Forest Plan. The language of the Act states that it applies to "*such portions*...which have heretofore or may hereafter be classified as timberlands...." 43 U.S.C. § 1181a (italics added). Under this plain language, only portions of the O&C lands classified as timberlands are covered by the O&C Act. When BLM jointly promulgated the Northwest Forest Plan with the U.S. Forest Service, BLM changed the classification of the O&C lands previously defined as timberlands to the status of late-successional reserves and riparian reserves. BLM has the authority to reclassify its land under FLPMA § 202(d), where the lands are better suited to a different purpose.

Act instituted a conservation ethic, marking the first federal statute to impose sustain-yield constraints on timber cutting.

The O&C Act provides that O&C lands:

> *shall be managed . . . for permanent forest production, and the timber thereon shall be sold, cut and removed in conformity with the principal [sic] of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities.*

Numerous statutes other than the O&C Act establish duties that BLM must meet in managing the O&C lands.[26] The timber industry has contended that BLM must manage the O&C lands under a timber-first mandate, drawing from the permanent forest production goal set out in the O&C Act. BLM has long recognized, however, that it must manage the O&C lands for multiple purposes both to comply with the O&C Act and its duties under other laws. Indeed, under the Northwest Forest Plan, BLM has been managing these lands to comply with all applicable laws, including the O&C Act.

II. SAFEGUARDS DRAWN FROM THE O&C ACT

Under the Act, O&C lands "shall be managed . . . for permanent forest production," but subject to other constraints.[27] First, permanent forest production is not synonymous with commercial logging. A 1979 Interior Solicitor memorandum clarified the forest production need not be for commercial use. That is but one of the uses. The forest production could be to protect watersheds, stream flows, or recreation.[28]

Second, the goal of the timber production is to promote economic stability of local communities. In the O&C Act, Congress sought to curtail the type of boom and bust logging frenzies that had generated economic instability. Congress decidedly did not support maximizing timber production for short-term economic gain. Instead, it sought to institute long-term sustainability. To achieve these goals, BLM must consider alternatives that promote community stability, even if they favor thinning over clearcutting and even if they shift some areas of the forest to other activities that would achieve that goal.

Indeed, the DEIS indicates that an alternative that increase timber harvest will be inconsistent with the O&C Act, which requires timber harvest "...contribut[e] to the economic stability of local communities and industries."[29] The DEIS states that "Because the timber industry has a long, national history of high volatility, alternatives with harvest volumes that exceed current levels are likely to introduce greater instability to local economies, based on past business

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[26] These comments address only management of the O&C lands, but the RMP revisions pertain to all BLM lands, including vast tracts of public domain lands that are fully subject to all land management and environmental laws.
[27] 43 U.S.C. § 1181a.
[28] Interior Solicitor Mem. (Aug. 27, 1979).

[29] 43 U.S.C. 1181a.

cycles." [30] Introducing greater instability to local economies is an inappropriate outcome for BLM land management, and is inconsistent with the O&C Act.

Third, the Act does not seek to promote other resource extraction activities, such as grazing. Such activities should not occur where they conflict with any of the Act's other goals or BLM's duties under other laws.

Fourth, the O&C Act explicitly lays out other goals for management of the O&C lands. Specifically, the lands must be managed for the purpose of "protecting watersheds, regulating stream flow, . . . and providing recreational facilities."[31] The mandate to protect watersheds and stream flow supports establishing safeguards like those embodied in the Aquatic Conservation Strategy of the Northwest Forest Plan.

Similarly, BLM must manage the O&C lands to protect high-quality recreational opportunities. The Interior Solicitor has advised that this mandate "is broad enough to include such things as scenic highways or scenic rivers which are identified as such through the Bureau's planning process." [32] With respect to a wild and scenic river partially on O&C lands, the Interior Solicitor counseled that logging that would be noticeable from the river would be prohibited along scenic stretches of the river and that logging could occur in areas important for recreation only if it would not impair recreational or aesthetic qualities. [33]

SAFEGUARDS DRAWN FROM OTHER LAWS

BLM must comply with other laws unless they expressly carve out an exception for the O&C Act. The courts strive to reconcile overlapping statutory duties so that all applicable statutes retain their vitality. A statutory obligation is overridden only in the event of a direct conflict that makes it impossible to comply with competing mandates or explicit legislative language indicating an intent for one to be preeminent over another.

Initially, BLM and the courts focused on the role of the Federal Land Policy and Management Act ("FLPMA"), enacted decades after the O&C Act. In *Headwaters v. BLM*,[34] the Ninth Circuit held that BLM did not err in construing the O&C Act to make timber production a dominant or primary use of the lands. Headwaters had challenged a particular timber sale and argued that BLM erroneously emphasized timber production over conservation of wildlife habitat and old-growth forests. Before rejecting this construction of the O&C Act, the majority held that BLM appropriately tiered its environmental assessment for the timber sale to a programmatic environmental impact statement addressing wildlife and old-growth habitat, and it rejected Headwaters' challenge to BLM's multiple use determination, which emphasized timber production for the lands at issue. As later cases confirm, the result is often far different where BLM is subject to other statutory duties that lead it to protect O&C lands in order to protect wildlife or old-growth forests.

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[30] DEIS at 568.
[31] 43 U.S.C. § 1181a.
[32] Interior Solicitor Mem. at 10. (May 14, 1981).
[33] Interior Solicitor Mem. at 1-2 (Oct. 4, 1978).
[34] 914 F.2d 1174, 1183-84 (9th Cir. 1990),

FLPMA has also been construed to impact BLM's wilderness review obligations for O&C lands. Under FLPMA, BLM has an obligation to conduct a wilderness study review of roadless areas that have 5000 acres or more and wilderness characteristics.[35] The review should have occurred within 15 years of FLPMA's passage, i.e., by the end of 1991. During a wilderness study review, BLM must manage the lands in a manner that does not impair their suitability for preservation as wilderness.[36] This has been construed to prohibit roadbuilding and logging in most instances.

FLPMA has a savings clause, which provides that the O&C Act prevails "*in the event of conflict with or inconsistency between [FLPMA and the O&C Act] insofar as they relate to management of timber resources, and disposition of revenues from lands and resources . . .*"[37] An Interior Department Solicitor's memorandum indicates that there is scant legislative history pertaining to the savings clause, but there was some indication that the Department sought to assuage concerns raised by the Oregon delegation that the funding formula and management of O&C lands would be affected by FLPMA.[38] The Solicitor's memorandum reconciles the O & C Act with FLPMA's wilderness study provision as follows: O&C lands that are suitable for timber production are ineligible for wilderness study, while O&C lands that are unsuitable for timber production can be considered for wilderness. In practice, however, O&C lands have been included in some wilderness study areas and designated wilderness areas, such as the Wild Rogue Wilderness and Table Rock Wilderness. Moreover, BLM could properly determine that designating O&C lands that are suitable for timber production as wilderness would be the most effective way to meet its legal obligations to protect species and ecological functions.[39]

After *Headwaters*, the courts have retreated from a timber-centric vision for O&C lands. Instead, the operating principle has become one of dual responsibilities. BLM must meet all of its statutory obligations, many of which call for environmental safeguards even where such safeguards result in less intensive or pervasive logging.

In *Portland Audubon Society v. Lujan* [40], the Ninth Circuit found no unavoidable conflict between an injunction stopping old-growth logging pending compliance with the National Environmental Policy Act, and the O&C Act, even though the Act's timber targets (stated as a minimums) could not be met under the injunction. BLM and the O&C counties had argued that "the district court erred in issuing an injunction which prevents the BLM from selling a minimum of 500 million board feet of timber per year as directed by the" O&C Act.[41] The court rejected this argument, stating:

> *We find that the plain language of the Act supports the district court's conclusion that the Act has not deprived the BLM of all discretion with regard to either the volume requirements of the Act or the management of the lands entrusted to its care. Because there does not appear to be a clear and unavoidable conflict between statutory directives,*

[35] 43 U.S.C. § 1782(a).
[36] *Id*. § 1782(c).
[37] 43 U.S.C. § 1701 note.
[38] Interior Solicitor Mem. at 9 (Sept. 5, 1978).
[39] Since the O&C Act supersedes FLPMA only where the two conflict, BLM still has an obligation to designate Areas of Critical Environmental Concern particularly where special management is needed to protect ecological values that are consistent with the O&C Act's goals. *See* 43 U.C.S. § 1702.
[40] 998 F.2d 705 (9th Cir. 1993).
[41] *Id*. at 709.

we cannot allow the Secretary to 'utilize an excessively narrow construction of its existing statutory authorizations to avoid compliance [with NEPA].'" [42]

Under this ruling, BLM must comply with NEPA, the ESA, and other environmental laws in its management of O&C lands.

More recent court rulings have held that in fact, the BLM must comply with many other laws, in addition to the O&C Act, which may have the effect of reducing the amount of timber that can be produced on O&C lands.[43] Similarly, the *Swanson* court also held that timber industry Plaintiffs did not have standing to bring a claim against BLM for failing to offer 500 MMbf of timber per year.[44] Consequently, it is plain that BLM has the legal authority to reduce timber harvests where necessary to comply with the provisions of other laws, as well as the multiple use mandate of the O&C Act.

I. THE NORTHWEST FOREST PLAN COMPLIES WITH THE O&C ACT AND ENVIRONMENTAL LAWS

In the Northwest Forest Plan, the agencies understood that other environmental laws take precedence over the O&C Act in the absence of a conflict between laws, and that prudent management to avoid future conflicts with such other laws is within the BLM's discretion, as it could promote economic stability in the long-run. For example, "*That Act does not limit the Secretary's ability to take steps now that would avoid future listings and additional disruptions.*"[45] The Secretaries made the finding that the adopted plan "will provide the highest sustainable timber levels from Forest Service and BLM lands of all action alternatives that are likely to satisfy the requirements of existing statutes and policies." [46]

In *Seattle Audubon Society v. Lyons*,[47] Judge Dwyer rejected the contention that the Northwest Forest Plan violated the O&C Act, stating that BLM must fulfill its conservation duties under other environmental statutes in managing the O&C lands. He also rejected the contention that the agency need not comply with the NEPA or the ESA because it has no power under its enabling statute to modify its management activities based on the other environmental statutes. BLM "*for many years has exercised broad authority to manage the O&CLA lands: the BLM is steward of these lands, not merely regulator. Management under the O&CLA must look not only to annual timber production but also to protecting watersheds, contributing to economic stability, and providing recreational facilities.*"[48]

Judge Dwyer noted that the court in *Headwaters* approved a BLM management plan that allocated over 50% of the area at issue to non-timber uses and that the decision dealt with the O&C Act alone, not BLM's duty to comply with other statutes. He also pointed to *Portland Audubon* as confirming that BLM must fulfill conservation duties imposed by other statutes. As in *Portland Audubon*, NEPA compelled BLM to consider the environmental impacts of its

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[42] *Id*. at 709.
[43] *Swanson Grp. Mfg. LLC v. Jewell*, No. 13-5268, 2015 WL 3634645 (D.C. Cir. June 12, 2015).
[44] *Id.*
[45] NWFP ROD at 50.
[46] NWFP ROD 61.
[47] 871 F. Supp. 1291 (W.D. Wash. 1994) (appeal history omitted),
[48] *Id*. at 1314.

actions.[49] Moreover, Section 7(a)(1) of the Endangered Species Act requires BLM to utilize its authorities and carry out programs to conserve threatened and endangered species.[50] BLM appropriately construed this mandate to take action to minimize the need to list species in the future.[51] Moreover, Judge Dwyer concluded that the agencies could not, given the current conditions of the forests, meet their obligations under NEPA and § 7(a)(1) of the ESA "*without* planning on an ecosystem basis.*"*[52]

While NEPA and the ESA are two statutes that impose mandates on BLM's management of O&C lands, the Interior Solicitor has recognized that numerous statutes similarly constrain BLM's management of O&C lands. The Wild and Scenic Rivers Act is one such statute, and in fact several designated wild and scenic rivers include O&C lands. BLM must also manage the lands to safeguard species listed under state endangered species acts, to provide sufficient habitat to conserve and rehabilitate fish, wildlife, and game populations, to meet water quality standards established under the Clean Water Act, and to impose measures to protect wetlands, including by prohibiting logging in wetlands areas, where necessary. *See* Interior Solicitor Mem. (May 14, 1981).

In short, there is no need to emphasize timber production over other statutory mandates because BLM has been acting in concert with those mandates under the Northwest Forest Plan for 20 years. BLM should be up-front about its one true purpose in proposing this action – increasing the cut from BLM lands in Oregon.

II. THE DEIS FAILS TO DISCLOSE THE EFFECTS TO THE NORTHWEST FOREST PLAN AS A WHOLE.

The 1994 Northwest Forest Plan amended the planning documents of 19 national forests and seven BLM districts, and it set standards and guidelines for these lands. The timber industry challenged the agencies' authority to adopt an ecosystem plan that covered lands administered by both the Forest Service and BLM. As stated above, the district court noted that both agencies' planning statutes required an integrated, scientific approach; both agencies had to comply with NEPA's mandate to consider ecosystem effects; and both agencies had to comply with the Endangered Species Act, among other laws such as NEPA. The court held that "[g]iven the current condition of the forests, there is no way the agencies could comply with the environmental laws *without* planning on an ecosystem basis."[53]

The effectiveness and legality of the Northwest Forest Plan depends on its application to both Forest Service and BLM lands; the Northwest Forest Plan is a "coordinated management direction for the lands administered by the Forest Service and BLM within the range of the spotted owl [that will also] protect and enhance late successional and old-growth forest ecosystems."[54] Two key assumptions behind the biological analysis of the Northwest Forest Plan were that (1) "[r]iparian and Late-Successional Reserves (LSRs) will retain reserve status and

[49] 871 F. Supp. at 1311.
[50] *Id*. at 1311, 1314.
[51] *Id*. at 1314.
[52] *Id*. at 1311 (emphasis in original).
[53] *Seattle Audubon Soc'y v. Lyons*, 871 F. Supp. 1291, 1311 (W.D. Wash. 1994).
[54] FWS Northwest Forest Plan Biological Opinion at 2 (Feb. 10, 1994).

will not be available for timber production other than as provided in Alternative 9" and (2) "[a]lternative 9 applies to Forest Service and BLM lands; all future actions on these lands would be consistent with Alternative 9, as adopted in the Record-of-Decision (ROD)."[55] BLM's alternatives in this DEIS, however, violate both of these assumptions.

A similar conclusion was reached with respect to aquatic protection. "The effectiveness of the [Aquatic Conservation Strategy] is still subject to debate among scientists. If the plan as implemented is to remain lawful, the monitoring, watershed analysis, and mitigating steps called for by the ROD will have to be faithfully carried out, and adjustments made if necessary."[56]

Under NEPA, federal agencies are required to examine in an EIS the cumulative impacts of proposed actions – that is, those impacts that result from the incremental impact of the action when added to the past, present, and reasonably foreseeable future actions.[57] By considering action alternatives that would change BLM's land management, the agency is essentially considering pulling out of the multi-agency Northwest Forest Plan. BLM cannot do this without causing the entire Northwest Forest Plan to crumble; that is, although the action agency here is BLM, its decisions will by necessity change the validity of the Forest Service's actions and land management assumptions. The DEIS fails to address or analyze the environmental and cumulative impacts of these alternatives on the continuing validity of the Northwest Forest Plan as a whole.

Similarly, pursuant to the consultation provisions of the Endangered Species Act, BLM, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service must address the full effects of this action, which includes the dismantling of the regional Northwest Forest Plan.[58]

Because the unraveling of the Northwest Forest Plan and its protections is a foreseeable future action and effect of the proposed actions, the environmental and cumulative impacts of losing or changing the Northwest Forest Plan should have been analyzed by BLM in the DEIS. As they were not, the DEIS violates the National Environmental Policy Act. By attempting to back out of the Northwest Forest Plan, BLM is violating its affirmative conservation duties under ESA § 7(a)(1). Finally, consultation under ESA § 7(a)(2) must look at the entire agency action, which is the dismantling of the Northwest Forest Plan.

III. BLM CANNOT MAKE RADICAL DEPARTURES FROM THE NWFP WITHOUT EXPLANATION

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[55] *Id.* at 4.
[56] *Seattle Audubon Soc'y v. Lyons*, 871 F. Supp. at 1322.
[57] 40 C.F.R. § 1508.7.
[58] *See Connor v. Burford*, 848 F.2d 1441, 1453 (9th Cir. 1998) (agency must "analyze the effect of the of the *entire* agency action" and render a "comprehensive biological opinion") (emphasis in original); *Greenpeace v. National Marine Fisheries Serv*., 80 F. Supp. 2d 1137, 1147-50 (W.D. Wash. 2000) (finding biological opinion invalid for failing to assess full scope of individual and cumulative fishing allowed under fishery management plan); *see also PCFFA v. NMFS*, No. 04-1299-RSM, Report and Recommendation, slip op. at 22 (W.D. Wash. 2006) (later site-specific consultations that do not address entire Northwest Forest Plan cannot adequately address cumulative effects).

Recent *en banc* case law from the 9th Circuit affirms the principle that BLM cannot radially depart from the NWFP without adequate explanation. *Organized Village of Kake v. USDA*. (9th Circ, July 29, 2015) http://cdn.ca9.uscourts.gov/datastore/opinions/2015/07/29/11-35517.pdf

BLM proposes some significant changes from the Northwest Forest Plan, including

- eliminating the Northwest Forest Plan's survey and manage program,
- dramatic narrowing of the purpose of and the width of riparian reserves,
- increasing active management in the reserves, and
- reducing the retention requirements in the timber management areas.

The NWFP was adopted with the most compelling scientific rationale of any RMP anywhere.

The purposes of the survey and manage program were justified based on "additional species analysis" contained in the 1994 FSEIS for the Northwest Forest Plan and further explained in Appendix J2 of that document. Based on the encouragement of Judge Dwyer, the NWFP adopted an ecosystem management approach that attempted to protect species before they become threatened or endangered. BLM is now trying to narrow the purpose and need for this RMP revision by asserting that it does not have a wildlife conservation mandate. This is incorrect. Wildlife conservation is mandated by the ESA, FLMPMA, as well as the mandates of the O&C Act (e.g., "permanent forest production" and "recreation facilities"). BLM has tried three times (unsuccessfully) to eliminate the survey and manage program (2004 EIS/ROD, 2007 EIS/ROD and 2008 WOPR). Twice the courts have rejected the agencies' efforts because the survey and manage program was considered integral to the overall conservation scheme of the Northwest Forest Plan.

The broad purposes of the riparian reserves were explained in the 1994 FSEIS. These purposes include both terrestrial and aquatic conservation objectives, providing extra assurance that at-risk fish would be conserved, mitigating for cumulative impacts, maintaining microclimate and wood input for amphibians and other wildlife that live near but not in streams. The agencies wrote an EIS to amend the ACS in 2008 but withdrew it in the face of litigation. Now BLM proposes an even more radical revision of the riparian reserves and its objectives and standards & guidelines. BLM DEIS does not address all the reasons that riparian reserves were established.[59]

BLM proposes to allow significant logging in reserves with an assumption that logging is compatible with late successional habitat and other objectives. This assumption was rejected in the Northwest Forest Plan and BLM has not explained how they arrived at a contradictory conclusion.[60]

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[59] See Heiken, D. 2013. Riparian Reserves Provide Both Aquatic & Terrestrial Benefits - A Critical Review of Reeves, Pickard & Johnson (2013). https://dl.dropboxusercontent.com/u/47741/Heiken%202013.%20Review%20of%20Reeves%20et%20al%20Riparian%20Proposal.pdf

[60] See Heiken, Doug. 2009. The Case for Protecting Both Old Growth and Mature Forests, Version 1.8. Oregon Wild. http://dl.dropbox.com/u/47741/Mature%20Forests%2C%20Heiken%2C%20v%201.8.pdf (See especially the following sections that explain why the authors of the NWFP adopted a mostly hand-offs approach in reserves, except for dense young stands:

- Logging mature forests will impair development of important features of old-growth forests, especially snags and dead wood. p 29

Heiken (2009) explained:

> The Northwest Forest Plan prohibits logging of stands 80 years or older in the Late Successional Reserves for several reasons: (a) such stands are beginning to acquire late successional characteristics and provide valuable habitat for spotted owls and other wildlife; (b) there is a lack of evidence to support the hypothesis that logging in stands >80 years old is beneficial to habitat development; and (c) logging will likely do more harm than good.
>
> This reasoning is articulated in several scientific reports, including the 1990 Interagency Scientific Committee (ISC) Report, the 1993 SAT Report, and various reports to Congress where the scientists were being asked to explain to a skeptical committee in Congress why logging old forests could not be compatible with conserving late-successional forest ecosystems. The ISC report said "no consensus exists about whether any silvicultural systems would produce the desired results. The ability to harvest timber in currently suitable owl habitat and have that habitat remain suitable has not been clearly demonstrated."[61]
>
> The SAT noted that "considerable additional research is likely required" before we will know whether silviculture can be compatible with spotted owls, and while the spotted owl is relatively well studied, the risks and uncertainty are even more pronounced for the hundreds of other species associated with old-growth.[62] It should also be recognized that President Clinton's Mission Statement directed the FEMAT team to ensure that "tests of silviculture should be judged in an ecosystem context and not solely on the basis of single species or several species response."[63]
>
> The 1993 Report of the Scientific Analysis Team (SAT) specifically highlighted the risks associated with logging in suitable owl habitat, saying "intentions to selectively cut forest stands to create conditions favorable for spotted owls, represents increased risks to the viability of the spotted owl."[64] The Scientific Analysis Team said there are several factors that support this conclusion and affirm the Interagency Scientific Committee's decision to exclude logging in old growth reserves and rely on natural processes to maintain and restore habitat:

- In all forest types, recognize that logging has trade-offs. p 34
- In moist provinces, mature forests just need time, not logging. p 35
- In dry provinces, fire hazard is over-stated. Logging mature trees will just make things worse. p 39")

[61] Thomas, J.W., E.D. Forsman, J.B. Lint, E.C. Meslow, B.R. Noon, and J. Verner. 1990. A Conservation Strategy for the Northern Spotted Owl. A report by the Interagency Scientific Committee to address the conservation of the northern spotted owl. USDA, Forest Service, and U. S. Department of the Interior, Fish and Wildlife Service, Bureau of Land Management, and National Park Service. Portland, OR (*herein* ISC Report), 1990, p 104.

[62] Thomas, JW, Raphael, MG, Anthony, RG, Forsman ED, Gunderson, AG, Holthausen, RS, Marcot, BG, Reeves, GH, Sedell, JR, and DM Solis. 1993. Viability Assessments and Management Considerations for Species Associated with Late-Successional Old-Growth Forests of the Pacific Northwest. The Report of the Scientific Analysis Team (*herein* SAT Report), 1993, p 147.

[63] FEMAT Report, p iii.

[64] SAT Report p 145.

a. "Lacking experience with selective cutting designed to create spotted owl habitat, such practices must be considered as untested hypotheses requiring testing to determine their likelihood of success. ... Given the uncertainty of achieving such expectations, it is likely that some silvicultural treatments, which have been characterized as largely experimental, may well have an opposite effect from that expected. Consequently, such treatments may hinder the development of suitable habitat or they may only partially succeed, resulting in development of marginal habitat that may not fully provide for the needs of spotted owls. Results which fall short of the expected conditions could occur because of delay or failure to regenerate stands that have been cut, increased levels of windthrow of remaining trees, mechanical damage during logging to trees remaining in the logging unit, the spread of root rot and other diseases. Increased risk of wildfires associated with logging operations that increase fuels and usually employ broadcast burning to reduce the fuels also increase the risk of not attaining expected results. Such events may spread to areas adjacent to stands that are logged, thereby affecting even more acreage than those acres directly treated." [SAT p 147-148] The SAT indicates that these comments apply equally to density management and patch cutting, both of which are being promoted as tools to enhance owl habitat. The SAT also cited concerns about the effect of logging on snags and down woody debris which are essential features of owl habitat.

b. "Planning produces a description of desired future conditions [and] culminates in a final plan for a project which, for timber sales, involves legal contracts obligating the purchaser and the seller to specific provisions. … Our experience is that commonly not all provisions of the plan are thoroughly incorporated into such contracts, nor are all contract provisions thoroughly administered to ensure compliance." [SAT p 148-149].

c. "There are also probabilities associated with how well monitoring will identify 'trigger points' that indicate a management plan may need modification. The more complex the plan (i.e., the more variables there are to monitor) the less likely the monitoring plan will successfully detect problems. Manipulation of forest stands to accelerate development of spotted owl habitat on a landscape scale, as prescribed in the Bureau of Land Management Preferred Alternative, is an extremely complex issue involving a myriad of variables over a very long timeframe. Development of a monitoring plan intensive enough to isolate the causes of observed variations for wide-scale implementation of the Bureau of Land Management Preferred Alternative seems unlikely to us. … [I]nadequate monitoring will increase, perhaps dramatically, the risk of failure of a plan that relies heavily on adaptive management." [SAT p 149].

d. "A basic requirement for a viable adaptive management strategy is the existence of resources necessary to make the required adjustments. Adaptive management can only be expected to reduce risk if options to adjust management to fit new circumstances are not eliminated. Adaptive management, therefore, can be considered a means to reduce risk associated with a Resource Management Plan commensurate with the options for adjustment which remain during the time the plan is in effect." [SAT p 149-150] In other words, silvicultural manipulation of mature forests has long-term consequences and is likely to foreclose some future options in

those stands, thus reducing the utility of adaptive management. A prime example is the fact that logging "captures mortality," yet mortality is an essential feature of old-growth habitat used by both spotted owls and their prey.

e. SAT then noted the cumulative effects of all these uncertainties: "The combined risks associated with treatment of spotted owl habitat or stands expected to develop into suitable habitat for spotted owls, as discussed above, will likely result in situations where either habitat development is inhibited or only marginal habitat for spotted owls is developed. The exact frequency of these partial successes or failures is unknown. Given the likely cumulative relationship among the risks for each factor, it appears to us that the overall risk of not meeting habitat objectives is high. … Members of the Interagency Scientific Committee indicated that, because a plan (the Interagency Scientific Committee's Strategy) was put forth which proposes to reduce the population of a threatened species by as much as 50 percent, providing the survivors with only marginal habitat would be extremely risky and certainly in their minds not 'scientifically credible' [65]

f. The SAT concluded, "The transition period (1-50 years) between implementation of the Interagency Scientific Committee's Strategy and achievement of an equilibrium of habitat and spotted owls is a critical consideration. … Given the existing risks that face owl populations and the sensitivity of the transition period, the short-term effect of these actions on habitat loss may be much more significant than the long-term predicted habitat gains. We further conclude that, although research and monitoring studies are presently being initiated, no significant new data exist which suggest that the degree of certainty that is expressed in the Bureau of Land Management Draft Resource Management Plans for developing owl habitat silvicultural treatments is justified. Therefore, it is our opinion that the course prescribed in the Interagency Scientific Committee's Strategy, pertaining to timber harvest in Habitat Conservation Areas, remains the most likely course to result in superior habitat conditions within reserves (i.e., Old-Growth Emphasis Areas). The approach prescribed by the Interagency Scientific Committee's Strategy preserves options for adjustments in the course of management under a philosophy of adaptive management." [66]

The authors of the Northwest Forest Plan took all this into account and determined that 80 years is a useful place to draw the line between younger forests that are likely to benefit from careful thinning and older forests that are likely to experience net negative consequences.[67] There is no new science to change that conclusion. In fact, new information developed since 1994 shows that dead wood is probably more

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[65] USDA 1991:45., SAT p 151. file://localhost/mailbox/::C%257C:Documents%20and%20Settings:netcorps:Application%20Data:Thunderbird:Profiles:0a0zzrc0.default:Mail:pop.efn.org:Inbox.sbd:DC%3Fnumber=100232524 - _ftn3

[66] SAT p 151-152.

[67] See 1993 SAT Report pp 146-152. AND February 1991 Questions and Answers on A Conservation Strategy for the Northern Spotted Owl (prepared in response to written questions from the Senate Energy and Natural Resources Committee to the Interagency Scientific Committee on the May 1990 ISC Report. AND Jerry Franklin, David Perry, Reed Noss, David Montgomery, Christopher Frissell. Simplified Forest Management To Achieve Watershed And Forest Health: A Critique. National Wildlife Federation. http://www.coastrange.org/documents/forestreport.pdf

valuable than previously thought. It is important for a wide variety of ecological functions, not least of which is providing complex habitat to support owl prey species. Thinning stands over 80 years will remove many large trees and prevent them from ever becoming snags and dead wood. The long-term loss of recruitment of dead wood habitat in older stands is a very strong argument against logging in stands over 80 years old.[68]

Structure-based management (SBM) is often suggested as a way to produce logs and habitat from the same forests, but this is not a well-supported approach to managing older forests. There are well-founded critiques which point out that structure-based management is untested, uncertain, high risk, and unlikely to result in desired outcomes. Consider the well-developed critique of structure based management set forth by the Scientific Panel on Ecosystem Based Forest Management:

> The concept that all forests must be silviculturally manipulated (logged) and eventually replaced in order to provide desired goods and services, including the continued health of forest landscapes, is an old and honored tradition. … The proposition that forest values are protected with more, rather than less logging, and that forest reserves are not only unnecessary, but undesirable, has great appeal to many with a vested interest in maximizing timber harvest. … Our interpretation of the scientific literature, combined with our professional experience, leads us to some very different conclusions about appropriate approaches. Scientifically based strategies for the conservation of forest ecosystems, with a sound theoretical basis in conservation biology—including biodiversity and critical ecological services—have inevitably incorporated reserves along with ecologically sensitive management of unreserved areas (e.g., FEMAT 1993). … In our view, the assumptions underpinning simplified structure-based management (SSBM) are not supported by the published scientific literature on structural development of natural forests, disturbance ecology, landscape ecology and conservation biology, or by the relationships between ecosystem structures and processes. … We do not believe, however, that scientific literature or forestry experience supports the notions that intensively managed forests can duplicate the role of natural forests, or that sufficient knowledge and ability exist to create even an approximation of a natural old-growth forest stand.[69]
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> …

[in dry forests]

Hanson et al (*in press*) reviewed 2 decades of fire records in conifer forests in dry provinces of the Northwest Forest Plan and found that the proportion of area burned and the severity of

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[68] USDA Forest Service. 2007. Curran Junetta Thin Environmental Assessment. Cottage Grove Ranger District, Umpqua National Forest. June 2007. http://www.fs.fed.us/r6/umpqua/projects/projectdocs/curran-junetta-thin/index.shtml This EA revealed that heavy thinning in young stands would delay attainment of objectives for recruitment of dead wood for 6 decades or more.

[69] Jerry Franklin, David Perry, Reed Noss, David Montgomery, Christopher Frissell. Simplified Forest Management To Achieve Watershed And Forest Health: A Critique. National Wildlife Federation. http://www.coastrange.org/documents/forestreport.pdf

fire has not changed significantly.[70] These findings, along with the evidence that logging has unavoidable adverse impacts, indicates that caution is warranted. We should not encourage excessive and unwarranted logging in mature forests. PNW Research Station recently reported that profit-driven fuel reduction logging can conflict with both habitat objectives and fire risk reduction objectives.[71]

If there is a new push for timber volume from mature forests and trees, it will cause fire hazard to increase. Commercial logging can increase fire hazard by making forest stands hotter and windier, and fuels dryer. "Thinning opens stands to greater solar radiation and wind movement, resulting in warmer temperatures and drier fuels throughout the fire season. [T]his openness can encourage a surface fire to spread. …"[72] Opening the canopy also stimulates the growth of new surface and ladder fuels, and logging moves fine fuels from the canopy to the ground where they are more available for combustion.

BLM's Western Oregon Plan Revision EIS confirms that fire hazard will increase in areas managed for timber production, and that retaining more canopy cover would help reduce fire hazard. "The more canopy that would remain, the less effect wind would have on drying fuels and surface fires. This reduction in mid-flame wind speed would reduce flame length, which can lead to a reduction in tree mortality. … A lower probability of mortality equates to greater fire resiliency."[73]

The current DEIS does not provide adequate discussion or explanation for the radical departures from these important Northwest Forest Plan requirements.

RANGE OF ALTERNATIVES

In preparing an EIS, NEPA requires the agency to "study, develop and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources."[74] The regulations implementing NEPA explain that alternatives to the agency's proposed action are "the heart of the environmental impact statement."[75] The "touchstone" of the alternatives analysis is "whether [the] selection and discussion of alternatives fosters informed decision-making and informed

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[70] Hanson, C.T., Odion, D.C., DellaSala, D.A., and W.L. Baker. *in press.* Overestimation of fire risk in Northern Spotted Owl Recovery Plan. Conservation Biology.

[71] PNW Research Station. 2006. Seeing The Bigger Picture: Landscape Silviculture May Offer Compatible Solutions To Conflicting Objectives. Science Findings. July 2006. Http://Www.Fs.Fed.Us/Pnw/Sciencef/Scifi85.Pdf

[72] USDA Forest Service; Influence of Forest Structure on Wildfire Behavior and the Severity of Its Effects, November 2003. http://www.fs.fed.us/projects/hfi/2003/november/documents/forest-structure-wildfire.pdf

[73] BLM. 2008. Western Oregon Plan Revision FEIS, pp 810-811.

[74] 42 U.S.C. § 102(2)(E).

[75] 40 C.F.R. § 1502.14; *see also* 42 U.S.C. § 4332(2)(E); 40 C.F.R. 1507.2(d), 1508.9(b).

public participation."[76] "The existence of a viable but unexamined alternative renders an environmental impact statement inadequate." [77]

The BLM failed to consider a reasonable range of alternatives in the DEIS. First, BLM explains that it did not consider an alternative that would examine the status quo, which is implementation of the Northwest Forest Plan *as amended and currently implemented*.[78] BLM's rationale for not analyzing effects of the NFP as implemented is that:

> *It is not possible to analyze continuation of the current practices within the decision area as the No Action alternative for two reasons. First, implementation of the timber management program has departed substantially from the outcomes predicted in the 1995 RMPs, and the manner and intensity of this departure has varied substantially over time and among districts (USDI BLM 2012, pp. 6-12). There is no apparent basis on which the BLM might select and project into the future continuation of the practices from a specific year (or set of years) since 1995. Second, continuing to harvest timber at the declared annual productive capacity level for multiple decades into the future would not be possible using the current practices (USDI BLM 2012, pp. 6-12). The No Action alternative provides a benchmark to compare outputs and effects, even though this alternative does not meet the purpose and need of the project. Because of the inherent unsustainability of current practices, the BLM cannot project their implementation into the future; thus, continuation of the current practices would not serve the essential function of the No Action alternative of providing a baseline for comparison of outputs and effects.*[79]

This rationale is arbitrary and capricious. While it may be true that the BLM's timber program has departed from timber harvest *estimates* in existing RMPs or even the NFP, this does not mean that BLM cannot model or predict how existing RMPs will affect the environment. BLM could simply forecast timber outputs based on continued application of the RMPs as amended by court order or other change; and BLM provides no evidence that this approach is inappropriate. Indeed, in order for the agency to conclude that the existing RMPs are not "sustainable over time," it must have completed some sort of calculations; but this evidence is not in the DEIS or appendices.

Similarly, BLM claims that "continuing to harvest timber at the declared annual productive capacity level for multiple decades into the future would not be possible using the current practices," and cites its 2012 *Resource Management Plan Evaluation Report: Western Oregon* for support. However, that report simply lists reasons why BLM has not met the timber targets in existing RMPs, not that it is impossible to continue to implement existing RMPs as amended by the NFP and to project those environmental consequences into the future.[80]

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[76] *Westlands Water Dist. v. U.S. Dep't of Interior*, 376 F.3d 853, 872 (9th Cir. 2004) (*quoting California v. Block*, 690 F.2d 753, 767 (9th Cir. 1982)).
[77] *Morongo Band of Mission Indians v. FAA*, 161 F.3d 569, 575 (9th Cir. 1998); *Alaska Wilderness Recreation & Tourism v. Morrison*, 67 F.3d 723, 729 (9th Cir. 1995).
[78] DEIS at 77-79.
[79] DEIS at 77.
[80] 5 U.S.C. § 706(2)(A).

I. ARTICULATION OF ENVIRONMENTAL CONSEQUENCES FROM ALTERNATIVES

The DEIS is clear that the BLM does not intend to select one of the alternatives analyzed in the DEIS, but instead will select aspects of the various alternatives for implementation. DEIS at 76. For that reason, each alternative contains different mixes of uses that seek to offset any environmental "benefit" (i.e., protection) with a commensurate amount of environmental "harm" (i.e., extraction). While this is an attempt to develop alternatives that are "balanced," in practice it means that the public cannot assess the individual components of each alternative. Instead, the public is left with the impression that more timber harvest means less environmental protection, which, while likely true, does not allow for the public to have a true understanding of the actual differences among the alternatives, or what combination of particular aspects of particular alternatives have what particular environmental effects. For example, an alternative that allocates more land to the timber harvest base, but also decreases riparian buffers and increases ACEC designations over the status quo may have the "same" effects on fisheries as an alternative that reduces lands in the harvest base but also increases riparian buffers and does not designate any additional ACECs. This alternatives approach does not allow the public to clearly understand the differences among alternatives and to make a reasoned choice among them.[81]

II. INCREASED DISCRETION HAS ADVERSE ENVIRONMENTAL CONSEQUENCES.

BLM's internal agency reward system leads to unintended consequences. Unreasonably high timber targets combined with highly discretionary standards and guidelines will lead to abuse of discretion and failure to attain environmental objectives.

The EIS needs to take a hard look at the adverse effects from increased discretion, especially increased flexibility for logging in reserves. Rules for riparian reserves and LSRs provide too much discretion, allowing BLM to log inside the riparian areas for reasons other than restoring aquatic resources. Logging often causes a mix of positive and negative effects. In an effort to meet timber targets, BLM will focus on the benefits and ignore the adverse trade-offs, and therefore likely lead to logging in reserves with net negative effects on ecological objectives for the reserves.[82]

The action alternatives leave very little of the BLM landscape off-limits to logging. Subtracting structurally complex LSR, inner riparian zones, and congressionally reserves lands, leaves 63% of BLM lands open to logging under the preferred alternative.

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[81] *California v. Block*, 690 F.2d at 767.

[82] See Heiken, Doug. 2009. The Case for Protecting Both Old Growth and Mature Forests, Version 1.8. Oregon Wild. http://dl.dropbox.com/u/47741/Mature%20Forests%2C%20Heiken%2C%20v%201.8.pdf

2015 BLM RMP Analysis of what's open to logging				
Open to logging	**Acres**	**Not open to logging**	**Acres**	
LSR	636,635	LSR that is structurally complex*	463,910	
outer riparian zone**	167,729	inner riparian zone	232,083	
HLB Low	77,384	cong reserved	40,537	
HLB mod	224,582	district reserves - not including road footprint*	187,926	
HLB uneven	274,199			
East Side Mgt Lands	151,885			
District Reserve Road Footprint**'	33,701			
Totals	1,566,115		924,456	2,490,571
Percentages	**63**		**37**	

3. The DEIS Fails To Distinguish Differences Among Alternatives.

The DEIS seems to focus too much on the similarity among alternatives instead of highlighting differences. The purpose to NEPA is to help the decision-maker choose among alternatives, so the analysis must be redone to better highlight differences that are relevant to the decision-maker's choice among alternatives.

For instance, the DEIS at 225 says "All of the alternatives would increase the potential large wood and small functional wood contribution to streams from the current conditions. There is no meaningful difference discernible at this scale of analysis among the alternatives in their effect on potential wood contribution." This fails to recognize that there are significant differences in wood recruitment among the alternatives. In particular, those that allow commercial logging within the riparian reserves will capture mortality and reduce recruitment of functional wood to both the stream and the adjacent stream-side habitat. Another example is on page 233 of the DEIS which says "there would be no identifiable difference among the alternatives in the effects on fish from peak flow increases …" This does not mean that differences will not occur but rather, BLM reached this conclusion because the analysis was done at a scale that was not designed to identify differences.

As another example, DEIS at 315 states "Although the absolute values for increased potential fine sediment delivery through 2023 vary by alternative, these differences do not represent a substantial difference in the effects of the alternatives, because the increases in sediment delivery and the differences among the alternatives in future increases in sediment delivery are so small in comparison to the existing sediment delivery." This is misleading. Instead of highlighting the small additional level of sediment produced at a regional scale compared to the sediment from existing roads, BLM should disclose that some of the new sediment would be produced in areas that are not currently exposed to high levels of sediment form existing roads. There are local effects that will be significant and differ significantly among alternatives that allow more or less logging and road building near streams.

DEIS at 430 says "there is no basis for predicting a difference in effects between the No Action alternative and Alternatives A, B, and C" with respect to conservation of rare plants and fungi. This is high misleading, especially given the fact that the no action alternative requires pre-disturbance surveys and protection buffers for rare and uncommon species, while the action alternatives do not require surveys and will result in the loss of countless populations of rare and uncommon wildlife. The action alternatives won't even protect existing known sites of rare and

uncommon species on O&C lands "when protection measures … conflict with sustained-yield timber production…" There are many bases for BLM to distinguish alternatives but BLM offers a misleading analysis that highlights similarities. This is arbitrary and capricious.

BLM is basically asking the wrong questions and failing to highlight the choice faced by decision-makers. The EIS needs to clearly show that more logging allowed near streams, more regeneration logging with less retention, more logging of older forests, and more logging without survey for rare and uncommon species, will result in greater the adverse effects to fish, water, wildlife, carbon, and recreation. It is important for the decision-maker to understand this and to be able to see and understand these differences among alternatives.

One example where BLM does find a substantial difference is on DEIS at 255 which says "There is a substantial difference in the structural complexity of most future forests when comparing the even-aged management (which includes clear-cutting) practices in the HITA in Alternatives A and C to the two-aged practices (which include variable retention-regeneration harvest) in the No Action alternative, and the LITA and MITA in Alternatives B and Sub-alternative B, and the MITA in Alternative D." This is an important disclosure that should lead the decision-maker to choose an alternative that retains more structure in regeneration harvest areas. It also shows why BLM finds a difference – because it looked at stand-scale effects, instead of regional effects. BLM needs to do more of this and ask further questions such as. What are the local stand-scale and reach-scale effects of more logging near streams or near populations of rare and uncommon wildlife.

Once these local effects are more clearly understood and disclosed, BLM can then add up those effects to provide a clearer picture of cumulative impacts.

AQUATIC CONSERVATION STRATEGY

The Northwest Forest Plan included the Aquatic Conservation Strategy ("ACS") developed by FEMAT. The ACS has four basic components: (1) a system of key watersheds or refugia comprising watersheds with the best aquatic habitat or the greatest potential for recovering at-risk fish stocks; (2) riparian reserves along streams where certain activities are constrained; (3) watershed analysis to be used to tailor activities to specific watersheds needs; and (4) a comprehensive, long-term watershed restoration program.[83]

The ACS imposed constraints on habitat-degrading activities in two ways. First, binding standards and guidelines restrict certain activities within riparian reserves and key watersheds.[84] Second, FEMAT recognized the need to constrain: (1) activities outside riparian reserves in, e.g., unstable areas; and (2) the cumulative impacts of activities throughout a watershed.[85] Instead of imposing explicit constraints on such activities, the ACS has nine objectives that require aquatic habitat to be maintained and restored to properly functioning conditions.[86] The Northwest Forest Plan Record of Decision gave the ACS objectives binding force as standards and guidelines and

[83] Northwest Forest Plan Record of Decision at B-12; FEMAT at V-32.
[84] See Northwest Forest Plan Record of Decision at C-7, C-30 to C- 38.
[85] FEMAT at V-29.
[86] Northwest Forest Plan Record of Decision at B-11; FEMAT at V-30 to-31.

explicitly required that federal lands shall be managed to attain the ACS objectives. "Both FEMAT and the [Northwest Forest Plan] contemplate that projects must be consistent with ACS objectives."[87]

When Judge Dwyer upheld the validity of the Northwest Forest Plan, he cautioned with respect to the ACS that, "[I]f the plan as implemented is to remain lawful, the monitoring, watershed analysis, and mitigating steps called for in the ROD will have to be faithfully carried out, and adjustments made if necessary." *Seattle Audubon Soc'y*, 871 F. Supp. at 1322. More recently, courts have found that FEMAT embodies the best available scientific information pertaining to the impacts of forestry activities on salmon and their habitat.[88]

The BLM offers no compelling rationale for why all of the proposed action alternatives eliminate the Aquatic Conservation Strategy Objectives and the Key Watershed designations of the NWFP. As confirmed in the 20-year NWFP Monitoring Report, the Aquatic Conservation Strategy Objectives and the Key Watershed designations have proven effective at improving water quality. The BLM's refusal to develop or consider an action alternative that retains these bedrock conservation elements of the NWFP is arbitrary and capricious.

As acknowledged by the BLM on pages 9-10 of the DEIS, FLPMA (43 USC 1701[a][8]) directs the agency to protect water resources and the O&C Act (43 USC 1181a) requires the BLM to manage forests for the purpose of protecting watersheds. At no point in the DEIS does the BLM identify how abandoning the ACS of the NWFP will achieve those objectives or contribute to attaining the purpose and need of the plan revisions process.

I. RIPARIAN RESERVES ARE AN INTEGRAL PART OF THE ACS.

The FEMAT scientists first convened in April 1993 and assessed the likelihood of having the continued persistence of the species, well-distributed throughout its historical range on federal lands over the next 100 years.[89] They were instructed to assume that the Aquatic Conservation Strategy would be fully implemented. For the salmon species considered, the likelihood of their continued survival on these lands over the next 100 years was only 65%.[90] Only when the riparian reserves and other mitigation measures were added into the protections of the ACS did the Northwest Forest Plan result in an 80 percent or greater likelihood of continued existence of salmon and steelhead.[91]

Recognizing that the ACS represented the best available science on the intersection between forest management and salmonid protection, NMFS has relied on ACS consistency in order to

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[87] PCFFA v. NMFS, No. 04-1299RSM, Order on Report and Recommendation, slip op. at 4 (W.D. Wash. March 30, 2007).
[88] *PCFFA v. NMFS*, 71 F. Supp.2d 1063, 1069 (W.D. Wash. 1999); see also *PCFFA v. NMFS*, No. 04-1299RSM, Order on Report and Recommendation, slip op. at 6 (W.D. Wash. March 30, 2007) ("The FEMAT scientists are respected scientists and their views relevant.").
[89] FEMAT at IV-40.
[90] FEMAT Table V-11, at V-69.
[91] FSEIS at 3&4-196; App. J2- 47-48.

judge jeopardy. "[B]ecause NMFS is allowed to equate ACS consistency with a no jeopardy finding, NMFS chooses to inquire into ACS consistency."[92]

Riparian forests are distinctly different from upland forests because they are located adjacent to stream channels where dynamic processes of stream flow and sediment transport interact with vegetation. Riparian forests have a dual role of providing water quality and habitat for freshwater species as well as late-successional habitat for a variety of birds, mammals and other species. Plants along streams and aquatic animals have distinct management needs quite different from upland areas. A large body of scientific literature describes interactions between riparian forests and stream channels as well as larger scale watershed processes.

II. THE BLM SHOULD WORK TOWARD SALMON RECOVERY

The recovery of threatened salmonids (e.g. the Southern Oregon Northern California Coast (SONCC) coho salmon Evolutionary Significant Unit and the Oregon Coast coho salmon ESU) must be a high priority for the RMP planning process. Development of the 1995 Medford District RMP and other RMPs anticipated federal ESA fish listings by adopting the Aquatic Conservation Strategy (ACS) of the Northwest Forest Plan into RMPs. Subsequently, the SONNC coho salmon ESU was federally listed as threatened in 1997 and the listing reaffirmed in 2006. The NOAA Fisheries has determined that the Northwest Forest Plan ACS is adequate for protection and recovery of listed fish ESUs, including the SONCC. We recommend that the ACS be used in all alternatives. Incorporation of the ACS would assure approval by NOAA fisheries and avoid questions of legality as occurred in the WOPR. We are concerned that the RMP process is emphasizing forestry classifications (e.g. moist/dry) that are designed to be compatible with spotted owl recovery while largely ignoring the need for protection of riparian forests to recover coho salmon.

Habitat monitoring has found that streams have generally improved with the ACS (Lanigan et al. 2011). Unfortunately, SONCC coho salmon populations have recently declined despite modest improvements in habitat. The SONCC coho recovery plan states that the SONCC coho salmon ESU is at high risk of extinction and is not viable." The parallel to spotted owl declines is striking but not surprising since both species are strongly dependent on watersheds with mature and old growth forest cover.

Riparian Forests are best managed with treatments that enhance structure through decadence creation, underplanting and prescribed fire (see Franklin et al. 2009:32). We believe these silivicultural treatments are appropriate in riparian forests because they do not remove structure (i.e. coarse wood) needed for the dual purpose of providing habitat for animals and integrity for stream channels. Commercial thinning in riparian forests is often not appropriate because it removes the very component (coarse wood) needed to achieve desired conditions and creates numerous adverse impacts antithetical to stream integrity.

[92] PCFFA v. NMFS, 265 F.3d 1028, 1034-35 (9th Cir. 2001) (further noting that presumably other methods of reaching a jeopardy determination are available, but discussing none).

III. PROTECT KEY WATERSHEDS

The RMP fails to identify a hierarchical system of 5th, 6th, and 7th field coho "key" spawning and coho "key" rearing watersheds with requirements to substantially reduce road density and grazing in 6th and 7th field watersheds. Summer steelhead would also be high priority for key watershed designations. Key watersheds were identified in the Northwest Forest Plan prior to the listing of coho salmon. Federal listings of coho salmon, SONCC coho recovery plan, and recent research findings[93] indicate a need to build on key watershed component of the ACS to direct effective recovery actions at appropriate watershed scales. Although not federally listed, summer steelhead in the Rogue Basin are at a high risk for loss of viability over the next decades. Generally coho and summer steelhead spawn in the same tributaries, thus these watersheds or sub-watersheds would be high priority for key watershed designation (e.g. Cheney Creek, Foots Creek, Evans Creek etc.).

IV. BASIS FOR KEY WATERSHED RMP STANDARDS AND GUIDELINES

Refugia are a cornerstone of most species conservation strategies. Williams et al. (2011b) identified four critical elements for watershed scale conservation: (1) maintain processes that create habitat complexity, diversity and connectivity;(2) nurture all of the life history stages of the fishes being protected; (3) include a large enough watershed to provide long-term persistence of native fish populations and (4) provide management that is sustainable over time. A system of Coho Key Watersheds that serve as refugia is crucial for maintaining and recovering habitat for threatened coho salmon within core areas identified in SONCC recovery plan. Coho Key Watersheds would include areas of high quality habitat as well as areas of degraded habitat. Coho Key Watersheds with high quality conditions would serve as anchors for the potential recovery of depressed populations segments within core population areas. Those areas of lower quality habitat with a high potential or capacity for restoration and will become future sources of high quality habitat with the implementation of a comprehensive restoration program.

As stated in our scoping comments, we recommend that 5th field watersheds with relatively high amounts of high intrinsic potential coho habitat and relatively high spawner counts be identified in RMPs as Key Coho Watersheds. For example, in the Illinois Basin, Sucker Creek, Deer Creek, upper East Fork Illinois River, Elk Creek and possibly Althouse Creek would be identified as Coho Key Watersheds to support core area designation in the SONCC Coho Recovery Plan (p. 30-6). Within Coho Key Watersheds we recommend that sufficient 6th or 7th field sub-watersheds be identified as Coho Key Spawning Watersheds. Likely candidates as Key Coho Spawning Watershed would be smaller watersheds of "key" streams (e.g., Bear Creek and Grayback tribs to Sucker Creek). Mainstem areas of 5th field watersheds are often too unstable for successful spawning by coho because of instability of gravel beds during winter peak flows.[94] Thus, it is common to find high concentrations of coho spawning in only a few tributaries of 5th field watersheds or in spring fed side channels buffered from bedload movement (e.g., Sucker Creek). A portion of juvenile coho migrate to mainstem 5th field stream areas suitable for rearing

[93] Firman et al. 2011
[94] Nawa and Frissell 1997.

or seek out other tributary reaches. The relatively small 6th and 7th field sub- watersheds would be high priority areas for intensive road decommissioning and grazing reduction.

A review by Carnefix and Frissell (2009) found that it is more effective to reduce road densities to very low densities in selected high priority watersheds than to reduce high road densities to only moderate levels. A road density effect on adult coho salmon was corroborated by Firman et al. (2011) who found that "[p]redictor variables indicative of land management, cattle density, and road density were negatively associated with peak spawner densities in many of our models."

The coho populations studied were spawning in 7th field watersheds. This is important because reducing road densities is extremely costly. Reducing roads to very low densities in 6th and 7th field Coho Key Spawning Watersheds would be far more practical and effective than attempting to reduce road densities in Coho Recovery Plan "population" areas that are many times larger. The recommended restoration strategy is to concentrate road density reductions in small watersheds where they will be most effective to benefit known coho spawning populations.

V. RECOMMENDED STANDARDS AND GUIDELINES FOR KEY WATERSHEDS

- Coho Key Watersheds are highest priority for watershed restoration;
- No new roads would be built in Coho Key Watersheds;
- Road Densities in Coho Key Spawning Watersheds would be reduced to 0-0.5/mi^2 during first ten years of plan;
- Grazing would be reduced or eliminated in Coho Key Spawning Watershed; and
- Watershed analysis is required prior to major ground disturbing management activities such as timber harvest in Coho Key Watersheds.

VI. THE BLM SHOULD MAINTAIN RIPARIAN RESERVES

> *The No Action alternative has wider Riparian Reserve widths on fish-bearing streams than all action alternatives." –DEIS at 228.*
>
> *[T]he Riparian Reserves in the No Action alternative were designed to meet an array of objectives, including broad ecological objectives and riparian and terrestrial species habitat. In contrast, the Riparian Reserves in the action alternatives are designed to meet narrower objectives: conservation and recovery or listed fish and protection of clean water, consistent with the purpose and need for action. -DEIS at 80.*

The BLM offers no compelling rationale or reason for its refusal to develop and consider action alternatives that meet the "broad ecological objectives" for Riparian Reserve management that underlie the NWFP. Indeed, federal courts have ruled that the NWFP conservation plan (including the terrestrial habitat connectivity function of Riparian Reserves) is the absolute minimum allowed by federal law. The DEIS contains no proposal to replace the habitat connectivity function provided by NWFP Riparian Reserves and contains no analysis or disclosure of the impacts of reduced riparian widths on terrestrial wildlife connectivity. Thus the

BLM is stepping away from minimum level science based broad ecological objectives that provide a comprehensive management approach to federal lands throughout the entire region, which is what the purpose and need of this DEIS calls for.

As illustrated in Table 3-89 of the DEIS, several BLM action alternatives would allow logging impacting 275-372 miles of fish-bearing and perennial streams "susceptible to shade reductions that could affect stream temperatures." Raising stream temperatures directly inhibits BLM watershed management goals and may result in violations of the Clean Water Act associated with TMDL listed-waterbodies.

Page 317 of the DEIS indicates that increase in riparian reserve logging proposed in every BLM action alternative would necessitate additional road construction within the "sediment delivery distance" (200 feet) near streams.

> *Within the sediment delivery distance (200' feet), newly constructed roads would primarily be constructed to provide access for forest thinning [logging] within the riparian reserve. In the action alternatives, this thinning [logging] would be limited to the outer zone of the riparian reserve." DEIS at 317.*

The BLM fails to quantify the amount of road to be constructed in Riparian Reserves or the amount of sediment that will be added to streams. The BLM neglects to disclose which streams in the planning area are currently TMDL listed for sediment and how the agency intends to meet its Clean Water Act obligations.

Please note that pages 332-335 of the DEIS indicate that the shade reductions and soil disturbance associated with Riparian Reserve logging will make "riparian habitats more susceptible to the introduction and spread of invasive plants" undermining BLM policy objectives for the management of invasive species and riparian habitats.

VII. BLM SHOULD RETAIN NWFP RIPARIAN RESERVES AND STANDARDS & GUIDELINES

We have two primary concerns with alternatives that modify streams buffers. First, the spatial extent of the buffers is reduced without any compelling justification. Second, the standards & guidelines governing activities in the buffers are weakened which will allow many activities to degrade the conditions that need careful conservation. We find no compelling rationale for either of these changes.

BLM claims that the riparian requirements under the no action alternative have conflicting objectives and that the action alternatives will increase certainty. This is inaccurate and misleading. The Northwest Forest Plan clearly prohibits timber harvest in riparian reserves. While it is true that the agencies have exploited some loopholes in that prohibition, that problem could be easily fixed with direction from BLM's state office. Contrary to BLM's assertions, the action alternatives actually increase uncertainty because most of the alternatives allow regeneration harvest in areas that are currently reserves, and they allow commercial logging in the outer portion of narrower stream buffers to achieve questionable purposes that will likely lead to conflict and controversy.

The DEIS fails to consider an adequate range of alternatives for riparian reserves. BLM should consider adopting wider stream buffers to meet several important policy objectives, including, but not limited to:

- Maintain and improve water quality;
- Maintain natural rates of wood recruitment both instream and adjacent areas that support terrestrial wildlife that live near streams;
- Provide high value habitat for spotted owls, marbled murrelets, and Pacific fishers that spend disproportionate time in lower slopes near streams;
- Increase old forest habitat to provide connectivity and support wildlife dispersal across the managed landscape;
- Provide habitat (including moderated microclimate and natural rates of wood recruitment) for numerous species that are not threatened & endangered;
- Provide greater assurance that salmon populations and water quality will be conserved;
- Provide carbon storage in highly productive streamside forests;
- Provide a buffer for increased climate extremes expected under climate change;
- Mitigate for amplified hydrologic cycle caused by climate change;
- Reduce landslide risk by encompassing a greater amount of potentially unstable lands;
- Protect of recreation and scenic values in areas where those values are high;
- Allow near stream forests to serve their natural functions including capture/store/release water, energy, sediment, carbon, nutrients, as well as provide unimpeded movement of wood, gravel, and organisms.

BLM should consider an alternative that retains the existing NWFP buffer widths with clarified standards & guidelines that limit active management to situations that provide clear net benefit to aquatic AND terrestrial wildlife, and do not retard attainment of ACS objectives.

BLM needs to compile and synthesize all the adverse impacts that are caused by reducing streamside buffers and increasing logging near streams, such as those listed above. Where effects are disclosed, the DEIS spreads these effect disclosures across numerous different sections of the DEIS, so the public and the decision-maker cannot see clearly all the public benefits that result from the simple requirement to maintain or increase stream buffers.

The DEIS does not address the original reasons for adopting wider buffers, nor provide a compelling alternative rationale for the proposed radical reduction of stream buffers. The Northwest Forest Plan adopted wider riparian reserves to meet a specific set of objectives that encompassed both aquatic and terrestrial wildlife and to mitigate cumulative effects. When an agency proposes to change course after making an important policy decision, the courts have consistently held that NEPA analysis must clearly explain the rationale for the change. This requires addressing the reasons for the original decision. The DEIS appears to lack any clear disclosure of the multi-faceted purposes of the riparian reserves and the diverse aquatic and terrestrial values that were intended to benefit from the adoption of wider stream buffers. The EIS needs to present the decision-maker with a clear picture of all the adverse impacts that will be caused by the choice whether to maintain or reduce stream buffers and whether to maintain or weaken rules protecting those buffers.

The Northwest Forest Plan explicitly adopted wider stream buffers for a variety of reasons that remain compelling to this day. BLM must not reverse the policy decision to protect wide stream

buffers absent a clear disclosure of a competing rationale and disclosure of the adverse effects of reduced protection for streamside forests. Oregon Wild has carefully reviewed and documented the original reasons for adopting wide stream buffers and Oregon Wild convincingly refutes all the rationales for reduced stream protection offered to-date. BLM must carefully review and respond to this analysis.[95] BLM is proposing to dramatically change the purposes of the riparian reserves in the Northwest Forest Plan from terrestrial AND aquatic purposes, to exclusively aquatic purposes. In making this change, BLM must carefully evaluate the original broad purposes of the riparian reserves, and provide a clear and compelling rationale for narrowing those purposes.

Most of the purposes of the wide riparian reserves adopted in the NWFP cannot be met by protecting forests elsewhere on the landscape. Simply put, meeting Recovery Action 32 is not a substitute for wide riparian buffers. Many of the purposes of the reserves are directly or indirectly connected to the unique slope positions and proximity to streams. For example, any amphibians are associated with streams but use habitat much farther than ½ to 1 site-potential tree distance from the stream. Narrow riparian buffers will have direct adverse effects on these amphibian species.

VIII. OTHER SPECIES RELY ON RIPARIAN AREAS

One of the key purposes of wide riparian buffers was to provide for dispersal of terrestrial organisms. This rationale has only increased in importance in the years since the Northwest Forest Plan was adopted.[96]

Spotted owls disproportionately use lower slopes near streams. Evidence indicates that spotted owls and barred owls are more likely to tolerate each other's presence in mixed hardwood-conifer forests near streams. These conditions often extent more than ½ to 1 site-potential tree distance from streams. Marbled murrelets disproportionately rely on nesting habitat near streams. Reducing stream buffers to ½ to 1 site-potential tree will shrink potential marbled murrelet nesting opportunities and expose marbled murrelet nest patches to next predation. Even wildlife that live within ½ to 1 site-potential tree still rely on protection of forests beyond that narrow buffer. Reducing stream buffers will expose their habitat to edge effects such as increase wind, increased temperature, reduced humidity, and reduced input of down wood which is in short supply as a result of past practices and which so many wildlife species rely on. This is why the authors of the NWFP saw a need for a buffer-on-the-buffer.

The DEIS does not disclose all of these significant adverse effects from reduced stream buffers. The DEIS analysis of riparian reserves does not address all the values provide by riparian reserves. The analysis focused exclusively on listed fish and water quality, but riparian reserves also provide value to non-aquatic species such as spotted owls and marbled murrelets and Pacific fisher, which spend disproportionate time on lower slopes near streams. Wide riparian buffers

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[95] See Heiken, D. 2013. Riparian Reserves Provide Both Aquatic & Terrestrial Benefits - A Critical Review of Reeves, Pickard & Johnson (2013). https://dl.dropboxusercontent.com/u/47741/Heiken%202013.%20Review%20of%20Reeves%20et%20al%20Riparian%20Proposal.pdf.

[96] See Alexander K. Fremier. Leona K. Svancara, Michael Kiparsky, Dale D. Goble, Stephan Gmur, Barbara Cosens, Jocelyn Aycrigg, Frank W. Davis, Robin Kundis Craig, J. Michael Scott (2015) A riparian conservation network for ecological resilience. Biological Conservation 191 (2015) 29–37.

also meet the purpose and need to reduce fire hazard by maintaining more mature forest and less regeneration harvest that leads to hazardous fuel conditions. Wide riparian buffers also contribute to community stability by protecting important public values near streams and by constraining timber harvest that makes communities boom and bust. The DEIS analysis of the alternatives therefore fails to recognize all the important effects of the wide buffers in the no action alternative.

The DEIS fails to address the unique values of lands near streams. BLM treats all lands outside of their new narrow buffers as if they were interchangeable in providing habitat functions for spotted owls, marbled murrelets, and other wildlife. BLM is assuming that protecting old forest far from streams is equivalent to protecting habitat near streams. This is wrong. The no action alternative protects wider riparian buffers. These forests may appear to resemble upland habitat, but their proximity to streams makes them function differently, and the EIS needs to recognize this.

Reeves et al. admit that riparian reserves were established to provide "dispersal corridors for a variety of terrestrial organisms" and "[t]he boundaries of the Riparian Reserve were extended to a full site-potential tree height on all non-fish bearing streams … to provide additional support for non-fish organisms that use the area near streams as habitat or migratory corridors"[97] but their analysis never fully acknowledges the scope of the terrestrial wildlife objectives expected from riparian reserves, nor does their analysis show whether terrestrial objectives will be met if riparian reserves are systematically reduced as they propose.

Application of riparian reserves Scenario 1 throughout the range of the northern spotted owl was one of the key mitigations adopted to assure long-term viability of, not just fish, but a wide range of aquatic and terrestrial species. The EIS supporting the NWFP states: *[General Mitigation Measures] Application of Riparian Reserve Scenario 1 in the intermittent streams would benefit a wide variety of terrestrial and aquatic species by providing additional habitat. These species include the northern spotted owl, coho salmon, amphibians, small mammals, and some vascular plants. Connectivity of the ecosystem would also be improved.*[98]

The NWFP Record of Decision adopted Riparian Reserve Scenario 1 with the explicit intention to benefit: spotted owls, marbled murrelets, marten, red tree vole,[99] vascular plants, bryophytes, amphibians[100] (especially tailed frog, Van Dyke's salamander, clouded salamander, Del Norte salamander, black salamander, Cope's giant salamander, Cascade torrent salamander, southern torrent salamander[101]), bats,[102] birds, mammals, mosses, arthropods,[103] goshawk, fisher, bufflehead, harlequin duck,[104] 19 mollusks,[105] 12 species of lichen, 23 species of fungi,[106] and

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[97] Reeves et al. pp 8 and 9.

[98] 1994 FSEIS p 3&4 – 49.

[99] 1994 FSEIS, Appendix B-11, p B-143 -145.

[100] 1994 ROD p B-13.

[101] 1994 FSEIS p 3&4 – 176; 1994 FSEIS, Appendix J2, p 45.

[102] 1994 FSEIS pp 3&4 – 186-187.

[103] 1994 FSEIS, pp 3&4 – 61, 81.

[104] 1993 SAT Report, Ch 5, pp 296-298, 304, 308—309, 310.

130 species that were subject to "additional species analysis" because of viability concerns and received mitigation in the form of wider riparian buffers).[107] Two of these benefited species - the spotted owl and marbled murrelet - were already listed as "threatened" under the ESA when the NWFP was approved. Since the NWFP was adopted, three additional benefited species are warranted (or likely warranted) for ESA listing (the Pacific fisher, the Humboldt marten, and the North Coast DPS of the red tree vole).

In upholding the Northwest Forest Plan Judge Dwyer said "*The federal defendants were bound by law, and by the obvious fact of species interdependence, to consider the survival prospects of species other than vertebrates.*"[108] There is no new information available suggesting that the current buffers are not needed. In fact, there is some evidence suggesting that buffers should be extended to accommodate dispersal of wide-ranging amphibians over ridgetops.[109]

Reeves et al. devote a section of their paper (at pages 46-48) to address the terrestrial wildlife impacts of their proposal, giving five justifications for adopting smaller riparian reserves and why it will have "minimal" effects on terrestrial wildlife. All of their justifications are flawed.

Those flaws are described in detail in the following documents: Heiken, D. 2013. Riparian Reserves Provide Both Aquatic & Terrestrial Benefits - A Critical Review of Reeves, Pickard & Johnson (2013).[110] The DEIS does not address the voluminous evidence that riparian reserves like those in the no action alternative are irreplaceably important for spotted owls, marbled murrelets, and a variety of amphibians, as reported in Heiken (2013).

IX. RIPARIAN RESERVES CONTRIBUTE TO SPOTTED OWL CONSERVATION

The NWFP represents the "federal contribution to recovery" of the threatened northern spotted owl.[111] The NWFP relies on riparian reserves to provide benefits to spotted owls, including dispersal, connectivity, and demographic support. Reeves et al. dismiss the need to maintain riparian buffers for spotted owls because FWS' final critical habitat rule did not specifically incorporate riparian reserves. A more thorough review of the evidence shows that riparian

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[105] 1994 ROD p 38.

[106] 1994 FSEIS, Appendix J2, pp 20 – 23.

[107] 1994 FSEIS, Appendix J2; 1994 FSEIS, Appendix B11, pp B-143 – B-145. Martin Raphael. 2012. The Function of Riparian Reserves for Terrestrial Species – What Was the Intent? http://ecoshare.info/wp-content/uploads/2013/01/Raphael-buffers.pptx

[108] *Seattle Audubon Society v Lyons*, 871 F. Supp. 1291 (W.D. Wash. 1994).

[109] Science Findings, Issue 120 (February 2010) Linked in: Connecting riparian areas to support forest biodiversity, based on science by Kelly Burnett and Deanna Olson. http://www.fs.fed.us/pnw/sciencef/scifi120.pdf; and Olson, D.H., Anderson, P.D., Frissell, C.A., Welsh, H.H., Jr., and D.F. Bradford. 2007. Biodiversity management approaches for stream–riparian areas: Perspectives for Pacific Northwest headwater forests, microclimates, and amphibians. Forest Ecology and Management 246 (2007) 81–107.

[110] https://dl.dropboxusercontent.com/u/47741/Heiken%202013.%20Review%20of%20Reeves%20et%20al%20Riparian%20Proposal.pdf

[111] 1994 ROD p 15.

reserves are critically important for spotted owls, and increasingly so in light of new threats like the barred owl and climate change.

The 1994 Record of Decision for the NWFP explained the role of riparian reserves in conservation of spotted owls:

> ***Mitigation Measures Adopted*** *… The standards and guidelines of the selected alternative mitigate the impacts to plant and animal species and their interrelated ecosystems. The standards and guidelines for the land allocations of this decision will improve current conditions and alter certain past practices detrimental to late-successional species by protecting large blocks of remaining late-successional and old-growth forests, and by providing for the regrowth and replacement of previously harvested late-successional forest stands. …*
>
> *… riparian reserves in particular mitigate timber harvest effects by providing for well distributed patches of late-successional forest that serve for dispersal of mobile species such as the northern spotted owl, and serve as refugia for species that disperse only short distances.*
>
> *… Another possible mitigation is that the rate of timber harvest in the matrix could be controlled (such as with the 50-11-40 rule) to provide additional dispersal habitat for spotted owls. This measure was not adopted, in part, due to the acreage of late-successional and other reserves well-distributed in the matrix … this will protect larger amounts of nesting, roosting, and foraging owl habitat, which will be higher quality than what the 50-11-40 rule would have done (see Appendix G, part 3 of the Final SEIS).*[112]

A careful review of the available evidence shows that riparian reserves provide disproportionate value to spotted owls and they represent an integral part of the spotted owl conservation strategy adopted in 1994. New evidence reinforces the importance of riparian reserves.

Contrary to Reeves et al.'s assertions, the critical habitat rule and the recovery plan explicitly recognize the role of riparian reserves in owl conservation. FWS's 2012 proposed rule for revised critical habitat said "Riparian Reserves, Adaptive Management Areas and Administratively Withdrawn Areas can provide both demographic support and connectivity/dispersal between the larger blocks, but are not necessarily designed for that purpose."[113] And FWS's 2011 Revised Recovery Plan states:

> Riparian Reserves, Adaptive Management Areas and Administratively Withdrawn Areas can provide both demographic support and connectivity/dispersal between the larger blocks, but are not necessarily designed for that purpose. … Apparently in response to barred owls, some marked spotted owl site centers have moved higher up slopes (Gremel 2005). According to one study, "the trade-off for living in high elevation forests could be reduced survival or fecundity in years with severe winters (Hamer et al. 2007:764).[114]

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[112] 1994 NWFP ROD p 29-31.

[113] USFWS 2012. Proposed rule- Revised Critical Habitat for the Northern Spotted Owl. Federal Register Jun 1, 2012. http://www.gpo.gov/fdsys/pkg/FR-2012-06-01/html/2012-13305.htm

[114] USFWS 2011. Final Revised Recovery Plan for the Northern Spotted Owl. pp A-14, B-11.

Spotted owls spend disproportionate time in riparian areas and on the lower third of slopes. Robert Anthony recently provided input to an interagency process regarding thinning in riparian reserves and noted that spotted owls are associated with riparian areas, and that logging has negative effects on spotted owls and their prey:

> *Northern spotted owls are also associated with riparian areas, which is relevant to thinning of young forests in these areas (McDonald et al. 2006, Glenn et al. 2004). The association with riparian areas has been determined with the use of radiotelemetry studies of their movements and habitat use, which have shown that owls use riparian areas more than their proportional availability across the landscape. There have been at least three hypotheses proposed for the disproportionate use of riparian areas: (1) riparian areas provide more favorable thermoregulatory conditions (Barrows 1981); (2) prey species are more abundant in riparian areas (Carey et al. 1992 1999); and (3) fire severity has been lower in riparian areas resulting in the retention of structural complexity (Reeves et al. 2006). There is some support for all three of these hypotheses so they all likely have some influence over the use of riparian areas by northern spotted owls.*
>
> *… [M]any of the forest management practices (i.e., clearcuts, shelterwood cuts, heavy commercial thinning) used in the Pacific Northwest have had negative effects on spotted owls*[115]
>
> *… [I]t is safe to say that commercial thinning within the range of the northern spotted owl will have a negative effect on abundance of northern flying squirrels. Northern flying squirrels are the owl's primary prey by number and biomass throughout most of their range; consequently, there is little doubt that commercial thinning will have a negative effect on abundance of flying squirrels as prey for spotted owls. In addition, commercial thinning has negative effects on the abundance of red-backed voles (Suzuki and Hayes 2003, Manning unpublished data), which is also an important prey species for the owl.*[116]

The contractor's report supporting FWS' 2004 status review of the spotted owls found "owl locations were positively associated with proximity to riparian habitat..."[117] The SEI Report also said, "In the Klamath Province, more nests than random sites were on the lower third of slopes … "[118] Blakesly et al. (1992) found similar results in California: "Spotted owls also selected the lower third of slopes, used the middle third of slopes in proportion to their availability, and used the upper third of slopes less than expected …"[119]

Riparian stands may be particularly important to spotted owls in areas where old forests are uncommon, such as the BLM checkerboard of western Oregon. Glenn et al. (2004) said:

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[115] Forsman et al. 1984, Zabel et al. 1995, Buchanan et al. 1995, Hicks et al. 1999, Meimann et al. 2003.

[116] Anthony, R.G. 2013. Effects of Riparian Thinning on Marbled Murrelets and Northern Spotted Owls. Part III of the Science Review Team for the identification and interpretation of the best available scientific information to determine effects of riparian forest management. 28 January 2013.

[117] SEI Scientific Evaluation Of The Status Of The Northern Spotted Owl, Chapter 5: Habitat Associations, p 5-6. http://www.sei.org/owl/finalreport/Chapter5HabitatAssociations.pdf *citing* Irwin et al. (in press).

[118] SEI p 5-19, *citing* Hershey et al. (1998).

[119] Blakesly, Franklin & Gutierrez 1992. Spotted Owl Roost And Nest Site Selection In Northwestern California. J. Wildl. Manage. 56(2):388-392. http://www.fs.fed.us/psw/publications/blakesley/blakesley1.PDF

> *[N]est sites for owls at NCR [Northern Coast Range] and ESF [Elliot State Forest] generally were located within mature/old conifer forest or along conifer–broadleaf edges associated with riparian areas. … In areas of western Oregon where spotted owls occupy sites with little or no old conifer forest, we recommend that managers retain existing old and mature conifer forest, broadleaf forest, broadleaf forest edges, and forested riparian areas as owl habitat.*[120]

The NWFP expected riparian reserves to serve two main purposes for spotted owls – First, owls use high quality habitat in riparian reserves for movement of adults within and between territories, and for dispersal of juveniles between reserves. Second, riparian reserves provide "demographic support" for owls in the matrix, that is, the additional suitable owl habitat occurring in riparian reserves supports a larger owl population that is less vulnerable to extinction.

The riparian reserves were adopted in part as a replacement for the spotted owl dispersal standard known as the "50-11-40 rule" that pre-dated the NWFP. Riparian reserves were expected to maintain and develop late-successional habitat, and provide superior dispersal habitat (i.e., better than 11" dbh and 40% canopy closure).[121] Higher quality dispersal habitat means that owls can not only move safely through the landscape with protective cover from predators, but they can also find roosting sites that are protected from weather extremes, hunting perches, a prey base offering foraging opportunities, as well as nesting/breeding sites.

An addendum to the Biological Assessment for the NWFP states:

> *Owl dispersal requirements are believed to be met in Alternative 9 due to the cumulative benefits from a variety of land allocations and standards and guidelines which are not specifically earmarked as owl dispersal standards. The following are two [sic] the benefits which are expected to be the most important to assuring owl dispersal … .*
>
> *Riparian Reserve Scenario 1 results in an increase in the total acreage and the amount of owl habitat and murrelet habitat which would be retained along intermittent streams. This will have a greater effect in the provinces which have higher stream densities, as illustrated in the calculations below and the Aquatic Conservation Strategy discussion in Chapter 3&4. The larger acreage of protected habitat will increase the amount of dispersal and nesting habitat which will be retained throughout the owl and murrelet range.*
>
> *Riparian Reserve Scenario 1 will apply to Alternative 9 throughout the range of the northern spotted owl. This modification increases the acreage of Riparian Reserve along intermittent streams from one-half to the full height of a site potential tree. … The decision to implement Riparian Reserve Scenario 1 results in 3,233,100 acres of Riparian Reserves, which is an additional 638,000 acres (25 percent increase) over the Draft SEIS Alternative 9. … These Riparian Reserves will improve travel and dispersal corridors for*

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[120] Glenn, Hansen, & Anthony 2004. Spotted Owl Home-Range And Habitat Use In Young Forests Of Western Oregon. Journal Of Wildlife Management 68(1):33–50. http://www.eddylsrproject.com/deis/B1/703-47%20Glenn%202004.pdf

[121] 1994 ROD p 29-31.

many terrestrial animals and plants, and serve as connectivity corridors between the Late-Successional Reserves. …

The standards and guidelines state that Riparian Reserve widths may be modified after completion of watershed analysis. That analysis will take into account northern spotted owl dispersal needs as well as other species that were intended to be benefited by this mitigation measure. There are two specific values in the application of Riparian Reserve Scenario 1 for spotted owl dispersal. First is the fact that the acreage reserved will be fairly evenly arranged across the landscape. This is important because of the documentation of juvenile spotted owl dispersal occurring in random directions. An even distribution of dispersal habitat is important, and this was one factor which lead to the development of the 50-11-40 rule. The second important feature is that the acreage reserved will have the potential both in the short term and in the long term to provide higher quality habitat than "11-40" conditions. The Riparian Reserves will have more complex forest structure and more dead and down, which will provide better roosting and foraging conditions than a strictly 11 inch dbh and 40 percent canopy closure stand would provide. This will increase its effectiveness in providing for owl survival during dispersal.[122]

David Wiens conducted intensive research on spotted owls in the Oregon Coast Range west of Eugene and found that:

Spotted owls and barred owls in my study selected foraging sites that were closer to streams than random locations, and the relative probability of selection decreased linearly with increasing distance to a stream for both species … . In my study area, small low-order streams were common in lower elevation riparian-hardwood zones and steep, narrow ravines in patches of mature and old conifer trees. Strong selection for habitats near riparian zones has at least 3 explanations. First, cool microclimates associated with stream drainages may be favorable for thermoregulatory purposes during hot, dry summers (Forsman 1976, Barrows 1981). Second, and perhaps more importantly, productive vegetation conditions near streams are likely to support a rich diversity of prey used by both owl species, including woodrats (Carey et al. 1999, Anthony et al. 2003), flying squirrels (Meyer et al. 2005, Wilson 2008), deer mice, and shrews (Verts and Carroway 1998). … A third reason that riparian areas were selected may be due to their complex canopy structures that resulted from past fires that burned less intensively along stream corridors than in upslope areas (Reeves et al. 1989, Kauffman et al. 2001). Such structures may provide good perching opportunities for hunting terrestrial or arboreal prey. … [123]

The 1993 SAT Report, which provided the genesis of the ACS, also offered evidence that riparian areas serve as source areas for small mammals which may serve as a prey base for spotted owls and other predators, stating:

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[122] 1994 FSEIS, Appendix G – Part 3 – Addendum to Biological Assessment. pp G-23 – G-24.

[123] Wiens, J. David. 2012. Competitive Interactions and Resource Partitioning Between Northern Spotted Owls and Barred Owls in Western Oregon. PhD dissertation. OSU. http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/28475/WiensJohnD2012.pdf

Many mammal populations are also dependent on riparian areas. Doyle (1986 and 1990) found that riparian areas in old-growth forests in the Cascades of Oregon were source areas for upland small mammal populations. Abundance of small mammals in coastal forests of Oregon were greatest within 300 feet of the stream, even though individuals were found up to 600 feet away (Gomez 1992). Chapter 5 of this document and USDI (1992) identify several mammal species that use or are dependent on riparian zones. Riparian corridors may also be important as dispersal, travel, and migratory routes for mammals (Gregory et al. 1991).[124]

X. RIPARIAN RESERVES HELP REDUCE COMPETITION BETWEEN SPOTTED OWLS AND BARRED OWLS.

Barred owls, native to eastern North American, have moved west and invaded the entire range of the northern spotted owl. When the NWFP was adopted in 1994, the barred owl was barely mentioned in the analysis. It was assumed that all suitable spotted owl habitat would be available to spotted owls and contribute to their conservation and recovery. Now barred owls occupy and defend tens of thousands (if not hundreds of thousands) of acres of suitable owl habitat that was assumed to be available for the recovery of the spotted owl. Barred owls and spotted owls use similar habitat, and there is significant dietary overlap between the two owls, though barred owls appear to be more generalists in both habitat and food sources.

The barred owl population appears to be growing, and there is no evidence that its population growth is slowing. To mitigate for this, suitable owl habitat needs to be conserved now more than ever. Protecting existing habitat in riparian reserves (and growing more habitat inside and outside reserves) helps increase the chances that spotted owls and barred owl can co-exist. Reducing stream buffers and increasing logging will just increase adverse competitive pressures and magnify the existential perils faced by the spotted owl.

There are two approaches being considered to address the new and significant threat posed by the barred owl: (1) grow more habitat, and (2) kill barred owls. These are not mutually exclusive. The first approach is to protect and grow more suitable owl habitat based on a well-known axiom of the "species-area relationship" from island biogeography which holds that as habitat area increases, the number of cohabiting species also increases.[125] Simply put, spotted owls are more likely to *co-exist* with barred owls if there is more suitable habitat, while local or regional *extirpation* is more likely if there is less suitable habitat available. The existing riparian reserves help protect and restore more suitable habitat and increase the chances of co-existence. Reeves et al. proposal for more logging in riparian reserves will mean reduced area of suitable habitat and greater likelihood of competitive exclusion.

Corroborating these ecological principles, Dr. David Wiens recent telemetry work shows that barred owls have a survival advantage relative to spotted owls in fragmented landscapes.

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[124] 1993 SAT Report, Chapter 5, pp 461-462.

[125] Oscar E. Gaggiotti and Ilkka Hanski. 2004. Chapter 14 - Mechanisms of Population Extinction. *In* Ecology, Genetics, and Evolution of Metapopulations. Elsevier. 2004. http://web.archive.org/web/20070612211945/http://www.eeb.cornell.edu/sdv2/Readings/Gaggiotti&Hanski.pdf. See also Martina Carrete, José A. Sánchez-Zapata, José F. Calvo and Russell Lande. Demography and habitat availability in territorial occupancy of two competing species. OIKOS 108: 125-136, 2005 http://www.ebd.csic.es/carnivoros/personal/carrete/martina/recursos/13.%20carrete%20et%20al%20%282005%29%20oikos%20108-125.pdf.

However, that survival advantage diminishes in landscapes with a higher proportion of older forest (as show in the figure below).[126]

This provides strong support for the continued conservation of mature & old-growth forest inside and outside riparian reserves because spotted owls are able to compete nearly equally with barred owls in landscapes with a high proportion of old forest. According to Wiens:

> *Survival of both species was positively associated with an increasing proportion of old (>120 yrs old) conifer forest within the home range, which suggested that availability of old forest was a potential limiting factor in the competitive relationship between the 2 species. When viewed collectively, my results support the hypothesis that interference competition with a high density of barred owls for territorial space can act to constrain the availability of critical resources required for successful recruitment and reproduction of spotted owls.*[127]

To address the need for additional suitable habitat and to reduce the adverse competitive interactions between spotted owls and barred owls, the FWS adopted Recovery Action 32 that recommends conservation of a *subset* of high quality suitable owl habitat in all federal land allocations. This is a step toward mitigating the effects of the barred owl, but we are not ware of any analysis showing that protecting just a subset of the highest quality habitat is adequate mitigation for all the suitable habitat occupied and defended by barred owls. An impressive groups of spotted owl experts are already calling for conservation of a more inclusive subset of high quality owl habitat.[128]

Even if the highest quality owl habitat in the matrix is likely to be protected under Recovery Actions 10 and 32, riparian reserves still serve an important role in owl conservation. Reeves et al.'s suggestion otherwise is unsupported for several reasons. First, FWS made the recommendation for conservation of high quality habitat knowing that riparian reserves were important for spotted owls and riparian reserves were already protected. Spotted owl conservation likely requires conservation of *both* high quality owl habitat <u>and</u> riparian reserves, not one or the other. Second, riparian reserves are disproportionately important to owl conservation in general, and barred owl mitigation in particular, as described below. Protection

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[126] Wiens, J. David. 2012. Competitive Interactions and Resource Partitioning Between Northern Spotted Owls and Barred Owls in Western Oregon. PhD dissertation. OSU. http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/28475/WiensJohnD2012.pdf. Wiens, D. 2012. Presentation to The Wildlife Society. http://tws.sclivelearningcenter.com/index.aspx?PID=6893&SID=163551 (at 1:12).

[127] Id.

[128] Eric D. Forsman, Robert G. Anthony, Katie M. Dugger, Elizabeth M. Glenn, Alan B. Franklin, Gary C. White, Carl J. Schwarz, Kenneth P. Burnham, David R. Anderson, James D. Nichols, James E. Hines, Joseph B. Lint, Raymond J. Davis, Steven H. Ackers, Lawrence S. Andrews, Brian L. Biswell, Peter C. Carlson, Lowell V. Diller, Scott A. Gremel, Dale R. Herter, J. Mark Higley, Robert B. Horn, Janice A. Reid, Jeremy Rockweit, Jim Schaberl, Thomas J. Snetsinger, and Stan G. Sovern. "Population Demography of Northern Spotted Owls." DRAFT COPY 17 December 2010. This draft manuscript is in press at the University of California Press with a projected publication date of July 2011. It will be No. 40 in Studies In Avian Biology, which is published by the Cooper Ornithological Society. http://www.reo.gov/monitoring/reports/nso/FORSMANetal_draft_17_Dec_2010.pdf

of high quality owl habitat outside of riparian reserves is not a replacement for conservation of riparian reserves.

David Wiens' recent PhD dissertation based on field research in the Oregon Coast Range provides strong evidence that riparian reserves are disproportionately valuable for reducing competition between spotted owls and barred owls.

> *Spotted owls' habitat selection shows a preference for riparian hardwoods (more than 4x greater than the non-forest reference), only slightly less than the owls' preference for old conifer forest (>5x). Furthermore, there is evidence that riparian forests may provide hope as an area where resource partitioning and niche segregation exists between the two owl species. That is, the diverse mix of food sources and habitat structures in riparian reserves appears to meet important needs of both species with less direct competition for resources. Finally, Wiens' telemetry work provides evidence that when spotted owls venture close to barred owls, their selection for riparian forests intensifies.*
>
> *Under the base [resource selection function] RSF for spotted owls, old conifer was >5 times as likely to be selected for foraging as the nonforest reference category (selection ratio [exp(ˆ)] = 5.3, 95% CI = 4.4–6.4), followed by riparian hardwood (4.3, 95% CI = 3.5–5.4), mature conifer (3.4, 95% CI = 2.8–4.1), and young conifer forest (1.9, 95% CI = 1.6–2.4). … As proximity to a barred owl's core-use area increased, a spotted owl's affinity for old, mature, and young conifer forest types was gradually replaced by selection for riparian hardwood forest (Fig. 3.7). … [S]potted owls spent a disproportionate amount of time foraging in steep ravines within patches of old conifer forest. Spotted owls in my study also showed strong selection for riparian-hardwood forest along low-order streams. … My results also parallel those of Glenn et al. (2004), who reported that resource selection by spotted owls in younger forests of western Oregon was associated with hardwood (broadleaf) trees and riparian areas. … Spotted owls and barred owls in my study selected foraging sites that were closer to streams than random locations, and the relative probability of selection decreased linearly with increasing distance to a stream for both species. … The best model of resource selection indicated that spotted owls responded to an increased likelihood of encountering core-use areas of barred owls by decreasing the time spent in mature and old forest and intensifying use of riparian-hardwood forests. Additionally, I found that when spotted owls did enter a core-use area of barred owls they were located more frequently within riparian-hardwood forest than other forest types. … Data on habitat selection and dietary composition suggested that riparian hardwood forests may be an important aspect of resource partitioning between the Species … My results emphasize the value of older conifer forests, large hardwood trees, and moist bottomland riparian areas to resource partitioning between spotted owls and barred owls in the central Oregon Coast Ranges. … My finding that older riparian-hardwood forests played an important role in niche segregation between the 2 species emphasizes the need to consider these forest*

conditions within a management context, as these forests are likely to promote a wide diversity of prey for both species …"[129]

XI. RIPARIAN RESERVES ARE IMPORTANT FOR MARBLED MURRELETS

Marbled murrelets are a threatened seabird that nest on large mossy limbs of mature and old-growth trees located within about 50 miles of the coast. Like spotted owls, marbled murrelets also depend disproportionately on lower slopes and riparian forests. FWS' 1997 Recovery Plan for the Marbled murrelet says "With respect to slope, eighty percent of nests in the Pacific Northwest were located on the lower one-third or middle one-third of the slope."[130] Hamer and Nelson (1995) show that the mean distance to streams from marbled murrelet nests in the Pacific Northwest is 159 meters.[131]

In California, Baker et al. (2006) found that marbled murrelet nest sites "were located closer to streams, had a greater basal area of trees >120 cm dbh, and were located lower on slopes than random sites based on analysis of variance models." Baker (2006) states:

> *We found that nest sites were much closer to streams than would be expected based on randomly available sites within old-growth forests. Nest sites may have been located near streams because these sites afforded murrelets better access from at-sea flyways. Studies have found proximity to streams or other openings to be important for murrelet nesting in other regions as well (Hamer and Nelson 1995, Meyer et al. 2004, Zharikov et al. 2006).*[132]

In British Columbia Burger & Chatwin (2002) found that "[f]orests bordering major stream channels provided high quality nest habitat for murrelets, with large trees, high epiphyte cover and many potential nest platforms. Detections of murrelets were also highest along stream beds …."[133]

Increased clearcutting within riparian reserves is in direct conflict with FWS' 1997 Recovery Plan for the Marbled Murrelet which recommends that mature forests within "secured areas" (such as riparian reserves) be protected so they can serve as future nesting habitat for the marbled

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[129] Wiens, J. David. 2012. Competitive Interactions and Resource Partitioning Between Northern Spotted Owls and Barred Owls in Western Oregon. PhD dissertation. OSU. http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/28475/WiensJohnD2012.pdf

[130] USFWS 1997. Marbled Murrelet Recovery Plan, p 32. http://ecos.fws.gov/docs/recovery_plans/1997/970924.pdf

[131] Thomas E. Hamer & S. Kim Nelson. 1995. Chapter 6: Characteristics of Marbled Murrelet Nest Trees and Nesting Stands. USDA Forest Service Gen. Tech. Rep. PSW-152. 1995. http://www.fs.fed.us/psw/publications/documents/gtr-152/chap6.pdf.

[132] Baker, L.M., Peery, M.Z., Burkett, E.E., Singer, S.W., Suddjian, D.L., And S.R. Beissinger. 2006. Nesting Habitat Characteristics of the Marbled Murrelet in Central California Redwood Forests. The Journal of Wildlife Management (70(4) 939-946. https://www.cnr.berkeley.edu/beislab/BeissingerLab/Steve'%20Publications/Baker_et_al_2006.pdf

[133] Burger, A.E., and T.A. Chatwin. 2002. Multi-scale studies of populations, distribution and habitat associations of Marbled Murrelets in Clayoquot Sound, British Columbia. Ministry of Water, Land and Air Protection Victoria, BC. March 2002. http://env.gov.bc.ca/wld/documents/techpub/mamuwebs.pdf

murrelet.[134] This recovery plan recommendation is not about *existing* high quality habitat, but about mature forests that can serve as future recruitment habitat. These 80-120 year-old maturing forests are precisely those targeted for logging in many recent policy proposals, such as the BLM Secretarial Pilots,[135] and the federal legislation proposed by Representatives DeFazio, Walden, and Schrader.[136]

XII. MAINTAIN BUFFER PROTECTIONS FOR WILDLIFE THAT LIVE NEAR STREAMS

Reeves et al. claim that new information shows that narrow buffers will adequately protect the microclimate needed to meet ACS objectives, stating:

A number of research efforts have examined the effects of forest management on microclimate in riparian areas since the ACS and the associated ecological function curves were originally formulated. … it has been suggested that a one tree-height buffer on fish streams should reduce potential impacts of harvesting in areas on the edge of the buffer on riparian microclimate and water temperature (Brosofske et al. 1997, Moore et al. 2005) (Figure 9b).

… With buffers of 49 ft or greater width, daily maximum air temperature above stream center was less than 1°C greater, and daily minimum relative humidity was less than 5 percent lower than for unthinned stands.[137]

Reeves et al. err by focusing on conditions at the *center of the stream* instead of conditions *throughout the buffers*. This is one of the most significant errors in Reeves et al.'s analysis. Riparian reserves are intended to protect numerous species that do not live *in* the stream, rather, they live in the stream-side forest extending hundreds of feet from the stream, but they still require a relatively cool-moist microclimate, complex forest structure, and abundant wood, and these species will be adversely affected by logging adjacent to narrower riparian reserves. This is part of the reason the NWFP adopted a *buffer-on-the-buffer*, that is, an outer buffer of shade and cover to maintain suitable microclimate conditions for wildlife that live in the inner buffer.

The EIS supporting the NWFP states:

> *Riparian areas are widely considered to be important wildlife habitat. Cool air temperatures due to the presence of cool and turbulent surface waters, typically dense vegetative canopy cover, and their location in the lowest portions of watersheds combine to maintain a distinct microclimate along stream channels and in the adjacent riparian*

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[134] USFWS 1997. Recovery Plan for the Marbled Murrelet. http://ecos.fws.gov/docs/recovery_plans/1997/970924.pdf

[135] Oregon Wild 2011. Scoping Comments on the Wagon Road and Roseburg BLM Secretarial Pilots. http://www.oregonwild.org/oregon_forests/forest-management/in-your-forests/files-for-eyes-on-the-agencies/Wagon_Road_and_Roseburg_Pilots_scoping_6-29-2011_BLM.pdf

[136] Oregon Wild 212. Problems and Pitfalls Associated with the Proposed "O&C Trust, Conservation, and Jobs Act" Version 1.3, June 5, 2012. http://www.oregonwild.org/oregon_forests/old_growth_protection/westside-forests/western-oregon-s-patchwork-public-lands/O-C_Trust_Act_White_Paper_FINAL_6-5-2012_w_DeFazio_response.pdf

[137] Reeves et al. pp 25, 26.

area. Maintaining the integrity of the vegetation in these areas is particularly important for riparian-dependent species of amphibians, arthropods, mammals, birds, and bats. Many species of amphibians, birds, and mammals use late-successional and old-growth riparian areas, including associated streams, ponds and wetlands, for reproducing, foraging, roosting, and as travel corridors (Table 3&4-11). The many wildlife species, along with lichens, mosses, vascular plants and mollusks, listed in Table 3&4-11 depend on diverse and complex riparian and aquatic habitats.

The principal factor influencing the outcomes for amphibians related to the width of Riparian Reserves.[138]

The NWFP anticipated regeneration harvest (modified clearcutting) on lands in the matrix outside of riparian reserves. The ongoing threat of regeneration logging is highlighted by recent efforts to increase regeneration harvest. The NWFP recognized that forest openings adjacent to a riparian buffer would create "edge effects" that change the microclimate in the buffer and reduce the recruitment of wood to the buffer. The NWFP addressed this problem by adopting a *buffer-on-the-buffer* so that at least the inner portion of the riparian reserves would have near-natural microclimate and wood recruitment processes.

Reducing the width of riparian reserves and increasing logging adjacent to the narrower buffer will expose sensitive wildlife such as amphibians, lichen, mollusks, red tree vole, and spotted owls, to unfavorable microclimate conditions and reduced levels of dead wood recruitment. This undermines the viability of numerous species that were specifically intended to benefit from the absence of edge effects in the inner buffer.

Reeves et al. recognize a "primary purpose for the extension of the boundary of the Riparian Reserve from one site-potential tree height to two on fish-bearing streams was to protect and enhance the microclimate of the riparian ecosystem within the first tree height …"[139] but they dismiss concerns about microclimate throughout the inner buffer by shifting the focus to microclimate conditions at the *stream center,* or at most 20 meters from the stream. This ignores the fact that many riparian species that were intended to benefit from the riparian reserves use habitat much further from the stream. The outer buffers were established in part to protect microclimate within an inner buffer extending up to 1 site-potential tree height from the stream, which notably protects only a portion of the habitat used by riparian associated species.

Reeves et al. rely on Olson et al. (2007)[140] to support the idea that narrower buffers may be adequate, stating:

Olson et al. (2007) reviewed studies of the effects of timber harvest activities, inside and outside of riparian buffers, on microclimatic conditions and amphibians. They concluded that relatively narrow buffers (compared to those of the Northwest Forest Plan) can be effective in maintaining microclimates 33-66 ft (10-20 m) from the stream center. Potential concerns about microclimate that could arise from reducing the size of riparian

[138] 1994 FSEIS pp 3&4 - 61, 3&4 - 81.

[139] Reeves et al. p 24.

[140] Olson, D.H., Anderson, P.D., Frissell, C.A., Welsh, H.H., Jr., and D.F. Bradford. 2007. Biodiversity management approaches for stream–riparian areas: Perspectives for Pacific Northwest headwater forests, microclimates, and amphibians. Forest Ecology and Management 246 (2007) 81–107.

buffers can be reduced further by minimizing clearcutting along the outer boundary (Moore et al. 2005, Anderson et al. 2007, Kluber et al. 2008). As mentioned previously, clearcutting is not part of the silvicultural strategy under ecological forestry—strategically placing aggregated retention patches during harvest should help ameliorate concerns here.[141]

Reeves et al. make several errors here:

- First, Olson et al. (2007) actually refer to buffers that maintain conditions "at stream center" and the microclimate that "*may* extend 10-20 meters." Reeves tries to make an uncertain statement seem more certain.
- Second, Reeves et al. ignore a very important caveat in Olson et al. (2007) which actually expresses a specific concern about the microclimate effects upslope beyond 10-20 meters from the stream center. Olson et al. state: "However, we have few data for predicting the countervailing spatial extent of upslope harvest influences on microclimates within buffers."[142]

- Third, riparian reserves are intended to protect many species that rely on moderated microclimate conditions extending more than 10-20 meters from the stream. The reduced riparian buffers advanced by Reeves et al. might maintain the microclimate at the *stream center,* or at most 20 meters from the stream, but the NWFP sought to protect the microclimate out to a distance equal to the height of a *site-potential tree*, often 60 meters.[143]
- Fourth, the variable retention harvest (VRH) advocated by Reeves et al. and Franklin & Johnson (2012)[144] is in fact a form of clearcutting (with small reserves). At the site scale, VRH likely creates "edge effects" that are indistinguishable from clearcutting.

A key issue is whether narrow buffers are adequate to protect wildlife, such as amphibians, that may be associated with streams, but also venture away from the water. The NWFP adopted wider buffers in part because many amphibians live up to 900 feet from water. The 1993 SAT

Report explained:

The abundance of amphibians in Pacific Northwest forest and riparian zones is influenced by habitat conditions in riparian areas (Bury et al. 1991, Gomez 1992). Amphibians populations are generally found less than 900 feet from water sources (Nussbaum et al. 1983). Gomez (1992) found that rough-skinned newts, tailed frogs, and western redbacked salamanders were the most abundant species of herptafauna in upland and riparian areas along the Oregon Coast Range. These organisms were found up to 600 feet from streams but were most abundant within 300 feet. Many species have

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[141] Reeves et al. p 27.

[142] Olson et al. (2007) at p 98.

[143] 1993 SAT Report, Chapter 5, pp 461-462. See also Olson, D.H., Anderson, P.D., Frissell, C.A., Welsh, H.H., Jr., and D.F. Bradford. 2007. Biodiversity management approaches for stream–riparian areas: Perspectives for Pacific Northwest headwater forests, microclimates, and amphibians. Forest Ecology and Management 246 (2007) 81–107.

[144] Franklin, J. F. And K. N. Johnson. 2012. A Restoration framework for federal forests in the Pacific Northwest. J. For. 110(8): 429-439.

Table 3
Maximum distances away streams into upland forests at which Pacific Northwest amphibians have been found

Species	Distance (m)	Comments	Reference
RHKE/RHVA, ANFE, PLDU, PLVE, ENES, TAGR [ASTR, DITE]	30–40 m [20–30 m]	Time-constrained searches in quadrats 0–10, 10–20, 20–30, and 30–40 m from streams; 5–100+ year old conifer stands, 0 to 40+ m buffers, 1st–3rd order streams, Oregon; DITE, RHKE/RHVA, PLDU and ASTR found primarily at 0–10 m from stream, PLVE found primarily at 0–20 m from stream	Vesely (1996)
AMGR, TAGR, ENES, PLVE	55	Pitfall traps and cover boards spanning 5, 30 and 55 m from stream; 70-year-old conifer stands; British Columbia; more AMGR were captured at 30 m from stream than 5 and 55 m from stream; AMGR and TAGR moved more along streams than up or down slopes	Maxcy and Richardson (2000)
ASTR	65	Pitfall traps at 5, 25, 45, 65 m from stream; <5 and 80+ year old conifer stands; non-fish-bearing streams <3 m wide; British Columbia; no difference in capture frequency across distance from stream	Matsuda and Richardson (2005)
DITE	66, 22, 19	Radiotracking; forested, clearcut with buffer (20–30 m), and clearcut conifer stands; small streams 1–6 m wide; British Columbia; maximum distance from stream was 66 m in intact forested habitat, 22 m in clearcut, 19 m in buffered clearcut	Johnston and Frid (2002)
ASTR	100	Pitfall traps 5, 25, 50 and100 m from stream; 5- and 250-year-old conifer stands; headwater streams 1–3 m wide and fishless; British Columbia; mean distances from stream reported (adults: 28 m; juveniles: 17 m; males 23 m; females 17 m); frogs captured farther from streams in old growth than in clearcuts	Wahbe et al. (2004)
DITE, TAGR, PLVE, ENES, AMGR, ASTR, RAAU	~135	Pitfall traps, 10 × 10 grid across 135 m × 135 m; 40–50-year-old red alder stands; 2nd order streams, Oregon	McComb et al. (1993a)
ASTR, DITE, BAWR, PLDU, PLVE, RAAU, RHsp, TAGR	200	Pitfall traps at stream and 200 m upslope, 2 trans-riparian pitfall arrays with traps every 25 m; 5–200+ year old conifer stands, deciduous stands; 3rd–4th order streams, Oregon	Gomez and Anthony (1996)
DITE, TAGR, PLDU, PLVE, ENES, ANFE, ASTR, RAAU	400	Pitfall traps <10 and 400 m from streams, 2 trans-riparian arrays with traps every 50 m; 12–140 year conifer stands; 2nd–3rd order streams, Oregon	McComb et al. (1993b)

Species acronyms follow Table 2.

Author's copy

> *specific tolerance thresholds (e.g., temperature and moisture) microhabitat requirements (e.g., headwater seeps or talus slopes). Many also require downed wood, but may differ in types of wood (e.g., snag, bark on a log, or bark on the ground) or particular decay class of wood (refer to Chapter 5 more specific requirements of specific species). Alteration of microhabitat climate may influence the suitability of riparian conditions for riparian-dependent organisms.*[145]

Narrow buffers that maintain microclimate at the stream center are unlikely to protect temperature-sensitive species that live hundreds of feet from streams.

Reeves et al. offer an incomplete and misleading account of amphibian habitat use, saying "*Recent research by D. Olson of the USFS Pacific Northwest Research Station, found that most amphibians moved along the stream within 45 ft (13.6 m) of the channel.*"[146] In reality there is abundant evidence from Olson and others showing that amphibian use habitat much farther than 45 feet from streams.

The results presented in Olson et al. (2007) do not justify any systematic reduction of stream buffers on federal lands. In fact, their findings strongly reaffirm the importance of the existing buffers, or even an expansion of buffers to promote connectivity between watersheds.

Recent recognition that **stream-breeding amphibians can disperse hundreds of meters into uplands** implies that connectivity among neighboring drainages may be important to their population structures and dynamics.

> *Microclimate studies substantiate a ''stream effect'' of cool moist conditions permeating upslope into warmer, drier forests. … Riparian areas may function as habitat for resident*

[145] 1993 SAT Report, Chapter 5, p 461.

[146] Reeves et al. p 28.

> *species and as corridors for transient species … [Amphibians] may be abundant upslope, and loss or degradation of upland forest habitat could disrupt population dynamics or affect persistence. … Questions persist about whether narrow buffers provide sufficient moderation of microclimate, habitat diversity, and transfers of energy and matter to support non-fish aquatic and riparian biota, particularly sensitive frogs and salamanders, whose abundance is often greatest upstream of fish-bearing waters and whose adult stages sometimes forage hundreds of meters upland from the immediate stream margin. … Many studies reveal pronounced decreases in the ability of amphibians to disperse as human alteration of landscapes increases, and survival of juveniles in such fragmented landscapes is often substantially reduced (see Cushman, 2006)*. These findings imply dramatic effects on immigration because dispersal in amphibians is thought to be primarily effected by juveniles rather than adults (e.g., Funk et al., 2005; Cushman, 2006). … [*L]ess intensive thinning harvests that retain a substantial proportion of the pre-harvest stand density and canopy cover have less impact on stream and riparian microclimates than do more intensive regeneration harvests. … Relatively narrow buffers … can be effective in maintaining stream center microclimate conditions and therefore the steep near-stream microclimate gradients that may extend 10–20 m from streams in intact stands (Anderson et al., 2007; see above microclimate discussion). However, we have few data for predicting the countervailing spatial extent of upslope harvest influences on microclimates within buffers. In general, our understanding of trans-buffer microclimate gradients must be improved by sampling at a higher spatial resolution with spacing among sensors sufficient to quantify non-linear trends across ecotones associated with both stream-buffer and buffer-upslope edges.*[147]

Evidence continues to show adverse effects on microclimate from logging near streams.

Reeves et al. recognize that "large wood is an important element of stream and river ecosystems"[148], however, Reeves et al. mislead when they assert that "[a]llowing ecological forestry in the outer half of the riparian buffers along non-fish-bearing streams is also unlikely to affect wood recruitment."[149] Reeves et al. fail to recognize that recruitment of wood is not just important for streams but also for terrestrial/upland ecosystems that were also intended to benefit from riparian reserves. Reeves et al.'s focus on clearcutting adjacent to narrow buffers and tree tipping into streams fails to recognize likely adverse affects on wood recruitment to terrestrial portions of the riparian reserves.

Many riparian species rely on unimpeded successional processes that accumulate abundant dead wood *near* streams, but not necessarily *in* streams. Logging within and adjacent to riparian reserves will capture mortality, truncate wood recruitment processes, and deprive wildlife of the abundant dead wood they need. Likewise, reducing stream buffers and allowing clearcut edges directly abutting inner riparian buffers will eliminate one source of down wood that would

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[147] Olson, D.H., Anderson, P.D., Frissell, C.A., Welsh, H.H., Jr., and D.F. Bradford. 2007. Biodiversity management approaches for stream–riparian areas: Perspectives for Pacific Northwest headwater forests, microclimates, and amphibians. Forest Ecology and Management 246 (2007) 81–107 (emphasis added).

[148] Reeves et al. p 14.

[149] Reeves et al. p 28.

otherwise fall into the buffer. Protecting an outer *buffer-on-the-buffer* helps maintain natural levels of wood recruitment at least within the inner buffer, though the outer buffer itself would still suffer from depleted dead wood levels due to edge effects.

The NWFP explicitly recognized the problem of reduced wood recruitment in narrow riparian buffers adjacent to logged sites. The 1993 FEMAT Report, an appendix to the EIS supporting the NWFP explained:

> *Large wood on the ground is an important habitat component in riparian areas. Maintaining the integrity of the vegetation is particularly important for riparian-dependent organisms including amphibians, arthropods, mammals, birds, and bats (see appendix V-E for greater detail).*

XIII. RIPARIAN PROCESSES AS A FUNCTION OF DISTANCE FROM STREAM CHANNELS - LARGE WOOD DELIVERY TO RIPARIAN areas

Large downed logs are recruited into riparian areas from the riparian forests and from upslope forests. Similar to large wood delivery from riparian areas into streams, the effectiveness of upland forests to deliver large wood to the riparian area is naturally expected to decline at distances greater than approximately one tree height from the stand edge (Thomas et al.., 1993). Timber harvest adjacent to the riparian area creates an edge that eliminates one source of large wood. Thus, long-term levels of large wood may diminish in the riparian zone.[150]

Additionally, any proposal to protect buffers narrower than one site-potential tree will trigger concerns about wood recruitment to streams, and (depending on slope and aspect) could also degrade the riparian microclimate. Wood is recruited from the full site-potential tree buffer, plus unstable areas. Logging in those areas will capture mortality and reduce in-stream wood recruitment. Also, riparian reserves serve to mitigate for logging outside the buffers. Retaining untreated "skips" (such as riparian reserves) helps mitigate for the loss of snags and dead wood in logged uplands.[151]

OREGON DRINKING WATER PROTECTION PROGRAMS

The Oregon Department of Environmental Quality has spatially mapped drinking water surface source areas for Oregon.[152] We are specifically requesting that BLM analyze a higher protection standard for BLM lands within these drinking water source areas. For example, we recommend that Cave Junction and the Kerby Water District receive a higher degree of watershed protections and higher priority for restoration. A Cave Junction "Drinking Water Special Management Unit" would include the entire East Fork Illinois River watershed upstream of the highway 199 bridge where the City of Cave Junction water intake is located. The federal government invested more than $10 million to construct the City of Cave Junction water and sewage treatment systems in

[150] 1993 FEMAT Report, pp V-25 - V-26.

[151] Heiken, D. 2013. Riparian Reserves Provide Both Aquatic & Terrestrial Benefits - A Critical Review of Reeves, Pickard & Johnson (2013). https://dl.dropboxusercontent.com/u/47741/Heiken%202013.%20Review%20of%20Reeves%20et%20al%20Riparian%20Proposal.pdf

[152] http://www.deq.state.or.us/wq/dwp/swcountymap.html

the 1990s. That investment and the City water rights should be a high priority for protection. In addition the City of Cave Junction has complied with the US Environmental Protection Agency source water protection planning requirements. The City of Cave Junction holds two water rights to divert water from the East Fork Illinois River and serve domestic water to many businesses and 2,350 citizens who live in Cave Junction and Kerby. The Oregon DEQ has mapped the drinking water source area for Kerby and Cave Junction. BLM needs to make spatially explicit analysis of this and all Oregon DEQ drinking water source area maps.

Improved drinking water protection would entail the retention of NW Forest Plan Riparian Reserves with added emphasis on actions to filter out excessive nutrients caused by logging (e.g. phosphorus, nitrogen), filter out roadside use of herbicides, reducing pollutants from road runoff by decommissioning roads or disconnecting roads from stream channels., eliminating rampant off- road- vehicle use that often travel in and across stream channels, eliminating herbicides for roadside weed control, eliminating grazing and horse trails, reducing public road access to stream channels where motorized user dump trash and toxic materials (e.g. Logan Cut), halting mineral withdrawal to prevent the creation of additional toxic mine waste (e.g. Queen of Bronze mine in Takilma Area) and increasing law enforcement to prevent illegal marijuana gardens that use toxic materials (rodenticides) and excessive fertilizers.

We will not be satisfied with the all too often repeated rhetoric that "logging will meet all drinking water requirements." Management of BLM lands and streams must be designed to buffer the effect of ongoing private land pollution and not contribute towards cumulative non-point water pollution effects.

RECOVERY ACTIONS FOR SALMON AND OTHER FISHES

The Southern Oregon Northern California Coastal Coho Cecovery Plan provides recovery actions relevant for analysis in this DEIS. Modeling analysis must delineate critical coho habitat and the network of stream channels upstream of critical habitat that would affect critical habitat.

Circumstances have changed since the ACS was adopted in 1995 BLM RMPS. Coho salmon have been listed and critical habitat identified on BLM lands. The NMFS has deemed the existing ACS (no action alt.) as adequate to maintain and recover listed coho salmon. A recovery plan is final for Southern Oregon Northern California Coastal coho salmon, and a final plan is expected soon.

A huge body of monitoring and research demonstrate that the current ACS has been effective at protecting and improving both water quality and habitat for coho salmon. Any analysis for reduced riparian reserves need to factor in climate change that is likely to be first evident with exacerbated hot dry summers in the Medford District.[153] We provide the following recovery actions and analysis for coho salmon and other fishes that could become biologically threatened and need to be listed and protected.

[153] See Climate Change Report for Rogue Basin http://www.geosinstitute.org/climatewiseservices/completed-climatewise-projects.html

- The National Marine Fisheries Service has identified critical habitat for Oregon Coastal Coho salmon and Southern Oregon Northern California Coastal coho salmon. Spatially explicit identification of these critical habitats need to be integrated into analysis with a higher Riparian Reserve protection standard than non-critical habitat or unoccupied critical habitat. Analysis would need a watershed approach since all stream channels upstream of occupied critical habitat would also need a higher protection standard (e.g. Riparian Reserve land allocations, protections from logging, habitat enhancement, passage improvement, and sediment reductions from non-point sources such as roads, gullies, landslides, OHV use).
- Timber yield projections (p. 58) must be reduced due to landslide prone lands that are unsuitable for harvest due to sediment pollution risk to coho salmon or are uneconomical due to access costs and risks. This is especially relevant for the Medford District because of low productivity on steep lands and need for relatively high road miles to access the low volumes of timber (See Table 28 p. 127). The Medford District needs over a mile of new road for every 1.5 million board ft thinned.
- We recommend that one or more alternatives analyze retaining the existing ACS with more flexibility when implementing project level "buffers" within Riparian Reserve that contain occupied critical habitat of listed species such as coho salmon.
- Analysis of at least one action alternative must include the identification of "inner gorges" and "landslide prone areas" for inclusion within protective riparian reserves based on site-specific project analysis.
- Where feasible, large trees >20' dbh in the outer fish riparian reserve (150-300ft) would be cut or tipped and cabled yarded into the stream with logging equipment. The Medford District has been successful with this technique on Cheney Creek, a high quality coho stream in the Applegate River basin. Obviously, if these large trees in the existing fish riparian reserves (15-300ft) are logged (Alts A, B, C, D) they will never be available for enhancing fish habitat.
- Fire killed trees within Riparian Reserves would not be removed from the riparian reserve. Fire killed trees would be retained to provide shade and dead wood. Burned hazard trees in the riparian reserve would felled into the stream. These management techniques were successfully implemented with the Biscuit Fire decisions.
- Occupied critical stream habitat shall be withdrawn from mineral entry to expedite installation of wood/boulders, ensure retention of large wood placement and ensure protection of spawning gravel and riparian forests.
- Coho salmon migration barriers within project areas or along haul routes shall be removed through collaboration with other agencies, watershed councils, and private land owners.
- A list of coho barriers shall be developed with ODFW and the top barriers shall be removed each year beginning with the year after the ROD. The BLM shall enter into cooperative agreements (i.e. funding, technical expertise) to improve passage on private lands that affect BLM lands upstream.
- Pacific lamprey are declining on the west coast and have been petitioned for federal listing. The principal issue for them is passage of adults to spawning areas. Spatially explicit analysis is needed to identify priorities for retrofitting culverts to provide Pacific lamprey passage on larger streams.

- Sediment from roads within a project area shall be reduced through disconnecting the road runoff from the stream network, decommissioning roads, and preventing off road vehicle use.
- Illegal water withdrawals on coho or summer steelhead streams shall be investigated and returned to instream flow.
- Watersheds with coho spawning shall be reviewed for logging deferral due to cumulative impacts. For example, portions of the Evans Creek watershed on the Medford District were deferred from logging in the 1995 Medford RMP. Conditions remain severely degraded in portions of this watershed (West Fork Evans Creek) and the logging deferral needs to be reinstated.
- Identify a network of 5th or 6th field watersheds as key coho salmon/summer steelhead watersheds for priority restoration.
- Identify a network of 6th and 7th field coho salmon/summer steelhead spawning key watersheds for intensive sediment reduction. Roads would be storm proofed or decommissioned. Roads would be disconnected from the stream network. Grazing would be eliminated. Firman et al. 2012 found that coho salmon spawner abundance was correlated with lower road densities and lower grazing.
- Beaver dams create the highest quality coho salmon habitat. Existing and former beaver dams need to be identified and management directed to enhancing conditions for beaver and protecting beaver from persecution (Pollock et al. 2003).

1. The DEIS Does Not Provide Relevant Choices For The Decision Maker To Ameliorate Sediment Delivery To Critical Coho Habitat.

It is vital that the BLM prevent sediment delivery to coho critical habitat and identify one or more mandatory techniques that would substantially reduce chronic and episodic sediment delivery to streams. We recommend:

- Retain 2 tree height riparian reserves for occupied critical coho habitat. This would greatly reduce sediment from landslides and timber harvest, reduce road building adjacent coho critical habitat, and prioritize road removal/sediment abatement.
- Identify roads within 6th or 7th field coho spawning watersheds for sediment reduction by disconnecting the road from the stream network or decommissioning/obliterating roads.
- Prohibit OHV use in 5th field coho watersheds. Designate them as “closed” and prioritize law enforcement, physical barriers, signs, monitoring and outreach in these watersheds.
- Eliminate grazing along occupied coho critical habitat.
- Identify headwalls and unchanelled valleys as potential sediment delivery sources (i.e. landslide prone areas). Retain mature or older forests on these sites and prohibit road building across potentially unstable areas.
- Reduce or identify a relatively low ASQ for dry forests because due to low productivity it takes twice the number of road miles to obtain the same volume of timber as other districts.

2. Nutrient Loading

The BLM failed to address nutrient loading of streams due to logging. Modeling analysis with reduced (60 ft.) no cut buffers must disclose increased risk of nutrient loading of nitrogen and

phosphorus into streams that are released with logging activities. Many streams in the planning area exceed Oregon DEQ standards for nutrients.

Generally forest buffers of 100 ft or more are needed to retain mobilized nutrients. Adequate no cut buffers are particularly important in headwater streams because of their extensive linear network. There is no science to support narrower buffers in headwater channels subject to nutrient loading. Many streams in the planning area exceed DEQ standards for phosphorus (e.g. Sucker Creek on the Medford District). The issue is how best to keep nutrients retained in soils and not leached out to streams.

3. Medford District Riparian Reserves

Analysis is needed to address the special needs of streams and cold water fish in the Medford BLM District where the dry forest classification dominates. The Riparian Reserve analysis needs to reflect conditions (i.e., context as per NEPA) that warrant a high standard of protection to achieve desired outcomes.

- The Rogue Basin experiences naturally very high stream temperatures, low stream flows exacerbated by droughts, and frequent fires. These hostile factors for fish and water quality are best ameliorated in the long term with the existing Riparian Reserve widths.
- Climate change modeling indicates more heat and drought related stresses on Rogue River cold water salmonids, requiring the maximum protection (i.e. NW Forest plan ACS).
- The federally listed Southern Oregon/ Northern California Coastal Coho salmon Evolutionary Significant Unit in the Medford District is listed separately from the Oregon Coastal Coho ESU. This is important because the SONCC ESU Coho in the Medford District are at a much greater risk of extinction than the Oregon Coastal Coho ESU. Coho populations are much below desired levels and have been decreasing, resulting in the need for retaining a high standard for protection and restoration for at least the next ten years.
- Small cold water refuges created by groundwater make the 2 tree default riparian reserve advisable for occupied coho salmon and summer steelhead habitat.
- Retaining the existing Riparian Reserve standards for the Medford District would greatly simplify timber sale implementation across all forest designations. The Medford District has done a good job of implementing Riparian Reserve thinning and this would continue across all designations as determined by local conditions.
- The Medford District rarely needs to consult with National Marine Fisheries Service because the existing Riparian Reserve widths are known to be adequate to protect federally listed SONCC Coho salmon. Retaining the existing Riparian Reserve standards in the Medford District would ensure speedy timber sale implementation because no consultation with NMFS would be needed.

For the reasons stated above, we think it best for the “dry forest” Medford District to continue managing Riparian Reserves as they have in the past, which includes the judicious commercial thinning of second growth within the reserves based on extremely variable site specific

conditions that defy modeling. Bringing existing Riparian Reserve management forward into the DEIS as a preferred option would ensure a smooth and less controversial transition for changes with upland (dry) forest management (i.e. improved "certainty").

BUREAU SENSITIVE SPECIES AND SURVEY AND MANAGE

The BLM analysis relies upon the development of hypothetical future structurally complex older forests to offset the very real and **immediate** impacts associated with abandoning the Aquatic Conservation Strategy and the Survey and Manage program of the NWFP.

As indicated on page 683 of the DEIS, currently 28% of BLM forests are young stands that lack the wildlife habitat and hydrological values associated with older structurally complex stands. "Young forest habitat is the most prevalent type of habitat" actually present on BLM lands today. Page 684 of the DEIS goes on to acknowledge that when the private lands portion of the O&C checkerboard is considered, 45% of Western Oregon forests consist of young stands. Hence "the prevalence of young and stand establishment stands is greater in the decision area than average historical conditions."

Every BLM action alternative calls for an increase in clearcutting and plantation establishment in a landscape in which young stands already dominate the "timbershed."

Page 225 of the DEIS indicates that alternatives B and C would reduce the amount of structurally complex forests within one site potential tree of streams. *See also* Figure 3-52 and page 233.

Page 680 of the DEIS indicates that the BLM intends to rely upon projected increases in hypothetical habitat for Bureau Sensitive Species (BSS) and (former) Survey and Manage species rather than protecting the actual known sites where these species occur. Trading occupied actual habitat for hypothetical future habitat is arbitrary and capricious.

I. BLM HAS NOT PROVIDED A RATIONALE FOR ABANDONING SURVEY AND MANAGE MITIGATION.

The Northwest Forest Plan adopted survey and manage as mitigation for past and ongoing loss of habitat that are associated with old forests and adversely affected by logging and fragmentation. BLM appears to have adopted a very narrow purpose and need focused on recovery of ESA-listed species, to the exclusion of the NWFP goal of keeping wildlife off of the list. BLM must address the original purposes of the Northwest Forest Plan and must provide a compelling rationale for changing the core purposes of land management. BLM cannot avoid their duty to protect wildlife and avoid analyzing the effects of failing to protect wildlife.

BLM should not abandon core elements of the Northwest Forest Plan, including the survey and manage program, which courts have repeatedly said is important to meeting the goals of the Plan. One of the purposes of the Northwest Forest Plan was to restore a functional interconnected old growth ecosystem. Another purpose was to not only recover species currently listed under the Endangered Species Act, but also prevent new species from being listed. This involved an ecosystem approach to forest management.

Past management of BLM lands has caused severe fragmentation of habitat and substantial emissions of greenhouse gases. Fragmentation of habitat results in increased extinction risk for wildlife populations and these effects tend to be time-lagged. Global warming will compound these effects. It takes a long time to recover from this "extinction debt." BLM lands remain highly fragmented, and the atmosphere remains polluted with excessive greenhouse gases, so BLM has a duty to focus on species that may become endangered during the lag period, rather than just focus on the species that are currently listed under the Endangered Species Act. *See* Jens Kolk, Tobias Naaf. Herb layer extinction debt in highly fragmented temperate forests - Completely paid after 160 years?[154]

In the 1994 Northwest Forest Plan, protecting species diversity was considered an integral part of maintaining functional old growth forest ecosystems. To meet the underlying need for "*a healthy forest ecosystem with habitat that will support populations of native species (particularly those associated with late-successional and old-growth forests),*" the 1994 EIS considered various combinations of reserves and standards and guidelines that mitigate the effects of continued logging and other management activities.[155] In the framework of the 1994 FSEIS, the twin goals of viable populations and functional ecosystems are mutually reinforcing. "In many respects the test of providing a functional, interacting late-successional and old-growth forest ecosystem subsumes the test of viability for the system's component species and groups of organisms."[156] This is merely an expression of the well-recognized interdependence of species.

The structure and function of the historic landscape condition in this region was created by relatively high-productivity forests visited by infrequent large stand-replacing fires which created a landscape dominated by large blocks of old forest. This is the condition that more than 1,000 species evolved with, but this condition was highly fragmented and functionally destroyed by decades of industrial clearcutting. The NWFP sought to recreate something much closer to the conditions that species evolved with.

The authors of the Northwest Forest Plan recognized that establishing large reserves on a highly fragmented landscape is not enough to meet the goal of preventing new species listings. Until the historic pattern of large blocks of old forest can be restored, the survey and manage program is needed to avoid loss of rare and uncommon species during logging.

For decades prior to 1992, logging proceeded on federal forests in the Pacific Northwest without adequate consideration of the needs of species that are dependent upon late-successional and old-growth forest (LSOG). Logging plans were typically designed to disperse cutting units across the landscape in order to avoid acute effects in any one area, but the resulting habitat fragmentation caused widespread harm to virtually the entire forest ecosystem. In the 1993 FEMAT report and the 1994 FSEIS for federal forests within the range of the spotted owl, federal forest managers for the first time attempted to craft a plan that would maintain and restore a functional interconnected late-successional old-growth forest ecosystem that would provide for the needs of

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[154] *Biological Conservation* 182 (2015) 164-172 http://www.sciencedirect.com/science/article/pii/S0006320714004777; and Mark Urban. Accelerating extinction risk from climate change. SCIENCE 1 MAY 2015. https://www.sciencemag.org/content/348/6234/571.full.pdf

[155] 1994 FSEIS vol I p 1-4.

[156] FEMAT, p. II-36.

the spotted owl, marbled murrelet, Pacific salmon, and hundreds of other species associated with LSOG and aquatic ecosystems.

BLM's assertion that "*the distribution of structural stages in the decision area in 50 years would be within the range of the average historic conditions*" (DEIS p 680) is highly questionable. BLM needs to better explain why this conclusion differs from the NWFP. BLM also needs to consider the landscape perspective. Late successional forests are in such short supply on non-federal lands that BLM may need to provide greater than historic average levels of old forest on BLM lands in order to compensate for degraded conditions across the federal/non-federal landscape so that wildlife associated with old forests remain viable.

Conservation of BLM lands represents a rare opportunity to restore low elevation forests. Restoration of a functional interconnected old forest ecosystem, as intended by the NWFP, requires that forests are allowed to express their full range of development and such forests are represented across a wide range of different biophysical settings, such as high elevation and low elevation, valley bottoms and ridge-tops, northern latitudes and southern, moist western aspects and dryer eastern aspects. The NWFP recognized this by including a wide range of biophysical settings in a network of reserves. "*Lower elevation forests have been subject to more intensive forest management than higher elevation forests because a large portion of lands at low elevations are privately owned. Small fragments of old growth are the only remaining representatives of low elevation forests in some areas.*" [157] BLM lands in western Oregon represent a large amount of low elevation forests that have relatively high productivity and high biodiversity. More BLM lands should be allocated to reserves to conserve their high ecological values.

In 1993-94, the authors of the FEMAT and the NWFP FSEIS considered a range of alternatives and concluded that none of the alternatives would ensure attainment of a functional interconnected late-successional old-growth ecosystem within 100 years, because the reserves were so damaged by past management that they likely needed 200 or more years to regrow and recover.

> *During the next 100 years, none of the alternatives provides for a higher than 60 percent likelihood of reaching an outcome in which the quality and quantity of the overall late-successional ecosystem (as defined by the three attributes: abundance and ecological diversity, processes and function, and connectivity) would be at least as high as the hypothesized long-term average condition."*[158]
>
> *In general, high rates of logging, forest plantations, fire suppression, ownership patterns, and human population and environmental influences have altered the regional ecosystem on federal lands to the extent that none of the alternatives can provide for a return to conditions that closely match those of previous centuries. ... [N]one of the alternatives achieved a likelihood of 80 percent or greater for Outcome 1 for any of the individual attributes (see the FEMAT Report, Chapter IV, Terrestrial Forest Ecosystem Assessment). ... The results indicate that none of the alternatives had a 60 percent or greater likelihood of producing a late-successional and old-growth ecosystem with*

[157] 1994 NWFP SEIS, p 3&4-31.
[158] 1994 FSEIS p 3&4 – 43

attributes that approximate at least long-term average conditions (Outcome 1) over a timeframe of 100 years. This occurs primarily because 100 years is not long enough for cutover landscapes to return to late-successional conditions that approximate prelogging conditions. Many late-successional attributes require 200 to 500 years to develop."[159]

The ecosystem assessment shows that the likelihood of attaining a functional and interconnected late-successional and old-growth forest ecosystem in the next 100 years is reduced because some characteristics of terrestrial ecosystems will not be obtained for at least 200 years. Similarly, the Assessment Team expected that degraded aquatic ecosystems will not be fully functional in 100 years. [160]

In recognition of the current deficit of functional late successional forest and the continued risks faced by many late-successional species, the agencies added several mitigation measures, including survey and manage, to the preferred alternative in the Final EIS. The Survey and Manage program requires that the agencies search for and protect certain rare and uncommon species, resulting in the creation of many relatively small, but biologically valuable, protection buffers.

The 1994 FSEIS relied primarily on a network of large reserves to maintain a functional interconnected late-successional old-growth ecosystem.[161] "The reserve system is designed to be comprehensive, adequate, representative, and replicated." [162] However, there are two problems with reliance on reserves. First, there are "significant unanswered questions about the degree to which a reserve system designed spatially to accommodate vertebrate dispersal meets the needs of small organisms," [163]

The second problem with excessive reliance on the reserves is that "old growth forests tend to be distributed in a highly fragmented mosaic." [164] Before the reserves were established in 1994, they were significantly impacted by past logging and road building so the reserves are not currently capable of ensuring the persistence of all late-successional old-growth species.

As much as 40 percent of the Late Successional Reserves currently in young plantations were established for timber production. Typically, the plantations are densely stocked with young Douglas-fir trees, and are unlikely to follow natural stand development pathways toward late successional conditions. Consequently, late-successional forest development in these plantations may be retarded or may not occur at all. In addition, young plantations often increase the occurrence of human caused wildfires, as well as increase the rate of spread and extent of fire and other disturbances across landscapes. The presence of young plantations in Late-Successional Reserves, thus, may increase the risk of loss of intermingled late-successional forests."[165]

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[159] 1994 FSEIS p 3&4 – 45
[160] 1994 FSEIS p 3&4 – 66
[161] 1994 ROD p 45. 1994 FSEIS vol I p 2-23. 2004 FSEIS vol I p 129
[162] 2004 FSEIS vol I p 129
[163] Perry et al. Sept 4, 2001 letter to the RIEC. See also 2004 FSEIS vol I pp 108-109.
[164] 1994 FSEIS vol I p 3&4-29.
[165] 1994 FSEIS vol I p 3&4-49. 2000 FSEIS vol I p 17.

So, the reserve system may not only be conceptually flawed for rare species with limited dispersal capabilities, but it is also non-functional for species that can disperse.

The current DEIS analysis is mostly limited to an projection of the abundance of various forest structural stages, while failing to fully consider other important attributes and indicators of ecosystem integrity. For instance, providing the historic *abundance* of structurally complex forests does not ensure support for healthy populations of wildlife if the habitat is fragmented and not arranged in an appropriate spatial pattern. BLM's analysis asks: "*What levels of habitat would be available under each alternative for [special status] species.*" In the FEMAT report and 1994 FSEIS, "*The evaluation of late-successional and old-growth forest ecosystems is expressed as an expected likelihood of achieving long-term past conditions based on three attributes that characterize the quantity and quality of the ecosystem.*"[166] Those three attributes are: (1) abundance and diversity, (2) process and function, and (3) connectivity.

II. AMOUNT OF LATE SUCCESSIONAL HABITAT IS INSUFFICIENT.

The current abundance of LSOG in the reserves is insufficient to provide a functional interconnected late-successional old-growth ecosystem, so any additional increment of LSOG outside the reserves (such as survey and manage buffers in the matrix) helps to provide important short-term functionality while the reserves regrow and recover from past logging. The following map of the 66,000 acre Fall Creek LSR clearly shows, with small light-green polygons, the fragmenting effect of past clearcutting. This LSR contains 44% late successional habitat, which is even more than the region-wide average for all reserves (37%).

[166] 1994 FSEIS vol I p 2-68.

III. DIVERSITY OF HABITAT IS IMPORTANT.

Diversity of habitat types is another important attribute LSOG considered by the 1994 FEIS. The survey and manage buffers help contribute to *diversity* simply because each one is in a unique location outside the reserves. Each physical location has a unique combination of geology, soils, slope, aspect, elevation, climate, and especially history of disturbance, therefore LSOG that is retained in different locations will represent a wider diversity of forest-types.

The scientists' Sept 4, 2001 letter to the RIEC says, "Species, species assemblages, and the genetic structure of populations may vary at relatively fine scales for small organisms (which account for by far the largest share of diversity), raising the possibility that each remaining older forest is to some degree unique in its biological structure."

Since survey and manage buffers retain LSOG outside of the reserves, the buffers protect different locations with different geophysical settings and different stand histories, and will thereby enhance the diversity of habitat types within the overall forest ecosystem.

IV. PROPOSED REMOVAL OF SURVEY AND MANAGE

All action alternatives remove the Survey and Manage measures that require the agency to survey for and protect sites of Bureau Sensitive Species when planning a site-specific logging project. The BLM is required pursuant to agency policy to "conduct[] evaluations of the distribution, abundance, population trends, current threats, or habitat for those species using available information." DEIS at 692.

As an initial point, the BLM is eliminating the survey and manage program which satisfied the agency's conservation duties towards these Bureau Sensitive Species. The BLM is eliminating these protections, but does not elaborate on the measures the BLM will take to satisfy their conservation duties. The BLM suggests that the reserve system being set up in WOPR will protect these species; however, this reserve system was not set up to benefit these species or takes into account these species whatsoever, because BLM plainly eliminates the goal of supporting viable populations of old-growth associated species from the WOPR revision. DEIS at 22. This is inadequate treatment of Bureau Sensitive Species.

Not all of these species react to forestry activities the same way the spotted owl does. For example, while thinning in reserves may benefit the spotted owl in the long run, thinning could extirpate many sensitive species from an area. The BLM needs to put a program in place to conserve and analyze impacts to Bureau Sensitive Species.

Also, the BLM's analysis of the vast impact of the removal of this program is woefully inadequate. First, the BLM claims that with complete and species specific surveys, the BLM could analyze the impacts to these species under the various alternatives, but says that the cost of conducting that analysis is too high to conduct all at once during this broad planning stage.

However, this is why Survey and Manage existed in the first place. The BLM has conservation and evaluation responsibilities towards these species, and the most effective way to meet this obligation was a project by project system of surveys, where project receipts would pay for the surveys. It is completely irrational for the BLM to assert that it cannot pay for surveys across the landscape, while also eliminating the only measure designed to mitigate that knowledge gap.

Secondly, the BLM should take into consideration the known sites of various species. The BLM states that for these sensitive species, the BLM will conduct evaluations of impacts to the species based on known information. Over the past two decades the BLM has surveyed for and discovered many known sites of various Bureau Sensitive Species. Those site locations and concentrations should be disclosed to the public in this NEPA process. The BLM could draw conclusions from the surveys conducted for these species concerning range, habitat, and distribution, because little is known about the range and distribution of these species. None of this analysis exists for any species with the exception perhaps of the red tree vole. Failure of the BLM to even attempt this analysis with the existing information it has from decades of survey efforts is a failure to take a hard look at the impact of removing these protections in the future.

Third, the BLM claims that the true analysis of the impact of removing protections for these species was conducted in 2004, the 2004 Final SEIS to Remove or Modify the Survey & Manage Mitigation Measure Standards and Guidelines. DEIS at 692. It incorporates that analysis here. There are several problems with this approach. First, the 2004 ROD and FEIS does not contemplate the various changes in the current alternatives with altering riparian reserve widths, altering the reserve system, altered protections for other late-successional species, like owls and murrelets. All of these changes render the analysis useless because all the underlying protection and buffer standards have changed. Further, there has likely been a lot of new information and significant changes that would render the baseline information in 2004 useless as well. Additionally, it is likely that the data concerning habitat and known sites that are over a decade old is now stale. It is plainly not accounting for the decade plus of surveys that have been conducted for all these species.

Additionally, the BLM cannot rely on a non-NEPA document to cure a lack of analysis in the present document. The 2004 ROD and FEIS, while it went through a NEPA process in 2004, the document was invalidated, DEIS at 692. Therefore, without a new decision on that NEPA document that analysis cannot be relied upon by connected later decisions.

As a final point, the BLM makes a massive faulty assumption regarding Bureau Sensitive Species in the DEIS. The BLM assumes that the habitat and sites of species that fall within the reserve system would receive protection. However, the BLM is permitting in the reserves various types of commercial timber harvest activities that downgrade or removal late-successional habitat. Without maintain the Survey and Manage program on reserve lands, the BLM cannot make this assumption. The BLM would also have to map out the location of every known sensitive species site in order to assure the protection of these sites on the reserves.

V. SURVEY AND MANAGE BUFFERS CONTRIBUTE TO THE FUNCTION OF LSOG FORESTS

The survey and manage species and buffers clearly contribute to the *function* of the LSOG forest, another important old-growth attribute considered in 1994. "Functions … refer to ecological values of the late-successional and old-growth ecosystem that (1) maintain or contribute to the maintenance of populations of species that use these ecosystems, …" [167] The survey and manage buffers contribute disproportionately to this attribute of forest ecosystems, because the buffers are not just randomly designated late successional areas; they are areas that have been surveyed and are known to actually harbor "populations of species that use these ecosystems," and not just any species, but rare and uncommon species that this forest plan was intended to protect. The presence of these rare and uncommon old-growth species is strong evidence that the survey and manage buffers contribute to the function of the old-growth forest ecosystem.

The 2000 and 2004 FEISs both recognize that if populations of survey and manage species are not maintained well-distributed across their native range there will be a "loss of normal biological function." [168]As a result of the 2004 ROD there are now 193 species that will have "insufficient habitat," resulting in some loss of biological function where those species are significantly reduced in population or no longer occur.[169]

The 1993 FEMAT Report also recognized the functional importance of many taxa included in the survey and manage program and the "broad benefits" of retaining even small fragments of LSOG in the matrix.

> *Although an important function of the Matrix is to provide for dispersal of organisms, perhaps of greater importance is the maintenance of organisms with key functional roles in the forest ecosystem. Taxa such as fungi, nitrogen-fixing organisms, and arthropods influence natural succession, nutrient cycling, and other ecosystem processes. Maintenance of populations of these organisms in the Matrix is essential to long-term forest productivity, as well as biodiversity.*
>
> *Old forest patches as small as only a few acres can also provide important refugia for sedentary organisms.... Lichens, fungi, bryophytes, mollusks, arthropods, vascular plants, and the less mobile vertebrates were consistently identified during the expert panel process as benefiting from even small fragments of old forest. <u>Panelists consistently reiterated the important functional roles played by these organisms. Panelists highlighted the necessity of maintaining these organisms well distributed throughout the ecosystem, not just confined to reserves.</u>*
>
> *<u>Summary of mitigation measures having broad benefits</u>*
> *(4) Retain small patches of late-successional or old-growth forest within the Matrix. These small patches can provide important habitat for arthropods, fungi, lichens, bryophytes, vascular plants, mollusks, small mammals, amphibians, and bats. Species*

[167] 1994 FSEIS vol. I p 3&4-37.
[168] 2000 FSEIS vol I p 191. 2004 FSEIS vol I pp 119-121.
[169] 2004 FSEIS vol I pp 124-125.

that are poor dispersers, narrow in their habitat requirements, have restricted geographic ranges and are sensitive to variation in microclimates will benefit most from retention of these patches of late-successional forest.
(6) Survey upland sites for rare, endemic, or sensitive organisms prior to any disturbance caused by management. Protect sites where these organisms occur (e.g. special habitats such as serpentine barrens, wetlands, rock outcrops).[170]

VI. CONSERVING SURVEY AND MANAGE SPECIES ENSURES THAT ECOLOGICAL PROCESS CONTINUE

Ecological processes are another important attribute of LSOG considered in the 1994 FEIS. Examples of ecological *processes* provided directly by survey and manage species include nitrogen fixation (by lichens), nutrient cycling (by fungi, arthropods, and mollusks), symbiosis (in which fungi provide water and nutrients to vascular plants, including virtually all the dominant trees species in the late successional forest, in exchange for photosynthate produced by the plants). Loss of survey and manage protections will lead to reduced benefits related to these processes.

The diversity of functions and processes represented by survey and manage species also enhances the resiliency of the entire forest ecosystem, which is particularly important in the face of climate change and other pressures. This resiliency value of biodiversity also refutes the assertion in the 2004 EIS that if survey and manage species are truly rare, then they must play only a minor role in ecosystem processes and functions.[171] As the climate changes, species that are rare today could become much more important tomorrow. Conserving survey and manage species helps ensure that ecological processes will continue under changing conditions.

VII. SURVEY AND MANAGE BUFFERS PROVIDE HABITAT CONNECTIVITY.

The survey and mange buffers provide important *connectivity* between larger fragments of suitable habitat. The 1995 FSEIS says "Connectivity is a measure of the extent to which the landscape pattern of the late-successional and old-growth ecosystems provides for biological and ecological flows that sustain late-successional old growth ecosystems and plant species across the range of the northern spotted owl." [172]

The current fragmentation of the landscape is not just *between* the reserves but also *within* the reserves themselves. The survey and manage buffers can be viewed as "stepping stones" that link larger patches of late-successional habitat wherever they occur. The added increment of connectivity provided by survey and manage buffers may be very important for enhancing persistence values while the fragmented forests recover.

The design of the Northwest Forest Plan includes large Late Successional Reserves, managed to protect LSOG habitat for species associated with LSOG, with intervening matrix areas, where

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[170] 1993 FEMAT pp IV-186 to IV-190 (emphasis added).

[171] 2004 FSEIS vol II pp 207-208.
[172] 1994 FSEIS vol I p 3&4-38.

more logging is allowed. But the matrix is not a sacrifice zone. There are several standards & guidelines (including survey and manage) to ensure that the matrix plays a role in the ecosystem management scheme of the Northwest Forest Plan.

[F]orests in the matrix function as connectivity between Late Successional Reserves and provide habitat for a variety of organisms associated with both late successional and younger forests. Standards & guidelines for the matrix are intended to provide for important ecological functions such as dispersal or organisms, carryover of some species from one stand to the next, and maintenance of ecologically valuable structural elements such as down logs, snags, and large trees.[173]

Riparian reserves are also located between the LSRs, and, like the Matrix, they are intended to provide connectivity and dispersal. However, the riparian reserves, even more so than the LSRs, are highly impacted by past logging and construction of roads that follow streams, so they are not currently providing adequate connectivity. The objective is that 80 percent of the reserves will be covered with LSOG, but FEMAT estimated that the riparian reserves were only about 31 percent covered with medium and large conifers (versus 42% for the LSRs)[174]. While riparian reserves recover from past disturbance, the survey and manage buffers clearly help serve an important function for connectivity between the LSRs. The 2004 FEIS did not consider the benefit of survey and manage in this context.

Related to connectivity, there is concern for persistence of many species covered by the survey and manage program in part because of the species' limited dispersal capabilities.[175] The scientists' Sept 4, 2001 letter to the RIEC said, "Studies and modeling over the last few years suggest that many LSOG associates in the PNW may be limited more by dispersal than by the abundance of habitat per se, including species of lichens, bryophytes, mollusks, fungi, and invertebrates (Boughton 2001, Sillett et al. 2000). This implies that every remaining piece of suitable habitat becomes an important focus for eventual colonization of the surrounding landscape."

VIII. THE SURVEY AND MANAGE PROGRAM CONTRIBUTES TO KNOWLEDGE AND UNDERSTANDING.

Another "value-added" feature of the survey and manage program is the knowledge gains that contribute to the agencies' understanding of the ecosystem. This value was attributed to some other mitigation but also applies to survey and manage and has not been adequately recognized in the FEIS.

Many of the survey and manage species are included in the program because they are thought to be closely associated with late-successional old-growth forests, yet for some species little is known about their specific habitat associations and their specific role in a functional interconnected old-growth ecosystems.[176] The 1994 EIS said that "opportunities to enhance knowledge about ecosystem function and management in the Adaptive Management Areas of

[173] 1994 ROD pp B-1 to B-2.

[174] FEMAT pp IV-51, IV-54
[175] 1994 FSEIS Appendix J2.
[176] 1994 ROD p C-6

Alternative 9 actually increased the likelihood that this alternative would provide late-successional characteristics in the future." [177] A similar *knowledge-value* is provided by the survey and manage program which not only informs and improves the design of projects at the local scale through pre-disturbance surveys (2001 ROD p 15), but also includes a comprehensive program of strategic regional surveys designed to gain scientifically useful information about little-known, rare, and uncommon species.[178] 2004 ROD eliminates both pre-disturbance surveys and strategic surveys designed to increase knowledge. The objective of functional interconnected late-successional old-growth ecosystem will be reduced to the extent that future knowledge will not be generated by the survey and manage program.

The DEIS at 692 says:

> *…the information in the 2004 SEIS and 2007 SEIS does present analysis based on the incomplete survey information available that concludes that most Survey & Manage species would have sufficient habitat to support stable populations under the No Action alternative without the Survey & Manage measure. … Compared to the No Action alternative, all action alternatives allocate more acres to the Late-Successional Reserve, which the Northwest Forest Plan expected to meet the needs of late-successional and old-growth related species.*

First, we find is very odd that BLM would attempt to tier to previous EISs that were found to be legally deficient by the courts. The analysis in the DEIS is just a few pages and does not address the flaws in those earlier EISs.

Second, the DEIS needs to take a hard look at species that would NOT have sufficient habitat. The fact that "most" species would have sufficient habitat does means that "some" won't.

Third, the DEIS needs to take a hard look at the consequences of increased logging in the reserves which is a likely result of weaker rules for logging in reserves. The standards & guidelines for LSRs allow far too much discretionary logging so the LSRs may not adequately protect rare and uncommon species (or listed species). This concern is amplified because riparian reserves are eliminated in LSRs. The action alternatives leave very little of the BLM landscape off-limits to logging. Subtracting structurally complex LSR, inner riparian zones, and congressionally reserves lands, leaves 63% of BLM lands open to logging under the preferred alternative.

2015 BLM RMP Analysis of what's open to logging

Open to logging	Acres	Not open to logging	Acres	
LSR	636,635	LSR that is structurally complex*	463,910	
outer riparian zone**	167,729	inner riparian zone	232,083	
HLB Low	77,384	cong reserved	40,537	
HLB mod	224,582	district reserves - not including road footprint*	187,926	
HLB uneven	274,199			
East Side Mgt Lands	151,885			
District Reserve Road Footprint**'	33,701			
Totals	1,566,115		924,456	2,490,571
Percentages	**63**		**37**	

[177] 1994 FSEIS vol I p 3&4-46. FEMAT p IV-72.
[178] 2000 FSEIS vol I p 330. The

Fourth, the DEIS needs to account for the increased uncertainty caused by climate change. Species may be less secure than previously assumed and more logging will cause greater risk to wildlife than assumed in previous analyses relied on here.

Fifth, the DEIS failed to take a hard look at the adverse effects on wildlife (including survey and manage species) caused by eliminating other key aspects of the Northwest Forest Plan, such as reducing protection for riparian reserves. The DEIS analysis seems to assume that survey and manage species are mainly dependent on the LSRs when in fact they are dependent on the combination of LSRs, riparian reserves, and other standards & guidelines (including the survey and manage requirements themselves). The matrix standards & guidelines for green tree retention, and down wood retention have significant benefits for wildlife. See 1994 ROD p 29; 1994 FSEIS, Appendix J2. The DEIS needs to clearly disclose the adverse wildlife effects of alternatives that remove these requirements. The EIS supporting the NWFP states:

> *[General Mitigation Measures] Application of Riparian Reserve Scenario 1 in the intermittent streams would benefit a wide variety of terrestrial and aquatic species by providing additional habitat. These species include the northern spotted owl, coho salmon, amphibians, small mammals, and some vascular plants. Connectivity of the ecosystem would also be improved.*[179]

The NWFP Record of Decision adopted Riparian Reserve Scenario 1 with the explicit intention to benefit: spotted owls, marbled murrelets, marten, red tree vole,[180] vascular plants, bryophytes, amphibians[181] (especially tailed frog, Van Dyke's salamander, clouded salamander, Del Norte salamander, black salamander, Cope's giant salamander, Cascade torrent salamander, southern torrent salamander[182]), bats,[183] birds, mammals, mosses, arthropods,[184] goshawk, fisher, bufflehead, harlequin duck,[185] 19 mollusks,[186] 12 species of lichen, 23 species of fungi,[187] and 130 species that were subject to "additional species analysis" because of viability concerns and received mitigation in the form of wider riparian buffers).[188]

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[179] 1994 FSEIS p 3&4 – 49.

[180] 1994 FSEIS, Appendix B-11, p B-143 -145.

[181] 1994 ROD p B-13.

[182] 1994 FSEIS p 3&4 – 176; 1994 FSEIS, Appendix J2, p 45.

[183] 1994 FSEIS pp 3&4 – 186-187.

[184] 1994 FSEIS, pp 3&4 – 61, 81.

[185] 1993 SAT Report, Ch 5, pp 296-298, 304, 308—309, 310.

[186] 1994 ROD p 38.

[187] 1994 FSEIS, Appendix J2, pp 20 – 23.

[188] 1994 FSEIS, Appendix J2; 1994 FSEIS, Appendix B11, pp B-143 – B-145. Martin Raphael. 2012. The Function of Riparian Reserves for Terrestrial Species – What Was the Intent? http://ecoshare.info/wp-content/uploads/2013/01/Raphael-buffers.pptx; See Heiken, D. 2013. Riparian Reserves Provide Both Aquatic & Terrestrial Benefits - A Critical Review of Reeves, Pickard & Johnson (2013). https://dl.dropboxusercontent.com/u/47741/Heiken%202013.%20Review%20of%20Reeves%20et%20al%20Riparian%20Proposal.pdf

BLM's DEIS fails to disclose the consequences of the fact that the old-growth forest ecosystem is currently non-functional. When such a high percentage of the historic amount of mature and old-growth has already been logged, protecting a high percentage of the small amount of remaining habitat does not ensure adequate protection. Likewise, including a high percentage of the forest plan area in the reserve system does not ensure adequate protection, because past logging has already affected such a high percentage of the reserves. Given the existing level of degradation, every acre of mature and old-growth forest is important. Acres with survey and manage species are even more important. Before cutting more of the remaining mature and old-growth forest, it is important to implement mitigation measures to protect species that contribute to the functionality of the overall mature and old-growth ecosystem.

Because the reserves are degraded and not fully functional and will remain so for the next century, the 1994 FSEIS considered, and the 1994 ROD adopted, a number of mitigations, including survey and manage, that will help maintain and restore some of the attributes of functional interconnected forest ecosystems and increase the likelihood that certain species will persist.[189]

The DEIS needs to disclose that Survey and manage buffers play a disproportionately important role in conservation of species because they are not randomly located, but rather they are (1) known to provide habitat for and be occupied by at-risk species and (2) they are located in areas that are threatened with immediate habitat modification.

The DEIS does not adequately disclose the ecological consequences of increased logging in the absence of the survey and manage program, nor does the DEIS explain how they expect to get rid of survey and manage now, after two courts have rejected prior efforts to eliminate the program. BLM must fully disclose the purposes of the program and provide a compelling rationale for abandoning it.

BLM cannot rely on the fact that a large fraction of the landscape is in reserve land allocation, when the old forests in reserves are highly fragmented and a large fraction of the reserves are covered by early and mid-seral forests that do not provide habitat for species of concern.

The scale of analysis makes the alternatives look similar, but this is misleading. At the site scale survey and manage makes a big difference. The 2004 Survey and Manage EIS clearly admits that implementing survey and manage "generally adds protection and reduces risk to species" compared to not doing it.

The DEIS fails to disclose that the Special Status Species Programs (SSSP) are far less protective than survey and manage. The scientific basis of these programs is weak. These programs are often under-funded and inconsistent. Special Status Species Programs give too much discretion to local managers causing inconsistent application and loss of occupied sites. BLM has far too much discretion (just in the fuzzy words) to make choices <u>not</u> to search for and <u>not</u> to protect SSSP. These program slack an "action forcing" mechanism, so the public will be unable to hold the agencies accountable for implementing the programs. Experience has shown that the agencies only act in the interests of wildlife when forced to do so. BLM and other federal

[189] See 2000 S&M FSEIS vol I pp 17-18. 2004 S&M FSEIS vol I p 17.

agencies are notorious for abusing such discretion and making choices in favor of timber extraction and against species conservation. The EIS should disclose the historical facts that lead Judge Dwyer to say in May 1991, that, "*...a deliberate and systematic refusal by the Forest Service and the Fish and Wildlife Service to comply with the laws protecting wildlife ...[demonstrates] a remarkable series of violations of the environmental laws."* [190]

"Site management" for SSSP is far less protective than for survey and manage species. BLM's approach to SSSP is to only protect high priority sites, but unlike survey and manage requirements, there are no consistent criteria or mechanisms to ensure that high priority sites are accurately and consistently identified and protected. The main difference between survey and manage and SSSP is the discretion SSSP affords local managers. This means that BLM's main expectation with the decision to eliminate the survey and manage program is to give local managers discretion to NOT conduct surveys and NOT protect sites. This means we are going from an accountable and consistent system to an unaccountable and inconsistent (i.e. arbitrary and capricious) system of species conservation.

> *Based on BLM Manual 6840, the BLM shall address Bureau Sensitive species (BSS) and their habitats in land use plans and shall implement measures to conserve these species and their habitats, to promote their conservation, and reduce the likelihood and need for these species to be listed under the Endangered Species Act." –DEIS page 680.*

The BLM DEIS largely ignores the binding direction to address and conserve BSS species in favor of a strategy that eliminates the Survey and Manage program, logs known sites, and relies on hypothetical future habitat to mitigate for the actual and certain loss of sensitive species from logging sites that they are known to inhabit.

The BLM presents no quantified analysis of the population levels or trends for any of the Survey and Manage species to be dropped from the program or the handful[191] that will be managed as BSS species. As disclosed on page 692 of the DEIS "there is incomplete and unavailable information relevant to the effects of the action alternatives on Survey and Manage species." What is certain is that the BLM intends to dramatically increase logging of known sites in the short term while relying on hypothetical future habitat. This strategy is not informed by actual species-specific population-informed data or analysis

IX. PACIFIC FISHER

As stated on page 703 of the DEIS the "BLM did not forecast population trends of fisher, because a quantified relationship between the specific number of individuals and the availability of habitat is unknown." This holds true for most BSS and S&M species. Yet the BLM is willing to conclude that hypothetical future habitat outweighs the impacts of refusing to look for, analyze, or buffer habitat for rare species in the planning area. This despite the fact that all of the action alternatives reduce denning habitat, resting habitat and total habitat for the first 10-20 years of implementation.

The fisher is likely to be proposed for federal listing during the RMP process. Management actions must be analyzed to protect and enhance specific habitat features critical to fishers.

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[190] http://clinton6.nara.gov/1993/07/1993-07-01-forest-background.html
[191] Only 5 of 28 current Survey and Manage Species are BSS species. DEIS 692.

Merely reporting generic fisher habitat types from various alternatives is necessary but fails to address needed conservation actions for specific habitat features (large denning trees, hollow logs, mistletoe trees, dense understory shrub, densely vegetated riparian reserves).

The Fish and Wildlife service is conducting a status review of the west coast fisher (78FR16828-16829) and a proposed listing is expected fall 2014. A 2012 update of fisher (77FR70010) states "*Existing regulatory mechanisms on Federal, State, and private lands do not provide sufficient protection for the key elements of fisher habitat, or the certainty that conservation efforts will be implemented or effective. The magnitude of threats is high as they occur across the range of the DPS, resulting in a negative impact on fisher distribution and abundance."* (Emphasis added) Thus, it would be prudent for the DEIS to analyze actual conservation actions to preserve and promote "key elements of fisher habitat" needing special management that would protect fishers and allow for them to increase abundance and range. A well-documented native fisher population is found primarily in the Medford BLM District.[192] A spatially explicit analysis is needed to identify lands with high habitat value as proposed, but analysis also needs to identify where specific conservation actions are needed. Some specific protections would be to protect all snags, live trees >32" dbh since these are used for denning and likely unavailable on most private timberlands. Fuels treatment projects are in conflict with fisher preferred habitat and spatially explicit analysis is needed to ensure that cumulative fuels treatment impacts do not harm fisher habitat. Fishers prefer undisturbed riparian areas. The robust riparian reserves in the no action alternative would best meet the needs of fishers and this conservation needs to identify for fishers. Current project level analysis simply assumes that project impacts are not important because there is abundant fisher habitat that is not being impacted. This is false and not scientific. Landscape scale spatially explicit analysis is needed in this RMP process to identify critical habitat for fishers for protection and enhancement of "key elements."

X. GOLDEN EAGLE AND BALD EAGLE

For the Golden Eagle, the BLM acknowledges that threats include "increased off-road recreation" [193] yet every action alternative includes more acres designated for ORV use while no analysis or data is provided regarding actual impacts to Golden Eagle populations and behavior.

The BLM analyzes impacts to the Bald Eagle at the entire planning level scale, and concludes that there will be "indistinguishable" differences between the action alternatives at this scale. Given that there are only approximately 250 thousand acres of nesting habitat on BLM lands, the BLM should be looking specifically at the impacts to these various habitat patches (older forest in close proximity to large water bodies). Merely concluding that there will be minimal differences at a scale of analysis taking into account millions of acres is inadequate under NEPA. Which sites will be logged, which sites will be retained? Does commercial thinning impact the species even if these sites are located in reserves? Please address these questions in the FEIS.

XI. BLACK-TAILED DEER AND ROOSEVELT ELK

[192] RMP Planning Criteria at 191.
[193] DEIS at 709.

BLM analyzes impacts of the plan revision process to deer and elk using early-seral habitat as a proxy for impacts to the species. BLM assumes that there is a need to increase early-seral habitat because ODFW has documented declines in deer populations across the state. DEIS at 676. To establish a proper baseline for analysis, the BLM instead needs to focus on deer population changes in the project area as opposed to state-wide. We are concerned that deer populations in the project area are stable, perhaps eliminating a need to create early-seral forests on BLM lands in the project area. Additionally, even though population numbers have declined since the 1980's we are concerned that this is an improper baseline for population analysis given the prevalence of clearcut logging in the years proceeding and programs to eliminate predators. In other words, deer numbers in 1979, might have been the highest in Oregon's recorded history, and do not necessary reflect an accurate or ecologically appropriate number of deer for the state and project area. Please develop a more accurate baseline for modeling and interpretation.

XII. WOLVES

Wolves are wide-ranging predators that can exist in a wide variety of habitat types. They are habitat generalists in terms of terrain and vegetation (Boyd 1999, Oakleaf et al. 2006). They are not wilderness dependent, but their survival depends on the availability of cover and relatively secure areas that allow them to avoid humans and escape persecution (Carroll et al. 2003). To successfully inhabit an area they require a year-round prey base of wild ungulates (Boyd et al. 1994, Fritts and Carbyn 1995). Deer, elk, beavers, wild turkeys, marmots, and other small mammals are probably preyed on also.

Because wolves are wide-ranging, disturbance and effects to the species will occur across BLM lands as the species continues to move west and south. Effects could occur during project activities from noise, road building, timber felling, yarding, hauling, smoke (prescribed fire), and increased human activity and presence. Additionally, effects will also be seen by grazing allotments.

Gray wolves are sensitive to road associated factors. (de Vos 1948, Mech et al. 1988, Thurber et al. 1994, Paquet and Callahan 1996, Boyd and Pletscher 1999). For gray wolves, both Mech et al. (1988) and Thiel (1985) found that when road densities exceed about 1 mi/mi^2, wolves avoided or were displaced from areas. Mladenoff el al. (1995) found that road density was the major predictor of wolf pack location. Jensen et al. (1986) reported that road densities >0.6 km/km^2 were apparent barriers to wolf dispersal. Wolves have also been documented to be killed by collisions with vehicles (Gibeau and Heuer 1996, Paquet and Callahan 1996).

The BLM needs to develop standards to ensure that road densities in the forests it manages remain below road densities over 1 mi/mi^2 or manage areas over this road density to prevent any new road construction temporary or permanent. The BLM in its DEIS failed to consider this issue at all, and a failure to do so is a failure to take a hard look at the issue under NEPA.

Specifically, to conserve complete arrays of species and associated ecological interactions, management schemes must consider the density of roads. Road densities greater than 1 mi/mil are considered detrimental to wolf and elk populations Qensen et al. 1986). Wolf pup survival rates indicate that wolves may tolerate road densities higher than 1 mi/mi2 if extensive roadless regions exist adjacent to wolf territories (Mech 1989). But road densities within much of eastside forests exceed 2.5 mi/mi2 (e.g., Colville and Winema National Forests), and remaining roadless regions are quickly disappearing. Protection of terrestrial vertebrates, as well as fisheries resources, requires a moratorium on road building plus efforts to remove existing roads. Henjum, M.G., J.R. Karr, D.L. Bottom, D.A. Perry, J.C. Bednarz, S.G. Wright, S.A.Beckwitt and E. Beckwitt. 1994. Interim Protection for Late-Successional Forests, Fisheries, and Watersheds: National Forests East of the Cascade Crest, Oregon and Washington. A Report to the Congress and President of the United States by the Eastside Forests Scientific Society Panel.

Pups are born at a natal den in spring (generally mid-to late April) and remain there with their mother for about 2 months (Mech 1970, Boyd 1999). During this time any disturbance that results in the female leaving the den may expose the pups to predation or inclement weather. The sensitivity of females to human disturbances at den sites varies greatly among individuals (Boyd 1999). Due to the potential disruption of breeding as a result of human activity associated with any timber harvest, hauling, or road construction activity, these activities and any other activities that could cause disruption should be restricted from April through June. BLM failed to take a hard look at this issue in violation of NEPA.

Wolves are also impacted by grazing activities and grazing allotments. There are 3 potential effects of the proposed grazing activities on gray wolf:

1) Cattle presence on the allotment could displace deer, the primary prey of gray wolves in this area, and thus cause wolves to move to other areas to hunt. Studies have found that deer either moved or changed their use patterns when cattle were turned into allotments (Mackie 1981). Wolves are wide-ranging predators that have been known to travel more than 20 miles away from a den or rendezvous site while hunting (Mech and Boitani 2003). Cattle use of the allotment may result in wolves having to travel further to hunt deer.

2) Human management of the grazing allotment; eg. maintaining fences and water developments, placing salt, moving cattle, looking for cattle, may disturb gray wolves that may be in the allotments. Human disturbance at natal den or rendezvous sites may result in abandonment of the sites (Fritts et al. 2003, Frame et al. 2005).

3) The possibility of livestock/wolf interactions that would result in wolf control actions. Although wolves normally prey on wild ungulates or other wild animals, they sometimes attack and kill livestock or other domesticated animals. Livestock depredation by wolves is difficult to predict and seems to be influenced by many factors. Newborn livestock in remote

places are more vulnerable than larger, older stock that are kept closer to humans, and leaving livestock carcasses out and available for scavenging may increase the risk of wolf depredation (Fritts et al. 2003). The proximity of livestock to wolf homesites can also be a factor in determining the potential for wolf to depredate on livestock (Stone et al. 2008).

The BLM needs to develop conservation measures for its grazing allotments that will deter, wolf-livestock conflict and reduce the need for lethal control actions. This should include, livestock carcass and bone pile removal from allotments, retirement of allotments near rendezvous or den sites, elimination of attractants for livestock near any den sites or rendezvous site, and active implementation of non-lethal techniques to deter conflict when necessary. Please take a hard look at these issues in the FEIS.

XI. RED TREE VOLE

Under the former management mandate (2001 ROD), vole surveys were required pursuant to the species Survey Protocol (now 3.0) and any sites discovered were required to be managed pursuant to the species Management Recommendations (2.0). There was a frequently used exception for pre-disturbance surveys in thinning projects in stands under 80 years old (Pechmann Exemption). WOPR greatly reduces these protections in all alternatives, completely eliminating the vast majority of the species range (all habitat south of Highway 20) from any survey or management regime.

The DEIS contains no analysis or disclosure regarding the impacts of the proposed actions on Red Tree Voles occurring outside the Northern Oregon Distinct Population Segment. What are the population levels and trends for Red Tree Voles (RTV) elsewhere in the planning area? How will genetic connectivity be assured? How many known active RTV sites will be logged? How many RTV will be harmed by such logging?

> *"Since every RTV site in the NOCDPS is a critical for persistence, the lack of provisions for pre-disturbance surveys and known site protection under alternatives A and C would negatively affect the species." DEIS at 738.*

Pages 738 and 744 of the DEIS indicates that Alternatives A and C would negatively affect the species by logging 136 of 383 known sites. Given the acknowledgment that "every RTV site in the NOCDPS is critical for persistence" of the species, the contention on page 744 that the BLM is unsure if such logging would contribute to the need to list the species under the ESA is in error.

A spatially explicit analysis for managing the red tree vole is needed on the entire planning area to assure abundance/distribution for its viability and as an important food source for northern spotted owls and other predators.

The simplistic modeling based on Huff et al 2012 is not adequate and the BLM needs to use Dunk and Hawley. The federal register notice for listing the north Oregon coast red tree vole states:

> *The most comprehensive analysis of current red tree vole habitat conditions specific to the North Coast Range DPS is a report by Dunk (2009, entire). Dunk (2009, p. 1) applied a red tree vole habitat suitability model (Dunk and Hawley 2009, entire) to 388 Forest Inventory Analysis (FIA) plots systematically distributed on all ownerships throughout the DPS (the FIA is a program administered by the USDA Forest Service, and is a national scientific inventory system based on permanent plots designed to monitor the status, conditions, and trends of U.S. forests).*[194]

Certainly the BLM has access to similar plot information identified by the Fish and Wildlife Service to conduct recommended analysis. We are particularly concerned about habitat fragmentation and decreased abundance due to proposed heavy thinning on the Medford District that would space mature trees to the extent that red tree voles would be locally extirpated (e.g. 40% canopy for spotted owl dispersal habitat). Management for abundant and continuous distribution of red tree voles needs to be spatially linked to management for northern spotted owl recovery.

Sites in Reserves: In the WOPR analysis of effects to red tree voles, the BLM forecasted effects to the species by "applying observed detection rates and mean size of occupied stands against acreage of habitat in the Harvest Land Base" and "assumed all sites would be protected in reserves." However, there is no requirement it appears from the management objectives and actions that surveys be conducted in reserves for red tree voles when activities are planned that could remove red tree vole habitat.

Any timber harvest activities in reserves will remove and displace voles. "Continuing timber harvest in younger forest areas adjacent to remaining patches of older forest diminishes the habitat quality of these stands by maintaining them in an isolated and fragmented condition that may not allow for persistent populations of red tree voles." Federal Register /Vol. 76, No. 198 /Thursday, October 13, 2011 / Proposed Rules 63735. Thinning younger stands occupied by tree voles can reduce or eliminate voles from these stands (Biswell 2010, pers. comm.; Swingle 2010, pers. comm.), and Carey (1991, p. 8) suggests activities that result in rapidly developing (changing, unstable) younger forests are a limiting factor for red tree voles. *Id.* at 637-38.

If the BLM wants to make the assumption that all vole sites are reserved in its analysis, all timber removal activities in the reserves should require full and complete red tree voles surveys, and the adequate protection of these red tree vole sites. *Id.* at 637-38. This should include protections of large blocks of habitat not just isolated patches of older forests created by the current Management Recommendations because the FWS's "evaluation of the remaining older forest patches within the DPS indicate they are likely insufficient to sustain red tree voles over the long term due to their relatively small size and isolated nature." *Id.* at 637-38.

Non-high priority sites: Although the baseline No Action Alternative takes into account the 2001 ROD, it does not mention or consider the "Non-High Priority" process that has designated many acres of existing red tree vole sites as non-high priority and cleared them for

[194] 76FR63724

logging. Not factoring in this option would allow the BLM to selectively log certain new red tree vole sites and it overlooks an option existing land managers had under the NFP. Its availability could influence the BLM's decision to eliminate Survey and Manage for red tree voles in most of the alternatives. Please disclose the amount of acres that have been designated or are proposed to be designated non-high priority. The BLM should develop an alternative that uses the survey and non-high priority approach to managing sites in the Harvest Land Base. Further surveys would contribute to a greater understanding of this imperiled species and inform future management and recovery decisions, not to mention the listing status of the species.

Additionally, will it be possible for the BLM to use the non-high priority process north of highway 20? This is not clear.

Need to List the Species: Based upon the findings of the FWS's Warranted but Precluded Findings for the North Coast Oregon DPS of the red tree vole, any reduction in federal vole protections will result in threats to the persistence of the species, and a potential need to list the species. The North Oregon Coast DPS extends north of the Siuslaw River to the Columbia, and the FWS concluded "that the ongoing effects of the destruction, modification, and curtailment of its habitat, in conjunction with other factors described in this finding, pose a significant threat to the persistence of the North Oregon Coast DPS of the red tree vole." FR 63740.

"Clearly, existing and projected amounts of older conifer forest habitat conducive to red tree vole persistence are less than the amounts projected to have occurred historically and with which tree voles have evolved. High-quality older forest habitat remains in isolated fragments, most of which are too small to support tree voles, and are so widely separated as to be likely well beyond the dispersal capability of the species. Unlike historical conditions, which were highly stochastic, these changes are likely to be permanent. Based on our analysis of best available information, we conclude the remaining high-quality habitat within the DPS is likely insufficient to support red tree voles over the long term, and persists in a fragmented and isolated condition that renders local populations of red tree voles vulnerable to extirpation or extinction through a variety of processes, including genetic stochasticity, demographic stochasticity, environmental stochasticity, and natural catastrophes." FR 63754.

Based on these conclusions by FWS, any reductions to protections to the species will contribute to the need to list the species. This is particularly true because "red tree voles are afforded more protection on Federal lands than on State Forest and private lands within the DPS, primarily as a result of the Survey and Manage protections" *id,* and every BLM DEIS Alternative aside from the no-action alternative removes Survey and Manage protections, or reduces these protections dramatically. Based on the WPB findings by the FWS, the BLM should have developed an alternative that set aside specifically large blocks of habitat in areas critical for red tree vole persistence, dispersal, and genetic connectivity. The BLM did not develop any alternative to this regard and did not analyze these issues at all.

Further, the BLM DEIS assumes a large number of sites will be treated as non-high priority, this was not the understanding of the FWS that concluded "all sites on Federal land within the DPS are considered high-priority sites with the exception of 198,000 ac (80,130 ha) of the southernmost portion of the DPS (primarily located within the Siuslaw River drainage)."

Undermining survey and manage protections and the high-priority treatment of vole sites will lead to threats to the species persistence within the North Oregon Coast DPS, not just the area north of Highway 20.

XII. BLACK BACKED WOODPECKER

Spatially explicit analysis is needed to identify expected areas of snag shortages over the entire landscape. Snag retention standards are needed for black-backed woodpeckers. Adjacent industrial private timber management produces virtually no snags.

Post fire forests that are aggressively clear-cut do not provide habitat for the Black Baked Woodpecker. Numerous mammals, birds and amphibians are dependent on snags and down wood. Fishers, black-backed woodpeckers and other future candidates for federal listing need active management to assure snag habitat is protected or artificially created. The BLM needs to reconsider assumptions about stand replacing fire regimes and treatments to reduce high intensity fire (Odion et al. 2014). Standards for snag retention during post fire logging are needed to assure viability of snag dependent animals currently in decline (e.g. fishers, black-backed woodpecker, olive sided flycatcher). Areas with existing or modeled snag shortages would be candidates for snag creation where unwanted competing trees exist within outer Riparian Reserves. There needs to be systematic active management to maintain desirable snag densities at appropriate spatial scales. At a minimum snags, live trees >32" dbh and hollow logs need to be protected in fisher areas during timber harvest. Similarly, dense stands of trees and fire-killed snags need to be maintained for black-backed woodpeckers.

The BLM must identify a spatially explicit analysis of the effects of salvage logging, thinning, and fire suppression on wildfire dependent black-backed woodpeckers. The black-backed woodpecker is undergoing a federal status review and a proposed listing is likely during summer 2014. The findings from the Federal Register notice (78FR21097)[195] states:

> *On the basis of our determination under section 4(b)(3)(A) of the Act, we find that information in the petition and readily available in our files presents substantial scientific or commercial information indicating that listing the Oregon Cascades-California population and the Black Hills population of the black-backed woodpecker may be warranted. This finding is based on information provided in the petition, in addition to information readily available in our files, on the possible loss of black-backed woodpecker habitat due to* ***salvage logging, fire suppression, and forest thinning****, and on the possible negative population effects due to small population size and climate change. We will initiate a status review to determine whether listing each population as endangered or threatened under the Act is warranted.* (emphasis added)

Thus, the BLM needs to analyze management options that would improve viability of black-backed woodpeckers by instituting conservation measures to provide large patches of intact burned forest, manage for dense forests with no thinning, curtail fuels treatment, and reduce the intensity of fire suppression efforts in appropriate potential habitat.

XII. MARBLED MURRELET

[195] http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0F5

In the NFP and original BLM RMPs, the agency would survey prior to logging in any potential Marbled Murrelet habitat. If there is any indication of occupancy, the agency would protect a 0.5 mile radius of all contiguous existing and recruitment habitat (stands capable of becoming habitat in 25 years). These areas would be managed as LSR. Recruitment habitat was required to "protected and enhanced" by any silvicultural treatment. (Eugene RMP at 62).

WOPR alters this regiment in all alternatives as laid out below. In the preferred alternative, murrelet surveys are restricted to the first 35 miles from the coast, and marbled murrelet habitat generally can extend up to 55 miles inland. Additionally, survey habitat is much more strictly defined as detailed out below. Timber harvest is allowed without surveys if large legacy trees are withheld from harvest and habitat is "maintained."

> *Alternative A: No surveys, protect existing sites, seasonal disruption restrictions
>
> *Alternative B: Surveys 35 miles from Coast in "mature or structurally-complex coniferous forest" and "conifer forests under 80 years old with platform trees (must be within 35 miles of coast, conifer, dbh greater than 19.1, over 33 meters tall, potential structure over 10 meters from ground, and contains platform over 4 inches in diameter. If stand occupied protect all occupied habitat plus 300 foot buffer around occupied stand. In stands under 80 with platforms, no surveys needed if platform trees aren't removed; maintain habitat (need to define); seasonal restrictions during breeding season.
>
> *Alternative C: surveys in conifer stands over 120 years old, protect sites same as above for 10 years, and existing site protection lasts 10 years
>
> *Alternative D: surveys same as B (but no 35 mile limitation), buffer all contiguous habitat within .5 mile radius of occupied stand (no gaps wider than 100 meters in forest)

<u>Existing Sites</u>: Marbled Murrelets have high nest-site fidelity, and as such, the PSG protocol recommends treating all occupied Marbled Murrelet sites as occupied sites indefinitely. A murrelet site, due to the inability to locate an exact nest location, occupies the entire area of contiguous forest. Given that the BLM is under direction from the FWS to protect occupied habitat, a majority of BLM alternatives say that the BLM will protect existing sites, but it is unclear what this means. DEIS at 722.

Pursuant to the PSG Protocol and available murrelet studies, occupied habitat means all the trees in a contiguous stand, including platform and non-platform trees. Any logging within this occupied habitat opens up the stand to predators and fragments the bird's habitat, resulting in take.

The BLM states that under three of the four action alternatives, all existing murrelet sites would be "retained." DEIS at 733. The BLM needs to elaborate on what this means. We assume it means that the entire survey area, i.e. contiguous forest stand, for each murrelet nest site is to be

protected, off limits from any kind of logging. Marbled Murrelet nest sites are compromised by forest and canopy openings that can be created by thinning or adjacent clearcutting. The BLM if indeed it is committed to protecting existing occupied sites, needs to ensure that all these sites are off limits from commercial harvest of any kind, because logging will create forest edges and openings that will expose these nest sites to an increased risk of predation. Additionally, even if these sites are in reserves this does not guarantee their protection because of the logging permitted in reserves that can downgrade or remove older forest.

300 Feet: In two of the BLM Alternatives the BLM proposes to protect Marbled Murrelet nest sites with a buffer of 300 feet as opposed to a half mile. This results in marbled murrelet occupied sites are approximately 6.5 acres in size as opposed to approximately 500 acres in size. The BLM provides no analysis or scientific justification that these 300 feet buffers will ensure protection of the nest site. Almost assuredly, a 6 acre nest site for the murrelet will result in the failure or predation of that nest site. We have attached numerous studies on the murrelet to that regard. Therefore, the BLM's assumption in the DEIS, that these sites will not be "taken" because of this 300 foot buffer is false and has zero scientific justification or rationale. This prescription will result in violations of the ESA, the MAMU Recovery Plan, the 5 Year Review Recommendations, and the NWFP Recommendations.

Potential or Suitable Habitat: We are concerned that the BLM is defining potential or suitable survey habitat for these alternatives too narrowly, and will accordingly miss certain types of Marbled Murrelet nest sites from this survey regiment. Murrelets will nest in younger stands if a single legacy tree is present, but the BLM is taking a stand level approach. When averaged, stands that provide nesting trees and habitat for murrelets could have average DBH, tree height, and various measurements that will not satisfy the BLM survey standards laid out above. Please provide scientific justification for the assertions that a large cohort of legacy trees within a forest stand is necessary for marbled murrelet habitat.

The BLM either needs to delete the DBH and height limitations or any limitations based on the number of platform trees present, or the BLM needs to factor in the percentage of nest sites that will occur outside of survey habitat and account for their loss and destruction in the modeling of the impacts. As an illustration, the BLM admits that over 10% of the existing occupied sites exist outside of what the agency has modeled or considered "nesting habitat." DEIS at 733. The agency needs to take a hard look at this issue.

35 Mile Delineation: Please explain or provide ecological or scientific justification for the 35 mile mark in Alternative B. It seems entirely arbitrary and will result in the take of murrelets nesting outside this area.

Habitat "Maintenance": Under the alternatives where surveys are required in the future, we are concerned that the BLM's habitat maintenance program will not result in adequate protection of the newly discovered nest site, not make it safe to assume that new sites will be retained, or that

Marbled Murrelets will continue to reproduce at these locations. The BLM is permitting logging, as long as the large legacy trees with platforms are not removed. Again, it is inadequate to just protect potential Marbled Murrelet nest trees in a stand. Logging trees that provide canopy closure around these legacy trees opens the stand up to corvids and will result in dramatic risk of nest predation and failure. The entire contiguous stand with large buffers needs to be protected in perpetuity to protect murrelets.

Large Block Habitat: The BLM should have considered blocking up large areas of habitat known to contain legacy and platform trees to provide refuges for the marbled murrelet. Aside from the no action alternative, it appears every alternative is reducing protections for the Marbled Murrelet. Given the species flat lining or declining population levels, coupled with an alarming drop in juvenile numbers which signal problems with reproduction, should implicate an alternative that strengthens protections for the species and creates special reserves for the species to guarantee viability of the species.

False Assumptions: In numerous places throughout the DEIS, the BLM assumes that murrelet populations are increasing. This is false, and we have attached numerous recent studies to this regard. Alternatives that all reduce protections for the species because they are based upon this false assumption flaws the NEPA process.

Studies: We have attached numerous studies that provide scientific support for the points made above. Please contact us for further scientific information or any questions regarding the studies and science provided.

XIII. OREGON SPOTTED FROG

Analysis and survey data are needed for the Oregon spotted frog because it has been proposed for federal listing and proposed critical habitat identified. The federal register notice (78FR53582-53632) for proposed listing of the Oregon spotted frog identifies two Oregon spotted frog populations in the planning area. The BLM must identify the need for a field survey in the decision area to locate additional populations in the Lakeview District and Medford District Ashland Resource Area. In the absence of a systematic field survey the BLM must assume that suitable spotted habitat is occupied and will be adversely impacted from grazing, water withdrawals, and potential introductions of alien predator species. The BLM must identify suitable Oregon spotted frog habitat for spatially explicit analysis purposes and to guide needed field surveys. The BLM must treat a species proposed for listing as if it is already listed. The RMP must identify conferencing with US Fish and Wildlife Service to guide the final decision of needed conservation actions and field surveys for the Oregon spotted frog.

XIV. NORTHERN SPOTTED OWL

WOPR Proposed Actions Common to All Action Alternatives:

"Protect stands of older, structurally complex conifer forest" and "maintain habitat for NSO" In LSR.

*Maintain means keep Nesting Roosting and Foraging Habitat (NRF) and dispersal. (Cites III-15 of recovery plan for management allowed in NRF)

*Maintain NRF, Nesting Roosting and Foraging Habitat defined as multi-layered, multi-species canopy, diameter over 30 inches dbh and canopy cover over 60% and decadence components

*Harvest generally prohibited, but road construction allowed, hazard logging allowed unless it downgrades habitat (NRF to dispersal).

*Fire suppression, fuels reduction, insect and disease logging, or any other logging to promote overall health of stand allowed even if it downgrades or removes habitat.

*No requirement for surveys.

*Alternatives A and C: No protections for spotted owl known or historic sites, no requirement for spotted owl surveys. Entirely based on land allocations.

*Alternative B: Is the same as A, except that the Sub-Alternative will protect known and historic sites within the Harvest Land Base, treating these areas as Reserves.

*Alternative D: Maintains all known and historic sites, like Sub B.

NRF and Recovery Action 32 Habitat: It is unclear from the DEIS, but is NRF habitat now being defined as only multi-layered, multi-species canopy, diameter over 30 inches dbh and canopy cover over 60% and decadence components? Spotted owls can and do nest in forests over 80 years old, even if they have not yet developed full decadence components present in unique old-growth forests like RA 32 habitat. In this new plan and DEIS, is the BLM equating RA 32 habitat to NRF habitat?

Better Comparison with NFP:

Generally, spotted owl management under the Northwest Forest Plan consisted of a land allocation approach (Late-Successional Reserves, Riparian Reserves, etc.) and site specific management. In LSRs, timber harvest was not allowed in stands over 80, and in stands under 80 only thinning was permitted to accelerate growth of the stand. In the Matrix, the agency was required to retain 100 acres of best NSO habitat as close as possible to the nest site or owl activity center as a core. Cores are managed as LSR, even if later unoccupied. Additionally within an owl home range (historic, modeled, or documented), the agency is required to maintain certain percentages of the owl's home range (appx. 1.5 mile radius) and certain percentage of the owl's nest core (appx. .6 miles radius). This maintenance of owl habitat generally required the agency to maintain over 60% canopy cover in the area post-treatment.

Also across the Matrix were Connectivity Blocks, where individual tree retention was higher, and the agency was required to maintain 25% of the best habitat within these blocks. Also within each fifth field watershed, 15% of all Matrix lands had to be late-successional forest to help meet spotted owl needs.

The agency is also required to survey for the species in potential habitat, and abide by recommendations made by USFWS to mitigate or eliminate adverse impacts to the species and critical habitat. The agency is also required to comply with the owl's recovery plan.

Under WOPR, almost every alternative shifts these various layers of protection to one land allocation based approach. But the WOPR analysis is unclear and not specific on the impact of the removal of these various protections. For example, if the BLM retained that 15% standard what would still be protected vs. what would be lost? This side by side comparison specific to former individual protective standards is needed to fully grasp the impact of the proposed changes, and to better analyze which changes would be most beneficial or harmful to the species. Please elaborate on a protective standard by standard basis in the FEIS.

Importance of BLM Lands: As an initial point, it is unclear from the NEPA documents produced by the BLM how important BLM lands are to the northern spotted owl. From the logging numbers and conclusions from the modeling in Appendix S, it appears that the differences in harvest land base allocations and volume to be logged will not make any significant impact on owl habitat or recovery objectives. Accordingly, BLM concludes that the primary role of its lands for the northern spotted owl is connectivity in the "central Klamath," coast province.

But this contradicts the DEIS (p 746), that states that BLM are "indispensable" for the northern spotted owl, and critical for both east-west and north-south dispersion. Given the critical nature of BLM reserves, and the critical dispersal element these lands play, the BLM should choose an alternative or modification of an alternative that maximizes reserve size and maximizes dispersal corridors.

In the agency description of riparian reserve objectives, the contribution of conservation and recovery of species is limited to "special status riparian associated species". Formerly the reserves contributed to dispersal and connectivity corridors for terrestrial species as well.

Riparian reserves were originally designed in part to facilitate spotted owl movement between reserves. Given the BLM's lands indispensable need towards owl connectivity, these riparian dispersal corridors should be increased, but it appears that almost every alternative is moving to shrink these riparian corridors. In fact, in the purpose and need for riparian corridors, benefit to terrestrial species like the northern spotted owl was completely ignored, even though this was one of the primary reasons for this allocation's original creation. The BLM should consider an alternative that increased riparian reserve size and protections in order to benefit dispersal capabilities for the northern spotted owl and other terrestrial species. Also it appears the BLM failed to take a hard look at the terrestrial species benefits that are provided by the riparian reserves, or the potential for these benefits to continue.

Scale of Analysis: We are concerned that the spotted owl's scale of analysis was too broad, and may have eliminated many conservation potential benefits by operating on such a large scale. We understand that this scope of analysis is needed for overall harvest projections and a bigger picture, but more local and detailed analysis is needed to more fully capture impacts to individual owl sites, areas of threatened connectivity, and how to rehab or connect isolated patches of owl habitat.

It is clear from the conservation needs of the spotted owl, spelled out on page 747-48, that all high quality habitat is needed for owl recovery, and all sites need to be protected. We are concerned that the definitions of what is considered high-quality habitat has changed, and may have led to much potential habitat falling through the cracks.

Generally under the Northwest Forest Plan, forests over 80 years in age were considered to have developed some older forest characteristics that benefited spotted owls, and was considered nesting, roosting, and foraging habitat (NRF). NRF habitat was considered high-quality owl habitat. It appears that the BLM has not adapted this definition of owl habitat, but has used a more complex metric by factoring in tree height, diameter, canopy cover and a range of other variables that are captured in a rating based on owl selection, i.e. "strongly selected for" or "strongly selected against."

The WOPR NEPA description of the models used for spotted owl habitat are not elaborated upon well. Spotted owl habitat suitability is rated on a 0 to 100 scale (higher numbers indicating better habitat) and the scale is based upon canopy cover, mean tree diameter, and slope. This new metric raises a lot of questions. Exactly what variables were included, and how are they weighted? Were legacy trees accounted for or secondary older cohorts accounted for and how? Additionally, the BLM divided owl habitat into four categories "strongly selected for", "selected for", "selected against", and "strongly selected against." I believe this means that a "strongly selected for" area had a high proportion of northern spotted owl nest locations based on the relative habitat suitability value.

It would be beneficial to the public and our organization to see how this new metric rates against the more simple analysis of stand age. In other words, we would like to know and see maps of how much of the BLM land is over 80 years in age, and how much of this land falls within the different new allocations. We need to see these maps and tables side by side with the new interpretations of owl habitat. How many forests over 80 were lost with this new metric and in what areas, or how many forests were gained based on this new habitat value interpretation?

It was make sense based on the owl's crashing demography that the BLM would err on the side of caution, and use the definition of habitat that would capture the most possible acreage to conserve based on the owl's needs and the indispensable nature of BLM lands to these needs. Additionally, it appears that the BLM excluded habitat that was not in large chunks of certain sizes from its modeling or consideration for conservation. Again it would be nice to see on a map and in tables, how much habitat was lost through these consolidations, and in what areas were they lost. It is a hard reality that much of BLM land in western Oregon is in the checkerboard and highly fragmented, but it would be nice to know that the habitat restoration efforts over the past 20 years were not in vain. Perhaps many of these isolated areas are close to being connected by recovering riparian corridors, or recently thinned forests nearing 80 years in age and attaining mature forests characteristics.

We are worried, that this block defining may have incidentally excluded a good deal of habitat that was formerly the focus of numerous recovery efforts. It would also be beneficial to see maps of where thinning had formerly taken place, so that the BLM could take full advantage and consideration of past restoration efforts. It could be that forests poised to more quickly attain habitat characteristics that would benefit the owl because of restoration efforts, will be lost in the definition shuffle and large scale approach taken by the BLM here.

Please include this analysis, these tables and maps, and comparisons in the FEIS.

Appendix S Modeling: The BLM states that it modeled in all potential timber harvest when calculating and modeling effects from the alternatives to the species. They specifically did not

include any patches under 10 acres, any forests over 500 meters from a road, any early-seral forest, and any forest logged within 50 years. DEIS at 1484.

We are concerned that BLM also did not account for in the model logging defined as "fire-suppression, fuels reduction, insect and disease control, and other activities needed to protect health of the stand or adjacent stands." This type of logging is permitted in LSRs even if it downgrades or removes spotted owl habitat. DEIS at 938.

We have seen numerous timber sales under the Northwest Forest Plan that have logged extensively, downgrading and removing spotted owl habitat that has been classified as "fire-suppression, fuels reduction, insect and disease control" and almost every timber sale planned is justified as a promotion of stand health.

Based on historic rates of this logging, the BLM needs to anticipate and account for a similar degree of this type of forest activity into the future, and needs to model its impact to the Northern Spotted Owl. BLM's failure to do so fails to satisfy the "hard look" required under NEPA.

Additionally, the modelling for the northern spotted owl appears to have an improper baseline. The No Action Alternative is defined as the existing 1995 RMPs for the various BLM districts. DEIS at 27. However, the models for impacts to Northern Spotted Owl habitat uses a baseline of no timber harvest. Appendix S, Page 1464. This is misleading to the public. Under the existing 1995 RMPs, the BLM was largely focused on restorative thinning projects to expedite the creation of Northern Spotted Owl habitat. By in essence changing the baseline to no timber harvest when analyzing impacts to the owl, the BLM masks the beneficial effect of the thinning regiment because under a no timber harvest baseline, these plantations are going to take much longer to development into taller, larger trees and other metrics the BLM is using to define good spotted owl habitat, or "strongly selected for" spotted owl habitat.

The analysis needs to be consistent with its baseline approach, and the modeling for the Northern Spotted Owl needs to be based upon the current management regime under the 1995 RMPs.

Protection of existing sites:

Generally, Northern Spotted Owl management under the 1995 RMPs consisted of a land allocation approach (Late-Successional Reserves, Riparian Reserves, etc.) and site specific management. In LSRs, timber harvest was not allowed in stands over 80, and in stands under 80 only thinning was permitted to accelerate growth of the stand. In the Matrix, the agency was required to retain 100 acres of best NSO habitat as close as possible to the nest site or owl activity center as a core. Cores are managed as LSR, even if later unoccupied. Additionally within an owl home range (historic, modeled, or documented), the agency is required to maintain certain percentages of the owl's home range (appx. 1.5 mile radius) and certain percentage of the owl's nest core (appx. .6 miles radius). This maintenance of owl habitat generally required the agency to maintain over 60% canopy cover in the area post-treatment. To facilitate this management surveys were required for Northern Spotted Owls, and the BLM was also required to comply with the spotted owl's recovery plan.

It appears in every action alternative that surveys for Northern Spotted Owls are not required. Are spotted owl surveys required for management actions in reserves under the various alternatives? The purpose of creating and protecting these reserves is to protect and recover the

Northern Spotted Owl. Thinning efforts that have been occurring for decades in Late-Successional Reserves were done to accelerate the development of spotted owl habitat. Riparian Reserves and dispersal habitat have been maintained to allow spotted owls to recolonize this new habitat, which the BLM models to be extensive in the future in Appendix S.

However, as touched on above, management activities and logging is permitted in the reserves even if it downgrades or removes spotted owl habitat. Surveys should be required for the Northern Spotted Owl for projects in the reserves because the BLM is not modeling for future owl sites, and we want to protect owls that are recolonizing thinned/restored habitat. This would also be an essential monitoring tool for the species, to determine if indeed the species is recolonizing commercially thinned forests.

In order to satisfy Recovery Action 10 and the mandate to conserve spotted owl sites, the BLM needs to conduct surveys for spotted owls and protect sites that it finds. The BLM states that it will, "[i]n areas of significant population decline, sustain the full range of survival and recovery options for the species in light of significant uncertainty." Page 747. The entire planning area is defined as an area of significant population decline. The BLM's insistence on abandoning the unified federal management plan for public lands within the range of the Northern Spotted Owl (NSO) may result in significant unintended consequences that curtail timber production. Existing Habitat Conservation Plans (HCP) and designated critical habitat necessary for the survival and recovery of NSO populations rested upon the assumption that the BLM would implement the NWFP including the protection of terrestrial connectivity values provided by full NWFP Riparian Reserve buffers. The BLM's action alternatives call that assumption into question.

As stated on page 749 of the DEIS:

> *analyses differs from the analyses done by the US Fish and Wildlife Service to inform its decisions on NSO recovery and NSO critical habitat (USDI FWS 2011Aa, Appendix C; USDI FWS 2012). These differences arise from differences in planning needs and regulatory requirements, as well as differences in data availability. The Service delineated critical habitat units, in part, assuming that existing NWFP land use allocations and management standards would continue, including on BLM-administered lands. In contrast, the BLM evaluated scenarios in which NWFP land use allocations and management standards would change on BLM-administered lands in the planning area." –DEIS page 749.*

By withdrawing from the NWFP, the BLM puts existing HCPs, the NSO Recovery Plan, and the basis for NSO critical habitat designations at immediate risk. In contrast, the NWFP provided regulatory certainty that contributes directly to the stated purpose of the RMP Revision Process to contribute to economic stability.

Please note page 769 of the DEIS acknowledges that alternatives A and C would provide less east-west NSO habitat connectivity between the Oregon Coast Range and the Oregon Western Cascades. This is a key distinction in that the USFWS has "identified east-west connectivity through this area as essential the conservation" of the species. DEIS page 769.

Given that the NSO Recovery Plan identifies habitat loss via fire as a significant issue for NSO survival and recovery, the BLM decision on page 774 of the DEIS not to analyze the effects of

its management on this aspect of NSO recovery is noteworthy. We would again point out that page 194 of the DEIS indicates that:

> *The HITA includes management such as thinning and regeneration harvest with no retention and rapid reforestation on a relatively short rotation. This management approach would result in continuous horizontal and vertical fuel profiles and conditions more closely aligned with high severity fire.- DEIS page 194.*

As stated on page 798 of the DEIS "*the NSO currently is under significant biological stress, and at risk of extirpation, over much of the moist forest portion of its range."* Given this reality, and given the BLM's proposal to dramatically increase even-age harvest that increases fire hazard in moist forests, the BLM must analyze and disclose the impacts of its activities on NSO survival and recovery.

Page 804 of the DEIS indicates that the BLM is aware of Recovery Action 6 which calls for thinning of moist forest plantations in order to develop structurally complex forests. Yet the DEIS contains no analysis of the BLM's proposal to greatly increase the creation of moist forest plantations that will presumably then require thinning to attain structural complexity. Indeed, the BLM appears committed to eliminating the leave tree and wood retention standards and guidelines that provide at least some structural complexity in NWFP regeneration harvest units. The US Fish and Wildlife Service relied upon the retention of structural legacies in harvest units over time in development of the NSO Recovery Plan and in the designation of NSO critical habitat.

The final decision on this plan revision should emphasize a large, well-connected reserve system, and do the most to emphasize the unique role of BLM lands in terms of connectivity, productive low-elevation habitat, and demographic support.

DEIS at 746 says -

> *In the Coast Range, the BLM has no opportunity, through habitat management, to reduce risks to the northern spotted owl during the next 50 years, and there are no substantive differences among the alternatives in their potential effects on those risks. However, in the western Cascades and Klamath Basin, the BLM, under all alternatives, would contribute to self-sustaining northern spotted owl populations during the next 50 years. ... The alternatives differ substantively in their contributions to east-west northern spotted owl movement between the Coast Range and western Cascades.*
>
> ** BLM-administered lands are indispensable:*
>
> ** To northern spotted owl reproduction, movement and survival in the southern half of the Coast Range, and in western and central portions of the Klamath Basin;*
>
> ** And in supporting north-south species movement through the southern portion of the Coast Range, and east-west species movement between the Coast Range and western Cascades."*

The final decision must address these "indispensables" with larger reserves, and high quality dispersal habitat (e.g., wider stream buffers, light-touch forestry, etc.) We remain concerned that the scale of analysis under-represents the importance of BLM lands elsewhere.

XV. BARRED OWL: INCREASED LOGGING OF HABITAT WILL INCREASED SPOTTED OWL EXTINCTION RISK

The Revised Recovery Plan for the Northern Spotted Owl includes Recovery Action 32 (RA 32) which recommends protection of a subset of high quality spotted owl habitat. The DEIS fails to clearly articulate the specific purpose of RA 32, which is to mitigate for the invasion of the barred owl. BLM should definitely meet FWS' RA 32 recommendation, but BLM must also consider how to address the more fundamental issue, which is how to manage owl habitat so that the two owls are more likely to co-exist on the landscape.

Since the Revised Recovery Plan for the NSO is not a NEPA document, BLM must conduct a full NEPA analysis to evaluate the efficacy of RA 32 as a mitigation and whether there is more than BLM can do to achieve the goal of spotted owl recovery in the face of barred owl competition, such as conserve *all suitable owl habitat* instead of just a *subset of high quality habitat*. Neither BLM nor FWS has conducted a NEPA analysis to consider whether conserving all suitable habitat, rather than just a subset, would better meet spotted owl recovery objectives. A NEPA analysis of this issue will show that protecting all suitable NRF habitat will not only increase the chances of spotted owl recovery, but provide a host of complementary benefits, including clean water, carbon storage, prevent new species listings, enhance recreation and scenic values, maintain quality of life, and provide community stability.

When deciding whether to protect all suitable nesting, roosting, foraging habitat for the spotted owl or just a subset of high quality habitat, it is important that BLM consider the best available information which is contained in part in the latest meta-analysis of all the spotted demography studies. We expect this report to show that the spotted owl is doing worse than expected, providing support for a cautionary decision to protect all suitable owl habitat instead of just a subset. BLM and others appear to be trying to keep this information out of the public record by saying it is in peer review. Nevertheless, the Department of Interior helped pay for this study; its employees helped collect data and write the report; the report is likely in BLM's possession; and we understand the BLM officials have been briefed on its contents, so it would be arbitrary and capricious not to fully consider the latest meta-analysis and make it part of the administrative record.

In DEIS Appendix S, BLM considered a model that segregated landscape patches into groups ("bins"), including "selected for" owl habitat and "strongly selected for" owl habitat. BLM should protect all selected for habitat, not just strongly selected for. Conserving all suitable/all selected habitat is more likely to advance recovery in several ways. First, it prevents the loss of habitat available for both species, thus reducing the risk of adverse competitive interactions between the two owls. (See more on that below.) Second, it increases the likelihood of future recruitment of additional high quality habitat. Suitable habitat that is not yet "high quality" habitat, is likely the best candidates for future recruitment of high quality habitat. If such habitat is instead logged it will prevent or delay recruitment of more high quality habitat.

The DEIS also needs to critically review the assumption implicit in RA 32 that "allowing for other threats, such as fire and insects, to be addressed by restoration management actions" will in fact enhance rather than detract from spotted owl recovery objectives. As explained in great detail in the fire and fuel section, forest treatments intended to reduce the threat of fire are more likely to cause harm to the owl than fire itself. See the fire and fuel section and Heiken, D. 2010. Log it to save it? The search for an ecological rationale for fuel reduction logging in Spotted Owl habitat.[196]

Barred owl competition and displacement are significant concerns documented in the recent status reviews for the northern spotted owl. The 2004 status review panel unanimously identified barred owls as a future threat to the spotted owl. [197]

The invasion of the barred owl undermines a critical assumption underlying the Northwest Forest Plan - that all *suitable* owl habitat is *available* to spotted owls. With the invasion of the barred owl, tens of thousands of acres old forest owl habitat (which was in short supply even before the barred owl arrived) are now occupied and defended by barred owl to the exclusion of spotted owls. Many acres that were previously assumed to be available to spotted owls is no longer available because the barred owl is there. The logical response now is to protect and restore more suitable owl habitat to reach previously established spotted owl recovery goals.

Based on well-established scientific principles, such as the species/areas relationship, BLM needs to protect more suitable habitat to ensure that these two owl species can co-exist, and to decrease the likelihood of competitive exclusion. This is corroborated by FWS' Final Recovery Plan for the Northern Spotted Owl, which recommends protection of "substantially all of the older and more structurally complex multi-layered conifer forest outside of MOCAs" in westside provinces (as well as on non-federal lands). "These forests are characterized as having large diameter trees, high amounts of canopy cover, and decadence components such as broken-topped live trees, mistletoe, cavities, large snags, and fallen trees."[198] This recovery action is intended to reduce competitive pressures between spotted and barred owls, but unfortunately an analysis has not been done to show *how much* additional habitat needs to be protected to help assure co-existence of the competing owls, and the USFS and BLM have not taken steps to implement this recovery plan recommendation.

The FY2014 Annual Report On Northern Spotted Owl Monitoring states:

> *There is mounting evidence that barred owls may be negatively impacting the spotted owl population within the KSA [Klamath Study Area]. This is illustrated by several apparent population trends: (1) spotted owl detections have been steadily decreasing (Figure 6) and reached the lowest point in 2014, when barred owl detections reached their highest level; (2) fecundity rates appear to be declining (Figure 8) and in only 2 of the previous 10 years was the rate above the 25 year average; and (3) the fecundity rate for sites with known barred owl presence was lower than at other sites and is continuing to decline. Forsman et al. (2011a) noted that the consistency of the negative associations between spotted owl demographic rates and the presence of barred owls supports the conclusion*

[196] Oregon Wild. V 1.0. May 2010. http://dl.dropbox.com/u/47741/Heiken_Log_it_to_Save_it_v.1.0.pdf
[197] https://web.archive.org/web/20060927184758/http://www.sei.org/owl/meetings/Presentations/June/Gutierrez%20Threats.pdf.
[198] See Recovery Action 32.

that barred owls are having a negative effect on spotted owl populations. The recent KSA data, with the combination of decreasing occupancy and reduced fecundity, appears to reinforce this conclusion.[199]

A recent telemetry study showed that in fragmented landscapes barred owls have a survival advantage relative to spotted owls, but that survival advantage diminishes in landscapes with a higher proportion of older forest. In other words, conservation of mature & old-growth forest should be favored because spotted owls are able to compete nearly equally with barred owls in landscapes with a high proportion of old forest.

[200]

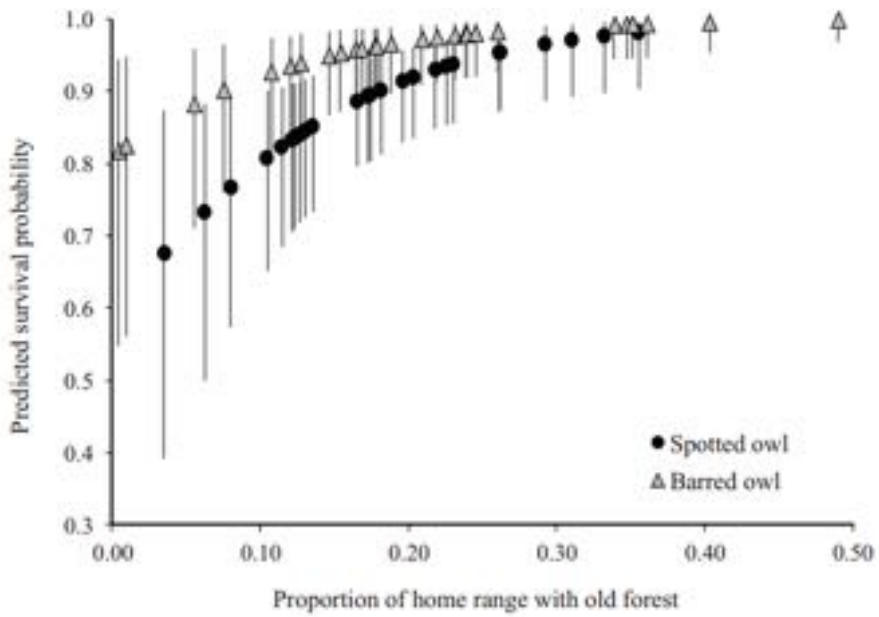

Figure 13. Predicted relationship between mean proportion of old conifer forest within the home range and seasonal (6-month) survival probabilities of radio-marked northern spotted owls ($n = 29$) and barred owls ($n = 28$) in western Oregon, USA, 2007–2009. We calculated point estimates with 95% confidence intervals at observed mean values for each individual under the best-supported model of survival, which included the additive effects of species and proportion of old conifer forest within the home range.

BLM has no NEPA analysis to tier to that supports RA 32 and addresses (on a range-wide scale) how to mitigate the adverse competitive interactions between spotted owls and barred owls. Before BLM adopts a plan that degrade more suitable owl habitat they must consider a range of NEPA alternative that protects more than just the "structurally

[199] Hollen, Horn, et al 2015. Demographic characteristics of northern spotted owls (*Strix occidentalis caurina*) in the Klamath Mountain Province of Oregon, 1990-2014. http://www.reo.gov/monitoring/reports/nso/KLA%20nso%20demog%20annual%20report%202014.pdf

[200] Wiens, J.D., Anthony, R.G., and E.D. Forsman. 2014: Competitive Interactions and Resource Partitioning Between Northern Spotted Owls and Barred Owls in Western Oregon. Wildlife Monographs 185:1–50; 2014; DOI: 10.1002/wmon.1009. https://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/48214/AnthonyRobertFisheriesWildlifeCompetitiveInteractions.pdf

complex older forest" in order to increase the chances that spotted owls and barred owls can co-exist.

The final Recovery Plan for the Northern Spotted Owl has partially addressed the barred owl issue by adopting Recovery Action 32 which urges the FS and BLM to "Maintain substantially all of the older and more structurally complex multi-layered conifer forests on Federal lands outside of MOCAs…" based on the idea that "protecting these forests will not further exacerbate competitive interactions between spotted owls and barred owls as would occur if the amount of shared resources were decreased.[201]" The revised critical habitat for the northern spotted owl was also expanded to "… increase the likelihood that spotted owls would be able to persist in areas where barred owls are also present. … [A]dditional critical habitat may allow for coexistence of the two species, potentially reducing competition. [202]

In considering this recommendation the agencies must prepare NEPA analysis which considers the full potential of suitable habitat quantity and quality and its mediating influence on the interactions between spotted owls and barred owls. Maintaining a subset of suitable habitat as recommended by the recovery plan is one option, but the agencies must consider the full benefits of protecting all suitable habitat, not just a subset, and providing additional mitigation in matrix areas such as managing the matrix to enhance habitat for owl prey species. The recovery plan is not a NEPA document and FWS was not required to consider all reasonable alternatives. Action agencies like the FS and BLM on the other hand are required to fully consider alternatives. It would be wise to do so at a range-wide level, but until that is done, the agencies should not adversely modify any suitable habitat. The recovery plan purports to offer the agencies an exception to the recommendation in Recovery Action 32 ("Land managers have made significant investments of time and resources in planning projects that may have been developed prior to the approval of this Recovery Plan, thus some forests meeting the described conditions might be harvested…"[203] however, FWS cannot exempt the action agencies from NEPA. Protection of additional suitable habitat in order to reduce competitive interactions between the two owls is now a recognized tool in the toolbox and represents significant new information about *any* proposal to modify suitable habitat regardless of how far the planning process may have proceeded.

A 2010 Draft report "Population Demography of Northern Spotted Owls" corroborates the need to protect more than just the highest quality spotted owl habitat as contemplated in the draft Recovery Action 32.

> *We also found a negative relationship between recruitment rates and the presence of Barred Owls and a positive relationship between recruitment and the amount of suitable owl habitat in the study areas. Recruitment was higher on federal lands where the amount of suitable owl habitat was generally highest. [p 96].*
>
> *While our observational results do not demonstrate cause-effect relationships, they provide support for the hypothesis that the invasion of the range of the Spotted Owl by Barred Owls is at least partly the cause for the continued decline of Spotted Owls on*

[201] FRP p 34.
[202] Dugger et al. 2011; Forsman et al. 2011." FWS 2012. CHU draft EA, p 53, 62. http://www.fws.gov/oregonfwo/Species/Data/NorthernSpottedOwl/Documents/CH_DRAFTEnvAssmnt_6.1.12.pdf.
[203] FRP p 35.

federal lands. Our results also suggest that Barred Owl encroachment into western forests may make it difficult to insure the continued persistence of Northern Spotted Owls.[204] *The fact that Barred Owls are increasing and becoming an escalating threat to the persistence of Spotted Owls does not diminish the importance of habitat conservation for Spotted Owls and their prey. In fact, the existence of a new and potential competitor like the Barred Owl makes the protection of habitat even more important, since any loss of habitat will likely increase competitive pressure and result in further reductions in Spotted Owl populations.*[205]

Our results and those of others referenced above consistently identify loss of habitat and Barred Owls as important stressors on populations of Northern spotted Owls. In view of the continued decline of Spotted Owls in most study areas, it would be wise to ***preserve as much high quality habitat in late-successional forests for Spotted Owls as possible****, distributed over as large an area as possible. This recommendation is comparable to one of the recovery goals in the final recovery plan for the Northern Spotted Owl,*[206] *but* ***we believe that a more inclusive definition of high quality habitat is needed*** *than the rather vague definition provided in the 2008 recovery plan. Much of the habitat occupied by Northern Spotted Owls and their prey does not fit the classical definition of "old-growth" as defined by Franklin and Spies (1991), and a narrow definition of habitat based on the Franklin and Spies criteria would exclude many areas currently occupied by Northern Spotted Owls. [p 99]...*[207] *"Population Demography of Northern Spotted Owls." DRAFT COPY 17 December 2010. This draft manuscript is in press at the University of California Press with a projected publication date of July 2011. It will be No. 40 in Studies In Avian Biology, which is published by the Cooper Ornithological Society.*[208]

A well-known axiom of the species-area relationship from island biogeography holds that as habitat area increases, the number of cohabiting species also increases.[209]

The major causes of population and species extinction worldwide are habitat loss and interactions among species. ... The most robust generalization that we can make about population extinction is that small populations face a particularly high risk of extinction. ... [E]mpirical support for the extinction-proneness of small populations has been found practically wherever this issue has been examined. ... The loss of habitat reduced population size ... Larger habitat patches have larger expected population sizes than smaller patches. Therefore, other things being equal, we could expect large habitat patches to have populations with a lower risk of extinction than populations in small

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[204] *See also* Olson et al. 2004.
[205] Horn and MacArthur 1972, Olson et al. 2004, Carrete et al. 2005. [pp 97-98]
[206] USDI Fish and Wildlife Service 2008.
[207] Eric D. Forsman, Robert G. Anthony, Katie M. Dugger, Elizabeth M. Glenn, Alan B. Franklin, Gary C. White, Carl J. Schwarz, Kenneth P. Burnham, David R. Anderson, James D. Nichols, James E. Hines, Joseph B. Lint, Raymond J. Davis, Steven H. Ackers, Lawrence S. Andrews, Brian L. Biswell, Peter C. Carlson, Lowell V. Diller, Scott A.Gremel, Dale R. Herter, J. Mark Higley, Robert B. Horn, Janice A. Reid, Jeremy Rockweit, Jim Schaberl, Thomas J. Snetsinger, and Stan G. Sovern.
[208] http://www.reo.gov/monitoring/reports/nso/FORSMANetal_draft_17_Dec_2010.pdf.

[209] *See especially,* Part III - Competition in a Spatial World *in* Tilman, D. and P. Karieva, Eds. 1997. Spatial Ecology: The Role of Space in Population Dynamics and Interspecific Interactions. Monographs in Population Biology, Princeton University Press. 368 pp.

patches. ... More generally, the relationship between patch size and extinction risk provides a key rule of thumb for conservation: other things being equal it is better to conserve a large than a small patch of habitat or to preserve as much of a particular patch as possible. ... [T]here are likely to be many complementary reasons why large patches have populations with low risk of extinction. " [210]

The territorial occupancy model developed by Lande (1987), extended here to include two competing species, represents a useful tool for evaluating how equilibrium breeding numbers could be affected by changes in habitat availability, demographic parameters, dispersal behavior and interspecific competition … Its application shows that **increases in the exclusive suitable habitat of each species is the best option to maintain viable populations of territorial competitors** in a same area, given that it reduces competition for territories. Increases in habitat overlap by reducing the exclusive habitat available for one species strongly affected the outcome of competition, resulting in extinction of the species for which exclusive habitat had been eliminated.[211]

From these ecological foundations, one can see that the barred owl, by invading, occupying suitable habitat and excluding spotted owls, has reduced the effective size of the reserves that were established in 1994, and thereby reduces the potential population of spotted owls. Extinction risk is increased by this loss of habitat and smaller population. If we provide more suitable habitat, the population potential increases, and the risk of extinction decreases. The most rational way to respond is to protect remaining suitable habitat, expand and restore the reserve system to provide more suitable habitat to increase the likelihood that the two owl species can co-exist.[212]

This view is corroborated by owl biologist David Wiens who was interviewed on the Lehrer News Hour, he said: "*The more habitat you protect, the more you're going to alleviate the competitive pressure between the species. Rather than reducing it and increasing the competitive pressure between these two species, we need to provide as much habitat as possible for them*."[213] Robert Anthony agrees, "*If you start cutting habitat for either bird, you just increase competitive pressure.*"[214] And in the same article Eric Forsman added "*You could shoot barred owls until you're blue in the face," he said. "But unless you're willing to do it forever, it's just not going to work*."

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[210] Oscar E. Gaggiotti and Ilkka Hanski. 2004. Chapter 14 - Mechanisms of Population Extinction. *In* Ecology, Genetics, and Evolution of Metapopulations. Elsevier. 2004. http://web.archive.org/web/20070612211945/http://www.eeb.cornell.edu/sdv2/Readings/Gaggiotti&Hanski.pdf

[211] Martina Carrete, Jose´ A. Sa´nchez-Zapata, Jose´ F. Calvo and Russell Lande. Demography and habitat availability in territorial occupancy of two competing species. OIKOS 108: 125-136, 2005 http://www.ebd.csic.es/carnivoros/personal/carrete/martina/recursos/13.%20carrete%20et%20al%20%282005%29%20oikos%20108-125.pdf.

[212] Put another way, when threatened with extinction, "the best defense is a strong offense" that is, species are more likely to persist if they have a large, well-distributed population size and if we minimize all manageable threats. Dunham, Jason. 2008. Bull trout habitat requirements and factors most at risk from climate change. http://www.fs.fed.us/rm/boise/AWAE/projects/bull_trout/bt_Dunham.html

[213] DAVID WIENS. News Hour interview. "Biologists Struggle to Save the Spotted Owl." December 18, 2007. http://www.pbs.org/newshour/bb/science/july-dec07/owl_12-18.html.

[214] Welch, Craig. 2009. The Spotted Owl's New Nemesis. Smithsonian Magazine. January 2009. http://www.smithsonianmag.com/science-nature/The-Spotted-Owls-New-Nemesis.html?c=y&page=2

The book "Signs of Life: How Complexity Pervades Biology" by Sole and Goodwin has an interesting discussion that immediately brings to mind the barred owl/spotted owl issue. Chapter 7 of the book describes work being done by a Japanese researcher named Kaneko who developed and explored a modeling concept called "coupled map lattices." The lesson from these models is that when habitat is abundant, competing species operate within the "coexistence regime" but when habitat becomes scarce the model switches to a new attractor and operates in the "exclusion regime." This model strongly supports the idea that retaining more habitat increases the likelihood that spotted and barred owls can coexist, and if we eliminate reserves or continue to log suitable habitat in the matrix, then barred owl may competitively exclude and extirpate the spotted owls. Similar results are demonstrated in resource competition models described by Tilman, Lehman, and Thompson. 1997.[215]

XVI. SISKIYOU MOUNTAIN SALAMANDER

The proposal to eliminate the survey and manage program and to allow for ground-disturbing activities in the majority of Siskiyou Mountain Salamander (SMS) sites managed by the BLM may directly contribute to the need to list the species under the Endangered Species Act (ESA). Implementation of the action alternatives in the DEIS would undermine several key elements of the 2007 SMS Conservation Strategy that were deemed necessary in order to "maintain well-distributed populations" and "avoid a trend towards listing under the ESA."

The BLM is planning to eliminate the Adaptive Management Area (AMA) land use allocation that contains 67% of known SMS sites according to page 12 of the 2007 SMS Conservation Agreement to which the BLM is a party. The BLM is also proposing to significantly reduce the width of Riparian Reserves that were relied upon as a selection criterion for determining "high priority" SMS sites.

Page 5 of the SMS 2007 Conservation Agreement and page 5 and 40 of the 2007 Conservation Strategy indicate that "*significant changes in Forest Service or BLM land-use allocation within the area of the conservation strategy"* must trigger *"immediate review of the Conservation Agreement."*

Page 3 of the Conservation Agreement acknowledges, *"habitat loss, degradation and additional fragmentation of discrete populations are all potential threats to the species."* The BLM RMP action alternative may directly contribute to all three of these threats to species persistence.

Page 4 of the Conservation Strategy indicates that the location of reserves (including Riparian Reserves) influenced the selection of high priority SMS sites and page 18 indicates that an objective of the strategy was to *"utilize the existing federal land use allocations as a foundation*

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[215] Tilman, Lehman, and Thompson. 1997. Plant diversity and ecosystem productivity: theoretical considerations. Proceedings of the National Academy of Sciences. 94:1857-1861. http://www.cedarcreek.umn.edu/biblio/fulltext/t1694.pdf. See also, Tilman, D. and P. Karieva, Eds. 1997. Spatial Ecology: The Role of Space in Population Dynamics and Interspecific Interactions. Monographs in Population Biology, Princeton University Press. 368 pp. and Valenti D., Fiasconaro A., Spagnolo B. Pattern formation and spatial correlation induced by the noise in two competing species http://arxiv.org/PS_cache/cond-mat/pdf/0401/0401424v1.pdf.

for providing a high likelihood of continued persistence." This objective, and the underlying assumptions of the Conservation Strategy, are undermined by BLM plans to abandon the land-use allocations of the NWFP.

Page 17 of the Conservation Strategy indicates that it rests upon the reasonable assumption that *"clearcut logging is no longer carried out on Forest Service or BLM lands within the range of this species."* The RMP DEIS renders this assumption invalid.

Please note that page 21 of the Conservation Strategy indicates *"if intervening lands become highly disturbed and unsuitable habitat conditions predominate, connectivity to retain interacting individuals across the landscape may need to be re-addressed."*

Page 21 of the Conservation Strategy also notes "long-term effects on the species from federal land management of occupied salamander habitat sites that are not chosen as high priority sites are unknown." The RMP DEIS does not disclose or analyze the uncertainties associated with BLM plans for non-high priority SMS known sites.

Please note that the January 24, 2008 Federal Register Notice by the USFWS denying ESA protection to SMS specifically states that "*given the stability of Federal Land and Resource Management Plans and the Northwest Forest Plan since its establishment in 1994, we assume that significant changes to current land management practices on Federal lands are not likely to occur within 20 years*."[216] This RMP DEIS renders that assumption invalid.

The USFWS also relied upon the belief that SMS management would include *"NWFP Matrix Standards and Guidelines [that] are designed to provide for important ecological functions such as dispersal of organisms, carryover of some species from one stand to the next, and maintenance of ecologically valuable structural components…"* 4388. The BLM RMP revisions undermine the NWFP conservation strategy relied upon by the USFWS in its determination that SMS need not be listed.

Additionally, as stated by the USFWS, the "*Survey and Manage guidelines have provided additional security for salamander populations across the vast majority of the range of the Siskiyou Mountains salamander.*" 4390. That security would be removed under every BLM RMP action alternative.

The USFWS determination not to list SMS under the ESA specifically mentions the 2007 Conservation Agreement and its assumption that *"many additional populations will continue to persist in reserved lands and in Matrix where habitat is retained for other reasons."* 4390. As discussed above, the BLM is proposing to reduce the size of Riparian Reserves and eliminate Matrix tree retention standards that were relied upon in both the Conservation Agreement and in the USFWS listing assessment.

XIII. PROPOSED TO BE LISTED SPECIES

Original RMPs under the NFP required the protection and conservation of proposed to be listed species. The new purpose and need for BLM WOPR eliminates this category of species for conservation mandates (likely overlooked in No Action Alternative). There is no analysis in the

[216] Vol. 73, No. 16. 4381.

DEIS of these particular limbo species. These species would be considered Bureau Sensitive Species, but the BLM states that it will only be providing conservation measures for these species to the extent that they are compatible with O&C Act purposes. Proposed to be listed species, deserve ESA protections, but the FWS is unable to address these protections given other higher priorities. These species should deserve special treatment under the plans, as they did under the NFP. Merely conserving to extant compatible with the O&C Act will lead to conflicts with the ESA, and potential future listings of these species.

OFF ROAD VEHICLES

While there is responsible Off Road Vehicle (OHV) use in western Oregon, illegal off road vehicle (ORV) use is predictable, widespread, and systemic on some BLM lands in the analysis area.

> *In this analysis, the BLM assumed that OHV users would operate vehicles consistent with BLM decisions about OHV use. Although the BLM has some site-specific and anecdotal information about illegal OHV use, the BLM does not have a basis for predicting the location or effects of any widespread or systemic illegal OHV use. – DEIS, 321*

Throughout the DEIS, the BLM refuses to analyze or disclose the significant, predictable, ongoing impacts of illegal off-road vehicle (ORV)[217] use. There is no rationale basis for the agency's contention that off-road vehicle users will abide by BLM rules and regulations.

Off-road vehicle damage to meadow and riparian habitats is particularly pronounced, significant, and predictable. Numerous meadow and riparian sites have been blocked or rehabilitated by the BLM on a continuous basis, only to be trashed by motorized use again and again.

The analysis contained in the DEIS repeatedly assumes that off-road vehicle damage is limited by steep forested landscape, yet page 623 of the document acknowledges that in "most of the interior south, the ability to track numerous different routes across the open space can lead to degradation and erosion…."

Rather than disclosing and analyzing the foreseeable impacts of illegal ORV use, the DEIS repeatedly claims that "the BLM does not have a basis for predicting the location or effects of any wide spread or systemic illegal OHV use." This is not an accurate statement. By observing past illegal OHV impact acres, it is reasonable to assume that sites that have been repeatedly trashed will be trashed again. Additionally, the BLM ignores the need to create an ORV enforcement strategy rather than relying on a strategy of user compliance that has been proven ineffective.

Please note that there is at least one website dedicated to advocating that the public violate BLM travel management policies in the Medford District.[218]

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[217] Please note, the BLM refers to such vehicles as "off highway vehicles" (OHVs) when it is much more accurate to describe them as "off road vehicles" (ORVs).

The agency's reliance on regulations and land use allocations to mitigate significant and foreseeable ORV damage to watersheds, wildlife and recreation has been proven ineffective. Approximately 75% of ORV riders regularly ignore regulations such as speed limits and closures. *See, e.g.*, Testimony of Jack Gregory, Special Agent in Charge (Ret.) USFS Southern Region, Before Subcommittee on National Parks, Forests, and Public Lands, U.S. House of Representatives, March 13, 2008, (hereafter "Gregory Testimony"). The testimony at 8 states:

> *Even if agency ORV route planning makes sense in downtown offices and public meeting rooms, there must also be a well-funded on-the-ground monitoring and enforcement component. This is where [agencies have] failed time after time. Once plans are drawn up and implemented, there is not adequate funding for field resources to police this activity where it's actually occurring. Throughout my years of working for the FS, I witnessed the development of many good plans, but a failure to provide the field resources to properly execute them. It is unfortunate that the FS is long on "plans" and seemingly good intentions, but very short on effective field implementation, particularly with providing necessary LE [law enforcement] resources for dealing with serious problems.*

Similarly, another law enforcement officer has publicly testified "about the growing burden on local law enforcement caused by a growing minority of reckless OHV riders and the need for effective management." Statement of Frank Adams, Executive Director of the Nevada Sheriffs' and Chiefs' Association, at the Senate Energy and Natural Resources Off-Highway Vehicle Management on Public Lands, Jun 2008. Sheriff Adams noted that "any kind of public lands law enforcement [is] challenging, but particularly with OHVs given the technology that allows users to cover vast distances in remote areas over a short period of time." *Id*. The Sheriff observed:

> *With such great land-masses and so few enforcement officers, it does not take a large group of individuals disobeying federal and local laws to cause a problem. We have determined that a small number of individuals riding OHVs that use our outdoors for recreation are causing the problems. They are reckless in the operation of their vehicles; they disregard instructions to stay off of sensitive lands and are destructive to the facilities that are provided for their use. This is evident by the increase in the number of injuries that are being reported and the increase in the number of search and rescue mission that occur. We see blatant disregard for areas that are posted as "do not travel" as they have been designated sensitive areas. Part of the problem that encourages this reckless behavior stems from the feeling of anonymity that many of the OHV riders have because there is no way of identifying them or their vehicles. Most States do not require a license plate for such vehicles. Those States that do require tagging, the tags are not large enough to be seen with out being in almost on top of the vehicle. If you are able to determine that there is a tag on the OHV, determining the tag number is almost impossible. Id*. at 3.

While assuredly many ORV riders have lawful intentions and "follow the rules," a disturbingly high percentage show a pronounced preference and practice among off-road vehicle

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[218] http://www.grantedright.com/Home_Page.html

recreationists to travel cross-country and ride off of legal routes. Indeed, this conclusion is derived from publically available data generated by the ORV community itself.

Monaghan and Associates, a marketing research firm, conducted a 2001 study at the behest of the Colorado Coalition for Responsible OHV Riding, a coalition of off-road vehicle representatives, environmentalists and public officials. *See* Status and Summary Report; OHV Responsible Riding Campaign. Researchers surveyed Colorado off-road vehicle riders through a series of three focus groups.

Monaghan and Associates found that the majority of off-roaders understand that staying on designated routes is "fundamental trail etiquette" and that going off trail is not "correct" off-road vehicle behavior. *Id*. at 11. The survey revealed, however, that regardless of this knowledge "as many as two-thirds of adult users go off the trail occasionally." *Id*. A significant percentage of riders, 15-20%, admitted to frequently breaking the rules and riding off of legal routes often. *Id*. Survey participants also stated that "others" ride off-route and cause most of the damage. *Id*. at 7. "Many reluctantly admit to having gone off trail 'a couple times' but felt that it is permissible if rarely done .... '*just this one time. '" Id.* (emphasis in original). Tellingly, the report concluded: "In a 'nutshell,' it is our premise that further ***information*** and ***education*** per se - will <u>not</u> result in substantial behavioral change." *Id*. at 1 (emphasis in original).

Similar results were found in Utah. In 2002, the Utah Division of Parks & Recreation commissioned Utah State University to survey riders to determine their "OHV uses and owner preferences." The university conducted a telephone survey of 335 riders from a random sample of the 50,676 people who registered off-road vehicles with the state in 2000. *See* Fisher, Andrea L., Dale J. Blahna, and Rosalind Bahr, 2001; Off Highway Vehicle Uses and Owner Preferences in Utah. Logan, Utah. Utah State University, at iv,

The Utah report reveals that an inordinate number of riders prefer to ride "off established trails." Of the ATV riders surveyed, 49.4% prefer to ride off established trails, while 39% did so on their most recent excursion. Of the dirt bike riders surveyed, 38.1% prefer to ride off established trails, while 50% rode off established trails on their most recent excursion. *Id*.

It should be noted that pro-ORV groups commissioned both of the studies cited above. Additionally, these data are ratified by two other recent reviews. In 2006, the Montana Fish, Wildlife and Parks received survey responses from 446 owners of registered off-road vehicles. *See* Lewis, M.S., and R. Paige. 2006: Selected Results From a 2006 Survey of Registered Off-Highway Vehicle (OHV) Owners in Montana. Responsive Management Unit Research Summary No. 21. Prepared for Montana Fish, Wildlife and Parks. Among the full sample of respondents, almost a quarter, 23%, "never" or "sometimes" comply with Montana's law against cross-country driving even though off-route riding has been illegal there since 2001. *Id*. at 2. Over 28% "never" or "sometimes" avoid riparian areas and wetlands, in violation of rules for federal and state public lands in Montana. Sixty-four percent of those surveyed have used an off-road vehicle while hunting. *Id*. at 2. The majority of this hunting subset admits to illegally riding cross-country — over 58% have traveled off of legal routes to retrieve downed game. *Id*. In the context of the assumption that land use allocations and designated BLM routes will cure unlawful ORV behavior, this figure is notable to the extent that the survey found that "[t]wo-thirds of the respondents who have used an OHV when hunting reported they have seen written materials (e.g., brochures, posters, articles, etc.) that address the topic of hunting and responsible OHV

use." *Id*. The survey concluded, therefore, "most OHV owners in Montana have been exposed to a variety of safety and responsible use information." *Id*. at 4. Regardless of this "education," the survey noted:

> *OHV owners do not always follow important guidelines for responsible use when operating OHVs. For instance, about a third of the respondents who have used an OHV when hunting disagree or strongly disagree that "OHV users should NOT travel off legal routes to retrieve harvested game." Only 42 percent of the respondents who have used an OHV when hunting reported they always follow this guideline. Nearly 7 percent reported they never follow this guideline. And, 52 percent reported they follow this guideline sometimes. Id*. (emphasis in original).

Echoing these findings are the results of a 2003 survey of Wisconsin ATV users. A study of "motivations and attitudes" by graduate student Robert A. Smail at the University of Wisconsin - Steven's Point, included a survey of user preferences for riding and found nearly two-thirds of respondents prefer to ride off maintained trails.

> *[S]urvey respondents were asked to indicate where they prefer to ride their ATV. Of the five possible choices, 'On maintained trails' (28.5%) ranked third. The top choice was 'On user created trails' (33.3%) followed closely by 'Cross country, off trails and roads' (32.0%). In other words, 65.3% of all users prefer to ride off of maintained trails." Id. Dr. Smail concluded that the survey results demonstrated that past orthodoxies premised on education and the assumed "positive peer-pressure" flowing from membership in established "rider clubs" are not adequate to generate trail-riding compliance; they had "no influence." Id. at 69. Rather, "[t]hese results indicate that messages promoting responsible ATV riding or use will need to be reformulated and law enforcement will need to be increased in order to prevent resource damage and user conflict.*[219]

Finally, the U.S. Fish and Wildlife Service found a near universal disregard for motorized guidelines when the BLM experimented with a "voluntary off-road vehicle route system" in Nevada. The area in question serves as a refuge for the disappearing Sand Mountain Blue butterfly, a species proposed for listing under the Endangered Species Act. A 2006 monitoring report compiled over a three-year period found that "98 percent of all existing routes continued to be used and new routes were created, indicating an ongoing expansion of habitat degradation." Nevada Fish and Wildlife Office, U.S. Fish and Wildlife Service. 2007. 12-Month Finding on a Petition to List the Sand Mountain Blue Butterfly (*Euphilotes pallescens ssp. arenamontana*) as Threatened or Endangered with Critical Habitat. Federal Register, Vol. 72, No. 84. *See* pages 24260-61. The study also found that "about 50 percent of all noncompliance points occurred *at or near red carsonite posts installed to alert riders that travel was discouraged in areas behind the posts*" to protect sensitive butterfly habitat. *Id*. at 24261, (emphasis added). The cumulative impacts of such "noncompliance points" were four-fold as each discouraged route experienced multiple incursions. *Id*. The FWS noted that "[h]igh levels of noncompliance occurred *from the*

[219] Robert A. Smail, July 2007, Wisconsin All Terrain Vehicle Owners: Recreational Motivations and Attitudes Toward Regulation, A Thesis Submitted in partial fulfillment of the requirements of the degree Master Of Science In Natural Resources Resource Policy And Planning College Of Natural Resources University Of Wisconsin, Stevens Point, Wisconsin, copy obtained from author.

onset of implementation of the voluntary system, and the number of incursions into habitat outside of the encouraged routes *increased* in 2006. *Id*. at 24260-61.

Providing a broader overview, in September 2007, the Izaak Walton League, one of the country's oldest conservation groups, released a study of state game and fish managers revealing that 83% of wildlife managers have seen "resource damage to wildlife habitat" caused by ORVs and 72% cited "disruption of hunters during hunting season" as another impact from ORVs. "Off-Road Vehicle Impacts on Hunting and Fishing, The Izaak Walton League of America, 2007, at 15.

Similarly, fully 60% of fisheries managers deemed ORV use to generate adverse impacts on Riparian resources. *Id*. at 16. Notably, 41% of wildlife and 50% of fisheries managers do not believe that current standards and protections adequately protect the resources they are responsible for with the perceived attitude of lawlessness playing a central role: "We have numerous rules and regulations, but many ORV riders have an attitude that they should not apply to them and many just ignore some rules because they want to ride someplace. It increases law enforcement effort and takes time from other areas." *Id*. at 15. "There seems to be a misconception that just because you own a piece of equipment that can go almost anywhere, that you are entitled to go almost anywhere including public land dedicated to wildlife management. This needs to change." *Id*. at 16. Further, "They go where they please, when they please, if they please. Not all do this, but many do. They cause significant upland erosion as well as stream side and in-stream damage." *Id*. "Many ORV riders seemingly have no conservation ethic or appreciation for habitat management or understanding of the damage they cause." *Id*. Another said: "While there is regulatory ability, there is insufficient enforcement response capability to adequately respond to illicit ORV use." *Id*. at 15.

In a tracking review on federal land managers, in December 2007, the Public Employees for Environmental Responsibility ("PEER") released the first-ever survey of federal rangers' views on off-road vehicle issues. "Rangers for Responsible Recreation: Off-Road Vehicle Issues Survey of SW Law Enforcement Professionals - Bureau of Land Management (BLM) & Forest Service (FS), 2007.

Strikingly:

> *• 91% of respondent rangers agree "off-road vehicles present a significant law enforcement problem in my jurisdiction";*
>
> *• More than half (53%) feel "off-road vehicle problems in my jurisdiction are out of control"; and*
>
> *• 74% say that off-road abuses "are worse than they were five years ago" while fewer than one in six (15.2%) believe the situation is improving. Id. at 1.*

Moreover, the survey found that rangers believe their agencies are unequal to the task of controlling ORV abuse:

> *• 62% believe their agency is not "prepared to deal with the ORV problems we are experiencing"; and*

• 78% do not think their department "devotes adequate resources to cope with ORV problems." Id. at 3.

An article published in the Washington Post entitled "'Off-Road Rage' Climbs as Trails Get More Crowded," was published on August 12, 2008, and appeared in section A at page 2. The report provides additional documentation of many ORV riders' unlawful — even violent — disregard of the rules and regulations applicable to ORV use on public lands.

Additionally, in the Roseburg BLM District, the White Rock OHV area is listed in Table N-287 (Appendix N, page 1284) as "managed as Extensive Recreation Management Areas (ERMA)" under alternatives C and D. However, this is the only place in the entire DEIS where the White Rock OHV area is mentioned. There is no NEPA analysis of the environmental impacts of creating this new OHV area. In fact, the DEIS makes it seem as if it is an existing OHV emphasis area. It is not. Local OHV enthusiasts have asked the BLM to create the White Rock Emphasis Area, but the Roseburg BLM has not acted on this request. The BLM cannot now choose alternative C or D and create it without any NEPA analysis.

OHV recreationists have severely degraded this area by riding off trails, riding through wetlands, and by creating play mud-bogs in areas like Yellow-Jacket Springs. They have violated closed and barricaded roads to do this. The Roseburg BLM has admitted they are powerless to enforce current regulations that forbid resource damages. Making a new White Rock OHV area, without NEPA analysis would only exasperate this problem.

I. THERE IS GREATER DEMAND FOR NON-MOTORIZED RECREATION THAN FOR EXPANDED ORV OPPORTUNITIES.

As illustrated on Table 3-126 (page 448) of the DEIS, there are currently three times as many participants interested in wildlife viewing and nature study on BLM lands than in motorized off-highway vehicle travel. Similarly, driving on *existing BLM roads,* camping and picnicking, non-motorized travel and hunting all draw more than one million participants yearly and significantly exceed the demand for motorized ORV travel.

In the Medford District the demand for non-motorized recreation compared to ORV use is even more pronounced. Page 462 of the DEIS projects 85,000 hiking trail users at sites within 30 minutes of Medford and only 18,589 ORV visits in the same area. Within an hour of Medford the BLM anticipates 137,371 hiking visits and only 30,041 ORV participants.

Please note that page 493 of the DEIS clearly establishes that "the most common outdoor recreation activities, requiring the least equipment or specialized skill, have the greatest participation numbers, and…provide the greatest total net benefit."

Given that the public prefers non-motorized recreation and that it provides the most social and economic benefits, it is arbitrary and capricious for the BLM to continue to emphasize ORV use

on tens of thousands of acres of public lands to the detriment of terrestrial and aquatic forest resources, neighboring landowners and other forest users.

II. BLM ORV ROUTE DESIGNATION CRITERIA

Page 638 of the DEIS indicates that the agency is aware of the route designation criteria in 43 CFR 8342 which directs the agency that ORV "[a]reas and trails shall be located to minimize damage to soil, watershed, vegetation, air, or other resources of the public lands and to prevent impairment of wilderness suitability." Yet all of the action alternatives appear to codify ORV routes that directly harm soils, streams, riparian vegetation, and lands with wilderness character.

Page 638 also acknowledges that 43 CFR 8342 directs the BLM that ORV"[*a]reas and trails shall be located to minimize harassment of wildlife or significant disruption of wildlife habitats. Special attention will be given to protect[ing] endangered or threatened species and their habitats."* Yet the action alternatives appear to codify numerous ORV routes that directly harm listed species such as the northern spotted owl (NSO).

The DEIS must analyze, disclose, avoid, or mitigate the impacts of foreseeable ORV noise harassment from proposed motorized use on NSO reproductive success and behavior patterns.

We bring to your attention the following language from pages 82-83 of the Rogue River/South Coast Biological Assessment FY04-08 for the Medford District BLM and the Rogue River-Siskiyou National Forests, July 11, 2003:

> *Noise above ambient levels may disturb or flush from their nest site, could cause a juvenile to prematurely fledge or could interrupt foraging activity. While the effects of noise are not clear, any of these impacts could result in the reduced fitness or even death of an individual bird due to missed feedings, or reduced protection of the young if adults are disturbed.*
>
> *There has been little data regarding the impacts of noise on spotted owls and other listed species. However, the Service has recently analyzed the available data on spotted owls, murrelets and other species (USFWS 2003c; Appendix D), and has consulted species experts who have worked extensively with spotted owls to determine the extent to which above-ambient noises affect spotted owls. The results of this analysis indicate that spotted owls may flush from their nest or roost or may abort a feeding attempt of their young when the following activities occur up to the specified distances (Table 11). The Lacy Washington office of the Service in two biological opinions has used this data and it is the Service's current understanding of harassment distances based on the best available science. Consequently, it will be incorporated into this Opinion as current guidance for harassment distances for various activities as it relates to adverse effects to the spotted owl from harassment due to disturbance. If the Services' understanding of these distances changes, adjustments to these distances may be recommended in the future.*
>
> *Above-ambient noises further than these Table 11 distances from spotted owls are expected to have ether negligible effects or no effect to spotted owls. The types of reactions that spotted owls could have to noise that the Service considers to have a*

negligible impact, include flapping of wings, the turning of a head towards the noise, hiding, assuming a defensive stance, etc.[220]

The risk to spotted owls from noise disturbance is tied to the timing of the activity and is highest when adults are defending young or eggs in a nest or are feeding and protecting recently fledged juveniles. During this period, the separation of adults and their young could result in death or injury to the young as a result of predation. The leading known causes of mortality in juvenile spotted owls are starvation and predation by great horned owls (Miller 1989; USDI 1990a~listing document). The time period when adults or offspring are unable to move away from threats or noises is between the time that the eggs are laid and when the young can fly, which is generally about two weeks after the young fledge from the nest. After the young are able to fly, we assume that adults and young may move, but would stay together if annoyed by noise from the proposed action.

The timing of these development benchmarks (nesting and fledging) varies geographically, although spotted owls are generally believed to start laying their eggs around the beginning of March. In Oregon, data based on fledge dates indicate June 30th is the date by which almost all juveniles are capable of flight. This 1 March – 30 June period of vulnerability is called the "critical nesting period."

Activities that may result in above-ambient noise levels include the use of mechanized tree harvest equipment, road hauling, aircraft/helicopters, heavy equipment, hydraulic hammers, blasting, and road construction and maintenance equipment. In some instances, noise levels produced by these activities can remain above ambient levels out to one mile (for blasting) and still affect spotted owls. If potentially disturbing activities are implemented during the spotted owl critical nesting season (March 1 – June 30) within the prescribed distances in Table 11 of occupied or unsurveyed spotted owl habitat, those activities may adversely affect spotted owls by causing adults to flush from their nest site, abandon a nest, or cause juveniles to prematurely fledge, interrupt foraging activity, or result in increased predation due to less protection when the adult flushes. After June 30, it is presumed that most fledgling spotted owls are capable of sustained flight and can avoid harmful disturbances; thus, disturbance from proposed actions within the prescribed distances shown in Table 10 of known activity centers or unsurveyed suitable habitat, and between July 1 and September 30, may affect, but are not likely to adversely affect, spotted owls.

The SW Oregon administrative units typically utilize minimization measures to avoid adverse impacts to nesting spotted owls wherever they occur, but it is likely that some adverse impact may occur to owls due to disturbance in unsurveyed habitat within or adjacent to project areas. The SW Oregon administrative units and the Service, used an average of the new Service disturbance distances to assess the potential impacts associated with tree harvest activities (the average of disturbance distances associated with tree harvest =100 yards - Table 10), they estimated 40 percent of an average zone of 300 feet around a standard project area (presumed to be 50 acres) would be NRF (as

[220] USFWS 2003.

determined by the percentage of suitable habitat in the matrix according to the Environmental Baseline Tables in the Assessment).

We also bring to your attention that page III-85 of the Rogue River-Siskiyou Draft Environmental Impact Statement for Motorized Vehicle Use indicates that noise disturbance from OHV use is roughly the equivalent of that which occurs from chainsaw use:[221]

Page 638 of the DEIS further acknowledges that 43 CFR 8342 directs the BLM that ORV:

> *"[a]reas and trails shall be located to minimize conflicts between of[f]-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors."* Yet the BLM continues to emphasize and prioritize ORV use near homes and communities. As stated on page one the May 5, 2009 comments of the City of Jacksonville regarding the Draft Timber Mountain Recreation Management Plan DEIS, "[*n]oise from BLM sponsored OHV trails is not compatible with the existing and proposed non-motorized reaction of Jacksonville land. The BLM must provide sufficient distance and buffers between BLM trails and Jacksonville land so that OHV noise does not disturb the peace and quiet desired by hikers, equestrians, picnickers and other non-motorized recreational pursuits."*

With regard to public off-road vehicle travel the BLM must analyze the "closed" option for the as a first step to protect sensitive public lands from motorized vandalism and associated illegal activities (trash dumping, poaching, meth labs, marijuana gardens, soil/plant destruction, invasive plant introduction, pathogen introduction of *P. lateralis*, and mobilization of fish killing fine sediment).

Circumstances have changed since 1995 with exponential growth of motorized vehicle activity on public lands. Deferring analysis for basic RMP decision about motorized use designations would jeopardize other outcomes for soil productivity, timber production, quality traditional recreation, fire prevention, public safety, endangered species recovery, and water quality. Deferring basic analysis and motorized use designations would not be consistent with BLM directives to minimize damage from motorized use. Analysis needs to clearly distinguish between unauthorized motorized use that damages lands (vandalism) and motorized use that is currently authorized (recreation). Lumping these creates huge amounts of confusion and misinformation.

It is prudent to single out the Medford District for motorized use analysis and subsequent designations with RMP decision as the Medford District has had unprecedented and ongoing damage from motorized users due to its context. A network of historic but unauthorized mining roads are regularly used by off highway vehicles to access fragile Jeffrey pine savannas, meadows, and wetlands where rare plants are destroyed and meadow hydrology irreparably damaged. Similarly, a large system of abandoned native service logging roads are regularly damaged during the wet season to access off road areas within timber stands. The French Flat ACEC on the Medford District receives nearly daily damage by off road vehicles despite official

[221] http://www.fs.fed.us/r6/rogue-siskiyou/projects/travel/deis.shtm

vehicle closures to protect *Lomatium cookii*, a federally listed species. Similar damage occurs on most serpentine lands in the Medford District with naturally sparse vegetation, mining history, and gentle slopes that make these areas attractive to motorized vandals. The interspersion of hundreds of home-owners adjacent Medford District BLM lands provides for illegal motorized access that is largely unregulated.

Analysis must inform the public and decision makers that ongoing and largely unregulated motorized access to Medford District BLM lands is connected to illegal and undesirable activities such as: destruction of critical habitat for coho salmon; destruction of listed plant species critical habitat; increased soil compaction; destruction of upland and riparian plants; animal poaching; timber theft; toxic trash dumping; meth labs; stream water pollution; marijuana gardens; rodenticide use that kills spotted owls, fishers, foxes; fertilizer applications that poison streams with excessive nitrates; stolen vehicle abandonment and stripping; wildfire ignitions; chronic illegal occupancy; and illegal mining. All of these transgressions have been repeatedly reported on Medford District lands by our staff and others. BLM cannot dismiss this as a "law enforcement" issue because no amount of law enforcement could effectively reverse current trends and impacts because of the network of off road activity not visible from most system road. The DEIS needs to analyze a combination of actions for the Medford RMP to effectively address motorized vehicle activities that can easily undermine other resource allocations. Streams and wetlands in the Medford District predicted to be protected from logging are being severely damaged with off road vehicles. In severe cases, cumulative soil impacts from OHV and past logging would exceed the 15% soil compaction standard making some timber stands off limits for programmed harvest.

We recommend that motorized analysis include a combination of spatially explicit "closed" designations, legal administrative prohibitions, law enforcement, physical barriers, coordination with adjacent land owners (especially the Forest Service), signs, agency monitoring, citizen monitoring, outreach, and education. We agree that intensive recreational development for off highway vehicle could be deferred from this RMP decision, but ongoing off highway vandalism must be effectively reduced. Currently, it is not practical to have "limited" off highway use areas on the Medford District except for areas currently being analyzed for legitimate recreation (e.g.,Johns Peak, Quartz Creek). Managed recreation and unregulated vandalism are two distinct issues and must be kept separate. Analysis assumptions that areas designated "closed" would not have significant impacts is false, however, anticipated off highway damage would be accounted for in "cumulative effects" that would include "illegal" use.

Recovery actions need to be incorporated into an alternative in the DEIS. At a minimum, coho passage issues both on and off public lands need to be addressed in systematic and timely manner. Similarly, reductions in non-point pollution from roads and off road use need to by systematically addressed with spatially explicit analysis. Priorities for restoration and protection would focus on spatially explicit occupied critical coho habitat. An annual timetable for specific recovery actions must be incorporated into analysis. Habitat quality contingent for increasing coho abundance is directly correlated with road densities in small 6th or the coho spawning watersheds.

III. THE DEIS UNDER-ESTIMATED THE ECONOMIC VALUE OF RECREATION

Recreation and other amenity values associated with forest conservation, not only provide direct economic benefit to those who enjoy those activities, but there are indirect benefits for the whole economy. Public land recreation and amenities like clean water and scenic views, help attract people to the region, help create jobs in non-recreation sectors, and help grow the whole economy.

Speaking about the natural amenities in the Northern Rockies, the National Parks and Conservation Association says:

Three million acres of national parks and protected wildlands—and eight million more of other public lands— give rise to our rivers and lakes, and support world-class biodiversity as well as ski hills, hiking trails, and fishing access sites.

Combined, these amenities drive a powerful economic engine, fueled by a core of national parks and adjacent protected lands. Tourism brings more than $3 billion to the Crown each year—Glacier National Park alone generates more than $110 million in new money to local economies, not to mention those entrepreneurial tourists who choose to relocate and start businesses here.

The stories in this report point to the Crown's spectacular wildlife, its scenic appeal, and its unmatched outdoor recreation as anchors to which our economic success is tethered.

[A] growing number of "footloose" businesses—outfits that locate where they choose, often far from markets, but close to amenities that deliver a high quality of life.[222]

From this perspective, recreation is not just another industry that provides a few direct jobs, rather recreation and amenities are an engine of economic growth across diverse economic sectors. The EIS needs to recognize this.

In 2012 Oregon BLM lands recreation generated $223 million in economic activity while timber production only provided $23 million. DEIS at 472.

"*The most common outdoor recreation activities, requiring the least equipment or specialized skill, have the greatest participation numbers, and...provide the greatest total net benefit."* [223] BLM should therefore reduce emphasis on OHV recreation. These noisy, dangerous, polluting machines displace and conflict with other low impact recreation. Only a small fraction of all recreation visits are associated with OHVs. There were 10.8 million recreation participants on Oregon BLM lands in 2013. Only 826,556 "participants" utilized BLM lands for ORV travel in 2012, while 2,564,574 "participants" visited Western Oregon BLM lands for wildlife viewing and nature study.

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[222] NPCA 2012. Pathways to Prosperity - The Natural Roots of Economic Success in the Crown of the Continent http://www.npca.org/assets/pdf/Pathways-to-Prosperity-Final.pdf. See also, Todd Cherry, Dan Rickman, 2010, "Environmental Amenities and Regional Economic Development", Routledge, 336 pages. http://www.gbv.de/dms/zbw/597954267.pdf ; https://books.google.com/books?id=PWiNAgAAQBAJ&printsec=frontcover#v=onepage&q&f=false

[223] DEIS at 493.

Oregon/BLM recreation related jobs are growing at a much faster rate (and with less volatility) than are timber jobs. DEIS at 567.

SALVAGE LOGGING

I. BLM CANNOT ADOPT A PROGRAM OF SALVAGE LOGGING WITHOUT TAKING A HARD LOOK

This is a programmatic EIS and BLM is clearly contemplating a program of salvage logging where commodity extraction trumps ecological values after natural disturbance events, including within reserves. This will conflict with a wide variety of management objectives (late successional habitat, complex early seral habitat, recovery of listed species, watershed protection, carbon storage, community stability, fire hazard reduction, etc.)

This program of salvage logging will cause very significant cumulative effects. BLM has never produced an adequate programmatic analysis of the effects of salvage logging, yet significant salvage logging was conducted during the last 20 years without any credible programmatic analysis of its effects on late successional habitat objectives. There is significant new information about the adverse effects of salvage logging since the last programmatic NEPA analysis was done. Now is the time to take the required "hard look" at the effects of salvage logging, and the time to adopt scientifically sound and ecologically appropriate policies for management of forest ecosystems following natural disturbance.

II. SALVAGE LOGGING IS INCOMPATIBLE WITH ECOSYSTEM MANAGEMENT

The DEIS (p 434) says "In all alternatives, salvage would take place in the Harvest Land Base after a high or moderate severity fire event." And under Alternative C "Within the Late-Successional Reserve, the BLM would conduct timber salvage after disturbance,…" (DEIS p 62). This is not consistent with the best available science regarding how to achieve ecological objectives in reserves. BLM was a cooperating agency in the Interior Columbia Basin Ecosystem Management Project which asked (and concluded) –

> **Can salvage timber sales be compatible with ecosystem-based management?**
> … Our findings suggest that this type of harvesting is not compatible with contemporary ecosystem-based management. Ecosystem-based management would emphasize removing smaller green trees with greater attention to prevention of mortality rather than removal of large dead trees.[224]

The DEIS does not fully and accurately describe the benefits of retaining large dead trees and the benefits of natural recovery after natural disturbance, nor does the DEIS fully and accurately describe the adverse effects of salvage logging.

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[224] Quigley, Thomas M., tech. ed. 1996; The Interior Columbia Basin Ecosystem Management Project: Scientific Assessment.) Gen. Tech. Rep. PNW-GTR-382; Page 178.

We strongly urge BLM to adopt an alternative that prohibits post-disturbance salvage logging in all reserves (only allowing felling of imminent hazard trees in areas of high public use). Based on current ecological science, this is the best way to meet objectives for reserves. Large dead trees which are the target of salvage logging are old growth structurally elements that provide significant ecological value even if they are not surrounded by green trees. Large snags provide "life boats" allowing many late successional organisms to persist in "young" forests. Science shows that best way to develop complex old forest is to maintain complex young forest and allow forest to regenerate naturally and move through succession without interference. Salvage logging is adverse to reserve objectives because it removes late successional habitat components that take a long time to develop once they are removed and creates atypical simplified habitat structures and patterns.

BLM cannot take a hard look at the issues of snag habitat and complex young forests without considering the dynamics of snags and dead wood in natural forests. Natural young forests are typified by large amounts of dead wood. Salvage logging results in atypical and undesirable ecological conditions.

> Spies et al. (1988) reported that amounts of CWD were high in the youngest successional stages, were lowest in 60-80-year-old forests, and were high in old stands (< 500 years). After 500 years CWD amounts declined to an intermediate level. Spies and Franklin (1988) reported that CWD input may be low in young stands because of the small size of dead and dying stems. Volumes in these stands are often high, however, due to residual CWD from the previous stand.[225]

Jerry Franklin's long career studying old forests led him to the conclusion that salvage logging is not compatible with conservation of old growth ecosystems.

> There are implications for management of old-growth stands selected for perpetuation. Salvage logging is inappropriate since it removes at least two of the major structural components -dead and down- that are key elements of the system. In all likelihood, some of the more decadent, live trees would also be removed. Salvage logging is also inappropriate because of the damage inevitably done to root systems and trunks of the residual stand which results in accelerated mortality of trees and overall deterioration of the stand.[226]

We also urge BLM to minimize salvage logging in other areas including the timber management areas. The purpose of this recommendation is to realize the benefits of complex early seral

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[225] Lofroth, Eric. 1998. The dead wood cycle. In: Conservation biology principles for forested landscapes. Edited by J. Voller and S. Harrison. UBC Press, Vancouver, B.C. pp. 185-214. 243 p. http://www.for.gov.bc.ca/hre/deadwood/DTrol.htm.

[226] Franklin, J.F., K. Cromack, Jr., W. Denison, A. McKee, C. Maser, J. Sedell, F. Swanson, and G. Juday. 1981. Ecological characteristics of old-growth Douglas-fir forests. PNW-GTR-118. USDA Forest Service. PNW Research Station. February 1981.
http://www.fs.fed.us/pnw/pubs/gtr118part1.pdf
http://www.fs.fed.us/pnw/pubs/118part2.pdf

habitat which is one of the most under-represented forest habitat types in western Oregon. Unsalvaged, naturally regenerated, young stands are one of the rarest forest types in the Pacific northwest, and their biodiversity rivals that of old-growth forests.

> Indeed, naturally developed early-successional forest habitats, with their rich array of snags and logs and nonarborescent vegetation, are probably the scarcest habitat in the current regional [Pacific Northwest] landscape.[227]
>
> "There has been a loss of diverse young forests on all ownerships. … Conservation of diverse young forests has received little attention in forest policy."

Janet Ohmann; Science Findings, Issue 56; Seeing the trees for the forest: mapping vegetation biodiversity in coastal Oregon forests; (September 2003). http://www.fs.fed.us/pnw/sciencef/scifi56.pdf.

III. BLM NEEDS TO CONSIDER ALTERNATIVE APPROACHES TO SALVAGE LOGGING

In timber management areas BLM should consider alternative approaches to salvage logging modeled on the recommendations of the Beschta report. Specifically:

- prohibit post-fire logging AND roadbuilding on all sensitive sites, including: severely burned areas (areas with litter destruction), on erosive soils, on fragile soils, in roadless/unroaded areas, in riparian areas, on steep slopes, and any site where accelerated erosion is possible. We would add: Late-Successional and Riparian Reserves, and protective land allocations or designations including Botanical and Scenic River Areas;
- protect all live trees;
- protect all old snags over 150 years old;
- protect all large snags over 20 inches dbh;
- protect at least 50% of each size class of dead trees less than 20 inches dbh.[228]

BLM should also consider alternatives for salvage logging that address the recommendations in the following publications:

- *Society for Conservation Biology Scientific Panel on Fire in Western U.S. Forests. Reed F. Noss (editor), Jerry F. Franklin, William Baker, Tania*

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[227] Lindenmayer, David B. and Jerry F. Franklin. 2002. Conserving Forest Biodiversity: A Comprehensive Multiscale Approach. Island Press. Washington, DC: 69. *See also*, DellaSala, D.A., J.E. Williams, C. Deacon-Williams, and J.F. Franklin. Beyond smoke and mirrors: a synthesis of fire policy and science. Conservation Biology, Pages 976–986. Volume 18, No. 4, August 2004. http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/17521/Beyond%20smoke%20and%20mirrors.pdf

[228] *See* Beschta RL, Frissell CA, Gresswell R, Hauer R, Karr JR, Minshall GW, Perry DA, and Rhodes JJ. 1995. Wildfire and Salvage Logging: recommendations for ecologically sound post-fire salvage logging and other post-fire treatments on Federal lands in the West. Corvallis, OR: Oregon State University. Available at: http://www.fire-ecology.org/science/Beschta_Report.pdf.

Schoennagel, and Peter B. Moyle. Ecological Science Relevant to Management Policies for Fire-prone Forests of the Western United States. February 24, 2006. http://www.conservationbiology.org/sections/namerica/FireWhitepaper.pdf.

- *See also the published version, Reed F. Noss (editor), Jerry F. Franklin, William L. Baker, Tania Schoennagel, and Peter B. Moyle. 2006. Ecology and Management of Fire-prone Forests of the Western United States. Society for Conservation Biology Scientific Panel on Fire in Western U.S. Forests. August 2006. http://www.conbio.org/images/content_policy/2006-8_SCB_NA_Statement_Wildland_Fire.pdf.*

BLM in the DEIS at 212 states "The ability to conduct salvage harvest for purposes of protecting human health and safety within the dry forest would be available under all alternatives." We are concerned that this authority is not adequately constrained. We support felling of real and imminent hazard trees in areas that are frequently used by workers and the public (e.g., in developed recreation sites and along paved roads). However, we have too often seen hazard tree removal used as an excuse for commodity extraction in areas that are not a high priority for hazard removal (e.g., remote locations where people visit infrequently and/or risk exposure is brief periods such as passing by large snags along a remote road or trail). BLM should consider (1) felling and retaining hazard trees onsite for ecological benefits, (2) keep workers out of the way of hazards as a way to retain high value large snags; (3) recognize that the public is risk tolerant when they are visiting wild forests. The public does not want a sanitized recreational experience on their public lands.

The DEIS at 813 concludes "In northern spotted owl critical habitat in the Harvest Land Base, the No Action alternative and Alternative B, Sub-alternative B, and Alternative D would allow salvage operations that meet down wood and snag retention standards, the minimum level needed 'to conserve and restore habitat elements.'" We are concerned about "managing for minimums." BLM should be managing for optimal levels of key habitat elements such as large trees, and dead and down wood. This requires retaining abundant levels of green trees for long-term recruitment of high levels of snags. BLM should consider alternatives that meet DecAID 50-80%+ tolerance levels for species associated with dead wood and sensitive to low levels of dead wood.

Appendix B "Management Direction" regarding salvage logging raises several concenrs. It urges BLM to minimize commercial loss and deterioration" but it does not balance with objective with any of the significant trade-offs including: recovery of listed species; protecting soil, water, and watersheds; mitigating the landscape shortage of large snags in the checkerboard lands; mitigating the temporal "snag gap" caused by stand replacing disturbance; development of future complex habitat (early seral or late seral); or carbon storage.

IV. BLM MUST TAKE A HARD LOOK AT THE ADVERSE EFFECTS OF SALVAGE LOGGING

Salvage logging also causes a host of adverse effects associated with logging in general, e.g., watershed degradation, erosion, sedimentation, road impacts, habitat fragmentation, soil

compaction, visual blight, etc. Many of these effects are worse than green timber sales because the soil lacks structure and protection normally found in green forests.

Renowned fisheries expert James Karr said:

> … I joined eight other scientists to explore whether forests might be restored by logging soon after a fire. We had among us a wealth of knowledge across a wide range of fields. We pored over several decades of research but found nothing to show that fire-adapted forests might be improved by logging in the wake of a fire.
>
> In fact, we found just the opposite: Most plants and animals in these forests are adapted to periodic fires; they have a remarkable way of recovering – literally rising from the ashes.
>
> These forests have evolved with fire. Periodic fires have been part of a normal cycle lasting thousands of years. Logging a burned forest damages the soil, carrying away nutrients, robbing seedlings of moisture and clogging nearby streams. Trees in a burned landscape, both dead and alive, continue to provide homes for wildlife after a fire and form the building blocks of new forests.[229]

BLM should carefully review the post-fire science summary prepared by the World Wildlife Fund in 2006.

> In general traditional forestry has viewed fire as bad and dead trees as a waste. These views have skewed public policies about post-fire logging. However, current scientific understanding recognizes that disturbance and dead trees are in fact critical to forest health. Of the approximately thirty scientific papers on post-fire logging and additional government reports published to date, not a single one indicates that logging provides benefits to ecosystems regenerating post-disturbance. In general, post-fire logging impedes regeneration when it compacts soils, removes "biological legacies" (e.g., large dead standing and downed trees), introduces or spreads invasive species, causes soil erosion when logs are dragged across steep slopes, and delivers sediment to streams from logging roads. Further, a large body of science on disturbance ecology (e.g., recent books on Mt. St Helens and studies in the Yellowstone Ecosystem and elsewhere) indicate that when natural disturbance events are preceded and/or followed by land management activities they often impair the recovery of forest ecosystems.[230]

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[229] Karr, James. 2005 Nature doesn't benefit from logging fire-damaged lands | The News Tribune, Tacoma, WA. ftp://ftp2.fs.fed.us/incoming/r5/Klamath/Mt.HebronRestoration/MountHebron.Records/MtHebronRestoration.ProjectRecord/D.%20ScopingComments.Analysis/ArtleyAttachment9.FullArticles/Pub10.Karr2005.Tribune.pdf

[230] Dominick A. DellaSala 2006. POST-FIRE LOGGING SUMMARY OF KEY STUDIES AND FINDINGS. World Wildlife Fund, February 2006. ftp://frap.cdf.ca.gov/pub/incoming/IMMP/Post%20Fire%20Salvage%20Logging%20Papers/Post%20Fire%20Logging%20Review%202006.pdf

In October 2013, 250 scientists signed a letter urging greater attention to the conservation of complex early seral forests and natural recovery after fire. These scientists conclude that the

> *"current state of scientific knowledge, … indicates that [salvage logging] would seriously undermine the ecological integrity of forest ecosystems on federal lands. … This post-fire habitat, known as 'complex early seral forest,' is quite simply some of the best wildlife habitat in forests and is an essential stage of natural forest processes. Moreover, it is the least protected of all forest habitat types and is often as rare, or rarer, than old-growth forest, due to damaging forest practices encouraged by post-fire logging policies. While there remains much to be discovered about fire in our forests, the scientific evidence indicates that complex early seral forest is a natural part of historical fire regimes in nearly every conifer forest type in the western U.S. (including ponderosa pine and mixed-conifer forests) … Numerous studies also document the cumulative impacts of post-fire logging on natural ecosystems, including the elimination of bird species that are most dependent on such conditions, compaction of soils, elimination of biological legacies (snags and downed logs) that are essential in supporting new forest growth, spread of invasive species, accumulation of logging slash that can add to future fire risks, increased mortality of conifer seedlings and other important re establishing vegetation (from logs dragged uphill in logging operations), and increased chronic sedimentation in streams due to the extensive road network and runoff from logging operations."*[231]

The EIS needs to carefully and comprehensively disclose and consider the following issues before approving a program of post-disturbance salvage logging:

a. the natural range of variability and existing rarity of complex young forests (e.g., young forests that are unsalvaged after disturbances). Since large snags are outside the natural range of variability across the landscape, the agency must retain all large snags to start moving the landscape toward the natural range of variability, or the agency must carefully justify in the NEPA analysis every large snag it proposes to remove. See Jerome J. Korol, Miles A. Hemstrom, Wendel J. Hann, and Rebecca A. Gravenmier. Snags and Down Wood in the Interior Columbia Basin Ecosystem Management Project. PNW-GTR-181. http://www.fs.fed.us/psw/publications/documents/gtr-181/049_Korol.pdf. This paper estimates that even if we apply enlightened forest management on federal lands for the next 100 years, we will still reach only 75% of the historic large snag abundance measured across the interior Columbia Basin, and most of the increase in large snags will occur in roadless and wilderness areas.
b. the ecological values (such as wildlife habitat) associated with snags, dead wood, and complex young forests. See Rose, C.L., Marcot, B.G., Mellen, T.K., Ohmann, J.L., Waddell, K.L., Lindely, D.L., and B. Schrieber. 2001. Decaying Wood in Pacific

[231] Della Sala, D. et al (2013) Open Letter to Members of Congress from 250 Scientists Concerned about Post-fire Logging. October 30, 2013. http://geosinstitute.org/images/stories/pdfs/Publications/Fire/Scientist_Letter_Postfire_2013.pdf or http://www.scribd.com/doc/181401520/Open-Letter-to-Members-of-Congress-from-250-Scientists-Concerned-about-Post-fire-Logging-October-30-2013

Northwest Forests: Concepts and Tools for Habitat Management, Chapter 24 *in* ***Wildlife-Habitat Relationships in Oregon and Washington*** (Johnson, D. H. and T. A. O'Neil. OSU Press. 2001) http://web.archive.org/web/20060708035905/http://www.nwhi.org/inc/data/GISdata/docs/chapter24.pdf

c. Given the regional deficit of young complex forests and the fact that many species, such as woodpeckers and secondary cavity users, appear to be adapted to exploit the structure and resources available within disturbed forests, the agencies should comprehensively consider and disclose the direct and indirect effects of salvage logging on species associated with young complex forests. The Forest Service has numerous Management Indicator Species whose populations have not been monitored, so the agencies lack the information necessary to that the salvage logging program will maintain species viability.

d. the effects of salvage logging on the development of complex forest habitat; "The early post-disturbance period of forest ecosystem development - pre-tree-canopy closure - is profoundly important!" because it is heterogeneous, light-energy rich, structure rich, biodiversity rich, and process rich. "**Removal of legacies is most profound long-term impact**" because of the "Importance of Coarse Wood:
   - Habitat for species
   - Organic seedbeds (nurse logs)
   - Modification of microclimate
   - Protection of plants from ungulates
   - Sediment traps
   - Sources of energy & nutrients
   - Sites of N-fixation
   - Special source of soil organic matter
   - Structural elements of aquatic ecosystems"

   Jerry Franklin - What is a 'Good' Forest Opening? – Powerpoint http://courses.washington.edu/esrm315/Lectures/FranklinEarlySuccession.pdf

e. all the new science related to salvage logging and dead wood, including but not limited to: Beschta R.L., J.J. Rhodes, J.B. Kauffman, R.E. Gresswell, G.W. Minshall, J.R. Karr, D.A. Perry, F.R. Hauer, and C.A.Frissell, 2004. Postfire management on forested public lands of the western USA. Cons. Bio.,. http://pacificrivers.org/files/post-fire-management-and-sound-science/Beschta-etal2004.pdf and Rose, C.L., Marcot, B.G., Mellen, T.K., Ohmann, J.L., Waddell, K.L., Lindely, D.L., and B. Schrieber. 2001. Decaying Wood in Pacific Northwest Forests: Concepts and Tools for Habitat Management, Chapter 24 in Wildlife-Habitat Relationships in Oregon and Washington (Johnson, D. H. and T. A. O'Neil. OSU Press. 2001) http://web.archive.org/web/20060708035905/http://www.nwhi.org/inc/data/GISdata/docs/chapter24.pdf

f. "Conservation of diverse young forests has received little attention in forest policy." USDA PNW Research Station. *Science Findings.* Sept 2003. http://www.fs.fed.us/pnw/sciencef/scifi56.pdf. "[T]here's a looming shortage of diverse young forests - where seedlings intermingle with fallen logs, standing dead

snags, and shrubs - that provide specialized habitat for certain animals and plants. … there's a looming gap in diverse, young, early-successional conifer forest, the type of forest that once came in naturally after forest fires. These young forests, up to 10 years old, have a diversity of forest structures - fallen logs and dead snags - and a diversity of plant life. They are important habitat for the western bluebird and other birds that prefer open areas, as well as some shrub species. Today, because of intense timber management on private lands, young forests don't get the chance to develop much diversity." OSU. 2001. Press Release: Researchers Assess Forest Sustainability. http://web.archive.org/web/20060914032259/http://oregonstate.edu/dept/ncs/newsarch/2001/Oct01/assess.htm According to the CLAMS project: "Diverse young forests: also rare but receiving less attention. Legacy tree habitat: uncertain future.." Ohmann, Spies, Gregory, Johnson. 2002. Vegetation Biodiversity in the Oregon Coast Range. http://www.fsl.orst.edu/clams/download/presentations/j02s_ohmann_10june02.pdf (slide 24).

g. Hutto, R.L., 2006. Toward Meaningful Snag-Management Guidelines for Postfire Salvage Logging in North American Conifer Forests. Conservation Biology Volume 20, No. 4, 984–993. http://web.archive.org/web/20090310114517/http://avianscience.dbs.umt.edu/documents/hutto_conbio_2006.pdf ("Species such as the Black-backed Woodpecker (*Picoides arcticus*) are nearly restricted in their habitat distribution to severely burned forests. Moreover, existing postfire salvage-logging studies reveal that most postfire specialist species are completely absent from burned forests that have been (even partially) salvage logged. I call for the long-overdue development and use of more meaningful snag-retention guidelines for postfire specialists, and I note that the biology of the most fire-dependent bird species suggests that even a cursory attempt to meet their snag needs would preclude postfire salvage logging in those severely burned conifer forests wherein the maintenance of biological diversity is deemed important.")

h. A recent study of birds that use post-fire mosaics highlighted the importance of resprouting shrubs and forbs on the re-establishment of nesting birds following wildfire. "Of the 39 species for which nests were found, 14 (37%) used cavities and 25 (63%) built open-cup nests.... Species that built cup nests used snags, residual live trees, resprouting hardwoods, and other ground vegetation and downed wood. The associations between the presence of breeding species and forb and shrub cover indicate that these are important components of the early establishment of bird populations following stand-replacing fires. These data suggest that post-fire management of resprouting hardwoods and herbaceous vegetation should consider potential impacts to bird species that nest and forage in burned forests." CFER 2007. Response of Birds to Fire Mosaics. CFER News. Winter 2007. http://www.fsl.orst.edu/cfer/pdfs/Vol7_1.pdf.

i. BLM's Western Oregon Plan Revision (WOPR) DEIS (p. LII) admits that structurally complex young forests develop old forest characteristics twice as fast as structurally deprived initial conditions.

j. Mark E Swanson, Jerry F Franklin, Robert L Beschta, Charles M Crisafulli, Dominick A DellaSala, Richard L Hutto, David B Lindenmayer, and Frederick J

Swanson 2010. The forgotten stage of forest succession: early-successional ecosystems on forest sites. Front Ecol Environ 2010; doi:10.1890/090157

k. Bats find favorable habitat in burned areas with abundant and diverse snags and abundant and diverse flying insects. Salvage logging will remove potential roost sites, and food sources. Carol Chambers and Erin Saunders. BATS IN THE BURNS - Studying the impact of wildfires and climate change. BATS. Bat Conservation International. Winter 2013, Volume 3, No. 4. http://www.batcon.org/index.php/media-and-info/bats-archives.html?task=viewArticle&magArticleID=1154

l. "Leaving a damaged forest intact means the original conditions recover more readily," says David Foster, … director of the NSF Harvard Forest LTER site. "Forests have been recovering from natural processes like windstorms, fire and ice for millions of years. What appears to us as devastation is actually, to a forest, a natural and important state of affairs." 10-16-2012 Press Release 12-198, In Blown-Down Forests, a Story of Survival To preserve forest health, the best management decision may be to do nothing. http://www.nsf.gov/news/news_summ.jsp?cntn_id=125744; Audrey Barker Plotkin, David Foster, Joel Carlson, and Alison Magill 2013. Survivors, not invaders, control forest development following simulated hurricane. Ecology, 94(2), 2013, pp. 414–423. http://harvardforest.fas.harvard.edu/sites/harvardforest.fas.harvard.edu/files/publications/pdfs/BarkerPlotkin_Ecology_2013.pdf

m. "Unmanaged early-seral stages of forest development are now considered to be among the most threatened habitat types in coniferous regions of the western United States (Noss et al. 2006, Thomas et al. 2006). Not surprisingly, concern has arisen over viability of populations that use broadleaf vegetation in early-seral forest, particularly as this habitat type contributes disproportionately to forest biodiversity (Halpern and Spies 1997). In the northwestern United States, a number of bird species thought to be strongly associated with early-seral broadleaf habitat have declined and are considered conservation priorities (Altman 1999, U.S. Fish and Wildlife Service 2002). Because the PNW represents a substantial portion of the ranges of these species, loss of quality early-seral habitat could increase risk of extinction." M. G. BETTS, J. C. HAGAR, J. W. RIVERS, J. D. ALEXANDER, K. MCGARIGAL, AND B. C. MCCOMB. 2010. Thresholds in forest bird occurrence as a function of the amount of early-seral broadleaf forest at landscape scales. Ecological Applications, 20(8), 2010, pp. 2116–2130. http://www.fsl.orst.edu/flel/pdfs/Betts%20et%20al%202010%20Ecol%20Apps.pdf

Before adopting a widespread salvage logging program, BLM needs to carefully consider and disclose reasons NOT to remove snags. Science tells us that natural forests develop after disturbance with abundant structural legacies. These legacy features include snags and down wood which play a wide variety of valuable ecological services for the developing forest, including but not limited to:

- nutrient uptake, storage, and release
- water uptake, storage, and release
- mycorrhizal colonization

- wildlife habitat, in particular for primary cavity species which are recognized as a "keystone" element of healthy forests
- allowing some forest species to linger in burned forests after disturbance and to recolonize burned forests sooner after disturbance, thereby shortening the period during which burned stands are unsuitable for wildlife
- providing food for insects that in turn feed a wide variety of other wildlife such as birds and bats
- favorable sites for seed germination and establishment
- mechanical thinning of the regenerating stand due to the process of snag fall
- shade and cover for everything from seedlings to big game
- perches, nest, and den structures.
-

In general, the larger the piece size, the longer they tend to last. But salvage logging removes those very elements that are most valuable for wildlife and most difficult to replace.

Since this project involves post-fire commodity extraction (also often referred to erroneously as "salvage" logging) please carefully analyze, consider, and disclose the site-specific analysis of the many reasons NOT to do post-fire commodity extraction, including but not limited to:

- adverse impacts to soil, such as erosion, compaction, displacement, litter disturbance, nutrient depletion; loss of chemical buffering; loss of soil organic matter; loss of burrowing wildlife that help aerate soils; reduction of nitrogen fixing plants that boost soil fertility; loss of slope and snow stabilizing effects which could lead to mass wasting or eliminate mechanisms that may mitigate mass wasting;
- loss of down wood functions s such as trapping sediment and aiding water infiltration, and creating microsites favorable for germination and establishment of diverse plants, and habitat for diverse wildlife;
- loss of decaying wood and depletion of the "savings account for nutrients and organic matter" which affects site productivity through the removal of dead trees which store nutrients and slowly release them to the next stand. Marañón-Jiménez, S., Fernández-Ondoño, E., and J. Castro. 2013. Charred wood remaining after a wildfire as a reservoir of macro- and micronutrients in a Mediterranean pine forest. International Journal of Wildland Fire. http://dx.doi.org/10.1071/WF12030 ("Partially charred wood represented a considerable pool of nutrients, due to both the relatively high concentrations and to the great amount of biomass still present after the fire. Potential contributions of the charred wood were particularly relevant for N and micronutrients Na, Mn, Fe, Zn and Cu, as wood contained 2–9 times more nutrients than the soil. Post-fire woody debris constitutes therefore a valuable natural element as a potential source of nutrients, which would be lost from ecosystems in cases where it is removed")
- Recent studies indicate that wood may release nutrients more rapidly than previously thought through a variety of decay mechanisms mediated by means other than microbial decomposers, i.e. fungal sporocarps, mycorrhizae and roots, leaching, fragmentation, and insects;
- loss of nutrients from live trees that are determined to be "dying." Live trees produce serve as refugia for animals, invertebrates, and mycorrhizae; produce litter fall; and help cycle nutrients which are all extremely valuable in the post-fire landscape;

- loss of wood that serves to buffer soil chemistry and prevent extreme changes in soil chemistry;
- water quality degradation;
- loss of water storage capacity in down logs;
- altered timing of storm run-off which could lead to peak flows that erode stream banks and scour fish eggs;
- delaying the pace of vegetative recovery and reducing the quality/diversity of the vegetation community;
- dead trees serve as a natural fence that protects young seedlings from browse by cattle and big game. This is one way that young aspen and other valuable species can get their start;
- spread of invasive weeds through soil disturbance and extensive use of transportation systems;
- loss of legacy structures that can carry species, functions, and processes over from one stand to the next;
- loss of terrestrial and aquatic habitat (mostly snags and down logs) potentially harming at least 93 forest species (63 birds, 26 mammals, and 4 amphibians) that use snags for nesting, roosting, preening, foraging, perching, courtship, drumming, and hibernating, plus many more species that use down logs for foraging sites, hiding and thermal cover, denning, nesting, travel corridors, and vantage points for predator avoidance;
- Depletion of large wood structures in streams that can cause: 1) simplification of channel morphology, 2) increased bank erosion, 3) increased sediment export, 4) decreased nutrient retention, 5) loss of habitats associated with diversity in cover, hydrologic patterns, and sediment retention;
- commercial salvage usually removes the largest trees, but this will disproportionately harm wildlife because: (1) larger snags persist longer and therefore provide their valuable ecosystem services longer and then serve longer as down wood too, and (2) most snag-using wildlife species are associated with snags >14.2 inches diameter at breast height (dbh), and about a third of these species use snags >29.1 inches dbh.
- Truncation of symbiotic species relations and loss of biodiversity. Sixteen species are primary cavity excavators and 35 are secondary cavity users; 8 are primary burrow excavators and 11 are secondary burrow users; 5 are primary terrestrial runway excavators and 6 are secondary runway users. Nine snag-associated species create nesting or denning structures and 8 use created structures.
- Reduced avian and terrestrial species diversity which affects plant and invertebrate diversity. Since different wildlife help disperse different sets of seeds and invertebrates, reduced wildlife diversity can significantly affect pace of recovery and the diversity of the regenerating stand. Snag- associated wildlife play a greater role in dispersal of invertebrates and plants, while down wood-associated wildlife play a greater role in dispersal of fungi and lichens. Down wood-associated species might contribute more to improving soil structure and aeration through digging, and to fragmenting wood which increases surface area encouraging biological action that releases nutrients.
- loss of partial shade that helps protect the next generation of forest;
- loss of cover quality and fawning areas for big game;

- loss of future disturbance processes such as falling snags that help thin and diversify the next generation of forest;[232]
- increased human activity and human access that can increase fire risk;
- increased fine fuels on the forest floor that can cause an increase in fire hazard;
- loss of seed sources, and
- loss of diversity of vegetation and microsite conditions.
- The fact that regional standards for snags and down wood fail to incorporate the most recent science indicating that more snags and down wood (especially large snags and logs) are required in order to maintain species viability and sustain site productivity.
- Arguments in support of the "reburn hypothesis" are specious. (1) partial reburn may be completely natural and desirable in some cases to consume some fuel and diversify the regenerating forest, and (2) salvage logging will cause a pulse of fine fuels on the ground and actually increase the reburn risk/hazard above natural levels, and (3) fuels that fall to the ground over time will to some extent decay as they fall.
- Uncertainty calls for a cautious approach.
-

Compare these adverse impacts of salvage logging to the few scant reasons to salvage (e.g., economic recovery of fiber).

V. THE DEIS FAILS TO RECOGNIZE THE SIGNIFICANT ECOLOGICAL VALUE OF RETAINING LARGE SNAGS

Protecting large snags from salvage logging is particularly important. Because large snags last much longer than small snags, large snags are disproportionately valuable as wildlife habitat, nutrient and water reservoirs, soil stabilizers, etc. If the agency chooses to conduct a salvage operation in this fire area, they must use a diameter cap and protect these scarce and valuable forest structures.

Jerry Franklin, in commenting on a large fire salvage project in 2015 said:

> Large snags and logs are the most important surviving structural elements or biological legacies of a forest disturbance (Franklin et al. 2002), excepting only surviving large live trees. Importance, in this case, refers to the roles of these structures in:
>
> (1) Providing essential habitat for an immense array of species;
> (2) Maintaining important ecosystem functions; and
> (3) Structurally enriching the young forest stand, making it possible for mid- and latesuccessional species to re-colonize the stand much earlier in its chronological development than would otherwise be the case (Franklin et al. 1987).

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[232] JAMES A. LUTZ AND CHARLES B. HALPERN. 2006. TREE MORTALITY DURING EARLY FOREST DEVELOPMENT: A LONG-TERM STUDY OF RATES, CAUSES, AND CONSEQUENCES. Ecological Monographs, 76(2), 2006, pp. 257–275. This study showed that mortality from mechanical damage ("crushing disturbance") from falling limbs and trees and snow loads can be a more significant factor than suppression mortality. See also, Brown, Martin J.; Kertis, Jane; Huff, Mark H. 2013. Natural tree regeneration and coarse woody debris dynamics after a forest fire in the western Cascade Range. Res. Pap. PNW-RP-592. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 50 p. "Snag fall and fragmentation added so much wood to the ground—thousands of meters of log length per hectare—that it probably constitutes a significant ecological disturbance in itself, a kind of rain of logs.")

The importance of large snags and down wood for a broad array of species is recognized in the EIS document. These structures provide habitat for early as well as late successional species and sustain many important ecosystem processes (e.g., Harmon et al. 1986). However, the long persistence and multiple roles played by the large pulse of snags, logs, and other CWD provided by the stand-replacement event (Harmon et al. 1986; Maser et al. 1988) do not appear to be adequately recognized in the analysis of how much of this wood should be retained. For example, large Douglas-fir logs continue to fulfill important ecological functions, such as habitat for small mammals and salamanders, for 200 to 250 years after their death. Cedar snags can persist for at least as long as 1 ½ centuries and as logs for over twice that long.

The massive input of large dead wood is characteristic and critical to stand development processes and the ultimate provision of habitat for late-successional species following stand replacement fires (Maser et al. , 1988; Franklin et al. 2002). As noted these wood structures may persist and play functional roles for several centuries, particularly in the case of decay resistant species. Large pines may also persist as snags for several decades and additional periods as logs on the forest floor. In fact, the entire recovering forest ecosystem will depend upon this pulse of CWD until it reaches a point in its development where the new stand begins to generate snags and logs of comparable size and heartwood content-generally between 100 and 200 years (Maser et al. 1988; Franklin et al., 2002). Consequently, basing snag and CWD retention following salvage on levels of these structures found in existing mature and old forests is not appropriate; *all of this initial pulse of wood is needed to reach those levels one to two centuries from now!* Indeed, the use of mature forests as a standard for CWD is particularly inappropriate since this is the period when CWD levels are at their lowest level during the entire natural developmental sequence from stand-replacement fire to old growth (see diagram in paper by Spies in Maser et al. 1988). It certainly does not appear to me that the approach taken in the DEIS reflects an appreciation of the fact that this one-time input oflarge and decay resistant CWO is all that the recovering forest ecosystem is going to get for the next 100 to 200 years.

The importance of snags, logs, and other CWD is recognized in FEMAT's (1993) scientific analysis. For example (my underlining for emphasis):

> *Because of the important role of dead wood in late-successional and old-growth forest ecosystems, and because there is much to learn about the role of dead wood in the development of forests, only limited salvage is appropriate in Late-Successional Reserves. .. <u>The Final Draft Recovery Plan [for the NSO] would allow removal of small-diameter snags and logs, but would also require retention o[snags and logs likely to persist until the new stand begins to contribute significant quantities of coarse woody debris</u>." FEMAT 1993, p. IV-37.*
>
> *Snags provide a variety of habitat benefits for a variety of wildlife species associated with late-successional forests. <u>Accordingly, following stand-replacing disturbances. management should focus on retaining snags that are likely to</u>*

> *persist until late-successional conditions have developed and the new stand is again producing large snags. FEMAT 1993, p. III-37.*
>
> *Following a stand replacing disturbance, management should retain adequate coarse woody debris quantities in the new stand so that in the.fi1ture it will contain amounts similar to natural regenerated stands. The analysis that determines the amount of coarsewoody debris to leave must account for the filii period of time before the new stand begins to contribute coarse woody debris .... FEMA T 1993, p. III-37.*

> In summary, general salvage of large snags and logs is clearly antithetical to the goal of rapid recovery of fully functional late-successional forest habitat and inappropriate within the Late Successional Reserves.

Jerry Franklin. Comments on the Klamath NF, Westside Fires Salvage DEIS. 6 April 2015.

Retaining large snags is necessary to mitigate the "snag gap" caused by stand replacing disturbance. It may seem counter-intuitive but fire results in a snag shortage. One of the most significant and lasting effects of stand replacing disturbance such as fire, wind, or regeneration logging is to bring the process of snag recruitment to a virtual standstill for many decades. Even if snags are not removed by the disturbance, snags created by the disturbance will fall down over time and few if any snags are created. This results in a "snag gap" that has serious adverse consequences for habitat and many other ecological processes. The apparent abundance of large snags after a stand replacing disturbance masks a severe shortage of large snags down the road.

In Congressional testimony in July 2004, Jerry Franklin said:

> It is sometimes argued that following a stand-replacement fire in an old-growth forest that snags and logs are present in "excess" of the needs of the site, in terms of ecosystem recovery. In fact, the large pulse of dead wood created by the disturbance is the only significant input of woody debris that the site is going to get for the next 50 to 150 years—the ecosystem has to "live" off of this woody debris until the forest matures to the point where it has again produced the large trees that can become the source for new snags and logs (Maser et al. 1988).

Dr. Jerry F. Franklin, Professor of Ecosystem Studies, College of Forest Resources, University of Washington. July 15, 2004. TESTIMONY FOR THE RECORD ON OVERSIGHT HEARING ON "RESTORING FORESTS AFTER CATASTROPHIC EVENTS" BY HOUSE COMMITTEE ON RESOURCES, SUBCOMMITTEE ON FOREST AND FOREST HEALTH. http://www.signaloflove.org/clearcutting/reports/fire3/Franklin%20Jerry%20July%202004%20testimony.pdf.

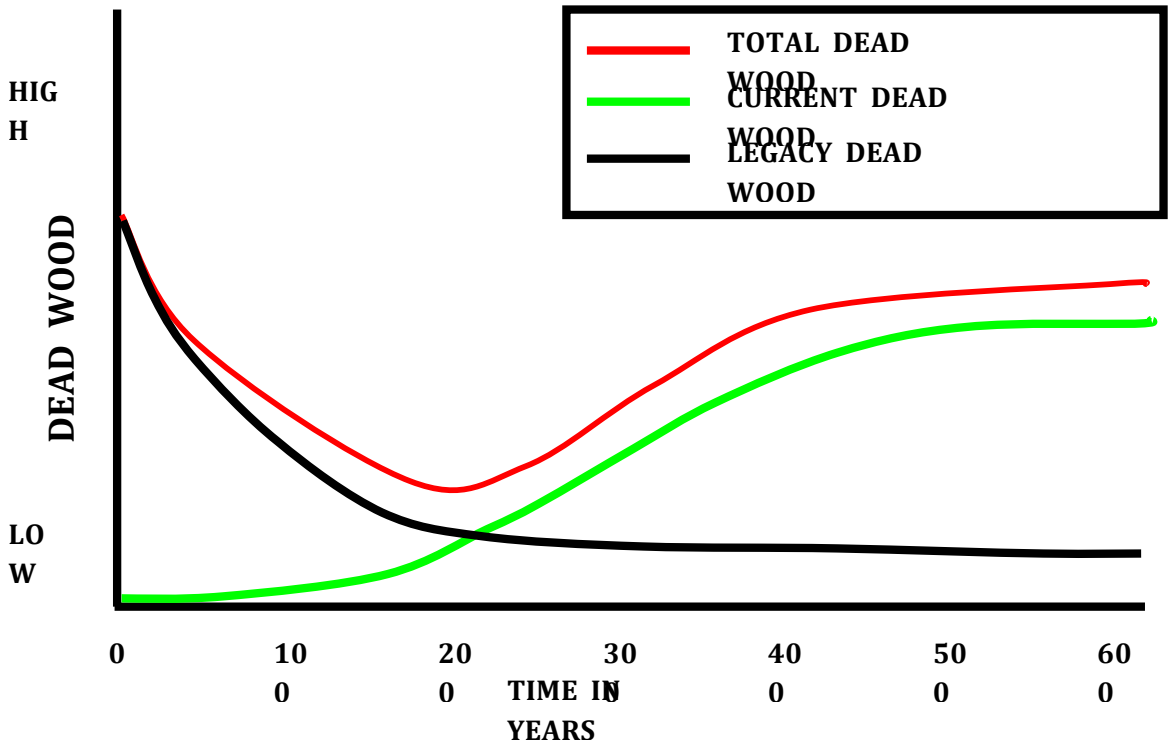
Similarly, Johnson & Franklin's 2008 Forest Plan for the Klamath Tribes says of large fires;

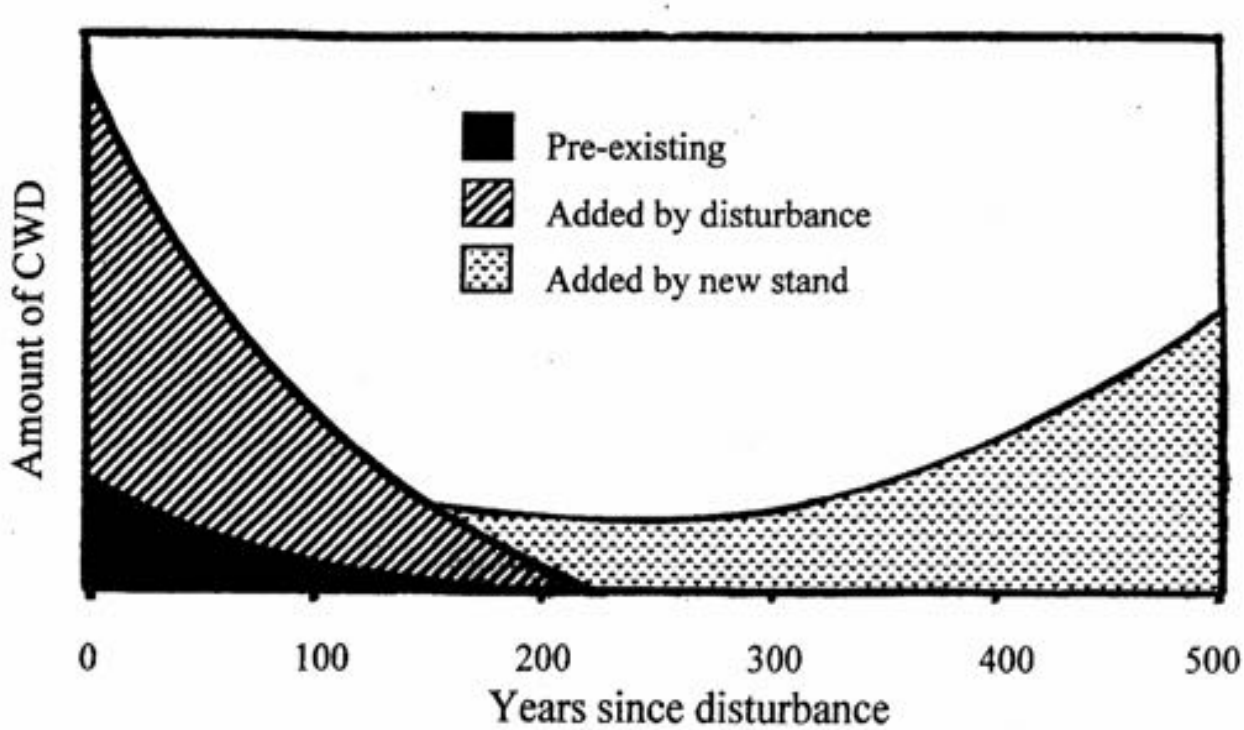
> Such fires do generate a large pulse of dying, dead and down material. After a stand-replacement fire, that pulse of large wood is all of the large wood that the recovering

ecosystem is going to get for the next century or more—i.e., until trees of large size are once again a part of the stand. Some of this dead wood legacy will persist and fulfill important functional roles in the recovering forest for many decades and, in the case of the largest and most decay resistant material, even for a century or more.

1. The agency must recognize the asymmetric nature of snag dynamics after all types of stand replacing disturbance. High rates of snag fall would be expected in the decades following disturbance, while low rates of snag recruitment would be expected in the decades following a disturbance. This unavoidably results in a serious deficit of snags at some point in the future.
2. In order for the NEPA analysis to fully address the snag habitat issue it must look carefully at the snag gap from both ends.
    a. The snag gap begins when too many of the current snags are gone. So the snag gap is exacerbated on the front end by salvage logging which removes too many large snags.
    b. The snag gaps ends when the next stand grows to the point that it contains large trees and some of them die, so the snag gap is exacerbated on the back end if there is a significant delay in tree regeneration.
3. The agency has a tendency to focus on the back end of the snag gap which is allegedly mitigated by tree replanting, but this benefit is in the distant future and remains speculative. The agencies tend to ignore the effect of logging on the front end of the snag gap (which is concrete and unavoidable).
4. Logging which retains only enough snags to meet snag requirements after harvest will not meet snag requirements in a few years after those few retained snags fall.
5. Both the RMP and the Northwest Forest Plan (p C-13) require that snags be maintained through time, so our goal must be to manage snags to minimize the time period that there is a deficit of snags.
6. The NEPA analysis must account for snag fall rates and figure out how to minimize the snag gap. Every day that the "snag gap" is lengthened by salvage logging is a violation of the RMP. Models that may be used to analyze snag dynamics can be found here: http://www.for.gov.bc.ca/hre/deadwood/DTmod.htm.
7. There is a strong correlation between the size of the snags and the length of time it is likely to remain standing, so salvage must be designed to retain all the large snag and only remove trees from smaller size classes.
8. Consider this example: Assume that the stands currently have 30 large trees/acre and 24 of those will be removed via salvage logging while 6 trees/acre will be retained for snag habitat. Further assume that in 50 years 2 percent of the large snags will remain standing as snag habitat. Two percent of 6 trees/acre is FAR LESS than 2 percent of 30 trees/acre, so there is a virtual statistical certainty that salvage logging will exacerbate the snag gap.
9. The snag gap is really exacerbated by salvage logging in two ways — first by targeting removal of the large and most persistent component of the snag population, and second by accelerating the rate that remaining snags fall and are lost from the snag population. New science from Idaho reveals that Ponderosa pine snags persist longer in unlogged areas. See Russell, R.E., Saab, V.A., Dudley, J.G., and J.J. Rotella. 2006. Snag longevity in relation to wildfire and postfire salvage logging. Forest Ecology and Management 232 (2006) 179-187. http://www.fs.fed.us/rm/pubs_other/rmrs_2006_russell_r001.pdf ("The predicted half-life of

a ponderosa pine snag was 7-8 years in salvage logged plots and 9-10 years in unlogged plots.”)





The agency often compares their proposed snag retention levels to the *average* number of snags across the landscape, without recognizing that after a significant disturbance such as fire “the

rate of input [of snags] to the CWD pool is 100-1000x the rate expected for an unburned steady-state forest (Harmon et al 1986). Even afterwards, in the next 5 or 6 years, the rate of input is still 5 or 10 or even 100 times that steady-state rate."
http://web.archive.org/web/20050428020846/http://www.brownandbrown.tv/warner-presentation-2002-05-14b.pdf

The shortage of snags in the decades following stand replacing fire is acknowledged by the Forest Service on page 136 of the Wallowa-Whitman National Forest's Trail Vegetation Management Project EA (October 2012). http://www.fs.usda.gov/project/?project=34482

The BLM has previously admitted that a "high proportion" of snags "are expected to persist for at least 50 years." Roseburg BLM 2009, Little Wolf 3 Density Mgt EA. http://www.blm.gov/or/districts/roseburg/plans/files/LittleWolf3EA.pdf. This means that salvage logging can exacerbate the snag gap the front end by at least 50 years.

An example of how salvage would lengthen the period that a forest remains inhospitable to wildlife is provided by the following study, Payer, D.C., and D.J. Harrison. 2000. Structural differences between forests regenerating following spruce budworm defoliation and clear-cut harvesting: Implications for marten. Canadian Journal of Forest Research 30(12): 196572. ("Summary: The authors looked at the use of clearcuts and areas where spruce budworm has caused mortality in relation to the American marten. When establishing new territories, martens avoid clearcuts but do not avoid stands with a history of extensive tree mortality caused by eastern spruce budworm. Although live tree basal area was similar between stand types, the results showed that the vertical structure provided by large snags can offset the limited availability of live trees for the marten, particularly where coarse woody debris and understory vegetation are plentiful.") http://www.umaine.edu/cfru/documents/payer.pdf

Salvage Logging is Incompatible with Watershed Recovery
Salvage logging should be avoided and minimized because it will violate the O&C Act mandate to protect watersheds and favorable conditions of water flow. Salvage retards watershed and aquatic recovery.

> In short, by adding another stressor to burned watersheds, postfire salvage logging worsens degraded aquatic conditions accumulated from a century of human activity (CWWR 1996,NRC 1996, 2002,McIntosh et al. 2000). The additional damage impedes the recovery and restoration of aquatic systems, lowers water quality, shrinks the distribution and abundance of native aquatic species, and compromises the flow of economic benefits to human communities that depend on aquatic resources (Beschta et al. 2004).

Karr, J. R., J. J. Rhodes, G. W. Minshall, F. R. Hauer, R. L. Beschta, C. A. Frissell, and D. A. Perry. 2004. The effects of postfire salvage logging on aquatic ecosystems in the American West. BioScience 54:1029-1033.

http://www.sierraforestlegacy.org/Resources/Conservation/FireForestEcology/SalvageLoggingScience/Salvage-Karr04.pdf *citing* Beschta, ,R.L., J. J. Rhodes, J. B. Kauffman, R. E. Gresswell, G. W. Minshall, J. R. Karr, D.A. Perry, F.R. Hauer, C. A. Frissell. 2004. Postfire Management on Forested Public Lands of the Western United States. Conservation Biology 18: 957–967.

Downloadable at:
https://www.researchgate.net/publication/227654964_Postfire_Management_on_Forested_Public_Lands_of_the_Western_United_States?ev=prf_pub

The quantity, quality, and rate of revegetation has a direct contribution to controlling erosion and sedimentation. USGS has described the role of vegetation in slope stability and erosion as follows:

> In a watershed, vegetation provides five major physical functions that help control soil erosion during rainfall events (Spittler, in press):
>
> - Interception of rainfall, which extends the time for water to reach the ground surface and absorbs raindrop impact energy.
> - Mulching of the ground surface to provide temporary water storage and slow release, slope roughness, and energy absorption.
> - Structural support of loose, surficial material.
> - Reinforcement of the deeper soil by roots, which increases the natural slope stability.
> - Maintains conditions necessary for soil micro-organisms that provide soil structure.
> -

http://web.archive.org/web/20040218052053/http://landslides.usgs.gov/html_files/ofr95-508/skrep2.html *citing* Spittler, T.E., in press, Fire and the debris-flow potential of winter storms, in, Proceedings of the Symposium on Brush Fires in California Wildlands: Ecology and Resource Management: International Association of Wildland Fire.

Wagenbrenner et al (2015) found that –

- Post-fire salvage logging increased soil compaction and decreased vegetative cover.
- Salvage logging greatly increased sediment production from more disturbed plots. ("Sediment production from the skidder plots was 10–100 times the value from the controls.")
- Salvage logging delayed post-fire recovery of vegetation and sediment production. ("The relative differences in sediment production between the disturbed plots and the controls tended to increase over time as the controls exhibited more rapid regrowth." Data were taken 2-8 years post-harvest.)
-

Joseph W. Wagenbrenner, Lee H. MacDonald, , Robert N. Coats, Peter R. Robichaud, Robert E. Brown. 2015. Effects of post-fire salvage logging and a skid trail treatment on ground cover, soils, and sediment production in the interior western United States. Forest Ecology and Management. Volume 335, 1 January 2015, Pages 176–193.
http://www.nrel.colostate.edu/assets/nrel_files/labs/macdonald-lab/pubs/Salvage-logging-Wagenbrenner%20et%20al-ForEcolMgmt-2015.pdf

Salvage logging will set back vegetative recovery that has already started and thereby retard attainment of riparian and aquatic management objectives. In research on post-fire logging on the Winema NF, Sexton (1998) found that salvage logged sites produced only about 38% of the

understory biomass of that on the unlogged site; and one year later produced only about 27% of the understory biomass of that on the unlogged site. In fact, Sexton's (1998) study comparing salvaged and unsalvaged areas of a fire on the Winema NF one and two years after logging showed:

Salvage Areas	**Unsalvaged Areas**
reduced vegetation biomass	greater vegetation biomass
reduced species diversity	greater species diversity
reduced species richness	greater species richness
reduced growth of planted seedlings	greater growth of planted seedlings
reduced survival of planted seedlings	greater survival of planted seedlings

Sexton, Timothy O. 1998. Ecological effects of post wildfire activities (salvage-logging and grass-seeding) on vegetation composition, diversity, biomass, and growth and survival of *Pinus ponderosa* and *Purshia tridentata*. MS Thesis Oregon State University. Corvallis, OR. 121p

Similarly, Dan Donato, looked at the effects of salvage logging at the Biscuit fire in SW Oregon and found that cutting down dead trees and hauling away logs killed 71 percent of the naturally established seedlings which were abundant after the fire but scarce after logging. D. C. Donato, J. B. Fontaine, J. L. Campbell, W. D. Robinson, J. B. Kauffman, B. E. Law. Post-Wildfire Logging Hinders Regeneration and Increases Fire Risk. www.sciencexpress.org. 5 January 2006. Shatford and Hibbs recently found similarly encouraging results of natural regeneration.

> Over the 2005 field season, natural regenerating conifers were sampled in 38 plots within 11 historic fires in the Klamath-Siskiyou Region … Years since stand replacing wildfire ranged from [18 years to 9 years] … The density of natural regenerating conifers ranged over three orders of magnitude … Although the abundance of natural regeneration was frequently high, the age and size of saplings ranged considerably … Frequently, the regenerating saplings were overtopped by shrubs and hardwoods. There was no evidence of recent conifer mortality (i.e. no dead or dying saplings) caused by competition … Saplings were generally in good condition with dominant trees having live crown ratios of 50% or greater.

Shatford, J., Hibbs, D.E. 2005. Predicting Post-fire Regeneration Needs: Spatial and Temporal Variation in Natural Regneration in Southwestern Oregonadn Northern California. Pp 29-32 *in* Cooperative Forest Ecosystem Research Program (CFER) 2005 Annual Report. http://www.fsl.orst.edu/cfer/pdfs/CFER_ar05.pdf. This data reveals that natural regeneration is not only demonstrably successful but also species diverse and variable both spatially and temporally. All of these attributes are highly beneficial in terms of both wildlife habitat and fuel hazard.

The adverse effects of salvage logging on vegetative recovery described by Sexton are not unique to the Ponderosa pine forest type. The results are in fact quite consistent with the results found by Michael Grifantini et al after salvage logging in Douglas fir forests in northwestern California. Grifantini, M.C., Stuart J.D., and L. Fox III, 1992. "Deer Habitat Changes Following Wildfire, Salvage, Logging and Reforestation, Klamath Mountains, California," Proceedings of

the Symposium on Biodiversity of Northwestern California, Oct 28-30, 1991, Santa Rosa, CA. UC Wildland Resource Center Report 29. December 1992.

Climate change is expected to increase the magnitude and intensity of rain events which can cause significant erosion, especially after disturbances such as fire and logging. It would be wise to retain extra material on site after fire in order to intercept and absorb the energy of rain drops, absorb and store water, stabilize soil, capture and store mobile sediment, etc. Garbrecht, J. D., J. L. Steiner, and C. A. Cox (2007), Climate change impacts on soil and water conservation, Eos Trans. AGU, 88(11), 136. http://www.agu.org/eos_elec/2007/11-136_climate.html. The agency needs to ensure that the hydrology and erosion models used in the NEPA analysis accurately account for the expected increase in storm impacts due to climate change.

The adverse effects described by Sexton appear to be long lasting. Busse at al 1996 found that the annual growth rate of pines was reduced by almost 20% where understory vegetation had been removed thirty years earlier. In addition, research has shown a direct relationship between the level of on-site coarse woody debris and the amount active ectomycorrhizal root tips. Graham, R. T., Harvey, A. E., Jurgensen, M., F., Jain T. B., Tonn, J. R., and Page-Dumroese, D. S. 1994. Managing coarse woody debris in forests of the Rocky Mountains. Res. Pap. INT-RP-477. Ogden, UT: U. S. Department of Agriculture, Forest Service, Intermountain Research Station, 13 p. See also Russell T. Graham, Theresa Benevidez Jain, and Alan E. Harvey FUEL: LOGS, STICKS, NEEDLES, DUFF, AND MUCH MORE. The Joint Fire Science Conference and Workshop
http://web.archive.org/web/20060829024013/http://jfsp.nifc.gov/conferenceproc/T-10Grahametal.pdf

Undisturbed litterfall after wildfire reduces soil erosion caused by both rain and overland-flow. By disturbing needle cover and effectively reducing the soil coverage, logging and yarding will cause increased in erosion compared to not logging. Pannkuk, C. D., and P. R. Robichaud. 2003. Effectiveness of needle cast at reducing erosion after forest fires, *Water Resources Research*, Vol. 39, No. 11, doi:10.1029/2003WR002318, 2003.
http://www.agu.org/pubs/crossref/2003/2003WR002318.shtml They found that a 50 percent ground cover of Douglas fir needles reduced water flow erosion by 20 percent and rain-induced erosion by 80 percent. A 50 percent ground cover of ponderosa pine needles reduced water flow erosion by 40 percent and rain-induced erosion by 60 percent.

VI. SALVAGE LOGGING IS INCOMPATIBLE WITH SPOTTED OWL RECOVERY

The Revised Recovery Plan for the northern spotted owl recommends retention and restoration of structure function and process across the dry forest landscape. This includes legacy retention after fires. The 2011 Final Revised Recovery Plan for the Northern Spotted Owl says,

> In general, we recommend that dynamic, disturbance-prone forests of the eastern Cascades, California Cascades and Klamath Provinces should be actively managed in a way that reconciles the overlapping goals of spotted owl conservation, responding to climate change and restoring dry forest ecological structure, composition and processes,

including wildfire and other disturbances (Noss et al. 2006, Spies et al. 2006, 2010a, Agee and Skinner 2005, Healey et al. 2008, Mitchell et al. 2009). …

…[O]ur intent in this Revised Recovery Plan is to embed spotted owl conservation and recovery within broader dry forest ecosystem restoration efforts to increase the likelihood spotted owl habitat will remain on the landscape longer and develop as part of this fire adapted community … To accommodate future disturbances and restore ecosystem resiliency, we believe it is essential to restore ecosystem structure, composition and processes. Restoring ecosystem structures that provide resiliency will necessitate maintaining and restoring the biological legacies that typically persist through disturbance events and influence the recovery process in the post-disturbance landscape (Franklin et al. 2000). With respect to the dry forest landscapes, structural legacies include not only the large trees that tend to be fire tolerant, but the snags and downed wood that were created as a result of the disturbance event. Structural legacies serve valuable functions such as reproductive structures that facilitate plant propagation, modifying microclimates, or improving connectivity through the disturbed area (Franklin et al. 2007). … These principles should be part of any dry forest restoration treatment: … Retain and restore heterogeneity within stands (i.e., manage for fine-scale mosaic within stands). This includes both vertical and horizontal diversity. …

… [P]ost-fire timber harvest activities "undermine many of the ecosystem benefits of major disturbances" (Lindenmayer et al. 2004:1303) and frequently "ignore important ecological lessons, especially the role of disturbances in diversifying and rejuvenating landscapes" (DellaSala et al. 2006:51). … studies of spotted owls in post-fire landscapes indicate that spotted owls use forest stands that have been burned, but generally do not use stands that have been burned and logged. Consistent with restoration goals, post-fire management in these areas should promote the development of habitat elements that support spotted owls and their prey, especially those which require the most time to develop or recover (e.g., large trees, snags, downed wood). Such management should include retention of large trees and defective trees, rehabilitation of roads and firelines, and planting of native species (Beschta et al. 2004, Hutto 2006, Peterson et al. 2009). We anticipate many cases where the best approach to retain these features involves few or no management activities. … Many researchers supported the need to maintain habitat for spotted owl prey. For example, Lemkuhl et al. (2006) confirmed the importance of maintaining snags, downed wood, canopy cover, and mistletoe to support populations of spotted owl prey species. Gomez et al. (2005) noted the importance of fungal sporocarps which were positively associated with large downed wood retained on site post-harvest. Carey et al. (1991) and Carey(1995) noted the importance of at least 10 to 15 percent cover of downed wood to benefit prey. The costs and benefits of post-fire harvest to the development of habitat for spotted owls and their prey should be evaluated by interagency teams (e.g., Level 1 teams) during the consultation process.

> · Recovery Action 12: In lands where management is focused on development of spotted owl habitat, post-fire silvicultural activities should concentrate on conserving and restoring habitat elements that take a long time to develop (e.g., large trees, medium and large snags, downed wood). Examples of areas where we

> believe this recovery action would greatly benefit future spotted owl habitat development include such fire-affected areas as the Biscuit fire, the Davis fire and the B&B complex.

USFWS 2011. Final Revised Recovery Plan for the Northern Spotted Owl. pp III-20, III-32 – III-34, III-48 – III-49. Note also, the 1994 Northwest Forest Plan ROD (page C-11, and 1994 FSEIS page F-146) says that " ... activities required by recovery plans for listed threatened and endangered species take precedence over Late-Successional Reserve standards and guidelines."

Also, keep in mind the FWS' June 28, 2011 Response-to-Comments on the Revised Recovery Plan says "Whether a burned area could support nesting spotted owls is not relevant to our recommending focusing on spotted owl habitat restoration and conservation of legacy habitat elements in areas where pre-fire management focused on developing spotted owl habitat. This recovery action is designed to provide for legacy habitat elements remaining after high-intensity fires which will contribute to future habitat development." http://web.archive.org/web/20130315193800/http://www.fws.gov/oregonfwo/Species/Data/NorthernSpottedOwl/Recovery/Library/Documents/Comments.Responses.pdf And, keep in mind "where pre-fire management focused on developing spotted owl habitat" includes all dry forests, e.g. "[O]ur intent in this Revised Recovery Plan is to embed spotted owl conservation and recovery within broader dry forest ecosystem restoration efforts"

The 2008 FRP (p 116) also says "Large and old trees, either living or dead, are important wherever they occur." The FWS response-to-comments on the draft recovery plan says "post-fire harvest recommendations stress the need to conserve large trees, both living and dead, as they are important components to the restoration of owl habitat after wildfire events." And recommends that after fire or other disturbance the agencies should "conserve the remaining large trees and snags." http://www.fws.gov/pacific/ecoservices/endangered/recovery/pdf/NSO_RPApp_F_Response_to_Comments_5_7_08.pdf. Since large snags take a very long time to grow and recruit, salvage logging should retain all large snags. Any salvage logging proposal must also carefully disclose and balance all detrimental effects and alleged beneficial effects of salvage logging and connected actions like road building.

Clark (2007) looked at post-fire habitat selection by spotted owls after several wildfires in southern Oregon and determined that low severity fire in nesting, roosting, foraging habitat appears to benefit spotted owl occupancy and colonization.

> Initial occupancy was positively influenced by the amount of roosting and foraging habitat with low severity burn within the core ($\beta = 0.08$, 95% C.I. = -0.02 – 0.17) … Colonization rates were positively influenced by the amount of nesting, roosting and foraging habitat that received a low severity burn within the core ($\beta = 0.08$, 95% C.I. = 0.02 – 0.15).

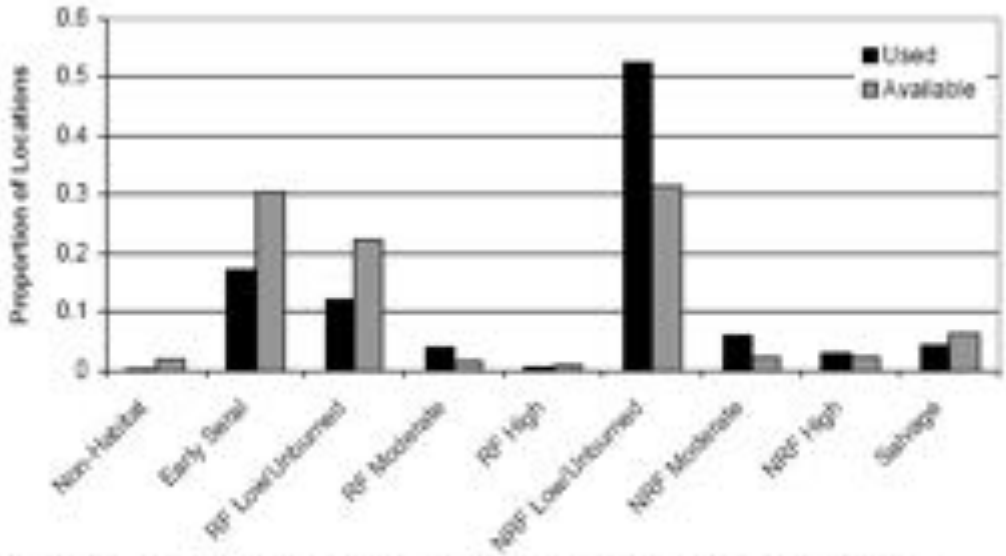


Figure 6.1. Proportions of used and available habitats for northern spotted owls monitored at the Timbered Rock Fire and surrounding areas from September, 2004 to August, 2006.

Darren A. Clark. 2007. Demography and Habitat Selection of Northern Spotted Owls in Post-Fire Landscapes of Southwestern Oregon. M.S. Thesis. Oregon State University. Robert Anthony, Advisor. Figure 6.1 shows that nesting, roosting, foraging habitat is used more frequently than random sites even after it has experienced moderate or high severity fire, while areas that were salvage logged were used less frequently than random sites.

See also, Clark, Anthony & Andrews 2013. Relationship Between Wildfire, Salvage Logging, and Occupancy of Nesting Territories by Northern Spotted Owls. The Journal of Wildlife Management 77(4):672–688; 2013; DOI: 10.1002/jwmg.523 ("Timbered Rock had a 64% reduction in site occupancy following wildfire (2003–2006) in contrast to a 25% reduction in site occupancy at South Cascades during the same time period. This suggested that the combined effects of habitat disturbances due to wildfire and subsequent salvage logging on private lands negatively affected site occupancy by spotted owls. In our second analysis, we investigated the relationship between wildfire, salvage logging, and occupancy of spotted owl territories at the Biscuit, Quartz, and Timbered Rock burns from 2003 to 2006. Extinction probabilities increased as the combined area of early seral forests, high severity burn, and salvage logging increased within the core nesting areas.")

VII. SALVAGE LOGGING WILL INCREASE FIRE HAZARD AND IS INCOMPATIBLE WITH FUEL MANAGEMENT OBJECTIVES

BLM should avoid salvage logging and replanting because it increases fire hazard by moving small hazardous fuels from the canopy to the ground where they are more available for combustion and replanting creates a dense continuous fuel profile that is conducive to fire severity and fire spread.

The DEIS needs to disclose that salvage logging will increase fire hazard, e.g.:

> "The slash created by the harvest and fuels treatments that is left on the ground for site protection and future site productivity, would create a short term (zero - eight years) fire hazard. The fuel-bed created by these treatments would be, in large part, comprised of material in the smaller size classes. These fuels would contribute to the flammability and continuity of fuels on a local level, as well as across the landscape. Under good burning conditions, fires burning in these slash fuel types have the potential to spread rapidly and extensively."

Bitterroot NF Burned Area Recovery DEIS, p. 3-12.

> "There's no science that demonstrates re-burn potential in areas where there is downed wood or decayed wood."

Craig Bobzien, Bitterroot NF Acting Supervisor (Missoula Independent, July 19, 2001)

> "We found no studies documenting a reduction in fire intensity in a stand that had previously burned and then been logged."

Environmental Effects of Postfire Logging (USDA Forest Service, 2000)

> "[We] are aware of no evidence supporting the contention that leaving large dead wood material significantly increases the probability of reburn."

Wildfire and Salvage Logging (Beschta, et al., Oregon State University, 1995)

> "The removal of large, merchantable trees from forests does not reduce fire risk and may, in fact, increase such risk."

Dept. of Agriculture and Interior, Report to the President (September 2000)

The best available science indicates that salvage logging increases small fuels that are most hazardous, and reduces large wood which is most valuable to wildlife.

> Our study examined fuel succession patterns by surveying downed woody fuels across a chronosequence of dry coniferous forest stands that burned with high fire severity (95–100% overstory tree mortality) within mixed- and high-severity wildfires in eastern Washington and Oregon, USA, between 1970 and 2007. We sampled forests in which ponderosa pine (*Pinus ponderosa*) and Douglas-fir (*Pseudotsuga menziesii*) are the dominant early-seral tree species … Relative to unlogged stands, post-fire logging initially increased surface woody fuel loads, increasing small diameter fuel loads by up to 2.1 Mg/ha during the first 5 years after fire and increasing medium diameter fuel loads by up to 5.8 Mg/ha during the first 7 years after fire. Logging subsequently reduced surface woody fuel loads, reducing large diameter fuel loads by up

> to 53 Mg/ha between 6 and 39 years after wildfire … The initial pulse of elevated surface fuels in logged stands was expected under our first hypothesis. Post-fire logging transfers woody debris in tree branches and tops from the canopies of fire-killed trees to the forest floor, producing well-documented conditions of higher surface woody fuels in logged stands than in unlogged stands in the first 1–4 years following logging (Donato et al., 2006, 2013; McIver and Ottmar, 2007; Monsanto and Agee, 2008; Keyser et al., 2009). Higher amounts of surface woody fuels – especially small and medium diameter woody fuels – can increase short-term fire hazards in logged stands by increasing potential rate of spread and fire-line intensity … Post-fire logging was most effective for reducing large diameter surface fuels, consistent with our second hypothesis. By removing tree boles, post-fire logging reduced maximum large diameter fuel loadings and produced a long period of reduced large diameter fuels, including both sound and rotten fuels. Although large diameter fuels may contribute little to fire spread rates (Hyde et al., 2011) and are typically disregarded in fire behavior modeling ….

David W. Peterson, Erich K. Dodson, Richy J. Harrod 2015. Post-fire logging reduces surface woody fuels up to four decades following wildfire. Forest Ecology and Management 338 (2015) 84–91. http://www.firescience.gov/projects/06-3-4-16/project/06-3-4-16_Peterson_et_al_-_2015_-_FEM_-_post-fire_logging_and_fuels.pdf. This study showed that salvage logging is most effective at reducing large fuels, which contribute least to fire hazard, but the study strangely failed to consider the effect on habitat. Reducing large wood for 40 years or more will have a significant adverse effect on wildlife habitat. It s also notable that this study focuses on fuels, but failed to note whether any of the numerous fire areas they looked at across Oregon and Washington had actually reburned. Studies that have looked at this issue, show that the risk of reburn (with or without salvage logging) is small, while the risk to wildlife from salvage logging is great.

Similar results were found in a "NecroDynamics" model that looked at 7 fires in the eastern slopes of the Oregon Cascades.

> Salvage logging immediately increased surface fine woody fuel loadings by 160–237% above maximum loadings observed in unmanipulated stands, and were higher during the initial 18–22 years post-fire … [O]ur modeling results suggest salvage logging has mixed effects on reducing hazardous fuel conditions since it increases fine woody fuel loadings and decreases coarse woody fuel loadings. … [P]rescriptions can be altered. For example, [to] retain a higher abundance of snags which would reduce the magnitude of difference in fine woody fuels between salvaged and unmanipulated stands during early in post-fire succession …. Although salvage logging reduces coarse woody fuel loadings, alone it does not mitigate re-burn hazard because it increases fine woody fuel loadings …. Additionally, intensive reforestation typically substitutes conifer biomass for shrub biomass, limiting hazardous fuels reduction unless additional efforts are employed … Understory woody vegetation reestablishes rapidly in these dry-mixed conifer forests (Dunn and Bailey, in press) and can be a highly-flammable fuel layer (Weatherspoon and Skinner, 1995), as well as a source of post-fire fine woody fuels when shrub crowns die (Table 4). This suggests salvage logging alone will not mitigate contributions to re-burn hazard from dead biological legacies when the temporal dynamics of multiple fuelbeds

(e.g. fine woody fuels, coarse woody fuels, and regenerating vegetation) are evaluated. R … Salvage logging to enhance ecosystem resilience may not be appropriate if multiple ecosystem functions and resources are considered, including; coarse wood use by wildlife (Cahall and Hayes, 2009; Hutto, 1995; Fontaine et al., 2009; Saab et al., 2005), functional attributes of early seral vegetation (Swanson et al., 2010), compounding effects on soil and nutrient pools (Brais et al., 2000; Triska and Cromack, 1980) and reduced water and carbon storage (Harmon et al., 1986).

Christopher J. Dunn, John D. Bailey 2015. Modeling the direct effects of salvage logging on long-term temporal fuel dynamics in dry-mixed conifer forests. Forest Ecology and Management 341 (2015) 93–109. http://www.sierraforestlegacy.org/Resources/Conservation/FireForestEcology/SalvageLoggingScience/Dunn&Bailey2015.pdf The authors suggested modifying salvage logging prescriptions to retain more snags, which would help retain fine fuels in the canopy longer and reduce the amount of fine fuels that are moved from the canopy to the ground.

A study of the portions of the Biscuit fire that were previously burned by wildfire, reveals that salvage logging did not reduce the severity of subsequent fires, and in fact salvage logging appeared to increase the severity of subsequent wildfires. See Jonathan R. Thompson, Thomas A. Spies, and Lisa M. Ganio. 2007. **Reburn severity in managed and unmanaged vegetation in a large wildfire.** Proceedings of the National Academy of Sciences. *PNAS* published online Jun 11, 2007. http://www.fs.fed.us/pnw/pubs/journals/pnw_2007_thompson001.pdf ("In places that burned with high severity in the Silver Fire, areas that were salvage-logged and planted burned with even higher severity than comparable unmanaged areas.") http://www.fs.fed.us/pnw/research/PNAS_Biscuit_Author_Comments_PNW.doc. This represents significant new information about salvage logging. ("Some, including forest scientists, would have expected fire severity to be lower in the logged and planted sites, where large wood was removed, broadcast burning done to reduce fine surface fuels, and some vegetation management conducted possibly reducing the cover of flammable shrubs. That our findings were the opposite of this expectation indicates that the large diameter wood is not a major factor in flammability …").

A recent scientific study scientific study of post-fire logging (McIver and Ottmar 2007) showed that salvage logging causes a four-fold increase in fine fuels and that increase can last for 15 years. Fine fuels tend to cause wildfires to rapidly spread which is more likely to kill young trees and set back forest recovery. Unlogged fire areas (the controls) had lower levels of fine fuels but had higher levels of large fuels. Large fuels do not tend to exacerbate the spread of fire but they can heat the soil. However, soil heating is a patchy phenomena that forests have evolved with and can tolerate. Retaining the large wood is also important for wildlife habitat and soil conservation. The scientific consensus in the fuel management literature is that it is more important to control small fuels. J.D. McIver, and R. Ottmar. 2007. Fuel mass and stand structure after post-fire logging of a severely burned ponderosa pine forest in northeastern Oregon. Forest Ecology and Management. Volume 238, Issues 1-3 , 30 January 2007, Pages 268-279. http://www.sierraforestlegacy.org/Resources/Conservation/FireForestEcology/SalvageLoggingScience/Salvage-McIver07.pdf

Donato looked at the effects of salvage logging after the Biscuit fire and found that—

> Postfire logging significantly increased both fine and coarse downed woody fuel loads (Fig. 1B). This pulse was comprised of unmerchantable material (e.g., branches), and far exceeded expectations for postfire logging-generated fuel
> loads (5, 6). In terms of short-term fire risk, a reburn in logged stands would likely exhibit elevated rates of fire spread, fireline intensity and soil heating impacts (7). Postfire logging alone was notably incongruent with fuel reduction goals. Fuel reduction treatments (prescribed burning or mechanical removal) are frequently intended following postfire logging, including in the Biscuit plan, but
> resources are often not allocated to complete them (8). Our study underscores that, after logging, mitigation of short-term fire risk is not possible without subsequent fuel reduction treatments.

D. C. Donato, J. B. Fontaine, J. L. Campbell, W. D. Robinson, J. B. Kauffman, B. E. Law. Post-Wildfire Logging Hinders Regeneration and Increases Fire Risk. www.sciencexpress.org. 5 January 2006.

The 1987 Bland Mountain fire burned east of Canyonville and was heavily salvage logged. The same area then reburned in 2004 with high fire intensity. Salvage logging did not appear to save these plantations from intense fire, in fact, the removal of large logs and dense replanting may have made the fire more intense. One fact is unquestionable, that is that fire hazard is high in young plantations even when they are salvaged. Salvage logging does nothing to address this fact, and may in fact lead to increased density of conifer vegetation types that are more flammable than the mixed conifer-broadleaf vegetation types that may be less flammable.

The NEPA analysis asserts that leaving large numbers of snags is unsafe and the NEPA document describes an undesirable scenario with respect to the no action and action alternatives, but the NEPA document must acknowledge the fire risks associated with salvage logging including: (a) salvage logging will remove most of the largest logs that least prone to burn (because large logs hold the most water the longest and they have relatively high ratios of volume to surface area), (b) salvage logging leave behind almost all of the smallest material which is most prone to drying and burning (e.g., relatively low ratio of volume to surface area), (c) the proposed action may lop and scatter the tops of large trees that are too big for the ground-based harvest machinery, (d) salvage logging equipment and workers could start fires, (e) increased human access increases the risk of human caused ignition, (f) the replanting will create a fuel load that is dense, uniform, extensive, volatile, and close to the ground (During an extreme weather conditions this is one of the most extreme fire hazards in the forest).

There is little empirical support for the idea that salvage logging reduces the intensity or severity of subsequent fire. Recent data show an actual increase in fire severity where post-fire logging had occurred. McIver, James D.; Starr, Lynn; [Technical Editors] 2000. Environmental effects of postfire logging: literature review and annotated bibliography Gen. Tech. Rep. PNW-GTR-486. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 72 p. http://www.fs.fed.us/pnw/pubs/gtr486.pdf. Harma K., and P. Morrison. 2002. Analysis of Vegetation Mortality and Prior Landscape Condition, 2002 Biscuit Fire

Complex. Pacific Biodiversity Institute.
http://web.archive.org/web/20060518211529/http://www.siskiyou.org/issues/pbivegetative.pdf
Dennis C. Odion, Evan J. Frost, James R. Strittholt, Hong Jiang, Dominick A. Dellasala§, And Max A. Moritz. 2004. Patterns of Fire Severity and Forest Conditions in the Western Klamath Mountains, California. Conservation Biology. Volume 18 Issue 4 Page 927 - August 2004. http://www.blackwell-synergy.com/links/doi/10.1111/j.1523-1739.2004.00493.x.

Salvage typically removes the largest logs that act as water "reservoirs" and are least prone to drying. *See* Amaranthus, M.P.; Parrish, D.S.; and D.A. Perry. 1989. Decaying Logs as Moisture Reservoirs After Drought and Wildfire. In: Alexander, E.B. (ed.) Proceedings of Watershed '89: Conference on the Stewardship of Soil, Air, and Water Resources. USDA-FS Alaska Region. RIO-MB-77. p. 191-194. This study found that large down logs in a post-fire landscape contain 25 times more moisture than the surrounding soil. While the authors recommended preventing large accumulations of "woody residue" (which the author described as very small diameter material--branches, twigs, etc.), they also recommended leaving down logs after fires to PREVENT future fire severity. They concluded that, "When forest managers are analyzing for fire risk, they should take into account the high water content of fallen logs during the period in which wildfire potential is greatest... Fallen trees, in a range of decay classes, therefore provide a long-term reservoir of moisture. A continuous supply of woody material left on the forest floor, not only protects the productive potential of the forest soil, but also provides a sanctuary for ectomycorrhizae and a significant source of moisture in the event of prolonged drought or wildfire." The study was conducted in the Klamath region in an area with roughly 40 inches of annual rainfall. It was published in 1989 in Proceedings of Watershed '89: a conference on the stewardship of soil, air and water resources. USDA Forest Service, Alaska Region: pp. 191-194 (1989).

VIII. SALVAGE LOGGING IS INCOMPATIBLE WITH COMMUNITY STABILITY

The DEIS admits that the timber industry is inherently volatile and timber production causes community instability. Salvage logging amplifies these adverse effects by creating unpredictable temporary pulses in log supply.

The DEIS (p 277) assumed that salvage logging would occur at the rate of 359 acres per year. This is misleading because fires do not occur in a steady rate over time. This are highly episodic, with some years producing few wildfires and other years producing many thousands of acres of wildfires. Salvage logging would likely following this episodic, boom-bust pattern. The DEIS did not disclose this disruptive effect on community stability.

ROADS, TRANSPORTATION, AND TRAVEL MANAGEMENT

Approximately 30 percent of the [BLM] road mileage is in fair to poor condition, primarily due to depleted surfacing aggregate and worn-out minor culverts. Currently the deferred maintenance backlog exceeds $300 million.

All of the BLM developed action alternatives call for increasing the size of the transportation network[233] despite the fact that the BLM already has a $317 million-dollar deferred road maintenance backlog of which $127 million is within the Medford District. DEIS at 646. Hence the range of action alternatives is arbitrarily narrow and excludes consideration of a reasonable action alternative that would avoid new road construction.

Additionally, the proposed new road construction is likely to have disproportionately large impacts on watershed and wildlife values. As stated on page 317 of the DEIS, "within the sediment delivery distance (200 feet), newly constructed roads would primarily be constructed to provide access for forest thinning within the riparian reserves" thereby harming water quality and terrestrial wildlife habitat connectivity. Already 36% of the 14,330 miles of inventoried BLM logging roads (that the agency cannot afford to maintain to standard) are located within 200' feet of streams. DEIS page 314. Every action alternative will contribute to the road maintenance backlog to the detriment of aquatic and wildlife objectives and values.

As indicated on page 650 of the DEIS, the Medford District will be disproportionately impacted by the BLM's proposal to increase the size of the existing transportation system. The Medford District has be far the most projected new road construction to access timber harvest with the lowest comparative volume per acre. This strategy undercuts the sustainable harvest mandate of the O&C Act and the stated purpose of sustainable forest production for the RMP Revisions.

Please note that the BLM is deferring transportation management planning and analysis of environmental and social effects to a hypothetical future NEPA planning process[234] while preparing to authorize a significant increase in the size and impacts of its road system in this planning process. NEPA does not permit such an approach.

I. BLM MUST PROVIDE ADDITIONAL INFORMATION WHEN DEFERRING TRAVEL PLANNING DECISIONS

We are concerned that the Draft RMP does not go far enough to set the legal existing footprint of travel routes and curtail additional route proliferation while the travel planning process is in deferment. BLM's Travel and Transportation Manual (Manual 1626) requires BLM to complete certain tasks through the RMP if it is deferring travel planning, as it is here. Among these required tasks include producing a map of the known network of transportation linear features and defining interim management objectives for areas where route designations were not completed concurrent with the RMP.[235] According to both the TMP Manual and Handbook, delineating travel networks can be deferred for up to 5 years after signing the Record of Decision for the RMP.[236] However, BLM must also come up with an action plan and planning schedule to indicate areas that will have travel planning completed concurrently with the RMP process and which areas will be deferred.[237]

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[233] DEIS at 648.
[234] DEIS at 636.
[235] BLM Manual 1626.06(B)(2).
[236] BLM Manual 1626.06(B)(3); BLM Handbook 8342(I)(C)(ii).
[237] BLM Handbook 8342(IV)(B).

We appreciate the work that has been completed in Appendix P of the Draft RMP entitled "Off-highway Vehicle Management Guidelines." The Draft RMP explicitly states that BLM developed these guidelines consistent with BLM Handbook H-8342. We acknowledge that several of the guidelines of Handbook H-8342 have been met for a deferred travel plan, there are some outstanding measures that have yet to be taken. We urge BLM to incorporate the following documentation and information in the RMP:

II. BLM SHOULD MAP THE CURRENT SYSTEM OF AUTHORIZED EXISTING TRAVEL ROUTES.

BLM Handbook 8342 states that BLM must assess the current ground transportation linear feature database during the pre-planning stage for the RMP since it is essential that that a credible baseline inventory is available for eventual TMP efforts and to decide which areas are higher priority for designating routes.[238] Thus, even though BLM can defer designation of a travel network, it still must document the current system of existing authorized routes now, during the RMP stage. Appendix P of the Draft RMP states that BLM is "*currently working on an inventory of all user-created motorized and non-motorized routes within the decision area . . . as a baseline to guide future implementation-level route designations within the areas that are designated "Limited to Existing Routes."* [239](emphasis added). The Draft RMP goes on to state that *"[r]ecreation routes (authorized and unauthorized) have been created in response to demand for trail-based recreation*."[240]

We encourage gathering inventory data on all routes, including user-created and unauthorized, for the purposes of knowing what exists on the ground. However, BLM should not be adding user-created or unauthorized routes to its baseline inventory maps of the existing travel network as these routes were not authorized by the agency. The baseline route inventory should only include those that were legally created or authorized by the agency and all other routes should be slated for closure and rehabilitation.

III. BLM SHOULD SET CRITERIA FOR PRIORITIZING AREAS FOR TRAVEL PLANNING AND PROVIDE A CLEAR PLANNING SCHEDULE.

Handbook 8342 mentions that BLM should consider completing certain units for travel planning during the RMP process, such as smaller areas or sub-units that have sufficient travel and transportation information, areas that are most heavily used, or areas that have existing social conflicts, resource concerns, or a defined need for route definition or development for administrative, public access or other needs first.[241] The Handbook also states that RMPs should "provide a clear planning sequence, including public process (focusing on user groups and stakeholders), initial route selection criteria, and constraints for subsequent road and trail selection and identification." [242]

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[238] BLM Handbook 8342(IV)(A).
[239] DEIS at 1377.
[240] Id.
[241] BLM Handbook 8342(IV)(B).
[242] BLM Handbook 8342(IV)(H)(iv)(2).

While the Draft RMP describes the process for selecting a final road and trail network, it does not set areas that should be prioritized for travel planning after the ROD is signed. The Draft RMP also does not provide a clear planning sequence or schedule for completing travel planning for the planning area within 5 years of signing the ROD. Setting criteria, priority areas and a schedule for completion will provide both the agency and the public with the expectations that travel planning will occur in a reasonable and timely fashion, in addition to following the policy guidance of BLM Handbook 8342.

One good example of setting a schedule for deferred travel planning at the RMP level is in the Proposed RMP for the Lander Field Office. In the Lander Proposed RMP, Appendix W, Table W.1 sets forth priority ranking, timeframes for completion and interim and final restrictions for each travel management planning zone. This is an appropriate approach to deferred travel planning that BLM should adopt in this RMP.

BLM also has broad authority to close areas in the interim to protect public lands and resources.[243] In addition, BLM must immediately close any areas where the agency finds that off-road vehicles are or will cause considerable adverse effects upon natural or cultural resources.[244] BLM has policy guidance (IM 2013-035) that describes how RMPs and TMPs should address temporary closures including defining thresholds for when ORV related closures will take place. BLM should issue temporary closures for any area where ORVs are currently harming or may harm natural or cultural resources in the interim period before BLM can designate the appropriate travel network.

IV. BLM SHOULD GATHER INVENTORY DATA FROM THE PUBLIC RELATED TO NON-MOTORIZED TRAVEL ROUTES.

Handbook 8342 provides that the RMP should *"[o]utline additional data needs and a strategy for collection."*[245] *In addition, the Handbook states that "[i]t is essential that the BLM identify all existing routes to the extent feasible*." [246]

Historically, non-motorized trails have been an underrepresented linear feature through BLM travel planning. The same is true with considering non-motorized recreational experiences. However, BLM must ensure that it is incorporating all non-motorized trail data from the public. In order to do so, BLM should gather as much data from the public on non-motorized trails as possible including trail location, use, time of use and compatibility with other uses. BLM should make clear in its data calls that data should be submitted in line with the step-by-step process outlined in *BLM Technical Reference 9113-1, Planning and Conducting Route Inventories.*

The following guidance set out in BLM Handbook 8342 provides additional considerations for gathering data from non-motorized users of the public lands in the decision area:

[243] 43 C.F.R. § 8364.1.
[244] 43 C.F.R. § 8341.2.
[245] BLM Handbook 8342(IV)(H)(iv)(1).
[246] BLM Handbook 8342(V)(D).

While the BLM should collect as much relevant information as possible during the RMP planning process, the data collection should be informed and guided by the issues and concerns identified by the ID team and through public scoping. Transportation data at the RMP level may tend to overlook the most recently created routes and fail to identify trails to a greater degree than roads. Input and collaboration with trail user groups, research through guidebooks and online trail information sources may be helpful in identifying areas where additional field data collection is important. Areas that are important local or regional destinations for trail use, or where dispersed recreation activities are highly popular (e.g., rockhounding) may require an interactive approach to data collection and public review of the transportation inventory.

The importance of making effective use of GIS technology cannot be overemphasized. For example, GIS can be utilized in the public involvement process to allow the public to have an interactive interface with the route data being presented. This can greatly facilitate the public's ability to understand and comment on the accuracy of the data that will be evaluated for possible inclusion in the designated route network (see Appendix 9 for examples of how GIS can facilitate the TTM process.)

Recommendations: BLM must map and document the existing authorized route system as of the date of this RMP and clarify that user-created or unauthorized routes will not be considered as part of the baseline inventory. BLM should prioritize areas for comprehensive travel planning with interim closures and restrictions and specific timeframes for completion, no later than 5 years from the signing of the ROD. BLM should gather inventory data from the public related to non-motorized travel routes to inform the travel planning process.

V. BLM HAS A DUTY TO MINIMIZE IMPACTS OF ROUTE DESIGNATIONS.

In response to the growing use of ORVs and corresponding environmental damage, Presidents Nixon and Carter issued executive orders mandating that BLM only allow ORV use on the public lands if certain conditions were met.[247] Pursuant to those orders, BLM regulations require that designated ORV "areas and trails shall be located:

(1) "to minimize damage to soil, watershed, vegetation, air, or other resources of the public lands, and to prevent impairment of wilderness suitability;"
(2) "to minimize harassment of wildlife or significant disruption of wildlife habitats;" and
(3) "to minimize conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors."[248]

[247] Exec. Order No. 11,646, 37 Fed. Reg. 2877 (Feb. 9, 1972); Exec. Order No. 11,989, 42 Fed. Reg. 26,959. May 25, 1977.
[248] 43 C.F.R. § 8342.1(a)-(c); *see also* Exec. Order 11,644, § 3(a) (similar language).

BLM's Travel Management Manual 1626 states that BLM must pay particular attention to thoroughly documenting how the minimization criteria was considered in making both ORV designations (Manual 1626.06(A)(2)(a)) and route designations (Manual 1626.06(B)).

Together these mandates impose a rigorous process and high threshold for BLM to designate OHV areas and travel routes in the planning area. BLM must carefully assess and document how *each* designated area or route will: (1) minimize impacts to the soil, watershed, vegetation, air, wilderness or other resources, and (2) minimize conflicts between motorized users and the visitors engaging in quiet, non-motorized forms of recreation. BLM must be sure to address those and other impacts through careful application of the minimization criteria on a route-by-route basis.[249]

The Draft RMP provides that *"[t]he BLM applied designation criteria in 43CFR 8342 when designating lands as open, limited, or closed to off-road vehicles. All designations are based on the protection of the resources of the public lands, the promotion of the safety of all the users of the public lands, and the minimization of conflicts among various uses of the public lands.*" [250] However, the Draft RMP provides no information on how the criteria were applied.

A number of federal courts have held that BLM and other federal land management agencies must *apply* these so-called "minimization criteria" to area and trail designations and *articulate* a reasonable basis for concluding that the designation minimizes impacts to important resources. For example, in addressing a BLM planning process, one federal court held that *"[a]cknowledging the minimization standards is not the same as applying them.*" [251] Further, BLM must provide sufficient information "*for someone other than the BLM to know why or how the routes were chosen.*" [252] "[*r]ecord does not demonstrate whether or how [the agency] implemented and incorporated the minimization criteria*" (under analogous Forest Service regulations);[253] (detailed survey and inventory of routes inadequate where "there is nothing in the record to show that the minimization criteria were in fact applied when OHV routes were designated").

The Ninth Circuit Court of Appeals recently struck down a plan for failing to properly apply the minimization criteria. [254] In *WildEarth Guardians*, the Ninth Circuit held that, *"[w]hat is required is that the Forest Service document how it evaluated and applied the data on an area-by-area basis with the objective of minimizing impacts*." [255] "Moreover, as various district courts have held, "*mere consideration of the minimization criteria is not sufficient to comply with the regulation."*[256]

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[249] *See, e.g.*, *SUWA*, 981 F. Supp. 2d at 1105 (BLM must apply minimization criteria "at the route specific level" to assess "the effects of route designations," and must provide sufficient information "for someone other than the BLM to know why or how the routes were chosen").
[250] DEIS at 638.
[251] *S. Utah Wilderness Alliance v. Burke*, 981 F. Supp. 2d 1099, 1104-06 (D. Utah 2013).
[252] *Id.* at 1105. *See also, Idaho Conservation League v. Guzman*, 766 F. Supp. 2d 1056, 1071-74 (D. Idaho 2011)
[253] *Ctr. for Biological Diversity v. BLM*, 746 F. Supp. 2d 1055, 1071-81 (N.D. Cal. 2009)
[254] *WildEarth Guardians v. USFS*, No. 12-35434 (9th Cir. June 22, 2015).
[255] *Id*., slip op. at 24.
[256] *Id*., slip op. at 25.

Thus, it is unequivocally clear that BLM cannot designate OHV areas or routes without applying the minimization criteria and documenting how it was applied for individual designations. The draft has nothing to show how the criteria was applied to the decision area.

***Requested Remedy*:** BLM must design OHV areas in the plan that minimizes conflicts among users and damage to natural resources. Areas must be evaluated to ensure that they are located and bounded to meet the minimization criteria for purposes of BLM management and enforcement. We request that BLM apply the minimization criteria by showing how it is specifically minimizing impacts to resources and conflicts to other uses for each route as required by law.

VI. BLM MUST PROVIDE A RANGE OF ALTERNATIVES FOR OHV AREA DESIGNATIONS.

The range of alternatives is "*the heart of the environmental impact statement*."[257] NEPA requires BLM to "*rigorously explore and objectively evaluate*" a range of alternatives to proposed federal actions.[258] "*An agency must look at every reasonable alternative, with the range dictated by the nature and scope of the proposed action.*" [259]An agency violates NEPA by failing to "*rigorously explore and objectively evaluate all reasonable alternatives*" to the proposed action.[260] This evaluation extends to considering more environmentally protective alternatives and mitigation measures.[261]

In regards to OHV area designations, BLM has not met its obligation to consider a reasonable range of alternatives. As stated in the Draft RMP, *"[e]ven under the most restrictive alternative for OHV use (Alternative C), the BLM would close less than 1 percent of BLM-administered lands in the decision area to OHV use.*"[262] This is the same analysis that was overturned by the district court and upheld by the 9th Circuit Court of Appeals five years ago for the BLM RMP for Southeastern Oregon. The 9th Circuit held:

The ORV analysis is also flawed . . . It considered no alternative that proposed closing more than a fraction of the planning area to ORV use, as opposed to merely designating areas for "limited" use. As ONDA observes, the BLM did not consider any alternative that would have closed more than 0.77% of the planning area to ORVs. Indeed, every alternative would have reduced the extent of closed areas from that in effect previously. It is precisely this sort of "uncritical[ ]" privileging of one form of use over another that we have held violates NEPA. Closures, not just "limited" designations, must be considered to comply with NEPA.

Or. Natural Desert Ass'n. v. BLM, 625 F.3d 1092, 1123-1124 (9th Cir. Or. 2010) (citations omitted).

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[257] 40 C.F.R. § 1502.14.
[258] *See* 40 C.F.R. §§ 1502.14(a), 1508.25(c).
[259] *Nw. Envtl. Defense Center v. Bonneville Power Admin*., 117 F.3d 1520, 1538 (9th Cir. 1997).
[260] *City of Tenakee Springs v. Clough*, 915 F.2d 1308, 1310 (9th Cir. 1990) (quoting 40 C.F.R. § 1502.14).
[261] *See, e.g., Kootenai Tribe of Idaho v. Veneman*, 313 F.3d 1094, 1122–23 (9th Cir. 2002) (and cases cited therein).
[262] DEIS at 640.

The BLM nonetheless maintains that its analysis of ORV designations is adequate because it considered a wide range of use allocations between open and limited ORV designations, and because it could implement emergency closures if necessary. We disagree. Limited ORV use is simply not identical to no ORV use. A limited designation, even with the possibility of closure, does not provide protection equivalent to a straightforward closure.[263]

Here, as in the RMP for Southeastern Oregon, the BLM has not considered closing more than 0.7% of the planning area to OHV use.[264] This does not meet BLM's legal obligation to consider a reasonable range of alternatives as discussed by the 9th Circuit in the case cited above.

Recommendation: BLM must consider alternatives that consider closing more than a very small fraction of the planning area to OHV use.

SOCIOECONOMICS

The draft RMP and DEIS are based on flawed economic reasoning and analysis that attempt to justify an expanded timber sale program that creates more economic harm than good.

The most significant economic and social effects of the preferred RMP alternative (Alternative B) will be associated with a 60% increase in timber harvests over current levels at a time when markets are severely distorted by negative externalities and logging subsidies and affected communities are evolving away from an unhealthy dependence on the timber industry.[265] The DEIS fails to provide an explanation of why the increase in logging proposed under alternatives A, B, and C is economically justified and why the no harvest and natural selection alternatives were rejected when they represent the only alternatives that can fulfill statutory sideboards that specify under what conditions BLM timber should be offered for sale.

I. BLM'S NEEDS AN ECONOMICALLY RATIONAL TIMBER SALE PROGRAM.

The BLM has misconstrued its legal mandate as one that requires an increase in logging. While there are dozens of statutes, regulations, and executive orders that have bearing on management of western Oregon BLM lands the controlling authority with respect to timber supply is the Oregon and California Railroad and Coos Bay Wagon Road Grant Lands Act (O&C Act; 43 U.S.C. 1181a et seq.).

In pertinent part, the O&C Act requires that western Oregon O&C lands be managed "for permanent forest production, and the timber thereon shall be sold, cut, and removed in conformity with the princip[le] of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities."[266] The O&C Act also provides that "timber from said lands in an amount not less than . . . the

[263] *Or. Natural Desert Ass'n. v. BLM*, 625 F.3d 1092, 1123-1124 (9th Cir. Or. 2010) (citations omitted).
[264] Draft RMP, Table 3-220, p. 639
[265] The timber harvest baseline in the DEIS is 144.3 million board feet (mmbf) in 2012. Alternative B, the preferred alternative, would increase this cut to 230.2 mmbf.
[266] 43 U.S.C. § 1181a.

annual sustained yield capacity . . . shall be sold annually, or so much thereof as can be sold at reasonable prices on a normal market."[267]

BLM has invoked this legal mandate as the primary purpose and need for the RMP revision process. In particular, the driving force behind the RMP revision and the proposed increase in timber harvest is to respond to what the agency has determined to be a "substantial, long-term departure from the timber management outcomes predicted under the 1995 RMPs." The 1995 RMP estimated a sustained yield allowable sale quantity, and current harvest levels are roughly 1/3 of that. However, there is nothing in the O&C Act that requires the BLM to actually sell that amount of timber each year. Indeed, the O&C Act puts significant conditions on BLM's timber sale program: (1) it must be offered at reasonable prices; (2) under normal market conditions, and (3) to achieve a variety of purposes, including community stability. If none of these conditions can be met, then no timber sale program much less an expanded one need be implemented. Against this backdrop, it is clear that the proposed increase in logging cannot be justified.

II. REASONABLE PRICES PRECLUDE ANY ADDITIONAL TIMBER SALES DURING THIS PLANNING CYCLE

In developing the RMP and DEIS, the BLM has not discussed the process the agency intends to use to ensure that when offered for sale, its timber receives reasonable prices. While current practice is to offer timber for sale at or below a fair market value based on current market prices for comparable timber,[268] there is nothing to suggest that this price setting method is reasonable, especially when the agency has at its disposal other methods for determining fair market value that are designed to cover all costs of production from the seller's (BLM) perspective. The issue of sales below fair market value from the seller's perspective is an issue that has plagued the agency for decades, and one that could be remedied in this planning cycle. As stated succinctly in 1997 in a PEER white paper on the subject, "[b]ecause no seller would perpetually sell a product for less than its cost, this suggests that Congress intended that BLM appraisals insure cost-recovery when the fair market value of timber is estimated."[269]

For a private entity a reasonable price that covers the costs of production includes direct material costs, labor costs, sale and administration costs, and provisions for markup to achieve a desired internal rate of return on investment plus markup for profits. This is simply known as full cost pricing. But the BLM is not a private firm. It also bears responsibility for the economic, social and environmental costs it may pass on to society – negative externalities. OMB Circular A-94 ("General Principles" Section 5) is explicit in this requirement for federal programs:

> Analyses should include comprehensive estimates of the expected benefits and costs to *society* based on established definitions and practices for program and policy evaluation. Social net benefits, and not the benefits and costs to the Federal Government, should be the basis for evaluating government programs or policies that have effects on private citizens or other levels of government. Social benefits and costs can differ from private

[267] Id.
[268] DEIS at 479.
[269] Public Employees for Environmental Responsibility (PEER). 1997. Land of No Return$. Bankruptcy of the BLM Public Domain Forestry Program. White Paper Number 13. Hood River, OR: PEER.

> benefits and costs as measured in the marketplace because of imperfections arising from: (i) *external economies or diseconomies* where actions by one party impose benefits or costs on other groups that are not compensated in the market place; (ii) monopoly power that distorts the relationship between marginal costs and market prices; and (iii) taxes or subsidies (emphasis in original).[270]

The Department of Interior (DOI) has fully embraced OMB's mandate to consider negative externalities in planning decisions:

> *In many cases the benefits provided by the raw materials and products that flow from DOI managed lands, as well as the production, distribution and use of these products, also may cause adverse effects on the environment, economy, or society. Economists typically characterize these adverse effects as* negative externalities…. *The ability to evaluate these negative externalities is an important component to strengthening the set of information available to decision makers" (emphasis in original).*[271]

To correct for the presence of negative externalities, the DOI has stated its commitment to full cost accounting to "help promote more cost-effective investments on public lands."[272] The BLM has further reinforced this mandate through an agency-wide directive to account for all of the market and non-market values affected by management activities with a strong preference for quantitative methods when certain criteria are met: (a) when significant non-market values are at risk; (b) when alternatives present a strong contrast between extractive and non-extractive uses of the land, and; (c) when the magnitude of the proposed change in management is large.[273] The draft RMP meets each of these.

In the draft RMP, there are no provisions for or even discussion of how the BLM intends to go about offsetting both the federal financial costs and negative externalities of an increased timber sale program. The range of negative externalities associated with BLM timber sales includes a wide array of costs associated with diminished recreational and commercial fish landings, sediment removal, increased flooding, loss of water quality, increased habitat restoration costs, loss of tourism revenues, and social costs of carbon emissions, to name a few.[274] The most logical way to account for these and one most consistent with market principles, DOI commitments, and BLM guidance is to incorporate these costs into minimum bid prices. The methods and sources of information needed to meet the reasonable price standard and set minimum bid prices that reflect all agency and social costs are well established, and have been

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[270] The full text of Circular A-94 is available online at: https://www.whitehouse.gov/omb/circulars_a094#6.
[271] US Department of Interior (DOI). 2012. The Department of The Interior's Economic Contributions. Fiscal Year 2011, Chapter 7 – The Externalities of DOI Activities: Moving Towards Full Cost Accounting. Washington, DC: US DOI.
[272] Id.
[273] Bureau of Land Management. 2013. Instruction Memorandum 2013-131, Change 1, attachment 1, "Economic Methods for Estimating Nonmarket Environmental Values. Accessible online at: http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2013/IM_2013-131__Ch1.print.html.
[274] *See, e.g.* Niemi, Ernie and Ed Whitelaw. 1999. Assessing Tradeoffs in Forest Management. General Technical Report PNW-GTR-403. Portland, OR: USDA Forest Service, Pacific Northwest Research Station; Talberth, John and Karyn Moskowitz. The Economic Case Against National Forest Logging. Santa Fe, NM: Forest Conservation Council and Forest Guardians.

for decades. To illustrate, consider the negative externalities associated with lost recreation value and carbon emissions and what they imply for reasonable prices of BLM timber.

The value of recreation on BLM and other public lands is typically expressed in terms of consumer surplus – or the amount people are willing to pay over and above the costs of travel, supplies, lodging, fees, and other financial outlays they make in association with particular recreation experiences. For all BLM administered lands in western Oregon, the DEIS estimates consumer surplus associated with outdoor recreation to be $222,872,000 per year ($232,676,040 in 2015 dollars).[275] Although a significant portion of this value is generated on lands allocated to Recreation Management Areas (RMA), recreation use is widely dispersed because many of those who participate in recreation activities seek access to the secluded sites and old growth forests provided by even small and isolated patches of BLM lands in an otherwise heavily logged landscape for uses such as wildlife viewing, camping, hunting, and nature study.[276] So recreation value is spread out on all BLM lands, included those allocated to timber management.

The BLM administers roughly 2.5 million acres of land. This implies that an average acre yields $93.07 in recreation related consumer surplus benefits each year. Even aged management as planned under all action alternatives destroys this recreation value since such stands are in abundance while mature and old growth forests are increasingly scarce and so substitute sites are already in short order. This is especially true because the greatest scarcities in the western Oregon region are for camping, trails, and other recreation opportunities that bring people closest to nature and provide solitude.[277] The most suitable sites for expansion of camping opportunities and trail use are in these unmanaged forests. Assuming this value is destroyed for all future years (50) in the analysis period yields an average present value cost to recreation of $2,395 per acre at a 3% discount rate. This is a cost of providing federal timber that must be factored into the BLM's determination of reasonable price, or minimum bid.

Historically, minimum bids are set close to current appraised values – roughly $300 per thousand board feet (mbf) anticipated under this RMP. An average acre of mature forest in the suitable timberland base on BLM lands in western Oregon yields roughly 46.2 mbf and so minimum bids will probably be close to $13,860 per acre.[278] Adding the recreation externality to this would boost the minimum bid needed to cover costs to $16,255 per acre or $351/mbf – an increase of 17.3%.

As another example, consider the social costs of carbon dioxide emissions (SCC) associated with logging activities. A typical acre of mature or old growth forest in the Pacific Northwest stores roughly 500 metric tons of carbon per acre.[279] The DEIS estimates 150 metric tons per acre on

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[275] DEIS at 494, Table 3-150.
[276] DS Consulting. 2013. Summary and Key Findings for the Bureau of Land Management Recreation Outreach and Public Participation of the Resource Management Plans for Western Oregon. Portland, OR: DS Consulting, Prepared for the Oregon BLM.
[277] ECONorthwest. 2015. Outdoor Recreation Scarcity and Abundance in Western Oregon: A Spatial Analysis. Portland, OR: ECONorthwest.
[278] Department of Interior. 1992. Report of the Secretary of the Interior to the Endangered Species Committee. Related to the Application by the Bureau of Land Management for Exemption from the Requirements of Section 7(a)2 of the Endangered Species Act.
[279] DellaSala, Dominick. 2015. Comments on Revised Draft CEQ Guidelines on Greenhouse Gas (GHGs) Emissions and Climate Change NEPA analysis. Ashland, OR: Geos Institute.

western Oregon BLM lands – a figure that includes clearcuts, plantations, and natural forests.[280] When logged, about half of this is released as a carbon dioxide CO^2 pollutant after accounting for the amount temporarily stored in wood products before they decay.[281] The emissions associated with a typical mature or old growth logging unit thus generates 917.5 metric tons of carbon dioxide equivalent (CO^2-e) per acre.[282] The social cost of these carbon dioxide emissions (SCC) have been well studied, and incorporated into federal agency decision making as the BLM notes in the DEIS.[283] At a SCC price of $42.77 per metric ton CO^2-e[284], this means $39,241 per acre in social costs. If the BLM minimum bid price is adjusted to offset both the social costs of carbon dioxide and the cost to recreation values it would thus have to be set at $55,496 per acre or $1,201/mbf – an increase of 400% over present minimum bid levels.

Another approach for internalizing negative externalities of logging into minimum bid requirements would be to incorporate the growing body of literature on ecosystem service values and studies on how logging affects them. This is the "lost services" approach and may present a more tractable alternative to estimating negative externalities on a case-by-case basis. For example Niemi (2015) quantified the annual ecosystem service benefits associated with provision of biological diversity (northern spotted owl habitat), water quantity, water quality, and carbon storage and then estimated the effects of an increase in industrial logging activities proposed on western Oregon BLM lands. He found that "[t]he value of these lost services likely would average at least $50,000 per acre and perhaps more than $100,000 per acre, especially on lands with large trees."[285] By the same methods used above, this would translate into minimum bid prices between 1,382/mbf and $2,465/mbf needed to offset these negative externalities.

Regardless of which approach is used – lost services or case-by-case estimation of the negative externalities associated with logging – the BLM has an obligation to incorporate this information into the design of its timber sale program so that minimum bids received reflect the true social cost of providing timber from federal land and thus reflect a reasonable price. But offering BLM timber sales at minimum bid prices of $1,200/mbf or more would be prohibitive for buyers now purchasing logs on the open market at roughly half this amount, at best. But this is a reasonable outcome, by law, since the O&C Act sets conditions on whether or not (reasonable prices and normal markets) BLM timber must be offered for sale at all. Thus, by the reasonable price standard alone, the BLM should adopt the no-harvest alternative. The DEIS and draft RMP must be revised to consider this outcome.

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[280] Calculated by multiplying the teragrams carbon figure from DEIS Table 3-23 (373.02) x 1,000,000 (metric tons per teragram) divided by the 2.5 million acres of western Oregon BLM lands.
[281] DellaSala. 2015. Note 6.
[282] Converting carbon to carbon dioxide equivalent (CO2-e) units requires multiplication by an adjustment factor of 3.67. The 500 metric tons carbon thus represents 1,835 metric tons of CO2-e. If half of this is lost to logging it thus represents a per acre emission factor of 917.5.
[283] DEIS at 483.
[284] This is the 2007 average social cost of carbon figure of $37 per metric ton CO2-e (DEIS at xx) converted into current (2015) dollars.
[285] Niemi, Ernie. 2013. Economic Value of Goods and Services Produced by the O&C Lands With and Without Industrial Logging. Eugene, OR: Natural Resource Economics.

III. NORMAL TIMBER MARKET CONDITIONS DO NOT EXIST

The second condition Congress set on the offering of timber from O&C lands is the condition that BLM only participate in "normal" markets. The concept of normal markets is a precise term for economists. It means markets that are not distorted by one or more market failures that take the form of externalities, public goods, missing markets, subsidies, monopoly power, barriers to competition, and asymmetrical information.[286] Markets for BLM timber are severely distorted by many of these market failures. The presence of negative externalities has been discussed above. In particular, each acre of BLM timber offered for sale may generate negative externalities of up to $100,000.[287]

Timber subsidies also abound. These subsidies take the form of numerous federal, state, and local government programs and policies that result in more timber being cut than would be in the absence of such programs and policies. The BLM and US Forest Service, for example, help supply timber from private lands through right of way and log haul permits that grant private logging companies unlimited use of federal roads to bring their logs to markets. The State of Oregon offers tremendous tax breaks to logging companies. In 1999, former Governor Kitzhaber rescinded the timber harvest privilege tax, which has now led to a $60 million a year shortfall in school funding. Timber companies do not have to pay property taxes at the rate most landowners pay. Instead, they pay based on what is known as "current use valuation" that translates into property taxes of just 10% of what other private landowners pay.

Another major subsidy takes the form of unemployment insurance paid by other businesses to compensate for the timber industry's failure to maintain community stability by overcutting its lands, exporting wood, and engaging in other practices harmful to labor. As noted by Niemi and Whitelaw (1999):

> *The amount of benefits paid to workers in the lumber and wood products industry often has exceeded the industry's premiums. Between 1980 and 1991, for example, the unemployment-insurance benefits paid to workers laid off from Oregon's lumber and wood products industry exceeded the total premiums paid by more than $221 million (1992 dollars).[288] Business owners in other industries, and their workers, bore the burden of making up this difference.*

The problem of missing markets is, perhaps, the greatest market failure in play with respect to BLM timber sales. While clean water, carbon storage, recreation, pollination, scenery, and biological diversity are public goods with vastly more value than timber they are not paid for because they are non-exclusive and non-rivalrous.[289] The typical results are:

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[286] Various forms of market failure are discussed in depth in most intermediate level macroeconomics courses. But a more accessible list has been compiled by Economics Online at: http://www.economicsonline.co.uk/Market_failures/Types_of_market_failure.html.

[287] Niemi, 2013, Note 21.

[288] ECONorthwest with data provided by the Oregon Employment Division. Data on file with: ECONorthwest, 99 W. Tenth, Suite 400, Eugene, OR 97401.

[289] This is also known as the public goods market failure. Public goods are goods that are non-exclusive (meaning no one can be excluded from enjoying them) and non-rivalrous (meaning one person's use does not diminish the next). Because of these characteristics, private markets cannot supply them. The outcome is that they are under-provided. For a useful synopsis, see: http://www.pitt.edu/~upjecon/MCG/MICRO/GOVT/Pubgood.html.

> *...underprovision of a good, service, or amenity relative to the efficient level of provision; excessive levels of discommodities and disamentities, relative to the efficient level; overexploitation of a resource, relative to the efficient level of exploitation; and underinvestment in the management, conservation, and productive capacity of a resource.*[290]

This is an accurate portrayal of what is occurring on Oregon's federal, state, and private timberlands. While development of missing markets in the form of payments for ecosystem services (PES) is forthcoming, the lack of PES markets at this time is one of the key explanatory factors in the dramatic overcutting of Oregon's state and private timberlands (see below) and use of techniques such as short rotation clearcutting that are so damaging to soils, watersheds, long term forest productivity, wildlife, scenery, biological diversity.[291] Adding more BLM timber to the mix in this context of missing markets is unjustified. Despite Congress's unambiguous language, the draft RMP and DEIS are silent on the entire concept of normal markets, these market failures, and how the proposed increase in logging is justified in the presence of them.

Additional timber sales will not meet the purpose of protecting watersheds, regulating stream flow, and contributing to economic stability. Congress also put constraints on BLM's timber sale program in the form of a set of purposes that a sustained yield supply of timber is supposed to serve alongside the purpose of a permanent source of timber supply. These include "protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities."[292] But the proposed increase in logging of 60% and 688 new miles of road[293] (Alternative B) runs counter to these purposes.

As demonstrated elsewhere in these comments, all remaining tracts of mature and old growth forest need protection because they are key landscape components for regulating stream flow, water quality, and water temperature and for responding to increasing scarcities of campsites, trails, and other recreation needs that depend on unlogged forests. Putting more of these stands on the chopping block is thus inconsistent with O&C Act requirements. So is the plan to build new logging roads. It is remarkable that the BLM is proposing new road construction when, in fact, forest roads in western Oregon already represent an extreme disruption of healthy watershed function.[294] The dominant effects of these high road densities on stream and riparian networks are well known and involve "alteration of routing of water, water-born chemicals, sediment, and mass movements to and through native stream networks."[295]

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[290] Randall, Alan. 1981. Resource Economics: An Economic Approach to Natural Resource and Environmental Policy. Columbus, OH: Grid Publishing.
[291] Zwick, Steve. 2010. Oregon Company Taps California Protocol to Earn More by Logging Less. Published online at Ecosystem Marketplace: http://www.ecosystemmarketplace.com/pages/dynamic/article.page.php?page_id=7520&section=home
[292] 43 U.S.C. § 1181a.
[293] DEIS at 648.
[294] *See, e.g.*, Oregon Department of Forestry (ODF). 2000. Report of the Ad Hoc Forest Practices Advisory Committee on Salmon and Watersheds to the Oregon Board of Forestry. Section B: Forest Roads. Salem, OR: ODF.
[295] Swanson, Fred, Julia Jones, Beverly Wemple and Kai Snyder. 1999. "Roads in Forest Watersheds – Assessing Effect from a Landscape Perspective." Published in Proceedings of the Seventh Biennial Watershed Management Conference, Charles W Slaughter, editor. Water Resources Center Report No. 98. Davis, CA: University of California.

With respect to community stability, even the DEIS concedes that additional BLM timber supplies make no sense: "[b]ecause the timber industry has a long, national history of high volatility, alternatives with harvest volumes that exceed current levels are likely to introduce greater instability into local economies, based on past business cycles."[296] Thus, not a single one of the criteria Congress cited as purposes of a timber sale program on lands managed under the proposed RMP can be met through an increase in logging over current levels.

IV. OVERCUTTING ON PRIVATE LANDS DEMANDS A REDUCTION IN BLM TIMBER SALES

To the extent that BLM timber sales are offered during this planning cycle, Congress requires the timber sale program to be consistent with permanent forest production and the principle of sustained yield. In making this consistency determination, it is essential for the BLM to account for logging on non-BLM ownerships and consider how the pattern of logging on those lands relates to the demand and supply of goods and services provided by BLM lands. This duty is amplified by NEPA's requirement to take connected actions and cumulative effects into account.[297] Moreover, there is nothing in the O&C Act that limits the concepts of forest production and sustained yield to timber only. Indeed, as noted by DellaSala et al. (2005) "the O&C term 'forest production' interpreted in today's climate means more than timber volume and includes multiple natural resource objectives related to watershed health, carbon sequestration, fish and wildlife habitat, recreation, endangered species, and other values inherent to BLM lands that also contribute to community stability."[298]

In light of this, if the rate of harvest on private timberlands is unsustainable then BLM must adjust its allowable sale quantities (ASQ) calculations downward to ensure that the overall supply of timber and other goods and services from all Oregon's forestlands comes closer to a level that is commensurate with maintaining permanent forest production and the principle of sustained yield. If BLM fails to do this, then it will be exacerbating rather than countering the effects of overharvesting on lands outside its jurisdiction.

Unsustainable logging is indeed the situation in Oregon on state and private forestlands within the western Oregon BLM ownership matrix. Using a GIS dataset provided through World Resources Institute's Global Forest Watch Program[299] CSE conducted a watershed-by-watershed analysis of the rate of forest cover loss versus forest cover gain during 2000-2013.[300] Net forest cover change is a more important indicator of sustainability than volume-based measures such as growth versus removal since it is forest cover that determines the overall ability to provide a suite of ecosystem goods and services. The results indicate a significant overcutting on state and private forestlands. In particular, as compared with 2000, there are 452,364 fewer acres that meet minimum definitions (30% canopy closure of trees 5 meters in height). This is a result of forest

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[296] DEIS at 568.

[297] Connected actions include private timber harvests facilitated by BLM's programs such as road right of way and log haul permits (40 CFR § 1508.25(a)1) Cumulative impacts analysis requires consideration of non-federal actions affecting the planning area (40 CFR § 1508.7).

[298] DellaSala, Dominick, Nancy Staus and Erik Fernandez. 2005. Importance of Western Oregon BLM Lands and Reserves to Fish and Wildlife Conservation. Ashland, OR: World Wildlife Fund.

[299] Available online at www.globalforestwatch.org.

[300] Talberth, John and Erik Fernandez. 2015. Deforestation, Oregon Style. Lake Oswego, OR: Center for Sustainable Economy. Available online at:

loss (1,476,209 acres) exceeding acres of forest cover gain (1,023,845 acres). If sustained yield is measured by sustained forest cover (forest gain = forest loss) than this implies an overall rate of overcutting of 42%. In some watersheds the rate overcutting is much worse. In the McKenzie River's Quartz Creek drainage, since 2001, nearly 7,200 acres (2,913 ha) of forest cover have been lost to extensive clearcutting while only 2,576 acres (1,043 ha) have been gained through natural afforestation or reforestation – an overcutting rate of 279%.[301]

Federal timber sale planners have often adjusted ASQ to compensate for overcutting on private lands, as they should. For example, in 1991 the Lolo National Forest had to adjust its ASQ downward to compensate for "higher than anticipated" rates of logging on private industrial timberlands within its checkerboard ownership pattern.[302] The BLM should follow suit and revise the ASQ during this planning cycle to compensate for dramatic overcutting on Oregon's state and private forestlands. To compensate adequately, the ASQ should be set close to zero.

The BLM arbitrarily rejected analysis of the no-harvest and natural selection alternatives when they represent the only economically rationale choices. As the foregoing suggests, neither a continuation of nor an increase in BLM's timber sale program can be economically justified during this planning cycle. A reasonable price for BLM timber that offsets agency costs and internalizes the negative externalities of logging would too high at current market prices to attract timber sale purchasers. But the law, DOI policy, and BLM guidance all require such a reasonable price. Nor can the BLM justify its timber sale program in the face of markets that are not normal but severely distorted by negative externalities, subsidies, missing markets, and other well-known sources of market failure. Nor can the BLM demonstrate that its timber sale program meets Congressionally imposed sideboards designed to ensure that the timber sale program protects watersheds, water flow, economic stability, and recreation. Because of this, BLM's decision to reject the no harvest and natural selection alternatives is groundless.[303] Overcutting on adjacent state and private lands underscores not only the need to consider in detail, but need to select one of these reasonable alternatives.

V. REMEDIES THAT MUST APPEAR IN THE FINAL RESOURCE MANAGEMENT PLAN

To remedy these deficiencies in the DEIS's socioeconomic analysis, we request that the following:

1. A detailed explanation of the process the agency intends to use to ensure that when offered for sale, its timber receives reasonable prices that compensate for all agency costs and negative externalities.
2. A detailed assessment of the negative externalities generated by timber sales under each action alternative. As discussed above, the methods and sources of information are readily available.

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[301] Talberth, John and Catherine Koehn. 2015. The Liquidation of Forests in McKenzie's Quartz Creek, Oregon. Lake Oswego, OR: Center for Sustainable Economy. Available online at: http://sustainable-economy.org/forest-liquidation-in-quartz-creek/.

[302] Hirt, Paul W. 1994. A Conspiracy of Optimism. Management of the National Forests Since World War Two. Omaha, NE: University of Nebraska Press.

[303] DEIS at 77, 79.

3. A detailed assessment of the ecosystem service values generated by BLM forestlands in their natural state. Again, the agency has at its disposal both the methods and sources of information to do so.
4. A detailed assessment of externalities, subsidies, missing markets and other timber market failures in the planning area that distort normal market conditions. In light of these market failures, the FEIS should discuss how the final RMP offers corrections.
5. A detailed assessment of the rate of harvest on adjacent state and private forestlands and the implications this has for the relative value of goods and services from BLM lands. As part of this analysis, the BLM should discuss adjustments needed to its long term allowable sale quantity estimates (ASQ) needed to compensate for unsustainable timber harvesting on these lands and meet the goal of sustainable forest cover.
6. A detailed consideration of both the no-harvest and natural selection alternatives.

VI. TIMBER SUPPLY AND DEMAND

> *[An] upward shift in the [BLM] timber supply curve would lead to lower stumpage prices (between 1 and 9 percent) and reductions in private harvests as timberland owners adjust their harvest downwards as prices fall." -DEIS page 516.*

Downward market pressure on timber prices from increased harvesting on public lands negatively impacting private timberland owners is an inappropriate outcome from this planning process.

VII. ECONOMIC STABILITY

> *Because the timber industry has a long, national history of high volatility, alternatives with harvest volumes that exceed current levels are likely to introduce greater instability to local economies, based on past business cycles." –DEIS page 568.*

Introducing greater instability to local economies is an inappropriate outcome for BLM land management. The O&C Act specifically mandates that BLM forest management must have the objective of "contributing to the stability of local communities and industries."[304] Selecting an alternative that will increase instability in local communities will violate the O&C Act.

VIII. THE TIMBER YIELD PROJECTIONS

BLM must have a reduction factor determined to reduce to reduce modeled timber volume on lands that are at high risk for erosion and subsequent sediment pollution into streams. Similarly, timber yield must exclude salvage from riparian reserves, critical spotted owl habitat, and black-backed woodpecker breeding range located generally east of I-5.

[304] 43 USC 1181(a).

Many BLM timber stands have not been logged because the areas have low standing volume and are too steep and erosion prone for building roads. Timber yield projections need to make a large reduction in timber harvest on the Medford District due to high erosion risk lands, economics of building long risky roads for low timber volumes, and ecological risks to coho salmon. The analysis needs to be explicit (quantitative) when it creates sediment risks to coho salmon critical habitat while providing certainty for timber volumes. We believe this unanalyzed trade-off is illegal because of the ESA. Many medium and large scale mass erosion incidents will deliver sediment to streams because they are "in-channel" events and not likely to be effectively buffered by proposed riparian reserves (e.g. debris flows, stream-side slides) thus the need for full one tree protection buffers on headwater channels, erosion prone swales, unchanelled valleys and unstable erosion prone headwalls. Analysis needs to take a hard look at choosing for the outcome of reduced mass erosion with wider no cut riparian buffers since many if not most smaller streamside slides occur within a few hundred feet of the stream. Models exist for predicting mass erosion due to geology, slope and morphology (Lee Benda attachment) but these features are best determined during site specific project analysis. Nevertheless, timber yield needs to be reduced using these mass erosion models. Economics of road construction to low volume and very steep areas on the Medford District is also a limiting factor. Timber yield cannot assume all trees can be equally accessed with roads.

IX. INCREASED LOGGING ON BLM LAND WILL UNDERMINE COMMUNITY STABILITY.

The O&C Act provides that O&C lands:

> *shall be managed . . . for permanent forest production, ... for the purpose of ... contributing to the economic stability of local communities and industries ...*

The Oregon Department of Forestry recognizes that conservation of federal lands helps provide regulatory stability for non-federal lands

> [T]he Northwest Forest Plan … serves as the conservation *anchor for the Oregon Plan for Salmon and Watersheds. The Northwest Forest Plan in turn took pressure off of private lands to provide for recovery of spotted owls, murrelets, and salmonids listed under the ESA. Our fear is that a leaner forest plan would no longer provide adjacent non-federal forest lands protection from added land use restrictions to comply with federal environmental laws.*- Roy Woo, Oregon Department of Forestry letter to Forest Service regarding new forest planning rules, 4-7-03.

BLM should not threaten regulatory stability on non-federal lands by increasing timber harvest in older forests or using controversial regeneration harvest methods.

"Because the timber industry has a long, national history of high volatility, alternatives with harvest volumes that exceed current levels are likely to introduce greater instability into local economies, based on past business cycles." DEIS (p 568).

DEIS at 472 concludes:

> *Over the long-term (1969-2007), timber-based industries nationally exhibited low or negative growth rates with high volatility compared with the United States economy as a*

whole, indicating that these industries tend to be inherently volatile. Increases in timber industry activity in the planning area could bring additional exposure to greater economic instability.

The DEIS acknowledges that the timber industry is far more volatile than other industries so boosting timber jobs does not necessarily translate to community stability. This new information requires a fundamental shift in thinking and must be a significant factor in making a final decision on this Plan revision.

DEIS at 568-569 states "*The expansion of existing timber-based firms or the addition of new ones would bring additional jobs and earnings to the planning area, but could make the whole planning area more vulnerable to large fluctuations inherent in domestic and international timber markets."* This statement seems to imply that volatility may adversely affect the region but benefit local communities. This is exactly backwards. The EIS needs to look at the adverse effects of volatility at the local level. Volatility would have its greatest effect in local communities that have the lowest levels of economic diversity, the greatest dependence on commodity production, and would therefore see the greatest fluctuations in jobs and income. The gain and loss of jobs caused by timber industry volatility would cause a variety of social problems related to job insecurity, depression, substance abuse, health care insecurity, domestic abuse, etc. which would in turn cause an increase in the demand for social services that are not adequately funded. If BLM would emphasize development of less volatile economic sectors through provision of amenities instead of commodities, the social problems described above would be diminished and the demand for social services would be reduced.

Proponents of more logging on federal land still subscribe to the outdated view that logging is good for communities. The evidence does not bear this out.

NWFP monitoring results found that -

> *Assumptions were challenged regarding both socioeconomic and ecological relationships, with implications for both. One of the more important set of findings concerns the role of the federal lands. From a socioeconomic perspective, it was assumed that timber flow from federal lands was a key determinant of community well-being. This turns out to be true in some communities, but not in most.*[305]
>
> *Historically, employment in solid-wood products manufacturing (SIC 24) has been volatile. ... Over the entire period of 1965 through 2000, employment positively or negatively changed more than 5 percent 13 times between successive years. Since 1991, changes in employment between years have generally varied between 1 and 2 percent, with a high of a 4-percent decline in 1996.* [306]

The DEIS needs to disclose that increasing federal timber supply will not prevent the overall declining trend of employment in the timber industry. Only "[*a]bout 400 of the 11,000 jobs lost in the timber industry since 1994 were based on reductions in timber harvesting on federal*

[305] Draft synthesis of the NWFP 10-year monitoring reports. 4-15-05. Pps 13-14.

[306] USDA/USDI. 5-volume Northwest Forest Plan, 10-Year Socioeconomic Monitoring Report, http://www.fs.fed.us/pnw/publications/gtr649/pnw-gtr649_vol3_pt5.pdf pp 40-41

lands. The remaining 10,600 job losses occurred during a period of an increased log supply and were the result of less efficient mills closing and mills continuing to invest in labor-saving technologies. ... The FS and BLM no longer play significant roles in the supply of timber in the Plan area as a whole."[307]

All things being equal, a more diversified economy is a more stable economy. Oregon will always have a timber industry based on non-federal forest lands. The highest and best use of BLM lands, in terms of community stability, is to conserve the resources on those lands to provide a stable flow of ecosystem services such as clean water, carbon storage and recreation opportunities, that will help diversify the economy, and mitigate the economic instability caused by logging on non-federal lands.

Increased logging threatens the economic stability of local communities by: recoupling counties to the boom-bust timber industry, by increasing local communities dependence on a volatile and declining industry, and by reducing the quality of life that helps sustain and grow a more healthy and diverse economy. Logging is a boom-bust industry that undermines community stability rather than enhancing it. The final decision should uphold the O&C Act (43 USC 1181a) mandate to foster community stability through increased forest conservation which helps stabilize communities by enhancing quality of life and helping to diversify the economy so communities are less dependent on the inherently volatile timber industry.

The Sonoran Institute has conducted a study of rural economies in the west and identified some insightful correlations. "*It turns out there is an inverse relationship between resource dependence and economic growth; the more dependent a state's economy is on personal income earned from people who work in the resource extractive industries, the slower the growth rate of the economy as a whole."* When one looks at resource dependence, Douglas County looks a lot like Wyoming whose economic performance is at the bottom of the pack. Given BLM's mandate for community stability, they should be trying to steer the economy *away* from commodities and toward a more diverse economic base. [308]

The Sonoran Institute's Report also found that proximity to "protected public lands" is positively correlated with economic growth. Other growth factors include access to education, transportation, airports, entertainment, and mountains. Western Oregon's economic assets are notable: proximity to Interstate 5, numerous airports and sea ports, diverse cities with lots of high wage jobs in "producer services," good educational infrastructure, high rates of in-migration, proximity to public lands, ready public access to both mountains and the Pacific coast, etc. All these factors reinforce the idea that the highest and best economic use of BLM lands is to help diversify the economy, not turn the clock back toward commodity dependence. The best way to do this is to protect the best (mature & old-growth) and restore the rest (thin the plantations).

Ray Rasker makes a compelling case for an economic stability strategy based on non-consumptive uses of public lands -

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[307] 10-Year Socio-Economic Report. pp 46-47. http://www.fs.fed.us/pnw/publications/gtr649/pnw-gtr649_vol3_pt5.pdf

[308] Ray Rasker. Prosperity in the 21st Century West. Sonoran Institute. 2004. http://www.sonoran.org/pdfs/Prosperity%20Report.pdf

The fallacy of the community stability policy can be exposed at two levels. First, as learned from lessons of the former Soviet Union, centrally planned economies do not work. Even if it were possible to manipulate natural ecosystems- of which we know very little-to produce a steady and predictable flow of grazing, mineral, energy, and timber resources, it is unlikely that the economy of nearby communities would remain stable. Factors such as price, the application of labor-saving technologies, international competition, the availability of capital, and the changing preferences of consumers all play as much a role in determining the health of local resource dependent industries as does the supply of raw materials from public lands.

Second, the premise that public resources such as forage, timber, minerals, and energy can stimulate local economic stability presumes that the local economy is indeed dependent on federally-owned resources. All too often the role public land managers play in community development is based on an antiquated, mythical view of the economy.

Three forces are at work in shaping the world economy. First, the industrial economy is becoming uncoupled from the primary products economy (i.e., raw materials). Many of the most valuable "products" in today's economy, like computer software and medical technology, require few raw materials. Second, within the industrial economy itself, employment has become uncoupled from production. Manufacturing efficiency has decreased the demand for physical labor. Instead, human resources are increasingly applied in research, design, engineering, finance, marketing, and other "knowledge-based" or "value-added" applications. Third, capital has become "footloose"-money follows good ideas, no matter where they occur on the globe.

Today, where the final product rolls off the assembly line is less important than who adds the most value to production. And, if most of a finished product's value lies in the amount of human ingenuity and modern technology that is applied, then those countries with the best-trained and educated work force will command the largest piece of the economic pie.

Lester Thurow points out that the seven key industries of the next few decades are all "brainpower" industries: microelectronics, biotechnology, new materials industries, civilian aviation, telecommunications, robots and machine tools, and computers and software. An important aspect of these industries is that they are "footloose"-they can locate anywhere in the world. According to Thurow:

Where they will be located depends upon who can organize the brainpower to capture them. In the century ahead comparative advantage will be man-made."

[T]he common mythology of the region is that the extraction and export of raw materials are what matter. A commonly heard phrase is that "true wealth comes from the ground." [I]t is clear that a "rear-view mirror" approach to economic development will not suffice. Communities in the West must shift their focus from what worked in the past, and ask

instead what will work in the future. Economic wealth consists of much more than raw materials. There is also wealth in the quality of the environment for non-consumptive uses.

… For many rural communities, the economic benefit of living adjacent to public lands has historically been access to vast repositories of raw material. Because of this economic history there has been a tremendous bias on the part of public agencies to equate quantitative expansion in commercial activities with social and economic well-being. Lacking is a perspective on economic development that measures the role of quality of life as provided to community residents living next to public lands: the mountains, scenery, wildlife, clean water, wilderness, and other non-commercial amenities.

Community stability can best be assured by economic diversity.

The cornerstone of an economic diversity strategy is the creation of a favorable business climate and the protection of the cultural, social, and environmental qualities that make a community a pleasant place to live and do business. In addition, the strategy should include investment in the infrastructure, such as education and telecommunications facilities, in order to promote entrepreneurial activity. In many instances, the most economically productive role of public lands is not in resource extraction or tourism, but in protecting the landscape, the wildlife, the rivers and streams, and the scenery-all those things that collectively enhance the quality of life for local residents.

In the 1800's the challenge for the West was to promote growth-to make the most use of the natural resource endowments of the region. In the 1990's, the challenge is to use this endowment intelligently, without despoiling the quality of life for the region's residents, and without foreclosing opportunities for economic diversification. Simply put, if scenery is part of what attracts and retains modern business activity, beyond tourism, then an unsightly clearcut will have more than ecological costs; it will be bad for the economy.

[A] community stability strategy which emphasizes commodity extraction has been shown to be counter-productive, particularly when those activities threaten the amenity-based foundation of the new economy.[309]

A study in Finland showed that the employment effects of forest conservation are not adverse, and this study did not even consider the long-term stabilizing effect from the quality of life provided by healthy forests.[310]

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[309] Raymond Rasker. A New Look at Old Vistas: The Economic Role of Environmental Quality in Western Public Lands. Colorado Univeristy Law Review. 1994. http://www.sonoran.org/programs/pubs/Rasker%20-%20CU%20Law%20Review%201994.pdf

[310] Kniivilä, M. & Saastamoinen, O. 2002. The opportunity costs of forest conservation in a local economy. Silva Fennica 36(4): 853–865. http://www.metla.fi/silvafennica/full/sf36/sf364853.pdf

BLM should emphasize forest conservation and restoration as the best way to ensure community stability. BLM can meet the social and economic objectives by focusing their efforts on forest restoration, including thinning dense young tree farms that were established following clearcutting. This will help meet the restoration objectives of the Northwest Forest Plan, while also creating jobs and producing some woods projects.

The FEIS needs to consider the economic impacts of shifting the regulatory burden to non-federal lands, and the economic costs of increasing communities' dependence on the inherently boom-bust timber industry. The Northwest Forest Plan and ESA protections allow private timber owners to continue logging with fewer environmental restrictions. If BLM disengages from the Northwest Forest Plan, then private logging may have to be restricted. This could cause uncertainty and instability for local communities and industries. BLM's NEPA analysis must explicitly address this cause-effect relationship on community stability.

Global warming and ocean acidification caused by more logging will also cause community instability, as reflected in part by the Social Cost of Carbon (SCC). To meet the O&C Act mandate for community stability, BLM should adopt the alternative that emits the least greenhouse gases and stores the most carbon in the forest.

Intact forests provide a wide variety of ecosystem services that contribute to community stability. These include: clear drinking water, carbon sequestration & climate stability, recreation opportunities, scenic beauty, viable populations of a wide variety of wildlife functional groups such as pollinators, nitrogen fixers, non-timber commodities such as salmon, mushrooms, & greenery, habitat for socially valued imperiled species, hunting and fishing opportunities.

REGENERATION HARVEST IS NOT NEEDED

BLM should not be managing forests in a way that makes rare old forests even more rare, and makes over abundant young forests even more common. Logging proponents say that regeneration harvest of mature forest is needed to enhance early seral forest, which is in short supply, but this assertion is not well supported.

> *The amount of early-successional forest on the landscape within the range of the northern spotted owl is probably greater now than at any time in the past. ... Any species that find optimum habitat in burned forests must have had the dispersal and reproductive capabilities to find and reproduce in these dispersed and infrequent patches of habitat. In general, species associated with early-successional conditions are good dispersers, have high reproductive rates, and are able to persist in small patches of habitat that result from small-scale disturbance* (Hunter 1990, Smith 1966)....

Compared to their historic populations, species associated with these early-successional conditions have increased in abundance. For example, Raphael et al. (1988) estimated that populations of 11 species of birds have probably tripled over historic numbers, and another 4 species have more than doubled. Raphael et al. (1988) and Raphael (1988) compared the estimated abundance of amphibians, reptiles, birds, and mammals from historic times to their present abundance and concluded that the early-successional associates that have increased over

time were associated with more open, drier conditions; were widely distributed (larger total geographic ranges than species associated with late-successional conditions); and, had wider ecological tolerances (i.e., they occupy a greater variety of habitat types). As noted by Harris (1984), birds associated with early-successional forest are more often migrants whereas late-successional associates are generally permanent residents. These studies also show that whereas some species associated with early-successional conditions reach their maximum abundance in early-successional forest, none of the species were restricted to that successional stage.

The creation of early-successional conditions as a result of logging has produced a different pattern on the landscape than the pattern that likely would have resulted solely from natural disturbance. Patches of early-successional forest are now more evenly distributed across the landscape, and sizes of patches are smaller. This pattern may have resulted in a more widespread distribution of early-successional species than in the past.

[T]here is currently additional acreage of early-successional forest intermixed in a fragmented pattern within all of the Late-Successional Reserves and Riparian Reserves on federal lands within the range of the northern spotted owl. As well, natural disturbances will continue to create early-successional conditions. The federal forest lands occur within a broader landscape of nonfederal lands where additional early-successional forest will be created through logging and other management activity. These lands will contribute to the maintenance of early-successional forest over time.[311]

Also, there is no shortage of early seral forest. In fact, thre's already too much early seral in the Oregon Coast Range.[312]

BLM's analysis for the 2015 RMP Revisions DEIS (Vol 1, p 183) indicates that the "current condition" shows no shortage of "early seral forest" across 1.3 million acres of dry Douglas fir forests.

[311] 1994 NWFP FSEIS, pp 3&4-203 – 204.
[312] . Janet Ohmann. Trends in Early Seral Forest at the Stand and Landscape Scale. http://www.slideshare.net/ecoshare/janet-l-ohmann-trends-in-early-seral-forest-at-the-stand-and-landscape-scale. (Slides 12, 29 show there is "no shortage of early seral" in Coastal Oregon, and early seral "exceeds the HRV" [historic range of variability].)

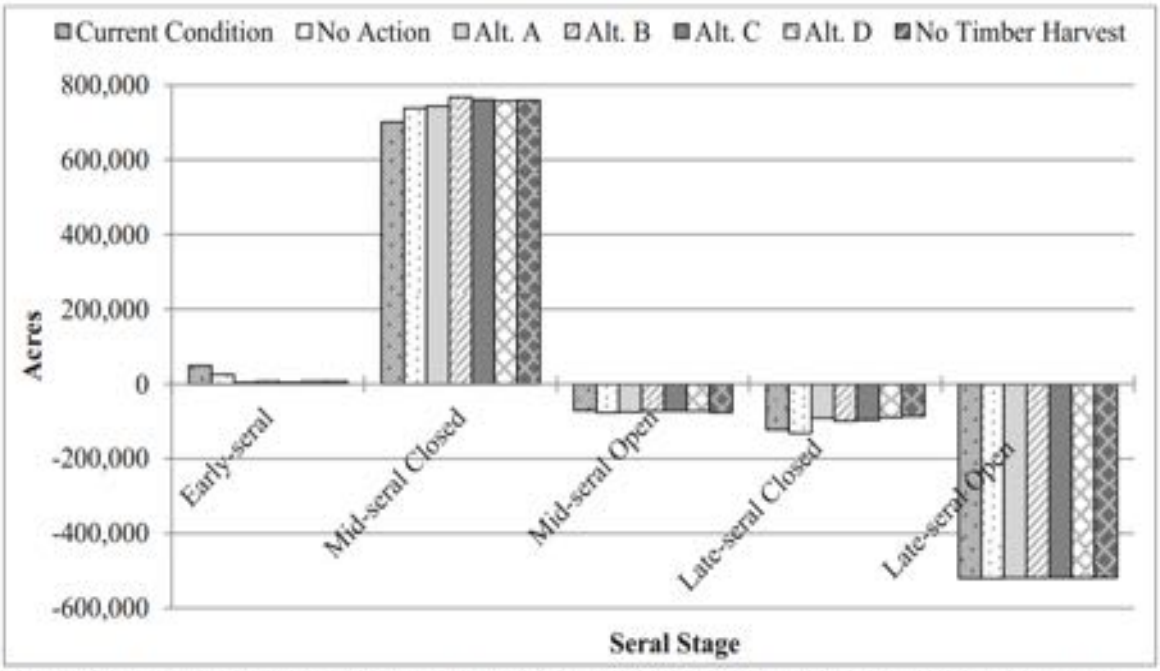

Figure 3-32. Departure from reference conditions in the Douglas-fir/dry vegetation type by seral stage; current conditions and by alternative and the No Timber Harvest Reference Analysis in 2063.

[313] This figures shows that the biggest shortage is late seral and BLM's main focus should remain transitioning over-abundant mid-seral stands to help mitigate the persistent deficit of late-seral stands.

There are many ways of enhancing early-seral habitat without sacrificing mature forests, for instance, we could:

- Modify the way we fight fire and how we react after fire, e.g., leave areas to recover naturally after fire instead of salvage logging and replanting which more closely resembled industrial clearcutting;
- Modify practices on non-federal lands to encourage greater retention of live and dead trees during harvest, tolerate slower conifer re-establishment and greater diverse of native vegetation, e.g., discourage herbicide spraying to control competing native vegetation;
- Embed structure-rich "gaps" (e.g. patches of very heavy thinning) in young stand thinning projects. See Miller, Randall. 2014. Practitioners Approach to Early Seral Habitats on Lands Managed Primarily for Older Forest, or There is More to Healthy Forests than Conifer Trees. Siuslaw NF.[314]
- Extend the early seral character of existing very young stands that are starting to become dominated by conifers.

[313] http://www.blm.gov/or/plans/rmpswesternoregon/files/draft/RMP_EIS_Volume1_pg_173-235.pdf
[314] http://www.slideshare.net/ecoshare/09-practitionersapproachtoearlyseralhabitatsonlandsmanagedprimarilyforolderforestorthereismoretohealthyforeststhanconifertreesmiller; Cheryl Friesen and Norm Michaels 2010. Effects of Incorporating Gaps into Commercial Thinning Prescriptions: Best Available Science, 3-30-2010, Central Cascades Adaptive Management Partnership (CCAMP). http://ecoshare.info/projects/central-cascade-adaptive-management-partnership/synthesis-papers-tools/

Oregon Wild's scoping 2011 comments on the Coos Bay Wagon Road and Roseburg BLM Secretarial Pilot Projects shed further light on this issue.

I. COMPLEX EARLY SERAL FOREST

One of the primary restoration objectives we keep hearing for these projects is the need to restore complex early seral forest. This may well be an important goal. However, this goal needs to be validated and if valid, alternative means of meeting the goal must be explored. With a little thought and creativity one can see that many ways to increase rare early seral habitat without sacrificing rare mature & old-growth forests.

Validation of the early seral habitat objective requires, among other things, asking if the current and projected amount of early seral habitat might be adequate to meet the needs of the opportunistic and generalist species that tend to occur in those areas. Only the interior valleys (and a few ridgetops) of western Oregon likely had persistent early seral conditions, while most of the federal forest landscape had transient early seral conditions associated with disturbances. Early seral wildlife species likely evolved to take advantage of early seral conditions when and where it could be found in the shifting mosaic of seral conditions.

Natural disturbance processes continue to operate across the landscape, including fire, wind, ice storms, landslides, floods, volcanoes, native insects, native disease, etc. Each of these helps create various sized patches of early seral forests every year. Many predict that climate change will increase the frequency of these natural events, suggesting that any shortage of early seral conditions might just take care of itself. "Ecologically, increased distribution and frequency of disturbances may result in increased distribution and dominance of early successional ecosystems dominated by fire adapted species..." [315] Conversely, it may become harder to maintain existing late-seral ecosystems and species, so existing late-successional old-growth forests should be retained in order to avoid making the shortage of late seral forest worse.

There is widespread recognition that early seral forest is produced in abundance on non-federal lands (through industrial clearcutting). Current industrial forest practices do not produce *high quality* or *long-lasting* early seral forest. It is also true, but not widely recognized that the *absolute abundance* of early seral forest on non-federal lands might partially mitigate for its lack of quality.

Early seral vegetation also exists along many streams, rock outcrops, meadows, as well as roadsides, landings, and other disturbed sites throughout the forest. An honest assessment of the early seral shortage must account for the quantity, quality and functionality of all these early seral forest elements.

If there is indeed a shortage of complex early seral forest, we must evaluate a full range of alternative ways of increasing either the quantity and/or quality of such features. Alternatives that have been suggested include:

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[315] Lemieux, Christopher J., Daniel J. Scott, Rob G. Davis and Paul A. Gray. 2008. Changing Climate, Challenging Choices: Ontario Parks and Climate Change Adaptation. University of Waterloo, Department of Geography: Waterloo, Ontario http://web.archive.org/web/20101023221023/http://www.fes.uwaterloo.ca/geography/faculty/danielscott/PDFFiles/NRCAN-Report-FINAL.pdf

Possible policy changes---- Private Lands

Goal: create more diverse early seral forest without increasing landowner cost or regulatory burden

Ideas:

- Remove free-to-grow requirement
- Remove regeneration requirement in its entirety
- Allow substitution of an invasives eradication plan, enhanced wildlife tree plan, or logging debris retention plan

(a) Reform forest practices on non-federal lands to retain more legacy structures and allow a longer period of conifer establishment and more vegetation diversity after harvest, as suggested by Norm and Debora Johnson in 2007. [316]

(b) Rely on natural processes such as fire, wind, insects, etc. Since the public has been misinformed that natural forest mortality processes are undesirable, this approach would work best if we increase public tolerance for natural processes. This approach may also require reform of fire suppression policies and post-fire salvage logging and replanting, as suggested by Norm Johnson, Jerry Franklin, and others in 2007 Early Seral Forest Symposium. [317]

(c) Aggressive pre-commercial thinning in existing very young stands or failed plantations to extend the early seral stage, as suggested in the Chalk Parker Project on the Middle Fork District of the Willamette NF;

(d) Create patches of heavily-thinned, structure-rich "gaps" in variable density thinning projects in dense planted stands <80 years old, as suggested by numerous projects around the region.

All these alternative methods would allow meaningful restoration of early seral forest conditions without unnecessarily sacrificing mature forests.[318]

Another reason that regeneration logging is not needed is because climate change may increase early seral. Efforts to artificially enhance early seral should recognize that climate change might take care of this for us, and in fact might make it much harder to hang on to the mature forests we have. "Ecologically, increased distribution and frequency of disturbances may result in increased distribution and dominance of early successional ecosystems dominated by fire

[316] K. Norm Johnson, Debora L. Johnson. 2007. Policies to Encourage Diverse, Early Seral Forest in Oregon: What Might We Do? http://www.reo.gov/ecoshare/ccamp/good_forest_opening/powerpoints/Early%20seral%20talkrevfinal.ppt

[317] http://www.reo.gov/ecoshare/ccamp/Good_Forest_Opening.shtml.

[318] Oregon Wild 2011. Scoping Comments on the Wagon Road and Roseburg BLM Secretarial Pilots. http://www.oregonwild.org/oregon_forests/forest-management/in-your-forests/files-for-eyes-on-the-agencies/Wagon_Road_and_Roseburg_Pilots_scoping_6-29-2011_BLM.pdf

adapted species..."[319] Conversely, it may become harder to maintain existing late-seral ecosystems and species, so existing late-successional old-growth forests should be retained in order to avoid making the LSOG shortage worse.

II. CURRENT RESTORATION THINNING PROGRAMS ARE MEETING OBJECTIVES

There is a pervasive misconception circulating among many people including local, state, and federal politicians and journalists that environmental restrictions have shut-down logging on our federal forests. It has become popular to repeat this misinformation and it has become nearly a full-time job refuting it. The facts speak for themselves.

The most recent data from the Forest Service and BLM on timber offered for sale under the Northwest Forest Plan between 1995 and 2010 reveal that the agencies have offered for sale 8.7 billion board feet of timber. This is equivalent to 1.74 million log truckloads. If parked end-to-end, these trucks would stretch along Interstate 5 from Seattle to San Diego more than 14 times. This is not gridlock – far from it.

Furthermore, any suggestion that a "promise" of timber was made and not kept is highly misleading. The timber industry likes to say that the NWFP promised them 1 billion board feet per year. However, the timber volumes described in the NW Forest Plan are clearly presented as "estimates," not hard targets. "*The PSQ [probable sale quantities] levels shown are estimates. ... They represent our best assessment of the average amount of timber likely to be awarded annually in the planning area over the next decade, following a start-up period."*[320] *"PSQ levels are presented as an effect, not a goal, of the standards and guidelines. Therefore, harvests within areas specified for habitat protection will be greatly curtailed."*[321]

The real timber targets are set each year by Congress. Data provided by the FS and BLM show that since 1995 the agencies have met 82% of the cumulative timber targets established by Congress. The small short-fall is primarily the result of two major legal blunders that agencies brought upon themselves (i.e., failure to comply with Survey and Manage and the Aquatic Conservation Strategy requirements). It is unfair to blame conservationists when the agencies simply failed to protect streams and wildlife as promised in the plan.

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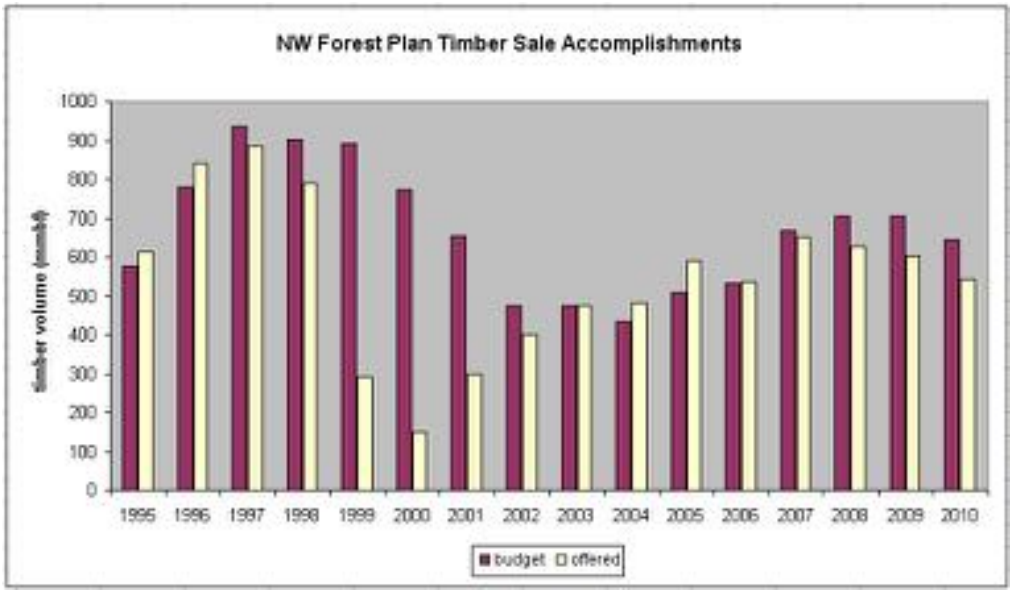
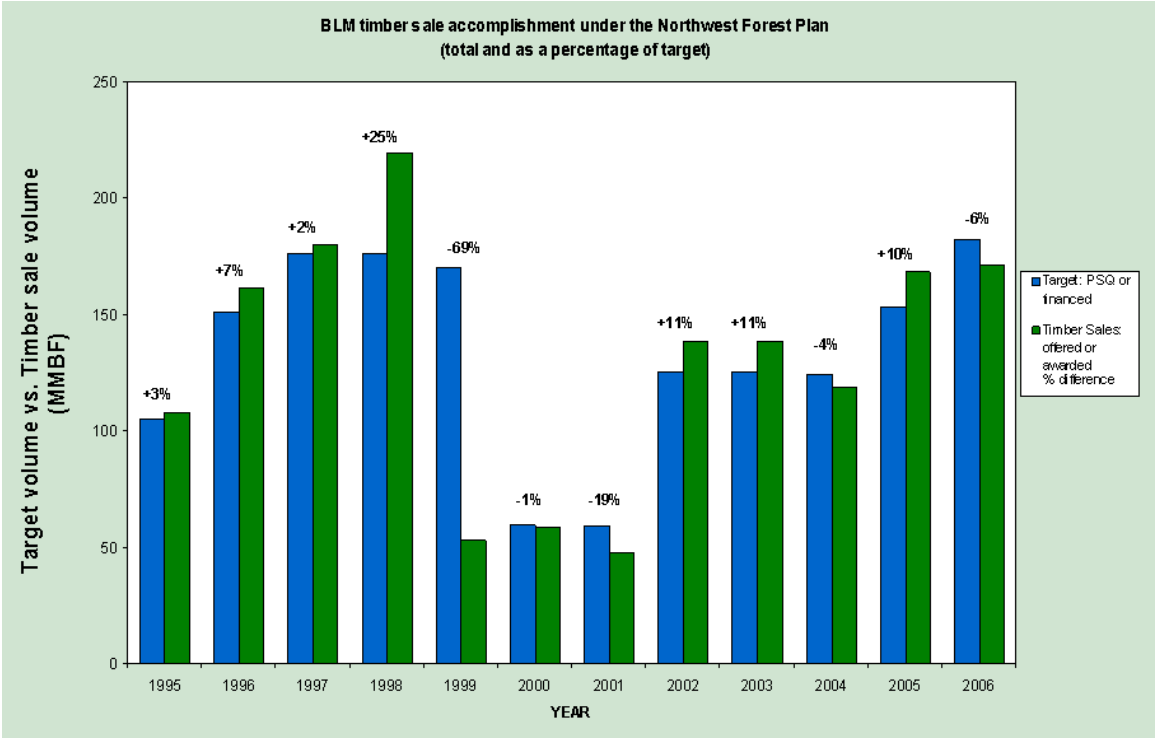
[319] Lemieux, Christopher J., Daniel J. Scott, Rob G. Davis and Paul A. Gray. 2008. Changing Climate, Challenging Choices: Ontario Parks and Climate Change Adaptation. University of Waterloo, Department of Geography: Waterloo, Ontario.http://web.archive.org/web/20101023221023/http://www.fes.uwaterloo.ca/geography/faculty/danielscott/PDFFiles/NRCAN-Report-FINAL.pdf

[320] 1994 NWFP ROD, p 19.

[321] 1994 NWFP ROD, p 66.

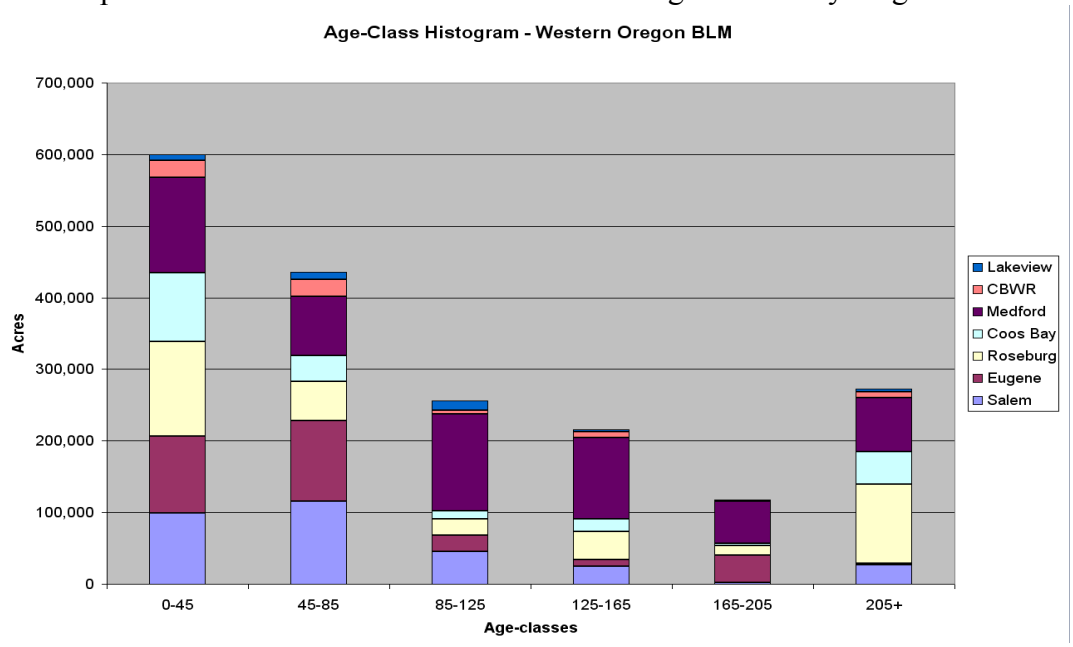


Timber Sale Accomplishments of USFS And BLM (Regionwide) Under The Northwest Forest Plan

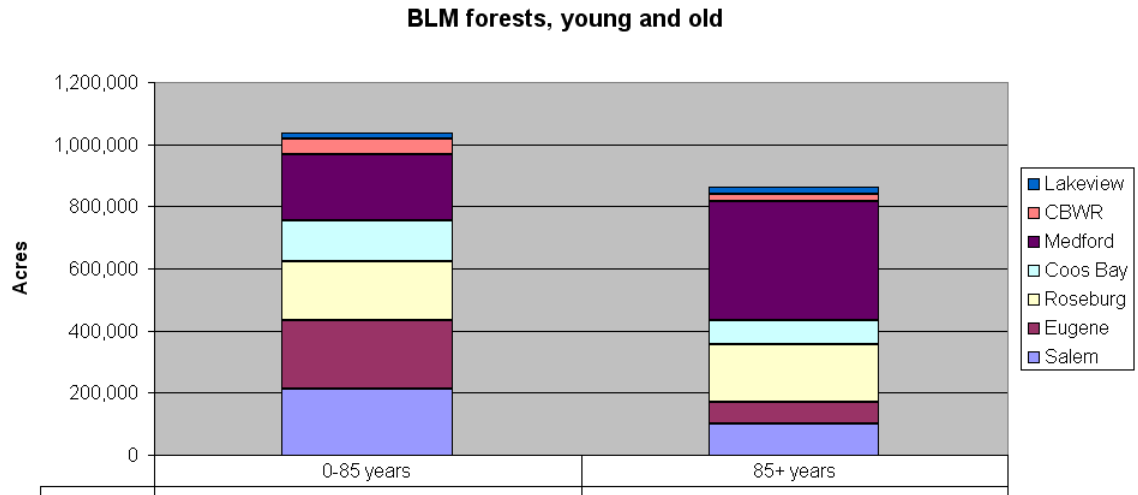


Timber Sale Accomplishments For Western Oregon BLM Districts Under The Northwest Forest Plan

The following age-class histogram created using BLM data shows that older forests are relatively under-represented and the bulk of the needed thinning work is in young stands.



This is the same data showing young versus old forests, split at 85 years.



	0-85 years	85+ years
Lakeview	18,660	22,519
CBWR	47,263	23,981
Medford	215,659	382,826
Coos Bay	132,714	76,680
Roseburg	186,901	185,587
Eugene	219,917	71,618
Salem	214,483	99,795

FIRE AND FUELS

The DEIS at page 10 indicates that restoring fire-adapted ecosystems to increase fire resiliency is part of the purpose of the RMP revisions. Page 10 additionally acknowledges that the "owl recovery plan recommends active management within the dry forest landscape to restore ecosystem resiliency," and that "under the O&C Act, BLM management must account for potential loss of this timber to fire." Hence "the purpose of this action includes restoring fire-adapted ecosystems to increase fire resiliency."

The fire resiliency purpose of the RMP revisions is directly thwarted by the BLM proposal to conduct:

> *"management such as thinning and regeneration harvest with no retention and rapid reforestation on a relatively short rotation. This management approach would result in continuous horizontal and vertical fuel profiles and conditions more closely aligned with high severity fire." DEIS page 194.*

It appears that every action alternative developed by the BLM will include logging techniques known by the agency to increase fire hazard. This directly inhibits the alleged purpose and need of increasing fire resiliency stated on page 10 of the DEIS. "The purpose of the action includes restoring fire-adapted ecosystems in increase fire resiliency." DEIS page 10.

The BLM's proposal to utilize logging techniques to known to increase fire resiliency in some instances while concurrently utilizing logging techniques to decrease fire hazard in other instances is arbitrary and capricious.

The DEIS fails to analyze or disclose an action alternative that would codify the dry forest restoration developed by Franklin and Johnson and successfully implemented in the BLM "pilot projects."

I. INCREASE FIRE RESISTANCE BY MAXIMIZING THE EXTENT OF LATE SUCCESSIONAL RESERVES

One of the purposes of this EIS is to restore fire-adapted ecosystems to increase fire resiliency. Recognizing that all forests in western Oregon are "fire-adapted," this purpose should be clarified to maintain fire resistance in mature and old growth forests, and to avoid regeneration harvest that creates dense young plantations that represent a very hazard fuel condition. BLM should pursue this important purpose across all forest types.

In the final decision on this RMP revision, BLM should avoid both high- and moderate-intensity timber harvest because DEIS (p 194) admits that:

The High Intensity Timber Area includes management such as thinning and regeneration harvest with no retention and rapid reforestation on a relatively short rotation. This management approach would result in continuous horizontal and vertical fuel profiles and conditions more closely aligned with high severity fire. ... [T]here currently exists an overabundance of young and closed conditions and the likelihood of large, high severity fire has increased. Large areas of no retention are not representative of the prevailing

vegetative patterns and structure associated with frequent fire, low-severity or mixed-severity fire regimes.[322]

Moderate Intensity Timber Area includes thinning and regeneration harvest with 5-15 percent basal area retention, and longer rotations and rapid reforestation. This management approach would result in more continuous horizontal and vertical fuel profiles and conditions more closely aligned with high severity fire. Additionally, contiguous fuel profiles have reduced stand-level fire resistance.

Adopting high- or moderate-intensity timber harvest is therefore inconsistent with the purpose and need for this EIS to *"restore fire-adapted ecosystems to increase fire resiliency."*

Figures 3-40 and 3-41 clearly show that areas with less logging (i.e. the reserves) create conditions that are much more fire resistant, while areas with more logging (i.e., the harvest land base) creates conditions that present much greater fire hazard.

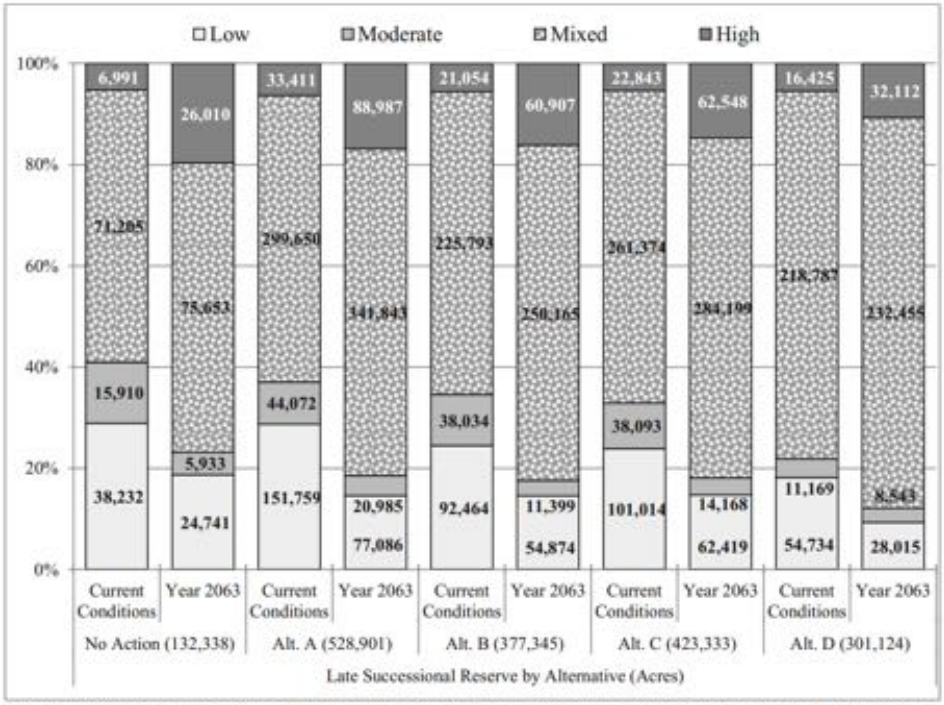


Figure 3-40. Stand-level fire resistance categories in the Late-Successional Reserves in the dry forest in the interior/south for the current condition and each alternative in 50 years.

[322] Taylor and Skinner 2003, Larson and Churchill 2012.

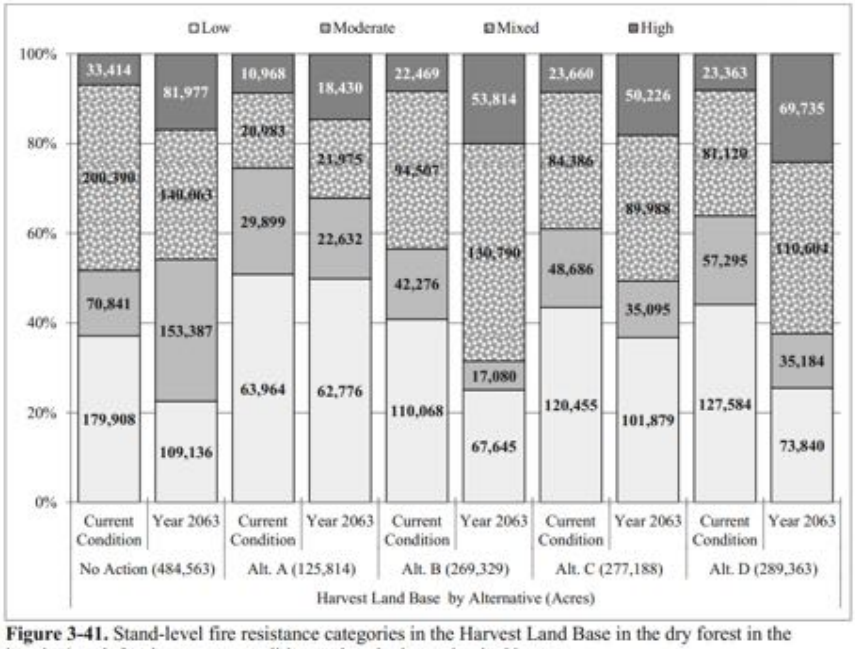


Figure 3-41. Stand-level fire resistance categories in the Harvest Land Base in the dry forest in the interior/south for the current condition and each alternative in 50 years.

Furthermore, the harvest land base probably has a greater fire hazard than this analysis recognizes given the fact that the EIS relies on some faulty assumptions about the effects of thinning on forest structure and fire hazard (explained below).

II. FOREST CONSERVATION HELPS MODERATE FIRE BEHAVIOR

DEIS 187 says that lower density stands tend to have higher fire resistance. The DEIS also adopts the notion that fire exclusion increases fire hazard. DEIS (p 194) says:

Uneven-Aged Timber Area [and] the Owl Habitat Timber Area … Both of these management scenarios would result in the greatest reduction of low and moderate stand-level resistance and the largest increase in the mixed- and high-resistance acres.

However, these DEIS assertions are not supported by the evidence from SW Oregon. The EIS needs to reflect the best available science which indicates that open stands (such as those resulting from thinning) tend to have more surface and ladder fuels (over time), as well as greater wind penetration, lower humidity, dryer fuels, longer flame lengths, and higher fire intensity at the flame front. Forests with a dense canopy tend to have a more cool, moist, and less windy fire microclimate, and the canopy helps suppress the growth of surface and ladder fuels.

Table 3-41 (DEIS p 187) needs to reflect the fact that complex older forests tend to be more fire resistant and resilient compared to young forests and logged forests. “Mixed” resistance is not described or defined. It would be useful for the public and the decision-maker to understand the complex old forests have several characteristics making them more fire resistant (e.g., thick bark, high canopies, hardwood understory that acts as a heat sink, canopy that suppresses ladder fuels and helps maintain cool-moist-les-windy microclimate) and know that this mixed-resistance old forest is the condition that historically dominated the forest landscape, and this is the condition

that results in the mixed severity fires that wildlife evolved with. Logging complex old forests is likely to reduce fire resistance and increase fire hazard.

The DEIS (p 187) says that only single-storied mature forests have HIGH resistance to wildfire. The EIS needs to disclose that open canopy forests tend to have more severe fire effects and that logging to create open forest conditions on large areas of BLM land (such as by logging to simplify complex forests) will have significant trade-offs for wildlife that need more complex forests. Forests lacking complex dead wood and complex understory do not provide high quality habitat for spotted owls and numerous other species.

The EIS needs to reflect the best available information (provided below) indicating that greater time-since-fire actually increases fire resistance. That is, fires are likely burn more severely in forests that have been more recently logged or burned, and are likely to burn less severely in closed-canopy forests that have not been recently logged or burned. This may be related to the fact that closed canopy forests maintain a cool-moist microclimate that helps retain higher fuel moisture and more favorable fire behavior. Canopy cover also helps suppress the growth of ladder fuels. The significance of this is that it may make sense to variably retain more canopy cover while thinning and don't focus on treatment of canopy fuels except to provide some well-spaced "escape hatches" for hot gases generated by surface fires.

Odion et al (2004) studies fire in the Klamath Mountains region and found -

> *Long absence of fire predicts low severity fire effects. Absence of fire enables closed canopy forest vegetation to replace shrub and open forest vegetation through succession. Shade reduces available fuel below the canopy as well as its potential surface heat output during fire events, making canopy fires less likely to occur. Therefore, severe fire effects are not correlated with the age of woody fuels. Instead, weather and climate dictate canopy fire behavior in closed canopy forests.*
>
> *Tree plantations, which typically follow high-severity fires under traditional forestry practices, exhibited "twice the burn severity" of closed canopy forests (20 percent), even though they accounted for only four (4) percent of the study area. The relative combustibility of structurally homogeneous tree plantations supports a self-reinforcing "feedback" dynamic of high-severity fires, and the authors anticipate continued high-severity fires in roaded and planted portions of the landscape.*

IMPLICATIONS- The central conclusion of the paper is that long absence of fire predicts low-severity fire effects in Klamath mixed evergreen forests. This conclusion has four management implications:

1. The fuel build-up model formulated for southwestern ponderosa pine forests does not apply to Klamath mixed evergreen forests, and fuel treatments intended to prevent crown fires based on this model are misdirected.

2. Fuel treatments designed to impose a low-severity fire regime may be ecologically detrimental because highly severe fire effects, to some degree, support diverse vegetation community structures and habitats for which the Klamath region is globally unique. Some fuel treatments also may adversely affect soils, water quality, wildlife habitat, and spread noxious weeds.

3. Fuel treatments may be ecologically beneficial in tree plantations where past logging left behind unnatural fuel profiles.

4. Naturally ignited wildland fires may be beneficial to a variety of conservation objectives in Klamath forests. Home ignitability mitigation in the wildland-urban interface may increase options for backcountry wildland fire use.

Fuel reduction projects in SW Oregon must consider the implications of Odion, D.C., E.J. Frost, J.R. Strittholt, H. Jiang, D.A. DellaSala and M.A. Moritz. 2004. Patterns of fire severity and forest conditions in the western Klamath Mountains, California. Conservation Biology 18(4): 927-936. [323]

In a mixed-conifer, mixed-severity fire regime study area in SW Oregon, Crystal Raymond found that,

> *Fire severity was greater in thinned treatments than untreated. … The additional fine wood left from the thinning operation (despite whole-tree yarding) most likely caused higher fire intensity and severity in the thinned treatments*."
>
> *… [T]he presence of activity fuels increased potential surface fire intensity, so increases in canopy base height did not decrease the potential for crown fire initiation. … [C]rown fire is not a prerequisite for high fire severity; damage and mortality of overstory trees in the wildfire was extensive despite the absence of crown fire, and the low predicted crown fire potential before and after the fuel treatment. Damage to and mortality of overstory trees were most severe in thinned treatments (80 – 100% mortality), least severe in the thinned and under-burned treatment (5% mortality), and moderate in untreated stands (53-54% mortality) following a wildfire in 2002. Fine fuel loading was the only fuel structure variable significantly correlated with crown scorch of overstory trees. Percentage crown scorch was the best predictor of mortality 2 years post-fire. Efforts to reduce canopy fuels through thinning treatments may be rendered ineffective if not accompanied by adequate reduction in surface fuels*. [324]
>
> *A greater percentage of pre-fire fine wood was consumed in the thinned plots than in the unthinned plots during the Biscuit fire suggesting that fine fuel moisture may have been lower in the thinned plots*." And "*the Biscuit Fire was observed to have more moderate fire behavior in stands with a sub-canopy tree layer compared to more open stands, suggesting that the sub-canopy trees did not function as ladder fuels. … Higher foliar moisture of broad-leaved species could have dampened fire behavior, inhibiting rather than aiding crown fire initiation."*

Similarly, Hanson and Odion (2006) compared wildfire behavior in seven previously thinned mixed-conifer forests vs. adjacent unthinned forest in the Sierra Nevada and found —

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[323] http://nature.berkeley.edu/moritzlab/docs/Odion_etal_2004.pdf.

[324] Crystal L. Raymond. 2004. The Effects of Fuel Treatments on Fire Severity in a Mixed-Evergreen Forest of Southwestern Oregon. MS Thesis. http://depts.washington.edu/nwfire/publication/Raymond_2004.pdf.

> *Contrary to our hypothesis, the mechanically thinned areas had significantly higher fire-induced mortality (p =.016, df = 6) and combined mortality (p =.008, df = 6) than the adjacent unthinned areas. Thinned areas predominantly burned at high severity, while unthinned areas burned predominantly at low and moderate severity … Possible explanations for the increased severity in thinned areas include persistence of activity fuels, enhanced growth of combustible brush post-logging, desiccation and heating of surface fuels from increased insolation, and increased mid-flame windspeeds. Given that sampling transects in thinned versus unthinned areas were only 100 m apart in each experimental unit, fire weather should have been the same for the thinned and unthinned areas sampled in each site. Thus, mechanical thinning on these sites appears to have effectively lowered the fire weather threshold necessary for high severity fire occurrence.*[325]

A study in mixed-conifer forests in California showed that forest reserves were more effective than logging in terms of reducing fire hazard.

> *[T]he efficacy of seven traditional silvicultural systems and two types of reserves used in the Sierra Nevada mixed conifer forests is evaluated in terms of vegetation structure, fuel bed characteristics, modeled fire behavior, and potential wildfire related mortality. The systems include old-growth reserve, young-growth reserve, thinning from below, individual tree selection, overstory removal, and four types of plantations. These are the most commonly used silvicultural systems and reserves on federal, state, and private lands in the western United States. Each silvicultural system or reserve had three replicates and varied in size from 15 to 25 ha; a systematic design of plots was used to collect tree and fuel information. The majority of the traditional silvicultural systems examined in this work (all plantation treatments, overstory removal, individual tree selection) did not effectively reduce potential fire behavior and effects, especially wildfire induced tree mortality at high and extreme fire weather conditions. Overall, thinning from below, and old-growth and young-growth reserves were more effective at reducing predicted tree mortality.*[326]

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[325] Hanson and Odion. 2006. Fire Severity In Mechanically Thinned Versus Unthinned Forests of the Sierra Nevada, California 2006 Fire Congress Proceedings. ftp://ftp2.fs.fed.us/incoming/r5/VMS/reference_library/Fire%20and%20Fuels%20References/Hanson%20and%20Odion%20%202006%20Fire%20severity%20in%20thinned%20vs%20unthinned%20forests%20.pdf

[326] Scott L. Stephens and Jason J. Moghaddas. 2005. Silvicultural and reserve impacts on potential fire behavior and forest conservation: Twenty-five years of experience from Sierra Nevada mixed conifer forests. Biological Conservation 125 (2005) 369–379. See also Morris Johnson, David L. Peterson, and Crystal Raymond 2009. Fuel treatment guidebook: illustrating treatment effects on Fire hazard. Fire Management Today 69(2) http://www.fs.fed.us/fire/fmt/fmt_pdfs/FMT69-2.pdf p 32-33

III. BLM NEEDS TO REFLECT THAT WILDFIRE MAY BE MORE CONTROLLED BY WEATHER THAN FUELS

DEIS p 175 discusses the effects of fire exclusion in dry forests. This analysis over-emphasizes the effects of fuel and under-emphasizes the effects of weather on fire. Forests throughout BLM lands in western Oregon almost always have enough fuel to carry fire. Weather conditions are a large determinant of the extent and severity of fire. Protecting homes and communities require treatments in the "structure ignition zone" immediately around structures, not across the forest landscape.

The agencies must recognize that most large fires are climate driven, not fuel driven.

> *Within forests, annual burned area correlated at least as strongly with spring–summer vapour pressure deficit (VPD) as with 14 other drought-related metrics, including more complex metrics that explicitly represent fuel moisture. Particularly strong correlations with VPD arise partly because this term dictates the atmospheric moisture demand."* [327]

Littell et al (2009) looked at a large number of fires that occurred in the western U.S. during the 20th Century and found -

> *Our analyses indicate that year-of-fire climate is the strongest influence on area burned in forested ecosystems, but fire size may be limited secondarily by fuel continuity between or within forest stands (Rollins et al. 2002). For example, continuity may be less limiting for fire regimes in which crown fires are the dominant mechanism than in lower-elevation forests characterized by surface fires…*
>
> *[R]elationships described in Westerling et al. (2006) hold for more of the 20th century than previously shown.... These relationships all support our claim that drying of fuels is the primary mechanism for large WFAB [Wild fire area burned] in the higher-elevation and northern mountainous ecoprovinces. Wild fire area burned in these ecoprovinces thus appears to be limited by climate rather than fuel availability, ...*
>
> *Our analyses indicate that year-of-fire climate is the strongest influence on area burned in forested ecosystems, but fire size may be limited secondarily by fuel continuity between or within forest stands (Rollins et al. 2002). For example, continuity may be less limiting for fire regimes in which crown fires are the dominant mechanism than in lower-elevation forests characterized by surface fires, ...*
>
> *Climate controls on the area burned by wildfire in the western United States are strong, even during the dominant period of fire suppression and exclusion in the last two-thirds of the 20th century. Roughly 39% (1916–2003) to 64% (1977–2003) of the fire area burned can be related directly to climate. The variance explained by climate implies that fuel treatments, for example, might be tailored to specific ecosystems and climate–fire relationships. Recognizing that most ecoprovinces have significant ecological variability,*

[327] A. Park Williams, Richard Seager al 2014. Correlations between components of the water balance and burned area reveal new insights for predicting forest fire area in the southwest United States. International Journal of Wildland Fire 24(1) 14-26 http://dx.doi.org/10.1071/WF14023 http://www.publish.csiro.au/?paper=WF14023

climate-limited ecoprovinces may be less influenced by fuel treatment than fuellimited ecoprovinces (at least for area burned, if not fire severity).[328]

The fire and fuels analysis does disclose trade-offs associated with logging. The DEIS says that forest management is a surrogate for fire, but wildfire creates complex forest structures that wildlife evolved with, while logging causes far different effects than fire. Logging requires roads and removes forest structure. The EIS needs to disclose the many ways in which logging is not a surrogate for fire.

IV. LOGGING HABITAT TO "SAVE" IT FROM FIRE COULD DEGRADE HABITAT

The DEIS (p 195) says "*BLM assumed that the restoration approach taken in the Late Successional Reserve in the dry forest would include stand density reductions, cultivation of large trees with old-growth characteristics, and introductions of heterogeneity into increasingly uniform stands, and treatments to reduce fire risk adjacent to high-value habitat."* The DEIS does not adequately disclose the adverse effects of these habitat-modifying treatments that will likely be conducted with commercial logging that removes primary constituent elements of spotted owl habitat.

DEIS (p 158) describes for thinning as a "no regrets" approach to climate adaptation. This is misleading. No regrets describes strategies that are beneficial whether or not climate driven disturbance occurs. This is not the case here. Forest thinning involves complex trade-offs that could help or harm the forest and its inhabitants, and the alleged benefits often accrue only if treated areas subsequently burn during the brief window that fuel reduction treatments may be effective. This is not a no regrets strategy.

A more specific example is the spotted owls that prefers to live in fuel-rich forests with high canopy cover. Thinning to reduce climate stress will likely result in adverse effects on spotted owls. Thinning is therefore NOT a "no regrets" strategy for spotted owls. In fact, leaving suitable spotted owl habitat unmanaged is probably the closest thing to a no regrets climate strategy for the spotted owl. The EIS fails to make this important point clear. Even when logging is conducted with an intention to reduce fire effects, such logging will still cause net negative effects on spotted owls and other wildlife that prefer to live in forests with dense canopy cover and complex structure. The DEIS failed to adequately disclose trade-offs between the needs of wildlife and the adverse effects of logging for fire resiliency. The net effects of logging plus wildfire are far worse for wildlife than the effects of fire alone.

Logging intended to benefit dense forest habitat will also reduce the quality of habitat by removing various constituent elements of their preferred habitat, and the NEPA analysis must therefore include some evaluation of ecological costs and benefits — e.g., the high probability that logging will degrade habitat vs. the low probability that fuel reduction logging will interact favorably with fire and thus benefit habitat. This evaluation requires an estimate of the probability of future wildfire. To assume, as many analyses do, a 100% chance of future wildfire

[328] Jeremy S. Littell, Donald McKenzie, David L. Peterson, Anthony L. Westerling (2009) Climate and wildfire area burned in western U.S. ecoprovinces, 1916–2003. Ecological Applications: Vol. 19, No. 4, pp. 1003-1021. http://naldc.nal.usda.gov/download/34676/PDF.

over-estimates the likelihood of treatments will interact with fire, thus over-estimating the ecological value of fuel treatments, and under-estimating the ecological effects of logging on habitat.[329]

There is a strong interest among the federal land management agencies to conduct widespread logging in suitable spotted owl habitat in order to reduce the effect of fire. The agencies view fuel reduction logging as beneficial to owl habitat because modeling shows that fire behavior is moderated by fuel reduction, but proponents never seem to conduct a careful evaluation of the relative probability, and the relative harms, of logging versus wildfire. Strangely, the probabilistic aspects of this issue have been largely ignored in the owl science literature, but recently explored in the forest-carbon literature which recently showed that although thinning can modify fire behavior, logging to reduce fire effects is likely to remove more carbon by logging than will be saved by modifying fire.[330] The reason for this seemingly counterintuitive outcome is a result of the "law of averages." As explained by Cathcart et al 2009 —

> *The question is—if the implementation of fuels treatments within the Drews Creek watershed had the beneficial effect of reducing the likelihood of wildfire intensity and extent as simulated in this study, why is the expected carbon offset from fuels treatment so negative? The answer lies in the probabilistic nature of wildfire. Fuels treatment comes with a carbon loss from biomass removal and prescribed fire with a probability of 1. In contrast, the benefit of avoided wildfire emissions is probabilistic. The law of averages is heavily influenced that given a wildfire ignition somewhere within the watershed, the probability that a stand is not burned by the corresponding wildfire is 0.98 (1 minus the average overall conditional burn probability …*
>
> *Thus, the expected benefit of avoided wildfire emissions is an average that includes the predominant scenario that no wildfire reaches the stand. And if the predominate scenario for each stand is that the fire never reaches it, there is no avoided CO2 emissions benefit to be had from treatment. So even though severe wildfire can be a significant CO2 emissions event, its chance of occurring and reaching a given stand relative to where the wildfire started is still very low, with or without fuel treatments on the landscape.*[331]

Both carbon and spotted owl habitat tend to accumulate in relatively dense forests with intermediate or longer fire return intervals. Thus, we can likely read these studies and replace the word "carbon" with the word "spotted owl habitat" and the results will likely hold.

DEIS pp 773-774 identifies "Issue 3" whether the alternatives will help reduce the loss of habitat due to wildfire, but the DEIS says no additional analysis is required, and the reasons given are

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[329] See Heiken, D. 2010. Log it to save it? The search for an ecological rationale for fuel reduction logging in Spotted Owl habitat. Oregon Wild. v 1.0. May 2010. http://dl.dropbox.com/u/47741/Heiken_Log_it_to_Save_it_v.1.0.pdf.

[330] Mitchell, Harmon, O'Connell. 2009. Forest fuel reduction alters fire severity and long-term carbon storage in three Pacific Northwest ecosystems. Ecological Applications. 19(3), 2009, pp. 643–655 http://www.fs.fed.us/pnw/pubs/journals/pnw_2009_mitchell001.pdf.

[331] Jim Cathcart, Alan A. Ager, Andrew McMahan, Mark Finney, and Brian Watt 2009. Carbon Benefits from Fuel Treatments. USDA Forest Service Proceedings RMRS-P-61. 2010. http://www.fs.fed.us/rm/pubs/rmrs_p061/rmrs_p061_061_079.pdf.

confusing: "As explained in **Appendix S**, the relative habitat suitability surfaces the BLM developed to address Conservation Needs 1, 2 and 4 include forecasts of habitat change from wildfire. Thus, the evaluations of Conservation Needs 1, 2 and 4 also address Conservation Need 3. The BLM needed no additional analysis." We could find no analysis in Appendix S or elsewhere in the EIS explaining that alternatives with more logging will create hazardous fuel condition and expose spotted owls to greater risk from wildfire.

In an effort to advance the discussion and help the agencies conduct better risk assessments in the NEPA context we have prepared a white paper in an attempt to clarify the critical considerations in a probabilistic risk assessment that compares the risk of logging versus wildfire.[332] Log it to save it? The search for an ecological rationale for fuel reduction logging in Spotted Owl habitat.[333] This report is most relevant in SW Oregon but the proposed evaluative framework is applicable in the east Cascades, northern California, and elsewhere. This report focuses on carbon and spotted owl habitat, but the analysis is relevant for any species or forest value that requires relatively dense forest cover, such as American marten, Pacific fisher, pileated woodpecker, northern goshawk, etc.[334]

To justify such fuel reduction logging in suitable owl habitat on ecological grounds requires several findings: (1) that wildfire is highly likely to occur at the site of the treatment, (2) that if fire does occur it is likely to be a severe stand-replacing event, and (3) that spotted owls are more likely to be harmed and imperiled by wildfire than by logging at a scale necessary to reduce fire hazard. Available evidence does not support any of these findings, which raises serious questions about the need for and efficacy of logging to reduce fuels in western Oregon and other forests lacking frequent fire return intervals.

The probabilistic element of the risk equation demands careful consideration. Both logging and fire have meaningful consequences, so the issue really boils down to a comparative probabilistic risk assessment where risk is characterized by two quantities: (1) the magnitude (severity) of the possible adverse consequence(s), and (2) the likelihood (probability) of occurrence of each consequence.

Framework for Assessing the Risk of Wildfire vs. Fuel Reduction Logging			
	Likelihood of event	Magnitude of harm	Net Benefit
Wildfire	LOW: Stand replacing wildfire is not common in western Oregon. Fire suppression policy prevails. The chance that any given acre of forest will experience wildfire is low.	LOW: The majority of wildfire effects are not stand replacing. Fire is a natural process to which native wildlife are adapted. There is still a deficit of natural fire processes on the landscape.	Fire is likely less harmful to habitat than fuel reduction logging.

[332] Heiken, D. 2010.
[333] Oregon Wild. v 1.0. May 2010. http://dl.dropbox.com/u/47741/Heiken_Log_it_to_Save_it_v.1.0.pdf.
[334] See for instance, Aubry et al 2013. Meta-Analyses of Habitat Selection by Fishers at Resting Sites in the Pacific Coastal Region. The Journal of Wildlife Management 77(5):965–974; 2013; DOI: 10.1002/jwmg.563.

Logging	HIGH: To be effective in controlling fire, logging must be very extensive, and sustained. Many more acres would need to be logged than would burn.	HIGH: Widespread logging will have significant impacts on canopy, microclimate, understory vegetation, down wood, and long-term effects on recruitment of large trees and snags.	Fuel reduction logging is likely more harmful to habitat than wildfire.

The white paper is organized around these risk evaluation parameters.

In spite of what we often hear, that federal forests are not at imminent risk of destruction by wildfire. Fire return intervals remain relatively long, due to both natural factors and active fire suppression policies. Wildfire severity also remains moderate. Most wildfires are NOT stand replacing. Most fires are in fact low and moderate severity.

The location, timing, and severity of future fire events cannot be predicted making it difficult to determine which forests will benefit from treatment - consequently fuel treatments must be extensive and many stands will be treated unnecessarily, thus incurring all the costs of fuel logging, but receiving none of the beneficial effects on fire behavior.

Furthermore, logging for purposes of fuel reduction has impacts on owl and prey habitat that remain under-appreciated, especially the reduction of complex woody structure, and the long-term reduction in recruitment of large snags and dead wood. Fuel reduction logging also has complex effects on fire hazard with potential to increase fire hazard, especially when fuel reduction efforts involve removal of canopy trees.

When all this evidence is put together, it becomes clear that "saving" the spotted owl by logging its habitat to reduce fuels often does not make any sense.

Similar conclusions were reached is several studies, reviews, and expert commentaries, such as:

Odion et al. 2014, who looked at the relative effects of fire versus thinning and fire on spotted owl habitat in two regions of interest: the Klamath and dry Cascades --

> *Using empirical data, we calculated the future amount of spotted owl habitat that may be maintained with these rates of high-severity fire and ongoing forest regrowth rates with and without commercial thinning. Over 40 years, habitat loss would be far greater than with no thinning because, under a "best case" scenario, thinning reduced 3.4 and 6.0 times more dense, late-successional forest than it prevented from burning in high-severity fire in the Klamath and dry Cascades, respectively. Even if rates of fire increase substantially, the requirement that the long-term benefits of commercial thinning clearly outweigh adverse impacts is not attainable with commercial thinning in spotted owl habitat. It is also becoming increasingly recognized that exclusion of high-severity fire may not benefit spotted owls in areas where owls evolved with reoccurring fires in the landscape.*

We found that the habitat recruitment rate exceeded the rate of severe fire by a factor of 4.5 in the Klamath and 10 in the dry Cascades, leading to a deterministic increase in dense forest habitat over time, assuming no other disturbance events. In contrast, previous published assessments of fire on spotted owls have not explicitly considered fire and forest regrowth rates (Wilson and Baker 1998, Lee and Irwin 2005, Roloff et al. 2005, 2012, Calkin et al. 2005, Hummel and Calkin 2005, Ager et al. 2007, Lehmkuhl et al. 2007). Not including the probability of high-severity fire, which is low, leads to highly inflated projections of the effects of thinning versus not thinning on high-severity fire (Rhodes and Baker 2008, Campbell et al. 2012).

Our calculations of thinning effects included rates of forest regrowth along with high-severity fire. The calculations illustrate how the requirement that the long-term benefits of thinning clearly outweigh adverse impacts (USFWS 2011) is not attainable as long as treatments have adverse impacts on spotted owl habitat. This is because the amount of dense, late-successional forest that might be prevented from burning severely would be a fraction of the area that would be thinned.

This would not be a concern if thinning effects were neutral, but the commercial thinning prescriptions being implemented call for forests with basal area reduced by nearly half to 13.5-27.5 m2/ha, which is mostly well below the minimum level known to function as nesting and roosting habitat (ca. 23 m2/ha) (Buchanan et al. 1995, 1998). … Even an immediate doubling of fire rates due to climate change or other factors would result in far less habitat affected by highseverity fire than thinning. In addition, much of the highseverity fire might occur regardless of thinning, especially if the efficacy of thinning in reducing high-severity fire is reduced as fire becomes more controlled by climate and weather (Cruz and Alexander 2010). Clearly, the strategy of trying to maintain more dense, late-successional forest habitat by reducing fire does not work if the method for reducing fire adversely affects far more of this forest habitat than would high-severity fire, and the high-severity fire might occur anyway because it is largely controlled by climate and weather.

While much of the concern about fire and thinning in dry forests of the Pacific Northwest has focused on spotted owls, it may also apply to other biota associated with dense, old forests, including species of conservation concern, such as Pacific fisher (Martes pennanti pacifica), which research indicates may benefit from mixed-severity fire (Hanson 2013), the Northern Goshawk (Accipiter gentilis), and, following fire, the Black-backed Woodpecker (Picoides arcticus), … Our findings highlight the need to be cautious about conclusions that thinning treatments are needed for species found in dense forest and that they will not have unintended consequences (e.g., Stephens et al.2012) until long-term, cumulative impacts are better understood. As we found with spotted owls, long-term and unintended consequences may be substantial for species that rely on dense, late-successional forests.[335]

[335] Dennis C. Odion, Chad T. Hanson, Dominick. A. DellaSala, William L. Baker, and Monica L. Bond. 2014. Effects of Fire and Commercial Thinning on Future Habitat of the Northern Spotted Owl. The Open Ecology Journal, 2014, 7, 37-51 37. http://benthamopen.com/toecolj/articles/V007/37TOECOLJ.pdf.

V. REGENERATION HARVEST REDUCES FIRE RESILIENCY

The DEIS did not adequately disclose the extent to which regeneration logging will convert naturally resistant and resilient mature forests into tree plantations which have a dense homogenous fuel structure close to the ground and represents a significant fire hazard.

Logging in many cases will actually increase fire hazard, but the EIS does not fully account for the impacts on wildlife. DEIS Figure 3-40 and 3-41 clearly show that timber management areas tend to have fuel conditions with greater fire hazard compared to the reserves where forests are better conserved. The DEIS does not carry this analysis forward into the analysis of effects on the northern spotted owl habitat (and numerous other wildlife that prefer to live in dense forests). Based on the fuel conditions created by logging, fires will likely be larger and more severe. There will likely be spill-over effects from the harvest areas to the reserves. The EIS needs to more fully disclose the adverse effects of logging on spotted owls

DEIS at 159 states,

> *In dry forests under all action alternatives, management would emphasize increasing fire resistance and resilience, which would often also increase resistance to drought, insects, and pathogens. The No Action alternative does not explicitly prohibit management to increase fire resistance and resilience, but does not have the same emphasis as in the action alternatives, especially within the Late-Successional Reserve and the Riparian Reserve*."

This is flawed for several reasons.

- First, BLM seems to assume that active management to reduce fire, insects, and drought will provide net benefits. In reality, fire and insects are natural processes that forests evolved with. Logging removes important features of wildlife habitat and is far more likely to cause adverse effects on wildlife compared to natural processes like fire and insects.
- Second, BLM seems to assume that active management (i.e. logging) will provide net ecological benefits. In reality, active management will interfere with these natural processes and cause more harm than good. For instance, beetle mortality is likely to kill the trees most susceptible to beetles, while sparing those trees that are best adapted to defend themselves from beetle attack. Logging removes trees without regard to their adaptive capacity. Logging will be removing adaptive genes from the forest, while natural processes recruit those individuals most likely to offer adaptive traits.
- Third, logging for resistance and resilience to fire and other natural disturbance agents will most often involve dramatic reduction in stand densities. This will imperil many species that prefer to live in dense forests, including spotted owls, and primary prey such as flying squirrels and red tree voles. In short, increasing resilience to fire, reduces resilience for spotted owls.
- Fourth, risk reduction logging is allowed in LSRs under the Northwest Forest Plan (as long as the benefits of action are clear and compelling) so BLM cannot cast aspersions on the no action alternative. In fact, BLM needs to give the action alternatives lower marks because they grant BLM more discretion to conduct active management In reserves that is not properly conditioned on ensuring net ecological benefits.

DEIS at 159 also says, "*Comparing recent satellite imagery of western Oregon with that collected in the mid-1990s, Reserves with minimal or no active management tended to become homogeneous with respect to stand density, age, and condition. Such landscapes appear to be increasingly vulnerable to large, stand-replacing fire*." This is highly speculative, misleading, and not supported by any evidence.

- First, reserves were intended to be spatially distributed and redundant, so that the system of reserves could absorb large disturbance events and still function. See Jerry Franklin's statements following the Biscuit Fire.
- Second, mature forests are less vulnerable to fire, while dense stands of young trees are more vulnerable to fire, so it's really the timber management areas with abundant areas of young reproduction that pose the greatest fire hazard. (See the science excerpts below.)
- Third, the assertion that large reserves are more vulnerable is contradicted in the DEIS. DEIS (p 194) admits that:

> *The High Intensity Timber Area includes management such as thinning and regeneration harvest with no retention and rapid reforestation on a relatively short rotation. This management approach would result in continuous horizontal and vertical fuel profiles and conditions more closely aligned with high severity fire. … [T]here currently exists an overabundance of young and closed conditions and the likelihood of large, high severity fire has increased. Large areas of no retention are not representative of the prevailing vegetative patterns and structure associated with frequent fire, low-severity or mixed-severity fire regimes*.[336]

Moderate Intensity Timber Area includes thinning and regeneration harvest with 5-15 percent basal area retention, and longer rotations and rapid reforestation. This management approach would result in more continuous horizontal and vertical fuel profiles and conditions more closely aligned with high severity fire. Additionally, contiguous fuel profiles have reduced stand-level fire resistance.

Contrary to popular belief, old forests present much less of a fire hazard compared to dense young plantations resulting from regenharvest. Older forests spend most of their lifecycle in a condition of tall trees where most of the fuels are held high above the ground and relatively unavailable for combustion by surface fires. Mature forest canopies also help maintain cool, moist conditions, reduce wind speeds, and suppress the growth of ladder fuels. Regeneration harvest results in young forests of short-stature where the fuels are densely packed and close to the ground where they are available for combustion and present more of a hazard.

> *Large blocks of old-growth forests – rather than large contiguous blocks of young growth or highly simplified forests – are the best scenario for reducing catastrophic wildfire.*[337]

Lindenmayer et al (2009) say –

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[336] Taylor and Skinner 2003, Larson and Churchill 2012.

[337] Jerry Franklin, David Perry, Reed Noss, David Montgomery, Christopher Frissell. Simplified Forest Management To Achieve Watershed And Forest Health: A Critique. National Wildlife Federation. http://www.coastrange.org/documents/forestreport.pdf

> *Contrary to claims by some commentators (e.g., National Association of Forest Industries 2009a,b,c), industrial logging is likely to make some kinds of forests more, not less, prone to an increased probability of ignition (Krawchuk & Cumming 2009) and increased fire severity and/or fire frequency (Uhl & Kauffman 1990; Thompson et al. 2007; Bradshaw et al. 2009; Malhi et al. 2009).*[338]

The 1992 Draft Recovery Plan for the Northern Spotted Owl says, "*High surface fire potential during early succession in Douglas fir was identified by Isaac (1940) as a 'vicious cycle' of positive feedback...*"[339] while "Mature to old-growth forests [in the west Cascades subregion] have a low surface fire behavior potential (Agee and Huff (1992)."[340]

Cochrane et al (2012) recently showed that a patchwork of small clearcuts in areas of the Umpqua National Forest actually increased the size and spread of recent fires. *"[T]he simulated exacerbation of overall fire spread rates is still realistic owing to increased crown fire prevalence caused by the continuous, even-aged fuel complexes of the treated areas.*"[341]

The 2000 National Forest Roadless Area Conservation FEIS (p 3-92 -93) noted the fire hazard associated with regeneration logging:

> *[E]arly successional vegetative growth often forms into dense thickets that create a highly flammable situation. New tree growth, whether from natural regeneration or planted nursery stock, produces needles and twigs that become the fine fuel that contributes to wildland fire spread. ... Post-harvest fuel conditions commonly found in some managed forests prompt many scientists to conclude that harvested forests have a higher propensity for large, severe wildland fires than forests that have not been harvested. A recent report by the National Research Council (2000) speaks to the issue of post-harvest fuel management in Pacific Northwest forests.*
>
> *"Logging has been proposed as a possible surrogate for fire in reducing fuel accumulation with the added benefit of economic return (Agee 1993), but logging and clearcutting do not necessarily reduce flammable fuels…rapid regeneration of early-successional shrubs and trees can create highly flammable fuel conditions within a few years of cutting. Without adequate treatment of small woody residues, logging may exacerbate fire risk rather than lower it (Agee 1993)…"*

Two fires in 2002 on the Umpqua National Forest were evaluated for their effect on the forest. Excerpts from the March 2003 Wildfire Effects Evaluation Project by the Umpqua N.F. make clear the impact of creating more tree plantations:

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[338] David B. Lindenmayer, Malcolm L. Hunter, Philip J. Burton, & Philip Gibbons. 2009. Effects of logging on fire regimes in moist forests. Conservation Letters xx (2009) 1–7. http://soln.org/wp-content/uploads/2010/01/effects-of-logging-on-fire-regimes-in-moist-forests.pdf

[339] 1992 NSO Recovery Plan page 444

[340] 1992 NSO Recovery Plan page 452

[341] M. A. Cochrane, C. J. Moran, M. C. Wimberly, A. D. Baer, M. A. Finney, K. L. Beckendorf, J. Eidenshink, and Z. Zhu. 2012. Estimation of wildfire size and risk changes due to fuels treatments. International Journal of Wildland Fire. http://dx.doi.org/10.1071/WF11079. http://www.publish.csiro.au/?act=view_file&file_id=WF11079.pdf

> *"Plantations had a tendency to increase the rate of fire spread and increased the overall area of stand-replacement fire effects by spreading to neighboring stands." Page 4*
>
> *"Fire burned most plantations with high intensity and spread rapidly through the canopy of these young stands." Page 20.*
>
> *"Plantation mortality is disproportionately high compared to the total area that plantations occupied within the fire perimeter. Page 26-27.*
>
> *"Crown fire spreads readily through these young stands: rates of fire spread can be high, and significant areas or mortality can occur in and adjacent to these stands." Page 32.*

Finally, the report says that the fire behavior in forest that had not been converted to tree farms was normal. "*The pattern of mortality in the unmanaged forest resembles historic stand-replacement patch size and shape*."[342]

The 2013 BAER Report for the Douglas Complex Fires in SW Oregon said "While the severity varied throughout the fire area, young timber plantations carried the fire while older stands tended to be more resistant. This is mostly due young timber plantations having a high density of ground fuels."[343]

VI. FIRE AND FUEL IN THE WILDLAND URBAN INTERFACE

The EIS should provide a map showing the Wildland Developed Areas, including the one-mile buffer. Where BLM intends to protect people and property from fire, we urge BLM to focus fuel treatments on the structure ignition zone, which is generally within 100 feet of structures. Treatment beyond the structure ignition zone should focus on harmonious goals including ecological restoration, carbon storage and clean water.

We urge BLM to focus fuel treatments on dense young plantations that are the most hazardous rather than mature forests that tend to be much more fire resistant and resilient.

The DEIS (p 202) says –

> *The extent of the Harvest Land Base under each alternative and the associated changes in vegetation due to differing management direction would influence the overall patterns in stand-level fire hazard, rather than changes within the reserves. … all alternatives would have similar effects on fire resistance within the Late-Successional Reserve.*

The EIS should do more to highlight the fact that alternatives with greater timber harvest, especially regeneration timber harvest and logging in mature forests, will result in greater fire hazard to homes and communities, while greater forest conservation in reserves would result in greater fire safety for communities.

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[342] Page 64. Umpqua NF. Wildfire Effects Evaluation Project. March 2013. http://web.archive.org/web/20041118062947/http://www.fs.fed.us/r6/umpqua/publications/weep/weep.html.

[343] HSG9 – Douglas Complex Fire Burned Area Emergency Rehabilitation Plan. BLM Douglas Complex BAER Team. Sept 5, 2013. (p 12).

SOIL RESOURCES

I. DETRIMENTAL SOIL DISTURBANCE.

"Detrimental soil disturbance could result in some reduction in future tree growth."[344] Detrimental soil disturbance directly inhibits the "sustained yield of timber" that forms part of the purpose and need for this planning process.

As stated on page 608 of the DEIS:

> *"The alternatives would increase the acreage of detrimental soil disturbance from timber harvest, road construction and fuels treatments by 13 to 30 percent of current amounts during the first decade."*

Further, on page 616 of the DEIS the BLM acknowledges that increased soil compaction and organic matter removal "*have the greatest potential to reduce forest productivity*."

Hence the BLM should have developed a reasonable action alternative that would have reduced, as opposed to increased the amount of detrimental soil disturbance associated with intensive harvest activities and road construction that are emphasized in the action alternatives. Such a reasonable action alternative would best meet the alleged planning purpose of sustained forest production in the long-term while avoiding significant harm to soil resources.

II. MACHINE SLASH PILING

On page 618 of the DEIS the BLM appears to indicate that machine piling may occur within logging units (and not just on log landings). This comes as a surprise to our organizations. The impacts of machine piling on soil resources, and hence on long-term forest productivity, are significant and avoidable.

Please note that the impacts of additional machine piling in logging units located in forest stands currently protected (under the NWFP) as Riparian Reserves or as known Survey and Manage sites is not disclosed or analyzed in the DEIS.

Machine piling increases the disturbance to groundcover and soil. Soil displacement results from the ground-based machine use when the heavy equipment turns and pushes the slash throughout logging units. This displacement has many impacts. First, it removes the organic debris and exposes the soil. This in turn can cause surface sealing and crusting. Erosion and decreased infiltration can also result from this. Second, displacement results in the loss of important soil biota, like mycorrhizal fungi, which assists plant nutrient uptake. It is not an unreasonable request to ask for the BLM to consider the other methods of slash treatment. Most project planners on public lands in the Klamath Siskiyous tend to avoid post-harvest machine piling because of the known impacts and availability of other slash reduction practices.

Please note that recently federal timber planners in the Six Rivers National Forest concluded:

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[344] *DEIS at 615.*

"Machine piling/burn piles would increase ground disturbance and soil displacement when the machine turns."[345]

Please note how the Medford BLM recently responded to requests from the timber industry to authorize machine piling on federal lands:

> *Comment 4: We asked that BLM provide some flexibility in how fuels would be treated by focusing on the desired goals. The BLM has restricted fuels treatments to handpiling and burning. Contractors could use lightweight equipment to treat fuels without detrimentally compacting soils.*
>
> *Response: The commenter has not provided details on methodology or supporting science that would support the claim that machine piling could be done without detrimentally compacting soils in excess of RMP standards for percent area compacted by current activities.*
>
> *Resource management plans call for limiting compaction in harvested areas in order to minimize soil productivity losses. Therefore, no additional use of mechanical equipment for fuels reduction was proposed, as ground-based logging would compact up to 12 percent of the harvest units. This is particularly important in the Cottonwood planning area as the majority of soils contain high rock content. It was identified that ripping the soils in this area would bring rocks and cobbles to the surface. The priority was given to minimizing the soil area compacted instead of trying to mitigate the effects. Additionally, the harvest prescription resulting in relatively few trees per acre being cut minimizes the slash, and consequently, also reduces the need for mechanical fuel treatment.*[346]

Mechanical piling is universally recognized as an outdated practice that has disproportionately harmful significant impacts on watershed and soil resources.

Please see:

> *Evelyn Bull et al. Trees and Logs Important to Wildlife in the Interior Columbia River Basin PNW-GTR-391 (1977).*
>
> *BLM, USGS, Biological Soil Crusts: Ecology and Management (Technical Reference 1730-2 (2001) (Available from BLM Publication Management Distribution Service, Bldg 41, E-16 (BC-650B) Denver, CO 80255*

Please note that machine slash piling will condense soil and decrease its porosity. This leads to a decrease in the productivity of that soil which affects the plant life. This can reduce root growth, timber volume, and tree height.[347] These impacts can come as a result of as little as one pass by

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[345] *Little Doe and Low Gulch Timber Sale DEIS p 110.*

[346] Medford BLM Cottonwood Project EA Appendix A, Response to Comments Page 3-2: http://www.blm.gov/or/districts/medford/plans/files/Revised_EA_Final.pdf

[347] Greacen and Sands 1980; Froehlich and McNabb 1984.

the logging equipment across a site.[348] This loss in productivity can impact individual trees (Froehlich 1979,[349] Helms and Hipkin 1986)[350] or whole sites (West and Thomas 1981)[351]. Even the microbial population in the soil can be adversely impacted (Amaranthus et al. 1996)[352].

BLM should examine the monitoring reports on soil compaction from 1985 through 1997, on the Payette National Forest. The study area in that planning effort contains different soil and ecotypes than those covered by the BLM RMP, but the documented long-lasting effects are still relevant to the DEIS at hand.

We also encourage the agency to review the findings of Geppert, R.R., Lorenz, C.W., and Larson, A.G., 1984. Cumulative Effects of Forest Practices on the Environment: A State of the Knowledge. Wash. For. Practices Board Proj. No. 0130, Dept. of Natural Resources, Olympia, Wash.

Manual piling or underburning is far preferable to tractor piling. Manual piling and underburning have none of the negative impacts to soils associated with tractor piling, and they provide an increased opportunity for local employment while significantly reducing long-term damage to soil health and productivity. Hence manual piling or underburning would better achieve the stated purpose and need for the RMP revisions. Given that these practices can reduce fuels without the negative impacts associated with machine piling, they are reasonable to implement and reasonable to consider and analyze as an action alternative.

MODELING CONCERNS

Several recent scientific publications and government reports refute some of the important but controversial modeling assumptions in the DEIS. The BLM fails to identify existing scientific information that answer the stated questions. The BLM must use the best available science for managing fish and wildlife on public lands.

The BLM examined several existing models for analyzing timber growth and harvest and selected a proven model for use (Woodstock). But for most other ecologically important issues, simplistic and untested models (often lifted from failed 2008 WOPR) when sophisticated and tested peer reviewed models already exist. For example, the BLM identifies a novel and untested model for large wood recruitment to streams when a sophisticated wood recruitment model developed by regional government scientists already exists[353]. Similarly, the untested and simplistic model for analyzing fine sediment delivery to fish streams is not an appropriate

[348] Wronski 1984.
[349] Froehlich, HA. 1979. Soil compaction from logging equipment: effects on growth of young ponderosa pine. *Journal of Soil and Water Conservation* 34:276-278.
[350] Helms, JA, and C Hipkin. 1986. Effects of soil compaction on tree volume in California ponderosa pine plantation. *Western Journal of Applied Forestry.* 1:121-124.
[351] West, S and BR Thomas. 1981. Effects of skid roads on diameter, height, and volume growth in Douglas-fir. *Soil Science Society of America Journal* 45:629-632.
[352] Amaranthus, MP, and DA Perry. 1989. Rapid root tip and mycorrhizal formation and increased survival of Douglas-fir seedlings after soil transfer. *New Forests* 3:77-82.
[353]Spies et al. 2013.

starting point when many more sophisticated and tested models exist for modeling sediment delivery to streams[354].

In the RMP Planning Criteria at 76, the BLM reports that "[Northern spotted owl] Conservation Need 3 includes "a monitoring program to clarify whether these risk reduction methods are effective and to determine how owls use habitat treated to reduce fuels However, *the creation of such a monitoring program is not a BLM responsibility and will not be included in the BLM evaluation."* (emphasis added) It is not appropriate for BLM to ignore FLPMA, NEPA and Congress, which also call for the stated effectiveness monitoring. Why is BLM spending millions on reducing fire risk if it does not work or is harmful to spotted owl recovery? In the absence of monitoring, it would at least seem logical and prudent for BLM to employ modeling to determine the trade-offs between logging impacts to owl habitat, when reducing fuels, and loss of spotted owl habitat to fires. Two independent studies (i.e. new information) have found that the BLM's commonly asserted assumption (that logging to reduce fuels in fire prone spotted owl habitat is beneficial) have found that fuels reduction at a landscape scale is actually harmful to spotted owl habitat[355]. Each of these studies is relevant to dry forests in the Medford and Lakeview Districts. Thus, the science finds that thinning resulted in much larger losses to owl habitat over a 40 and 100 year period than living with more fire killed habitat. Several other studies soon to be published are also finding that the spotted owls are better off with fire and no pre-emptive fuels reduction logging. Add to this the need for large patches of fire killed snag forests for "status review" black-backed woodpeckers in these same districts and logging to reduce fires is not a win-win technique as once thought. Large scale fuels reduction projects have now been shown to be lose-lose for the wildlife on at least the Medford and Lakeview Districts.

SPECIAL DESIGNATIONS

We support the Illinois Valley as a "salmon and botanical area" because this unique area has extraordinary potential for wilderness recreation, Wild and Scenic River recreation, botanical recreation, unmatched steelhead fishing opportunities, and high value conservation of rare and endangered wildlife, rare plants, and native fishes. The free flowing Illinois River basin hosts one of the largest remaining Coho salmon populations of the SONCC. The BLM needs to initiate cooperative and coordinated management of the Eight Dollar Mt. complex with the Forest Service, Oregon parks and recreation and nature conservancy similar to management agreements in place at Table Rock complex.

The Illinois Valley is a large interior valley of the Rogue River basin in the Klamath-Siskiyou ecoregion of southwestern Oregon/northwestern California. The BLM managed lands have exceptional plant and animal diversity because of elevation gradients, a hierarchy of perennial streams, and complex serpentine geology. A large number of the endemic plant species of the Klamath Siskiyou ecoregion are found in the Illinois Valley. Some of these plants are found nowhere else in the world and two are federally listed due to limited range. Plant protection is the focus of three existing ACECs, two Research Natural Areas, and two proposed ACECs. ACEC's and RNA's often abut similar Forest Service botanical area designations and require

[354] See BLM Timber Rock Final EIS.
[355] See Hanson et al. 2009 and Raphael et al. 2013.

close coordination to prevent damage from off road vehicles, mining, and undesirable introductions of alien species such as Alyssum. The Eight Dollar Mountain Area is a complex of BLM ACEC, Forest Service Botanical Areas, Oregon State Parks Lands, and Nature Conservancy lands with numerous Darlingtonia fens, associated rare plants and recreational facilities. The BLM manages a boardwalk that provides handicapped access to a Darlingtonia fen at the base of Eight Dollar Mountain. Coordinated management is needed to protect fragile ecosystems and provide appropriate recreational opportunities for plant areas and the Wild and Scenic Illinois River. Additional recreational areas are identified along the West Fork Illinois and for the 80 acre BLM parcel within Forks State Park.

In addition to the exceptional plant diversity of the Serpentine Siskiyous, large areas of oak woodlands and mixed evergreen forests provide high tree and shrub diversity in the Oak Savanna Foothills and Inland Siskiyous ecoregions of the Illinois Valley. Neotropical and resident bird species diversity is high. The endemic Del Norte salamander occupies talus areas. Rare Pacific fishers and federally listed northern spotted owls inhabit these forested areas. Beaver create ponds for declining western pond turtles (e.g. a beaver dam occupied by pond turtles is at proposed Logan Cut recreation area)

Illinois Valley streams and rivers support robust runs of native winter steelhead, Chinook salmon, coho salmon, cutthroat trout, and Pacific lamprey. Anadromous fishes can access nearly all historical habitat because the mainstem Illinois River and its major tributaries have no high dams. All fish species sustain themselves with natural production and with no hatchery fish supplementation, thus assuring a high degree of genetic integrity. The Illinois Valley is a major stronghold for the federally listed coho salmon because several tributaries have viable populations. High elevation headwater areas have dependable snowpacks that provide cool perennial water through the long hot summers. Winter Steelhead that spawn and rear in BLM streams are caught in a recreational fishery as adults in the mainstem Illinois. Selmac Lake, an artificial impoundment, near Selma provides year round fishing for primarily non-native fishes such as bass and perch.

Timber harvest is primarily directed at upland forests that have been categorized as “dry” forests where thinning young trees is the principal silvicultural technique. High priority for harvest are densely stocked plantations and encroaching Douglas-fir trees that have invaded oak woodlands and are a threat to plant biodiversity because they shade out understory shade intolerant species. Fuels treatments to break up dense shrub patches and remove flammable small trees are augmented with controlled fires.

ACECS

We hereby incorporate by reference KS Wild et al. comments on ACECs submitted on the DEIS.

WILD AND SCENIC RIVERS

The BLM should identify streams being considered by congress for inclusion in the national wild and scenic rivers system and also seek out candidate streams with mixed BLM and Forest Service management.

The BLM cannot pre-empt the will of Congress by failing to protect streams currently being considered in federal legislation. Specifically the streams identified for Wild and Scenic designation in Senator Wyden's O&C Bill must be treated as candidate wild and scenic rivers. The O&C Bill identifies the Nestucca River, Walker Creek, North Fork Silver Creek, Jenny Creek, Spring Creek, Lobster Creek, Wasson Creek and Franklin Creek. These streams and adjacent ¼ mile must be reserved from timber harvest modeling and any management actions that would damage wild and scenic characteristics. These streams and adjacent lands would also need to be identified for mineral withdrawal in the RMP. Additionally the BLM must coordinate with the Forest Service to conduct a geospatially explicit analysis to identify potential BLM wild and scenic streams that are adjacent existing Forest Service candidate wild and scenic streams. Some examples are Rough and Ready Creek, West Fork Illinois River, Sucker Creek, and Althouse Creek in the Medford District.

CARBON AND CLIMATE CHANGE

Global climate change is a new and significant threat to humanity and forests. We have a moral and legal obligation to minimize and mitigate this threat.[356] Climate change is caused by excess CO_2 and other greenhouse gases transferred to the atmosphere from other pools. All temperate and tropical forests, including those in this project area, are an important part of the global carbon cycle. Since all forests are an important part of the global carbon cycle, the agency must do its part by managing forest to maintain and increase carbon storage. Global warming is caused by the *cumulative* build-up of greenhouse gases, especially carbon, in the atmosphere. Logging will add to the cumulative total carbon emissions so it is clearly part of the problem and must be minimized and mitigated. Logging will not only transfer carbon from storage to the atmosphere but future regrowth is unlikely to ever make up for the effects of logging, because carbon storage in logged forests will lag carbon storage unlogged forests for decades or centuries. Since the time the resource management plan was written, there is significant new information reinforcing the need to conserve all existing large stores of carbon in mature & old-growth forests in order to keep carbon in forests and out of the atmosphere in order to mitigate climate change. Please review the report on "Forests, Carbon & Global Warming" prepared by Oregon Wild. The report explains how climate change is likely to affect Pacific Northwest forests as well as how forest conservation and restoration (including sensible changes to this project) may help mitigate climate change.[357] And see this related slideshow that helps debunk some of the flawed arguments used by logging advocates: http://www.slideshare.net/dougoh/forest-carbon-climate-myths-presentation/.

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[356] See 2015 Oslo Principles on Global Climate Change Obligations. http://www.osloprinciples.org/.

[357] https://dl.dropboxusercontent.com/u/47741/Oregon%20Wild%20Report%20on%20forests%2C%20carbon%2C%20and%20global%20warming%2C%20ver.%201.4.pdf.

On June 25, 2013, President Obama released his Climate Action Plan which includes forest conservation among the "first pillar"[358] of efforts to reduce emissions, saying: "**Preserving the Role of Forests in Mitigating Climate Change:** *America's forests play a critical role in addressing carbon pollution, removing nearly 12 percent of total U.S. greenhouse gas emissions each year. … Conservation and sustainable management can help to ensure our forests continue to remove carbon from the atmosphere …* " [359] "[A]dvancing efforts to protect our forests" is also mentioned in the 6th U.S. Climate Action Report under the United Nations Framework Convention on Climate Change (UNFCCC). The agency should advance this national climate goal by conserving public forests. Carbon emissions from logging public lands directly conflict with this important national goal and indicate potential significant impacts requiring an EIS.

The Copenhagen Accord recognizes the need to avoid dangerous climate change and the role of forests in climate mitigation. *"…To achieve the ultimate objective of the Convention to stabilize greenhouse gas concentration in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system, we shall, recognizing the scientific view that the increase in global temperature should be below 2 degrees Celsius… We recognize the crucial role of reducing emission from deforestation and forest degradation and the need to enhance removals of greenhouse gas emission by forests and agree on the need to provide positive incentives to such actions*"[360] This likely requires reducing atmospheric CO_2 concentrations below 350 ppm[361] and avoiding logging that would increase atmospheric carbon emissions.

In the DEIS, "key points" described under "climate change" include: "*Carbon storage would increase under all alternatives. … Greenhouse gas emissions associated with BLM-administered lands would increase under all Alternatives…*" This is misleading. It is more useful to provide the public and the decision-maker with information on what distinguishes the alternatives. Which alternative would store the most carbon in the forest? Which alternatives would cause the most GHG emissions? How does carbon storage compare to the baseline of natural forests growing without being logged? These are the key points that need to be disclosed. We applaud BLM for preparing a "No Timber Harvest Reference Analysis" and this should have been reflected in the "key points" to highlight the fact that logging sacrifices carbon storage.

The DEIS (p 136) says "*harvesting removes carbon and shifts stand characteristics, such as mean diameters and heights, in more of the landscape to smaller trees and younger age classes that store less carbon*." This is good, but the EIS analysis needs to clearly disclose the carbon consequences of the various discrete policy choices that the decision-maker is facing. For instance, the EIS needs to disclose that:

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[358] U.S. Dept of State 2013. draft 6th Climate Action Report http://www.state.gov/e/oes/climate/ccreport2014/index.htm (page 12).
[359] http://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf
[360] http://www.climatesciencewatch.org/file-uploads/Copenhagen_Accord.pdf.
[361] Rockström, J., W. Steffen, K. Noone, Å. Persson, F. S. Chapin, III, E. Lambin, T. M. Lenton, M. Scheffer, C. Folke, H. Schellnhuber, B. Nykvist, C. A. De Wit, T. Hughes, S. van der Leeuw, H. Rodhe, S. Sörlin, P. K. Snyder, R. Costanza, U. Svedin, M. Falkenmark, L. Karlberg, R. W. Corell, V. J. Fabry, J. Hansen, B. Walker, D. Liverman, K. Richardson, P. Crutzen, and J. Foley. 2009. Planetary boundaries:exploring the safe operating space for humanity. *Ecology and Society* **14**(2): 32. [online] URL: http://www.ecologyandsociety.org/vol14/iss2/art32/. http://www.stockholmresilience.org/download/18.1fe8f33123572b59ab800012568/pb_longversion_170909.pdf. http://www.ecologyandsociety.org/vol14/iss2/art32/figure6.html.

- Wider stream buffers store more carbon than narrow stream buffers;
- Forest reserves store more carbon that timber management areas;
- Large reserves store more carbon than smaller reserves;
- Reserves with strict limits on logging store more carbon than reserves that allow logging;
- Thinning stores more carbon that regeneration harvest;
- Regeneration harvest with ≥30% retention stores more carbon than regeneration with little of no retention;
- Logging to try to limit carbon emissions from fire will likely emit more carbon from logging than will be prevented via fire control. Law, B. & M.E. Harmon 2011. Forest sector carbon management, measurement and verification, and discussion of policy related to mitigation and adaptation of forests to climate change. Carbon Management 2011 2(1). [362]
- Meeting RA 32 by protecting all forests over 80 years old will store more carbon than meeting RA 32 by conserving forests 150 years and older.

Similarly, wider stream buffers and large, well-protected reserves, will better prepare forests for the extremes of climate change. In most cases, logging will reduce forest resilience, not increase it. The DEIS (p 132) says "*Active management would provide opportunities to implement climate change adaptive strategies*." However, there is strong evidence that unmanaged forests have great capacity for self-correction and self-organization. BLM should look carefully at all the evidence, including competing experts viewpoints before concluding that logging is beneficial. Complex native forests are more resilient to climate change than logged forests and simplified plantations. The IPCC recognizes that –

> *... [R]educing emissions from deforestation and degradation may also yield co-benefits for adaptation by maintaining biodiversity and other ecosystem goods and services, while plantations, if they reduce biological diversity may diminish adaptive capacity to climate change (e.g., (Chum et al., 2011). Primary forests tend to be more resilient to climate change and other human-induced environmental changes than secondary forests and plantations (Thompson et al., 2009).*[363]

BLM should maintain the existing Aquatic Conservation Strategy and its wider riparian buffers because it will help make hydrologic systems and aquatic ecosystems more resilient to climate change by moderating cumulative watershed effects, reducing the extent of the road system, emphasizing maintenance of riparian areas, shade, floodplain processes, recruitment of large wood from both near stream areas and unstable slopes, and connectivity and fish passage.

DEIS (p 133) says "*the potential error in the estimate for any one alternative likely exceeds the amount of variance between the alternatives*." This should be clarified to say that in spite of these uncertainties, confidence the relative effects of alternatives remains strong, i.e., alternatives

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[362] http://terraweb.forestry.oregonstate.edu/pubs/lawharmon2011.pdf;

[363] IPCC AR5, Working Group III, Mitigation of Climate Change, Chapter 11 Agriculture, Forestry and Other Land Use (AFOLU) (Final Draft 2014) pp 46-47.http://report.mitigation2014.org/drafts/final-draft-postplenary/ipcc_wg3_ar5_final-draft_postplenary_chapter11.pdf

with less logging and larger reserves will result in relatively greater carbon store, while alternatives with more logging and small reserves will result in greater GHG emissions.

The DEIS does not explain how BLM arrived at the conclusions presented in Figure 3-24, the pie chart showing that fire emits more carbon than "harvest operations." The DIES does not say what kinds of emissions are include in harvest operations. Is it just the fuel used for machinery and transport? Does it include carbon removed from the forest via logging and slash fires? Does it account of the decay of wood products removed from the forest in current and prior years? Etc.

The "affected environment section" of the climate change section of the DEIS needs to describe the forest carbon cycle (pools and flows), how carbon flows into and out of the forest, the fate of carbon removed via logging, processes that control the net gain/loss of carbon,

The effects analysis needs to disclose the different consequences of carbon emissions in different time periods (e.g., near-term emissions are not compensated by delayed carbon uptake because global climate change and ocean acidification were made worse during the timber that extra carbon was in the atmosphere and future uptake cannot effectively mitigate for that). BLM should incorporate the concept of "carbon debt" and lag time associated with logging related carbon emissions in the near terms, and carbon recapture via forest regrowth over the long-term.

DEIS Figure 3-26 shows that all alternatives will increase carbon emissions but Alt. D will emit much less than the other alternatives. This makes sense based on the fact that Alt D allows more forests to continue growing and storing carbon, but this result requires further explanation in light of the DEIS assertion that carbon emissions are dominated by by wildfire, rather than logging. Does this result imply that forest growth dominates the net carbon balance of BLM forests regardless of wildfire effects, or that Alt D is expected to maintain more forests that are resistant to wildfire and therefore cause less carbon emissions from both logging and fire? If so, this should be made more explicit.

DEIS (p 145) describes a pattern of increased tree mortality related to climate change. The EIS should explain that this is a beneficial system-level adaptation to increasing climate stress. Trees that die free up resources so that surviving trees have a better chance of survival. This is an example of forests' self-correcting, self-organizing behavior common to many complex systems that are far from equilibrium.

DEIS (p 149) says "*analysis of Oregon large fires using data from the Monitoring Trends in Burn Severity site (http://mtbs.gov/index.html) indicates that the proportion of high-severity fire in forests generally has increased by 11 percent since 1984, with much of the increase since 2000.*" This appears to be contradicted in DEIS Appendix D which

> *… examined the MTBS data for any obvious temporal trends in wildfire severity, but did not detect a strong signal (Figure D-6). Over the course of 25 years, there appears to be a slight increase in the percentage of area burned by low and moderate severity wildfire, and a slight decrease in the percent of area burned in high severity wildfire, although these trends are not statistically significant. … While several studies have indicated that high severity fires are increasing across the western United States (Westerling et al.*

2006, Dillon et al. 2011a, Miller et al. 2012), no such trends were apparent in the observed record within the range of the northern spotted owl (Figure D-6).[364]

DEIS (pp 149-150) describes increasing stream temperatures as a result of climate change. The DEIS does not fully disclose the likely consequences on cold-water fish and other temperature-sensitive aquatic organism. For instance, stream temperatures are increasing most during summer when fish are most vulnerable. BLM should attempt to mitigate this by avoiding any shade loss caused by logging, and by reducing other anthropogenic stresses such as sediment from logging and roads and grazing.

DEIS Figure 3-28 shows that climate change seems to be causing an increase precipitation during spring. This is a significant concern for spotted owl nest success, which is inversely related to spring precipitation. DEIS (p 150) has a brief discussion of climate change and spotted owl declines, but the DEIS effects analysis (p 157) needs to consider alternative ways of mitigating the likely effects of climate change, such as by maintaining more suitable habitat which will support a larger owl population that is less vulnerable to stochastic variation and uncertainty caused by climate change and other factors.

DEIS (p 156) says "in the Northwest, warming air temperatures and declining summer base flows are strongly associated with warming stream temperatures" BLM needs to disclose how this trend intersects with the proposed reduction in stream protection and increases sin logging near streams. BLM should maintain wide stream buffers to maintain maximum shade and mitigate for global warming.

DEIS (p 157) says climate change will result in "*changes in disturbance regimes [that] could disfavor species associated with old-growth forests, by shifting more of the landscape into earlier seral stages, altering species compositions to ones less preferred, reducing the extent of large trees and structurally-complex forest, and decreasing patch sizes preferred for different life stages, such as nesting…*" The NWFP assumed that eventually 80% of the reserves would grow old and provide late successional habitat, while at any given time approximately 20% of the reserves might be affected by disturbance. As a result of climate change these proportions are likely to shift toward greater disturbance and more younger forests. BLM should mitigate for this by adopting a final alternative that protects all suitable owl habitat, not just a subset of high quality habitat, and by protecting larger LSRs and riparian reserves so that there is a larger part of the landscape given a chance to grow old and provide complex habitat.

To meet legal requirements including those under the O&C Act related to watersheds and community stability, BLM should adjust the purpose and need for this plan revision to include carbon storage and climate change adaptation. BLM should therefore strive to maintain and increase carbon storage and maintain biodiversity, not just focus on recovery of ESA-listed species. Maintaining biodiversity is an important way to prepare for global climate change, because the diversity of organisms and genes represent the complete range of evolutionary adaptations to past (and near future) climate change.

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[364] Ray Davis et al 2015. RMP Revisions for Western Oregon BLM DEIS. Appendix D – Modeling Wildfires and Fire Severity. http://www.blm.gov/or/plans/rmpswesternoregon/files/draft/RMP_EIS_Volume3_appd.pdf

I. THE FEDERAL LAND POLICY & MANAGEMENT ACT REQUIRES BLM TO TAKE ACTION ON CLIMATE CHANGE

BLM has a duty to prepare a current and up-to-date inventory of public lands and their new and emerging resource values.[365] This requires BLM to carefully inventory all the carbon stored in forests and soils on western Oregon BLM lands and the value of BLM lands to store more carbon if managed appropriately to grow more mature & old-growth forest forests.

BLM must give priority to identifying ACECs where special management is needed to prevent irreparable damage and protect life and safety from safety from natural hazards. This requires BLM to identify all mature & old-growth forest forests as ACECs because they must be conserved in order to avoid and mitigate climate change which is a natural hazard predicted to cause irreparable harm to important natural systems that need protection.

BLM must consider "potential uses of public lands." [366] This requires BLM to consider an alternative that uses BLM lands for carbon storage and climate mitigation, arguably the highest and best use of the highly productive forest lands in western Oregon. The analysis will reveal significant complementary benefits for water quality, quality of life, fish & wildlife habitat, community stability, etc.

FLMPA requires BLM to consider scarcity of values and available alternatives.[367] This requires BLM to recognize that western Oregon BLM lands are capable of growing very high levels of biomass per acre and such places are relatively rare. This also requires BLM to consider and compare the carbon consequences of various alternative management schemes.

Some forests are far better at sequestering carbon than others. And BLM has some great ones — low elevation forests with long growing seasons and mild winters and disturbance regimes that allow longer periods of growth and carbon accumulation. Forests on the westside of the PNW (where BLM's western Oregon holding are located) are twice as productive as forests in other parts of the country. Western Oregon forests can grow 100 cubic feet of wood per acre per year, while forests of the NE, SE, and mid-west generally produce half or less than that.[368] In addition to prodigious growth, westside forests are able to store that carbon for long periods. The "carbon density" of Westside forests exceed that of any forests in North American[369], possibly the world. This means that BLM lands are uniquely suited for sequestering carbon.[370] These highly

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[365] 43 USC § 1711.
[366] 43 USC § 1712.
[367] Id.
[368] Powell, Douglas S.; Faulkner, Joanne L.; Darr, David R.; Zhu, Zhiliang; MacCleery,l Douglas W. 1993. Forest resources of the United States, 1992 Gen. Tech. Rep. RM-234. Fort Collins, CO: U.S. Department of Agriculture, Rocky Mountain Forest and Range Experiment Station. 132 p. + map. [Revised, June 1994]. http://www.fs.fed.us/rm/pubs_rm/rm_gtr234.html
[369] Carbon density is a measure of the carbon in live and dead vegetation plus soil carbon measured on a per-acre basis. The westside of the Pacific Northwest is uniquely suited to growing and storing carbon in forests. See Figure 6 in Ingerson, Ann L. 2007. U.S. Forest Carbon and Climate Change. Washington, D.C.:The Wilderness Society. http://www.wilderness.org/Library/Documents/upload/ForestCarbon-ClimateChange.pdf

[370] See Christine L. Goodale, Michael J. Apps, Richard A. Birdsey, Christopher B. Field, Linda S. Heath, Richard A. Houghton, Jennifer C. Jenkins, Gundolf H. Kohlmaier,

productive forests of the northwest are losing carbon due to short-rotation forestry. From 1990 to 2010 western Oregon and western Washington are expected to lose 97.4 million tons of carbon under business-as-usual forest management.[371] There is a great potential to adopt new forest practices to reverse this trend. In fact, the Northwest Forest Plan reserves are already recognized as a step toward wise management of forest carbon. "Federal forest management policies are already contributing significantly to this goal with the extensive series of forest reserves established in the Northwest Forest Plan. Tens of thousands of acres of cutover federal forest land are being managed for restoration of late-successional forest conditions and, coincidentally, much higher levels of carbon stocks." [372] If BLM reduces the extent of the reserves and reduces protection of the carbon in large trees, and reduces the goals for restoration of previously logged sites, then these recognized carbon storage values will be lost. The EIS must address the impacts of this on climate, ecology, and social systems.

Recent studies show that northern forests are experiencing "A trend toward hotter and drier conditions is likely to exacerbate the effects of fire by increasing the frequency, intensity, and size of burns."[373] Some northern forests are also facing unprecedented mortality from insects, which could cause large-scale changes in boreal forest systems. These changes point to the very real possibility that boreal forests may be entering a positive feedback that shifts the northern forests from net carbon sinks to net carbon sources. This highlights the "scarcity" of forest sites with high potential to store carbon and the dwindling alternatives to storing carbon on BLM lands.

Scientists and policy-makers recognize that forests can play a significant role in mitigating climate change by storing more carbon. The UN says that 35% of the global opportunity to store carbon in forests is outside the tropics. Scientists have estimated that compared to other forest types, temperate conifer forests are likely to be one of the most persistent forest types in the face of climate change.[374] This makes old-growth on BLM land a potentially very rare and valuable reserve in terms of carbon storage.

Compared to other sectors, the forestry sector has a high benefit/cost ratio for carbon mitigation actions. That means that carbon storage in forests is a relatively efficient way to mitigate climate change. BLM must consider this in the EIS.

Werner Kurz, Shirong Liu, Gert-Jan Nabuurs, Sten Nilsson, And Anatoly Z. Shvidenko. 2002. Forest Carbon Sinks In The Northern Hemisphere. Ecological Applications, 12(3), 2002, pp. 891–899q 2002. http://www.whrc.org/resources/published_literature/pdf/GoodaleEcolAppl.02.pdf
("Over 80% of the estimated sink occurred in one-third of the forest area …")

[371] Haynes, Richard W.; Adams, Darius M.; Mills, John R. 1995. The 1993 RPA timber assessment update General Technical Report RM-259. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 66 pp. http://www.treesearch.fs.fed.us/pubs/20058

[372] LAURIE A. WAYBURN, JERRY F. FRANKLIN, JOHN C. GORDON, CLARK S. BINKLEY, DAVID J. MLADENOFF, NORMAN L. CHRISTENSEN, JR. 2007. Forest Carbon in the United States: Opportunities & Options for Private Lands. Pacific Forest Trust. http://www.pacificforest.org/publications/pubpdfs/ForestCarbonReport-07Update.pdf

[373] Jill Sakai. 2007. Wildfire drives carbon levels in northern forests. University of Wisconsin News. Oct. 31, 2007. http://www.news.wisc.edu/14399 *citing* work by Dr. Tom Gower and others.

[374] Staley, TNC Climate Conference 2007.

BLM must consider long-term vs short-term benefits.[375] This requires BLM to recognize that the benefits of logging are very short-term, while the benefits of climate mitigation through conserving and restoring mature & old-growth forests are both short-and long-term.

II. BLM MUST MANAGE FOR COMPLEMENTARY MULTIPLE USES

The O&C Act's mandate to correct market failures and sell timber only at "reasonable prices on a normal market" is an implicit acknowledgement of the multiple use concepts in the Federal Land Policy and Management Act. The O&C Act does not conflict with multiple use or FLPMA because Congress sought to further the public interest by normalizing markets. FLPMA requires that BLM produce appropriate amounts of public goods like watersheds, fish & wildlife, scenery, and scientific values. FLPMA's multiple use mandates require consideration of future generations and harmonious management of the multiple values, without any one use impairing the others.[376] This is accomplished in part by correcting market failures so that appropriate amounts of public goods are produced and prices reflect the full costs of production (including the cost of mitigating climate change and impaired water quality, and the cost of replacing old growth habitat where it has been lost).

III. O&C ACT REQUIRES BLM TO TAKE ACTION ON CLIMATE CHANGE

BLM views the forest as just trees and they view the O&C Act as a simple mandate to cut them down as fast as they grow. This grossly over-simplified view of the forest is inconsistent with the current understanding of forests and inconsistent with the O&C Act itself.

The O&C Act of 1937 provides: *"[T]imberlands … shall be managed … for permanent forest production, and the timber thereon shall be sold, cut, and removed in conformity with the principal of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities … [T]imber from said lands … shall be sold annually, or so much thereof as can be sold at reasonable prices on a normal market."* [377]

> *Forests are not just trees, but part of ecosystems that underpin life, economies and societies. …[A]ll forests provide a wide range of ecosystem services. These services include prevention of soil erosion, maintenance of soil fertility, and fixing carbon from the atmosphere as biomass and soil organic carbon. Forests host a large proportion of terrestrial biodiversity, protect water catchments and moderate climate change. Forests also support local livelihoods, provide fuel, traditional medicines and foods to local communities, and underpin many cultures. The harvesting of forest products is putting severe stress on the world's forests. … {Ecosystem] services have been reduced by the decline in total forest area and by continued forest degradation, especially in production and multipurpose forests … Greater emphasis on conservation of biodiversity may lead*

[375] 43 USC § 1712.
[376] 43 USC § 1702(c).
[377] http://www.blm.gov/or/plans/wopr/files/OCAct.pdf

to increased benefits in terms of resilience, social relations, health, and freedom of choice and action.[378]

The best way to safely store carbon and mitigate climate change to achieve permanent forest production, sustained yield, regular water flow, protect watersheds, and community economic stability is to protect all mature & old-growth forest forests and allow young forests to grow while increasing their diversity through variable density thinning, while maintaining forests that are prone to drought stress below their water-limited carrying capacity through thinning small trees and prescribed fire. This should have been considered as an alternative.

IV. BLM MUST HELP MITIGATE CLIMATE CHANGE TO REGULATE WATER FLOW AND TO PROTECT WATERSHEDS

"*Forest ecosystem services are threatened by increasing human demands. Exploitation of forests has been at the expense of biodiversity and natural regulation of water and climate…* "[379]

Logging mature & old-growth forests will exacerbate climate change and cause altered precipitation patterns, reduced snow pack, and increased evaporative demand which will violate the O&C Act's mandate to regulate water flow and protect watersheds. Logging mature and old-growth forest will tend to make water flow less regular and watersheds less protected from hydrologic extreme hydrologic events. If BLM protects mature & old-growth forest forests and grows more, water flow will be more regular and watersheds will be more protected.

Climate change is expected to increase winter precipitation and more of that precipitation will fall as rain instead of snow. This will increase peak flows in the winter and spring. Peak flows that exceed the natural pattern are harmful to watershed values. Peak flows cause erosion of stream banks and bottoms and cause landslides by undercutting slopes.

The forests and watersheds have had 2 million years to adapt to the climatic swings between glacial and interglacial periods, but now climate change threatens to push the pendulum beyond the normal interglacial into new territory that is warmer than the earth has experienced for millions of years. Both the rate and magnitude of climate change are unprecedented.

Warming will increase evaporative water demand and soil water deficit ,which will decrease late summer stream flow. Low stream flow harms not only fish but also agriculture, communities, and industries that rely on summer water supply.

There has been progressively more information highlighting the hydrologic consequences of climate change:

- The IPCC Second Assessment Report in 1995 predicted that "Warmer temperatures will lead to a more vigorous hydrological cycle; this translates into prospects for more severe

[378] Dent, David. Chapter 3 – Land *in* Global Environment Outlook (GEO4). http://www.unep.org/geo/geo4/report/03_Land.pdf
[379] Dent, David. Chapter 3 – Land *in* Global Environment Outlook (GEO4). http://www.unep.org/geo/geo4/report/03_Land.pdf

droughts and/or floods in some places and less severe droughts and/or floods in other places. … Potential North American climate change impacts include increased winter/spring runoff and decreased summer soil moisture and runoff."[380]

- IPCC's 2001 Third Assessment Report found "It is likely that summer continental drying and associated risk of drought will increase over most mid-latitude continental interiors [leading to] decreased crop yields, increase forest fire risk, decreased water quality/quantity."[381]
- An analysis of water run-off using the climate models in the IPCC Fourth Assessment Report projected a 10-30% decreases in runoff in western North America by the year 2050 "Such changes in sustainable water availability would have considerable regional-scale consequences for economies as well as ecosystems" C. Milly et al. 2005 Global pattern of trends in streamflow and water availability in a changing climate. Nature.
- In summary, "Air temperatures are virtually certain to warm further [and] Warmer air temperatures would probably severely reduce the quantity of water resources." Martin Hoerling and Jon Eischeid. Emerging Issues for Water in the West: 21st Century Drought. Climate Action Panel. 20 Nov 2006. [382]

"*[M]odel results indicate that severe droughts (5% frequency today) will occur about 50% of the time by the 2050…..due primarily to temperature increase".* [383]

Small changes in stream flow can have large impacts on water storage and power generation. *"A 20% reduction in natural runoff would cause mean annual reductions in storage of 60 to 70% reductions in power generation of 60%…"* [384]

V. BLM MUST HELP MITIGATE CLIMATE CHANGE TO STABILIZE COMMUNITIES AND INDUSTRIES

The economic and social impacts of climate change are widely recognized. "Global warming could have impacts right here in the Rogue Valley, boosting the number and size of wildfires, harming salmon and reducing the snowpack people rely on for drinking water and irrigation." [385]

The Oregon Legislature passed a bill in 2007 with the following findings[386]:

> *(3) Global warming poses a serious threat to the economic well-being, public health, natural resources and environment of Oregon.*
> *(4) Oregon relies on snowpack for summer stream flows to provide energy, municipal*

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[380] IPCC. 1995. The Regional Impacts of Climate Change: An Assessment of Vulnerability.
[381] IPCC Third Assessment Report, Climate Change 2001
[382] http://www.resourcesaver.com/ewebeditpro/items/O14F10014.pdf
[383] David Rind, Jim Hansen et al. 1990. Potential Evapotranspiration and the Likelihood of Future Drought. Journal of Geophysical Research.
[384] L. Nash and P. Gleick. The Colorado River Basin and Climate Change: The sensitivity of streamflow & water supply to variations in temperature & precipitation. EPA Report, Policy, Planning and Evaluation 1993.

[385] Vickie Aldous. 2007. Global warming could alter Valley life. Ashland Daily Tidings. October 29, 2007. http://www.dailytidings.com/2007/1029/stories/1029_climate1.php.
[386] Oregon Legislature - House Bill 3543 http://www.leg.state.or.us/07reg/measpdf/hb3500.dir/hb3543.en.pdf

water, watershed health and irrigation. Also, a potential rise in sea levels threatens Oregon's coastal communities. Reduced snowpack, changes in the timing of stream flows, extreme or unusual weather events, rising sea levels, increased occurrences of vector-borne diseases and impacts on forest health could significantly impact the economy, environment and quality of life in Oregon.
(5) Oregon forests play a significant role in sequestering atmospheric carbon, and losing this potential to sequester carbon will have a significant negative effect on the reduction of carbon levels in the atmosphere.
(6) Global warming will have detrimental effects on many of Oregon's largest industries, including agriculture, wine making, tourism, skiing, recreational and commercial fishing, forestry and hydropower generation, and will therefore negatively impact the state's workers, consumers and residents.
(7) There is a need to ... take necessary action to begin reducing greenhouse gas emissions in order to prevent disruption of Oregon's economy and quality of life and to meet Oregon's responsibility to reduce the impacts and the pace of global warming.

Governor Kulongoski's Advisory Group On Global Warming says:

Absent decisive actions across the globe of the sort proposed in this report, the warming already underway is expected to lead to changes in the earth's physical and biological systems that would be extremely adverse to human beings, their communities, economies and cultures. ... The impacts of such changes on Oregon citizens, businesses and environmental values are likely to be extensive and destructive." The Governor of Oregon is being urged by a broad cross-section of advisors to think of the economic costs of addressing climate change as "investments" that result in net gains relative to the economic costs of failing to make those investments, or the costs of addressing climate change can be thought of as buying an insurance policy that reduces future expenses related to coping with climate change. Forest conservation is among the committee's recommendations for addressing the climate problem: "The Advisory Group recommends actions to increase the amount of carbon that can be captured and fixed in new or restored forest and field growth and in the soil beneath. ... While we will continue to work the lands that must feed, clothe and shelter us, there are still land management choices that will restore much of this natural sequestration capability.[387]

The West Coast Governors' Global Warming Initiative Report says:

The world's scientists are clear: Global warming is happening, and the world must act now to reduce greenhouse gas emissions. Global warming will have serious adverse consequences on the economy, health and environment of the West Coast states. While these consequences are not entirely predictable, the effects of global warming are already evident in the form of higher temperatures, reduced snow pack, insect infestation and increased fire danger in our forests, and rising sea levels on our ocean shores. These

[387] Oregon Strategy for Greenhouse Gas Reductions - Governor's Advisory Group On Global Warming. State of Oregon, December 2004. http://www.oregon.gov/ENERGY/GBLWRM/docs/GWReport-Final.pdf

impacts will grow significantly in coming years if we do nothing to reduce greenhouse gas emissions.

VI. THE COSTS AND IMPACTS OF INACTION

In addition to the direct economic benefits of investing in low-carbon energy sources, acting against global warming hedges against the risks posed by global warming itself. The economic costs of unchecked global warming are projected to be immense.

Sea level rise, coupled with more frequent and severe storm events, would threaten beaches, ports, low-lying towns and cities, and other coastal resources, causing severe disruption for people and ecosystems. The increased frequency and severity of storm surges may be more significant for low-lying areas than sea level rise alone. Increased storms and wave height could lead to saturated ground, increased erosion, and more slope failure in the coastal bluffs and hills.

A reduction in the mountain snowpack will exacerbate already tight water supplies, restrict agricultural production, and alter the pattern of power generation. For example, in California, the $30 billion agriculture industry is one of the sectors most vulnerable to changes in climate and water supply.

With an increased proportion of winter precipitation falling as rain, winter flooding is more likely. Ski areas at lower elevations will likely disappear. Scenarios of future climate change in the Northwest from the University of Washington Climate Impacts Group show a snow pack decline by 2090 that could reach 72 percent below the base period of 1960 to 1990.4

Energy generation, salmon recovery, and infrastructure operations, including roads, bridges, and dams, are likely to be directly affected by climate change impacts, according to the Climate Impacts Group. Many of these changes may be felt within 20 years. (See Appendix D.)

Forest fires, smog, and extreme weather events, along with the attendant costs of fighting fires and protecting public health, will worsen. There have been high fluctuations in wet-dry climate cycles for the last 30 years in the Northwest. Climate change may increase the annual and decadal variability of precipitation. Climate variability, far more than fire suppression, has led to the sudden rise and severity of wildfires in recent years. In fact, climate variability is the primary determinant of fire occurrence, location, and timing.[388]

Logging that exacerbates climate change will violate the O&C Act's mandate to foster stability of industries and communities in other ways.

- Climate change will likely lead to social unrest and economic upheaval at a global scale that will reverberate at a local level in western Oregon. Extreme weather events and rising sea levels will displace millions of people who will seek refuge in new lands. Our borders are only marginally effective in controlling economic refugees from the south today. This could become must worse in the future. "Climate change is the largest environmental change expected this century. It is likely to intensify droughts, storms and floods, which will undoubtedly lead to environmental migrations and potential conflicts in the areas migrated to. … People facing environmental disasters have no choice but to leave the affected area.

[388] West Coast Governors' Global Warming Initiative; Staff Recommendations to the Governors; November, 2004. http://www.oregon.gov/ENERGY/GBLWRM/docs/WCGGWINov04Report.pdf

The larger the migration and the shorter the period over which it occurs, the harder it is to absorb the migrants, raising the likelihood of conflict. For instance, migrants clash over jobs, resources and way of life, and violent interactions such as theft, beating, armed scuffles, seizure of resources and property, murders and insurgencies are likely." Springer (2007, November 28)[389]

- Climate change will alter growing conditions and displace agricultural and forest industries. Climate change will increase forest disturbance and impair seedling establishment and harm the timber industry.
- Warming is expected to lead to denser vegetation, higher fuel loads, as well as more frequent and intense droughts which is a recipe for more wildfire.[390] Increasing wildland fires will threaten the stability homes and communities located within or adjacent to fuel-rich wildlands. Climate change is expected to increase the length of fire seasons. Communities will have to spend more money preparing for and fighting fires. Wildfire in the urban interface is disruptive to communities and climate change will increase fire hazard in the community zone. U.S. Forest Service Chief Gail Kimbell said that warming globe and urban sprawl are making fires increasingly dangerous. "Fires are burning hotter and bigger, becoming more damaging and dangerous to people and to property," she said. "Each year the fire season comes earlier and lasts longer." Nation's Forest Chief warns of 'hotter and bigger' fires[391], BLM must store more carbon in mature & old-growth forest forests in order to reduce this hazard to communities and industries.
- Climate change will increase competition for limited water resources, which will adversely impact community and economic stability in western Oregon. Increasing frequency and duration of droughts caused by climate change will limit water supply for electricity generation, as well as municipal, industrial, and agricultural uses causing a destabilizing influence on communities and industries that rely on snow, water, energy, and a stable climate. Reduced snow pack will destabilize the agricultural industry, the winter recreation industry, the reservoir recreation industry, and municipal and industrial water supply. "Human well-being and ecosystem health in many places are being seriously affected by changes in the global water cycle, caused largely by human pressures. … The warming of the ocean, in particular its surface waters, and the feedback of heat to the atmosphere are changing rainfall patterns, affecting the availability of freshwater and food security, and health. Due to the ocean's great heat storage capacity and slow circulation, the consequences of its warming for human well-being will be widespread." [392] "The 2000 report by the Global Water Partnership calls upon the international community to work towards 'Water Security'

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[389] Climate Change Likely To Result In Eco-migration: What Can Be Done?. ScienceDaily. Retrieved November 29, 2007, from http://www.sciencedaily.com- /releases/2007/11/071126134703.htm *citing* Reuveny R (2007). Ecomigration and violent conflict: case studies and public policy implications. Human Ecology (DOI 10.1007/s10745-007-9142-5)

[390] Joint Fire Science Program. The Fire-Climate Connection. Fire Science Digest Issue 1, October 2007. http://www.firescience.gov/Digest/Fire_Science_Digest_1.pdf

[391] Thursday, October 25, 2007. By Erik Robinson, Columbian staff writer. http://www.columbian.com/news/localNews/2007/10/10252007_Nations-forest-chief-warns-of-hotter-and-bigger-fires.cfm

[392] Russell Arthurton, Sabrina Barker, Walter Rast, and Michael Huber. Chapter 4 – Water *in* Global Environment Outlook (GEO4). http://www.unep.org/geo/geo4/report/04_Water.pdf

as an overarching goal at all levels from local through to global."[393] This will require urgent action to avoid and mitigate climate change.

- The agricultural sector is particularly vulnerable to water supply constraints caused by climate change. For instance, "In most areas of the Willamette Basin, surface water supplies have been fully allocated — no further water is available for new surface water rights and in dry years more junior water rights are not satisfied."[394] Climate change will only make this situation worse. Warming is expected to raise temperatures, increase evaporative demand, reduce water stored as snowpack, and reduce water availability during summer periods when water supplies are already in short supply and over appropriated. Summers are expected to get warmer and dryer. The irrigation season in western Oregon overlaps with periods of expected increasing water scarcity.[395] Water availability is also a major factor in the value of farm land, so climate change is likely to decrease land values where water supply is limited.[396] BLM should analyze the expected impact of climate change on agricultural water supply[397] and use that information to inform its decision whether it is wise to make climate change worse by logging more mature and old-growth forest.
- Climate change will alter the incidence of diseases affecting humans, crops, and forests potentially impacting community health and stability.

Consider the following maps showing the examples of watersheds that are expected to suffer from low summer streamflows (even without considering climate warming).[398] These areas are likely to become even more water stressed under a warmer climate. What happens to the farmers, community water supplies, and fish if BLM does not stop logging mature and old-growth forests?

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[393] Motoyuki Suzuki. Water in Our Future, Chapter 11, Global Water Crisis. http://202.253.138.71/ENV/Files/Global%20Water%20Crisis%20Suzuki.doc

[394] J. Baker J. Van Sickle D. White. Water Sources and Allocation. *in* Willamette River Basin Atlas 2nd Edition. Chapter 3 - Water Resources. http://www.fsl.orst.edu/pnwerc/wrb/Atlas_web_compressed/3.Water_Resources/3h.water_sources_alloc_web.pdf

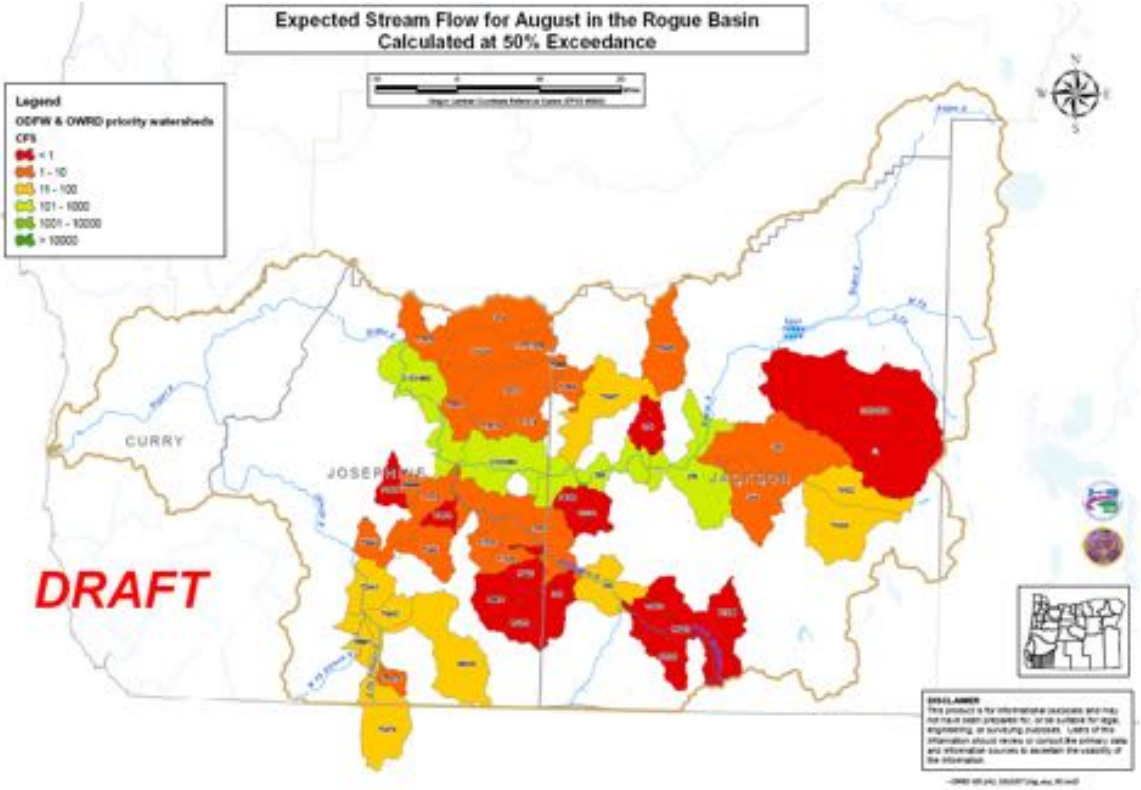
[395] Richard M. Cooper, PE. Determining Surface Water Availability in Oregon. State of Oregon Water Resources Department. Open File Report SW 02-002. Appendix E http://www1.wrd.state.or.us/pdfs/reports/SW02-002.pdf

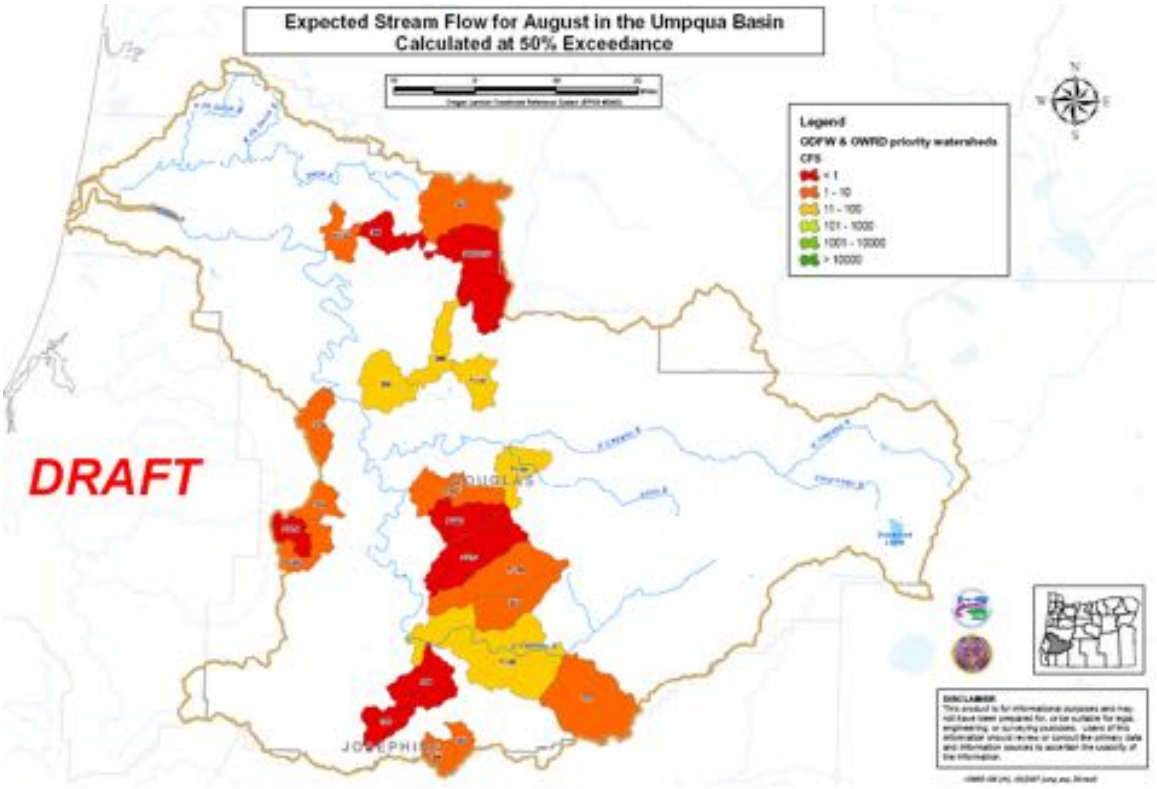
[396] Wolfram Schlenker, W. Michael Hanemann, and Anthony C. Fisher. 2005. Water Availability, Degree Days, and the Potential Impact of Climate Change on Irrigated Agriculture in California. April 2005. http://are.berkeley.edu/~fisher/ClimateChange.pdf

[397] Here are some tools that may be useful to conduct this analysis:

- Wolfram Schlenker, W. Michael Hanemann, and Anthony C. Fisher. 2005. Water Availability, Degree Days, and the Potential Impact of Climate Change on Irrigated Agriculture in California. April 2005. http://are.berkeley.edu/~fisher/ClimateChange.pdf,
- Guobin Fu 2005. Modeling Water Availability And Its Response To Climatic Change For The Spokane River Watershed. PhD Dissertation Washington State University. December 2005. https://research.wsulibs.wsu.edu:8443/dspace/bitstream/2376/413/1/g_fu_120605.pdf

[398] Oregon Water Resources Department. 2007. Strategic Measurement Plan Approved by Water Resources Commission 2000-2001. Information Provided by OWRD March 8, 2007 http://www1.wrd.state.or.us/pdfs/reports/Priority_WAB_Report03-2007.pdf


Expected Stream Flow for August in the Rogue Basin
Calculated at 50% Exceedance
Legend
ODFW & OWRD priority watersheds
CFS
< 1
1 - 10
11 - 100
101 - 1000
1001 - 10000
> 10000
CURRY
JOSEPHINE
JACKSON
DRAFT


Expected Stream Flow for August in the Umpqua Basin
Calculated at 50% Exceedance
Legend
ODFW & OWRD priority watersheds
CFS
< 1
1 - 10
11 - 100
101 - 1000
1001 - 10000
> 10000
DRAFT
DOUGLAS
JOSEPHINE

Maps showing "summer stream flow restoration priorities" established by the Oregon Water Resources Department for all watersheds in Oregon are available here: http://nrimp.dfw.state.or.us/nrimp/default.aspx?p=297. BLM must disclose that climate change that is exacerbated by continued logging of mature & old-growth forests will spread and intensify water shortages in these watersheds and destabilize communities and industries that rely on plentiful clean water.

The IPCC 4th Assessment Report Synthesis described a variety of highly relevant social and economic impacts from climate change. See IPCC Table SPM.3 below which shows just a sample of the relevant impacts. These impacts would clearly tend to destabilize local communities and industries in violation of the O&C Act and the EIS must disclose that continued loss of older forests on BLM lands will exacerbate climate change and contribute to causing these destabilizing impacts.

Table SPM.3. Examples of possible impacts of climate change due to changes in extreme weather and climate events, based on projections to the mid- to late 21st century. These do not take into account any changes or developments in adaptive capacity. The likelihood estimates in column two relate to the phenomena listed in column one. (Table 3.2)

Phenomenon[a] and direction of trend	Likelihood of future trends based on projections for 21st century using SRES scenarios	Examples of major projected impacts by sector			
		Agriculture, forestry and ecosystems	Water resources	Human health	Industry, settlement and society
Over most land areas, warmer and fewer cold days and nights, warmer and more frequent hot days and nights	*Virtually certain*[b]	Increased yields in colder environments; decreased yields in warmer environments; increased insect outbreaks	Effects on water resources relying on snowmelt; effects on some water supplies	Reduced human mortality from decreased cold exposure	Reduced energy demand for heating; increased demand for cooling; declining air quality in cities; reduced disruption to transport due to snow, ice; effects on winter tourism
Warm spells/heat waves. Frequency increases over most land areas	*Very likely*	Reduced yields in warmer regions due to heat stress; increased danger of wildfire	Increased water demand; water quality problems, e.g. algal blooms	Increased risk of heat-related mortality, especially for the elderly, chronically sick, very young and socially isolated	Reduction in quality of life for people in warm areas without appropriate housing; impacts on the elderly, very young and poor
Heavy precipitation events. Frequency increases over most areas	*Very likely*	Damage to crops; soil erosion, inability to cultivate land due to waterlogging of soils	Adverse effects on quality of surface and groundwater; contamination of water supply; water scarcity may be relieved	Increased risk of deaths, injuries and infectious, respiratory and skin diseases	Disruption of settlements, commerce, transport and societies due to flooding; pressures on urban and rural infrastructures; loss of property
Area affected by drought increases	*Likely*	Land degradation; lower yields/crop damage and failure; increased livestock deaths; increased risk of wildfire	More widespread water stress	Increased risk of food and water shortage; increased risk of malnutrition; increased risk of water-and food-borne diseases	Water shortage for settlements, industry and societies; reduced hydropower generation potentials; potential for population migration
Intense tropical cyclone activity increases	*Likely*	Damage to crops; windthrow (uprooting) of trees; damage to coral reefs	Power outages causing disruption of public water supply	Increased risk of deaths, injuries, water- and food-borne diseases; post-traumatic stress disorders	Disruption by flood and high winds; withdrawal of risk coverage in vulnerable areas by private insurers, potential for population migrations, loss of property
Increased incidence of extreme high sea level (excludes tsunamis)[c]	*Likely*[d]	Salinisation of irrigation water, estuaries and freshwater systems	Decreased freshwater availability due to saltwater intrusion	Increased risk of deaths and injuries by drowning in floods; migration-related health effects	Costs of coastal protection versus costs of land-use relocation; potential for movement of populations and infrastructure; also see tropical cyclones above

Notes:

a) See WGI Table 3.7 for further details regarding definitions.

b) Warming of the most extreme days and nights each year.

c) Extreme high sea level depends on average sea level and on regional weather systems. It is defined as the highest 1% of hourly values of observed sea level at a station for a given reference period.

d) In all scenarios, the projected global average sea level at 2100 is higher than in the reference period. The effect of changes in regional weather systems on sea level extremes has not been assessed.

Table SPM.3 IPCC 2007. 4th Assessment Report Synthesis. [399]

[399] http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf

The uncertain effects of climate change is not a valid excuse for inaction because: (a) uncertainty itself has a cost, making it more difficult and expensive to plan for the future and make rational investments. For instance, the cost of insurance will likely increase; and (b) change itself has adverse impacts; in many cases the likelihood of change is fairly certain. it is only the direction and/or magnitude of change that is uncertain.

VII. O&C ACT – BLM MUST HELP MITIGATE CLIMATE CHANGE TO ENSURE PERMANENT FOREST PRODUCTION AND SUSTAINED YIELD

Logging that exacerbates climate change will cause increases in insects, fire, possibly wind, and will make some marginal sites potentially incapable of maintaining permanent forest cover thereby violating the O&C Act's requirement to maintain permanent forest production.

The Northwest Forest Plan, 10-Year Monitoring Program Synthesis Report (Haynes 2006) says "[*C]limate change effects within the Plan area are most likely to be at lower elevations, in drier provinces at ecotones between forest and nonforest areas. Many of these effects would be manifest as increases in disturbance frequency and severity of fires, wind, disease, and insect outbreaks*."[400] Because BLM's western Oregon forest lands are relatively low-elevation and include eco-tones between forest and non-forest habitats, Haynes' summary descriptions of climate change impacts have direct relevance to BLM's legal obligations under the O&C Act. Even small changes in BLM's ability to maintain forest cover at the margins of ecotones, implicates BLM's obligation to maintain "permanent forest production."

BLM must take seriously the O&C Act mandate to maintain permanent forest production. Marginal sites that are currently on the biological edge between forest and other vegetation types are particularly vulnerable to climate change. Increased disturbance and increased drought stress will push some sites over the edge from forest to shrub or grassland.

Scientists predict that seedling establishment will become more difficult under a warmer climate. After fire (and logging) some sites will simply not be able to re-establish forest cover. To the extent that BLM continues to log mature and old-growth forests they will be exacerbating climate change and contributing to the root cause of the forest establishment problem thus violating the "permanent forest production" mandate of the O&C Act.

Well-established forests are generally more resilient to drought and disturbance than young forests. Clearcutting reduces fire resiliency, which sets the stage for forest establishment problems described above. BLM must not conduct activities that increase the risk that the site will be unable to re-establish forest cover in the future. In simple terms, clearcutting and climate change are incompatible because it is uncertain that forest can be re-established after any loss of forest cover. Existing forests have a much better chance of maintaining permanent forest production than non-forested sites.

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[400] Haynes, Richard W.; Bormann, Bernard T.; Lee, Danny C.; Martin, Jon R., tech. eds. 2006. Northwest Forest Plan—the first 10 years (1994-2003): synthesis of monitoring and research results. Gen. Tech. Rep. PNW-GTR-651. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 292 p. http://www.fs.fed.us/pnw/publications/gtr651/

After tracking 21,000 trees over 22 years USGS researchers found - "*Mortality rates increased in both of two dominant taxonomic groups (Abies and Pinus) and in different forest types (different elevational zones). The increase in overall mortality rate resulted from an increase in tree deaths attributed to stress and biotic causes, and coincided with a temperature-driven increase in an index of drought. Our findings suggest that these forests (and by implication, other water-limited forests) may be sensitive to temperature-driven drought stress, and may be poised for die-back if future climates continue to feature rising temperatures without compensating increases in precipitation.*"[401] Apparent climatically induced increase of mortality rates in a temperate forest.[402] "*This study is important because ... modeling studies suggest that, over a period of decades, even small changes in mortality rates can profoundly change a forest*," said USGS scientist Dr. Nate Stephenson, the study coauthor.[403] Even with no discernible trend in precipitation levels, increasing temperatures will increase evaporative demand and increase annual water deficit, which leads to stress, mortality, and reduced tree establishment. This study showed a very close correlation between average annual rate of tree mortality in undisturbed old forests and the three-year running average of the water deficit index.

VIII. O&C ACT – BLM MUST HELP MITIGATE CLIMATE CHANGE TO ACHIEVE "REASONABLE PRICES ON A NORMAL MARKET" FOR ITS TIMBER SALES

The O&C Act requires sale of timber at reasonable prices in a reasonable market. BLM cannot argue that O&C Act requires them to cut and sell trees in today's market because doing so would be adverse to the other goals of the O&C Act (permanent forest production, regulate water flow, protect watersheds, and community economic stability). The way the O&C Act is structured, BLM may only sell timber sales if they take steps to correct market failures by among other things internalizing market externalities. Unfortunately, the market has many imperfections that remain unaddressed.

Due to various economic externalities, prices are not reasonable and markets are not normal. A normal market requires that all costs and benefits involved in the transaction are internal to the buyer and seller. If costs of the transaction are externalized and born by someone other than the buyer and seller (such as CO_2 emissions and water pollution that are borne by the public), then the price will not reflect the full costs of production and consequently the price will be artificially low. Prices are supposed to reflect all costs and benefits because we rely on prices to send accurate signals to the market about rational investments in capacity and how much of any given product to produce or consume relative to substitutes.

Since the price of wood products derived from mature & old-growth forests is artificially low, then investors are receiving bad signals form the market and are maintaining excess capacity which produces an irrationally high level of wood products from mature & old-growth forests relative to market substitutes such as wood products from thinned young stands. In other words, externalities lead to market failure, unreasonably low prices, and abnormal markets. This is elementary college economics.

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[401] Van Mantgem, P.J., and N.L. Stephenson. 2007.
[402] Ecology Letters 10:909–916.
[403] http://www.usgs.gov/newsroom/article.asp?ID=1716

The UK's Stern Report said *"When people don't pay for the consequences of their actions we have market failure. [Climate change] is the greatest market failure the world has seen*."[404] The Stern Report states, "*human-induced climate change is at its most basic level an externality. Those who produce greenhouse-gas emissions are bringing about climate change, thereby imposing costs on the world and on future generations, but they do not face directly, neither via markets nor in other ways, the full consequences of the costs of their actions. ... [GHG] emitters do not have to compensate those who lose out because of climate change. In this sense, human-induced climate change is an externality, one that is not 'corrected' through any institution or market, unless policy intervenes*."[405] Stern warns that the externalities of climate change are unique because the consequences of climate change are long-term and potentially irreversible.

Other externalities that contribute to market failure and unreasonably low prices for large logs include: degraded water quality, loss of wildlife habitat, loss of ecosystem services like pollination, nutrient cycling, etc. The economic costs of addressing climate change due to the release of carbon caused by logging mature & old-growth forests are not reflected in the prices of BLM timber sales, and the costs of addressing the climate change caused by such logging are not born by the buyers and sellers of those logs but rather they are born by the public at large and by other industries that are harmed by climate change. *"[Climate change] is the greatest and widest-ranging market failure ever seen. ... policy must promote sound market signals, overcome market failures and have equity and risk mitigation at its core."*[406]

The ecosystem services provided by BLM's western Oregon forest lands are "public goods" that present another economic problem that leads to unreasonable prices and abnormal markets for BLM timber sales. Water quality, livable climate, and wildlife habitat are public goods which have undisputed value to people and communities, but because no one can be excluded from enjoying those resources when they fail to pay, the market fails to provide investors with incentives to produce rational and necessary quantities of those services. As a result the market provides too little of those ecosystem services.

The climate is a public good: those who fail to pay for it cannot be excluded from enjoying its benefits and one person's enjoyment of the climate does not diminish the capacity of others to enjoy it too. Markets do not automatically provide the right type and quantity of public goods, because in the absence of public policy there are limited or no returns to private investors for doing so: in this case, markets for relevant goods and services (energy, land use, innovation, etc) do not reflect the consequences of different consumption and investment choices for the climate. Thus, climate change is an example of market failure involving externalities and public goods.

> *... The impacts [of climate change] are likely to have a significant effect on the global economy if action is not taken to prevent climate change, so the analysis has to consider*

[404] http://www.hm-treasury.gov.uk/media/A/8/stern_speakingnotes.pdf
[405] Stern Report, Chapter 2. http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm
[406] Stern Report http://www.hm-treasury.gov.uk/media/4/3/Executive_Summary.pdf

potentially non-marginal changes to societies, not merely small changes amenable to ordinary project appraisal.[407]

The total social and economic return on carbon storage in mature & old-growth forests is higher than the total social and economic return on logging those forests, but the abnormal market does not reflect this reality. BLM's plans to increase logging of older forest represents rational behavior only from the perspective of the internal returns to BLM and the timber industry, but BLM is not behaving rationally when one considers total social welfare. In a normal market the interests of the timber industry, the public and the BLM would converge. The market failures described above (externalities and public goods) cause the interests of the public and the BLM to diverge. The O&C Act requires BLM to intervene to correct market failures and sell timber only when the market is normalized, when prices are reasonable, and when the market sends accurate price signals that further the public interest.

The IPCC 4th AR Synthesis finds that "A wide array of tools exist, or will soon be available, to adapt to climate change and reduce its potential effects. One is to put a price on carbon emissions." This is another means of internalizing externalities, normalizing markets, and making prices reasonable.

IX. ESA – BLM MUST HELP MITIGATE CLIMATE CHANGE TO CONSERVE LISTED SPECIES

Climate change is a threat to listed species because all the cascading effects of warming: drought, peak flows, low flows, fire, insects, disease, etc. will alter the quality and quantity of habitat, predator prey interactions, plant/pollinator relations, plant/herbivore interactions, etc. The stress of these cascading impacts is added to the existing stresses that lead each species to be listed. The cumulative impacts will be significant and must be fully disclosed and considered in the FEIS.

The Marbled Murrelet Recovery Plan recommends conserving stands over 80 years old because climate change may increase forest disturbance placing habitat at risk and because it may not be possible to replicate suitable habitat for the murrelet under the climate of the future.

Oregon Wild and others raised several issues during scoping related to the effect of climate change on spotted owls:

Spotted Owl new information includes the potential effect of climate change on regional vegetation patterns; **Implications**: Under a new climate regime, we may not be able to regrow new owl habitat in the reserves as assumed in the NW Forest Plan. Existing old forests are relatively resilient to climate change. It is risky to be conducting regeneration harvest and expect to be able grow new owl habitat in the reserves under an uncertain climate regime.

The FWS 5- Year Review of the Status of the Northern Spotted Owl says:

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[407] Stern Report, Chapter 2. http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm

The Northwest Forest Plan was adopted in 1994, and significantly altered management of Federal lands. The substantial increase in reserved areas and associated reduced harvest (approximately 1 percent per year to 0.24 percent per year) has substantially reduced this threat to northern spotted owls. However, the plan allows some loss of habitat and assumed some unspecified level of continued decline in northern spotted owls. The SEI panel noted that many, but not all of the scientific building-blocks of the Northwest Forest Plan have been confirmed or validated in the decade since adoption, though one major limitation appears to be the inability of a reserve strategy to deal with invasive species. Reserves provide no protection against viruses, fungi or invasive owls. ***Climate change is an additional threat to northern spotted owls that was not explicitly addressed in the Northwest Forest Plan*** *and, more generally, is not readily addressed by a reserve-based conservation strategy. Neither of these issues reduces the important contribution of the Northwest Forest Plan to northern spotted owl conservation"*[408]

Jerry Franklin's summarized the "findings" of the Northern Spotted Owl Status Review scientific review panel as follows:

... in view of current uncertainties, such as the eventual outcome of the Spotted Owl/Barred Owl competition, West Nile Virus, and Sudden Oak Death, and whatever else comes along -- such as global change and other kinds of introductions -- existing suitable habitat could be important to the persistence of the Northern Spotted Owl. [repeated with emphasis] Existing suitable habitat could be important to the persistence of the Northern Spotted Owl, i.e., risk to Northern Spotted Owl may increase if additional suitable habitat is removed. It is not clear where the Spotted Owl may find the refuge or refuges from new threats within existing suitable habitat. Barred Owl intrusions do not negate the need for structurally complex forest habitat to sustain Northern Spotted Owl based on existing knowledge.[409]

X. ESA – BLM MUST HELP MITIGATE CLIMATE CHANGE TO TAKE STEPS TO AVOID FUTURE LISTINGS

Scientists predict that a large fraction of species are potentially imperiled by climate change. BLM must consider not only the species within western Oregon, but those all over the world that could be adversely impacted by climate change. The IPCC's 4th Assessment Report synthesis says that "Climate change is likely to lead to some irreversible impacts. There is medium confidence that approximately 20- 30% of species assessed so far are likely to be at increased risk of extinction if increases in global average warming exceed 1.5-2.5oC (relative to 1980-1999). As global average temperature increase exceeds about 3.5oC, model projections suggest significant extinctions (40-70% of species assessed) around the globe. {3.4}"[410]

Climate change may even threaten the survival of many species. Detailed research into the possibility of species extinctions due to climate change, published in the respected American

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[408] FWS Status Review p 43 [http://pacific.fws.gov/ecoservices/endangered/recovery/pdf/NSO_5-yr_Summary.pdf].

[409] U.S. Fish & Wildlife Service Scientific Review Panel for the Northern Spotted Owl. June 22, 2004 Public Hearing. Washington State University, Vancouver campus. Transcript of proceedings at 121. http://www.sei.org/owl/meetings/minutes/june-meeting-transcripts.pdf

[410] IPCC 2007. 4th Assessment Report Synthesis. http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf

journal Nature in 2004, used climatic modelling to examine possible impacts on a total of 1,103 terrestrial plant and animal species found in many different regions of the world.

Precise predictions could not be made, since the climatic models contain many uncertain factors, but the resultant scenarios nevertheless indicated that global warming would have clear impacts on biodiversity. The more temperatures rise, the more species will be driven into extinction. Some species may become extinct due to the disappearance of their natural habitats, while others could vanish because they are unable to move rapidly enough into new regions where conditions would still meet their requirements.

The research results also indicated that 15– 21% of the species endangered by climate change could be saved if we are able to limit the extent and impacts of climate change through rapid reductions in greenhouse gas emissions combined with improvements in the sequestration of carbon.

The more average global temperatures rise, the more species will be threatened with extinction.[411]

[411] Thomas, C.D., et al. 2004

Rise in average global temperature by 2050	Proportion of the studied 1,103 species facing extinction	
	mean value	range values
0,8– 1,7°C	18%	9– 31%
1,8– 2,0°C	24%	15– 37%
>2,0°C	35%	21– 52%

[412]

XI. CLEAN AIR ACT — BLM MUST PREVENT AND CONTROL CO_2 AIR POLLUTION.

Logging mature and old-growth forests causes the emission of CO_2 pollution to the atmosphere. The Clean Air Act supersedes the O&C Act and requires BLM to control CO2 emissions through on-site carbon storage and management. Since this RMP Revision is a long-term plan, BLM should anticipate changes in water pollution regulations. DEQ is currently taking public comment on reporting requirements for GHG emissions. 42 USC § 7402(b) requires all federal agencies to use their authorities to further the goals of the Clean Air Act. Sections 7401(b)(1) and 7470(1) set forth clear goals to protect the public welfare by limiting air pollution such as CO_2.

XII. CLEAN WATER ACT — BLM MUST PREVENT AND CONTROL CO_2 WATER POLLUTION.

Logging mature and old-growth forests causes the emission of CO_2 pollution to the atmosphere with is ultimately absorbed by the ocean where it is converted to carbonic acid. Slight alterations of the pH of the ocean alters mineralization processes like calcification which can have serious adverse consequences on marine ecosystems. Since this RMP Revision is a long-term plan, BLM should anticipate changes in water pollution regulations.

[412] Finnish Environment Institute. 2005. The impacts of climate change on biodiversity. 9/21/2005 (Updated).

http://www.ymparisto.fi/default.asp?node=17418&lan=en#a3 *citing* Thomas, C.D. et al. 2004. Extinction risk from climate change. Nature 427, p.145-148. http://www.ymparisto.fi/download.asp?contentid=32647&lan=fi

In August 2007 the Center for Biological Diversity officially requested that the ocean waters off Oregon be declared impaired under the Clean Water Act due to ocean acidification caused by the absorption of human-produced carbon dioxide. Listing a water body as "impaired" allows states to limit the discharge of pollutants that are contributing to impairment.

The atmosphere and ocean freely exchange carbon dioxide, and as atmospheric levels of carbon dioxide increase, so does the absorption of carbon dioxide by the ocean. The ocean takes up about 22 million tons of carbon dioxide each day and has absorbed about half of the carbon dioxide released into the atmosphere by human activities. This excess carbon dioxide changes the chemistry of seawater, making it more acidic: Ocean acidity, measured in pH, has already changed 0.11 pH on average due to human-generated carbon dioxide since preindustrial times — a significant, approximately 30-percent rise in acidity. If current emissions trajectories continue, an additional change of 0.5 units is predicted by the end of the century. These changes will be irreversible on human timescales.

Already, ocean acidification is damaging surface waters and having an impact on marine ecosystems. It makes unavailable the compounds necessary for marine organisms to build shells and skeletons, thus impeding the growth of plankton, starfish, urchins, oysters and other shelled organisms as well as coral. Due to ocean acidification, coral reefs will begin to erode more quickly than they can rebuild. And these changes are occurring so quickly that marine life will have great difficulty adapting to changing seawater chemistry.[413]

XIII. LOGGING TO REDUCE FIRE-INDUCED GREENHOUSE GAS EMISSIONS WILL BACKFIRE

The DEIS claims that logging provides climate benefits but this is not supported (in fact refuted) by the best available science. DEIS (158-159) says

Many studies have found that active management, particularly in forests adversely affected by fire suppression, could reduce both carbon losses and increases in greenhouse gas emissions from wildfires. Results from various thinning and burning prescriptions indicate that the short-term reductions in carbon result in long-term benefits to carbon storage and greenhouse gas emissions by reducing fire-induced mortality, maintaining a higher fraction of carbon in live trees, increasing drought resistance, and reducing competition for water, nutrients, and light.[414]

This is an incomplete, erroneous, and misleading description of the carbon consequences of logging and the interaction of logging with fire. BLM needs to critically review the sources cited. Do these studies really support what BLM is suggesting? Are there distinguishing features? Are the study designs sound? Are the study conclusions really supported by the study results?

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[413] Center for Biological Diversity. "Seven Coastal States Petitioned to Address Ocean Acidification: Clean Water Act Requires Regulation of Carbon Dioxide That Could Drive Ocean Species Extinct." August 15, 2007 Press Release.

[414] Stephens et al. 2009, Hurteau and North 2010, North and Hurteau 2011, Stephens et al. 2012, Hurteau et al. 2014, Loudermilk et al. 2014, Volkova et al. 2014.

Some of the studies cited by the DEIS (158-159) directly contradict BLM's assertion that logging has climate benefits. Many of these studies are generally not applicable to western Oregon because they are from different biophysical settings, and they generally fail to properly account for the low probability that fuel reduction logging will interact with wildfire --

- Volkova et al (2014)[415] This study does not support BLM's assertion that logging provides climate benefits. This study looked at forest carbon after fire occurred, so it selected for areas where there was 100% overlap between treatments and fire. This fails to account for the real world (low) probability of fuel treatments interacting with fire, and all the GHG emissions caused by fuel treatments that did not subsequently burn. Also, this study was in a completely different (eucalyptus) forest type.
- Stephens et al (2009)[416] This study does not support BLM's assertion that logging provides climate benefits. This study appears to assume a 100% chance that fire will interact with treatments, which is not a real world probability that treatments will interact with wildfire. Drawing conclusions about the carbon benefits of fuel reduction logging requires consideration of the relative extent and probability of emissions from logging and wildfire. Also, the study cautions readers to limit conclusions to young stands in the Sierra Nevada that are recovering from past timber harvest.
- Hurteau & North (2010)[417] This study does not support BLM's assertion that logging provides climate benefits, saying -
  In the absence of wildfire or if wildfire emissions are lower than the carbon stock reduction necessary to mitigate high-severity fire risk, fuels treatments could have a net negative impact on carbon stocks and thus reduce the forest's potential to mitigate climate change (Mitchell et al., 2009). … . The higher intensity overstory thinning treatments will require longer periods of time before they sequester the carbon removed and emitted during treatment. By removing large overstory trees that often contain >65% of the aboveground carbon, these treatments incur a substantial immediate carbon stock reduction and require a much longer recovery period. While large tree percent changes in C were high in these treatments (Table 1), there are simply fewer large trees ha−1 to store C. In earlier research we also found overstory thinning did not substantially decrease the risk of high-severity fire compared to understory thinning treatments (North et al., 2009).

This study made no attempt to quantify the probability that fire would interact with fuel treatments. Other studies that have attempted to estimate these probabilities show that fuel reduction logging results in greater GHG emissions than doing nothing. See below. This study also failed to account for the climate consequences of the extra carbon in the atmosphere while the forest is recovering from logging related carbon loses. Even if the carbon is later recaptured by the forest as a result of regrowth after logging, that does not neutralize the adverse climate effects suffered during the lag time.

Loehman et al (2014) have criticized Hurteau and North (2008) (and others) saying:

Recent studies (Hurteau and North, 2008, 2010; Hurteau et al., 2008a; North et al., 2009; *Reinhardt and Holsinger, 2010) have focused on carbon responses to fire in individual forest*

[415] http://www.publish.csiro.au/nid/114/paper/WF14009.htm
[416] http://nature.berkeley.edu/stephenslab/wp-content/uploads/2015/04/Stephens-et-al.-FFS-Carbon-CJFR-8-09.pdf
[417] http://www.fs.fed.us/psw/publications/north/psw_2010_north(hurteau)002.pdf

stands as a basis for gaining insight into terrestrial-atmospheric carbon fluxes. Suggested management treatments to protect, maintain, or enhance forest carbon stocks forest carbon stores include mechanical fuels treatments, prescribed fire, and suppression of wildfires (Canadell and Raupach, 2008; Hurteau and North, 2008, 2010; Hurteau et al., 2008b; McKinley et al., 2011; Stephens et al., 2012). Results from these studies suggest that fuel treatments can reduce wildfire severity and protect forest carbon stocks from future loss from severe wildfires (Hurteau and North, 2008; Hurteau et al., 2008b; Stephens et al., 2009b), but management of carbon in fire-prone and fire-adapted forests is more complex than simply minimizing wildfire carbon emissions and maximizing stored carbon in individual stands. The stochastic and variable nature of fires, the relatively fine scale over which fuels treatments are implemented, and potentially high carbon costs to implement them suggest that fuel treatments are not an effective method for protecting carbon stocks at a stand level (Reinhardt et al., 2008; Reinhardt and Holsinger, 2010).

Rachel A. Loehman, Elizabeth Reinhardt, Karin L. Riley 2014. Wildland fire emissions, carbon, and climate: Seeing the forest and the trees – A cross-scale assessment of wildfire and carbon dynamics in fire-prone, forested ecosystems. Forest Ecology and Management 317 (2014) 9–19.[418]

- Hurteau et al (2014)[419] This study does not support BLM's assertions that logging provides climate benefits, saying –
  Fire effects on the forest can be managed by altering forest structure and fuel loads, thereby reducing the risk of carbon loss due to wildfire (Hurteau et al., 2009). However, this risk reduction measure carries a carbon stock reduction cost and the carbon balance of a specific treatment is dependent upon a wildfire burning in the treated area, the end-use of the trees harvested during treatment, among other factors … Generally, the probability of a fire event occurring at most forest locations in any given year is quite low."

This study speculated about how trees in the Sierra Nevada Mountains of California may become mal-adapted as a result of global warming, but this study found wide variation in the effects on forest carbon depending on various future climate scenarios for the Sierra Nevada. ("The large influence of GCM on carbon storage suggests that reducing uncertainty in modeling forest growth response to wildfire mitigation treatments will require further refinement of climate projections") Refinement of climate scenarios should of course be region-specific. BLM should not be using wild speculations from dry/open forests of California to set policy for moist/dense forests of western Oregon. ("our findings highlight the need to overcome the scale mismatch between GCMs and the typical forest management unit. Recent research suggests the substantial influence of local terrain on mediating climate (Dobrowski, 2011) making even downscaled climate projections too coarse to capture the fine scale climate variability that can influence tree growth.") Finally, this study highlights uncertainty. It does not make concrete recommendations to conduct logging to help store carbon or help forests adapt to climate change. ("[T]he current variability in downscaled global climate projections adds considerable uncertainty to projecting how management actions to alter forest structure and composition and climate will interact in the future.")

[418] http://www.fs.fed.us/rm/pubs_other/rmrs_2014_loehman_r001.pdf
[419] http://www.fs.fed.us/psw/partnerships/tahoescience/documents/p029_Hurteau2014Tahoe.pdf

- Loudermilk et al (2014)[420] This study does not support BLM's assertion that logging provides climate benefits. Figures 4 and 5 in this publication clearly show that not logging results in greater forest carbon storage than any of the fuel reduction scenarios.
  Over the near future, more forest C would be removed from the system than would be released without treatment (i.e., from ecosystem respiration); creating a net C 'cost' … . Eventually, reduced fire severity and enhanced forest re-growth would lead to a net gain in C storage at the management area and landscape level. … Our simulated fuel treatments … controlled wildfire C emissions, and in the long run resulted in a net C gain. These positive outcomes far outweigh the intermediary loss in forest C from biomass removal,…

However, this conclusion is not supported by the study results or any other evidence. While the carbon density of the treatment and no treatment scenarios appear to converge in the year 2100, the study fails to account of the climate consequences associated with the excess carbon in the atmosphere in the decades prior to 2100. This is sloppy accounting that does not meet NEPA standards. The near-term climate effects caused by logging-related carbon emissions are not neutralized by carbon uptake that occurs decades in the future. This study also recognized that carbon benefits depend on the probability of future fire but made no attempt to quantify that probability.

Achievement of a net C gain … depended on wildfire activity: Fuel treatments were more effective in a more active fire environment, where the interface between wildfires and treatment areas increased and caused net C gain earlier than as compared to our scenarios with less wildfire activity … regulation of C emissions may force forest managers to balance the use of fuel treatments for reducing wildfire risk against goals to maintain or increase C sequestration (Hurteau et al., 2008). This will require consideration of the net balance between the immediate loss of C from live and detrital matter during fuels management (e.g., mechanical thinning and prescribed burning) against the long-term C sequestration potential associated with reduced C emissions from lower intensity wildfires.

This study also assumed that wildfire activity would increase thus increasing the probability that treatments would interact with fire. This assumption may or may not hold on BLM lands where aggressive fire suppression remains the norm. Furthermore, this study looked at fuel reduction targeted close to homes and communities, not across the landscape as BLM proposes.

BLM should then conduct a much more thorough review of credible opposing viewpoints. In virtually all cases, commercial logging will increase GHG emissions relative to not logging, even after accounting for emissions related to wildfire. Numerous experts have carefully studied the issue and conclude that logging to reduce fire and reduce carbon emission will actually make matters worse, not better.

Law & Harmon conducted a thorough literature review and concluded …

Thinning forests to reduce potential carbon losses due to wildfire is in direct conflict with carbon sequestration goals, and, if implemented, would result in a net emission of CO2 to the atmosphere because the amount of carbon removed to change fire behavior is often far larger

[420] http://www.fs.fed.us/psw/partnerships/tahoescience/documents/p049_Loudermilk2014.pdf

than that saved by changing fire behavior, and more area has to be harvested than will ultimately burn over the period of effectiveness of the thinning treatment.[421]

XIV. BLM NEEDS TO ACCURATELY DESCRIBE THE PROBABILISTIC NATURE OF THIS ISSUE

- Premises:
  - Fire and logging both emit GHG;
  - No one can predict where or when fire will occur, therefore logging to modify fire behavior must be spatially extensive;
  - Fuels regrow after logging, so treatments will have to be repeated;
  - Fire is relatively infrequent, so fire will rarely interact with fuel reduction treatments during the period they are presumed effective. Many acres will be treated and few acres will actually interact with fire, so fuel treatments and associated GHG emissions will occur "unnecessarily" (i.e., without any fire benefits to offset the GHG emissions caused by logging);
  - Fire is mostly controlled by weather (e.g., temperature, humidity, wind), not by fuel conditions.
  - Logging has complex effects of fire behavior. Logging might make fire worse in some cases.
  - Logging will have only marginal effects on fire in most cases – slightly reducing fire intensity and fire size.
  - Logging will very rarely be perfectly timed, perfectly located, perfectly scaled, and perfectly implemented to result in meaningful fire control and significant GHG benefits.
- Conclusion: Logging to control fire does not provide climate benefits, because, the combined GHG emissions associated with logging plus emissions associated with wildfire are highly likely to be far greater than the GHG emissions associated with fire alone.
- Note: The limited exception to this conclusions involve cases where three conditions are met: (i) smallest fuels are removed (ii) from forests with the most frequent fire return interval, and (iii) where fire suppression is not being practiced. These conditions do not occur on BLM lands in western Oregon. "Smallest fuels" means non-commercial thinning, not removal commercial-sized logs that store a lot of carbon. BLM emphasizes commercial logging. Forests in western Oregon have an intermediate-to-long fire return interval, and BLM cooperates with the state to aggressively suppress every fire.

Logging proponents often claim that logging will increase carbon storage controlling carbon emissions caused by natural processes such as fire and insect-induced mortality. This is simply counter-factual. In most cases, managing forests in an effort to control natural processes that release carbon will only make things worse by releasing MORE carbon. This is mostly because no one can predict where fire or insects will occur, so the treatments must be applied to broad landscapes, yet the probability of fire or insects at any given location remains low, and only a

[421] Law, B. & M.E. Harmon 2011. Forest sector carbon management, measurement and verification, and discussion of policy related to mitigation and adaptation of forests to climate change. Carbon Management 2011 2(1). http://terraweb.forestry.oregonstate.edu/pubs/lawharmon2011.pdf.

small fraction of the treated areas will actually experience fire or insects. As a result, many acres will be treated "unnecessarily" and therefore the cumulative carbon emissions from logging to control fire and insects (plus the carbon emissions from fire and insects that occur in spite of control efforts) are greater than emissions from fire and insects alone.
Before attributing carbon benefits to fuel reduction logging please consider numerous credible opposing viewpoints, including:

- John L Campbell, Mark E Harmon, and Stephen R Mitchell. 2011. Can fuel-reduction treatments really increase forest carbon storage in the western US by reducing future fire emissions? Front Ecol Environ 2011; doi:10.1890/110057[422] (Results suggest that the protection of one unit of C from wildfire combustion comes at the cost of removing three units of C in fuel treatments.)
- Mitchell, Harmon, O'Connell. 2009. Forest fuel reduction alters fire severity and long-term carbon storage in three Pacific Northwest ecosystems. Ecological Applications. 19(3), 2009, pp. 643–655. [423]
- Reinhardt, Elizabeth, and Lisa Holsinger 2010. Effects of fuel treatments on carbon-disturbance relationships in forests of the northern Rocky Mountains. Forest Ecology and Management 259 (2010) 1427–1435.[424] ("Although wildfire emissions were reduced by fuel treatment, the fuel treatments themselves produced [carbon] emissions, and the untreated stands stored more carbon than the treated stands even after wildfire. … Our results show generally long recovery times …")
- Jim Cathcart, Alan A. Ager, Andrew McMahan, Mark Finney, and Brian Watt 2009. Carbon Benefits from Fuel Treatments. USDA Forest Service Proceedings RMRS-P-61. 2010.
- Law, B. & M.E. Harmon 2011. Forest sector carbon management, measurement and verification, and discussion of policy related to mitigation and adaptation of forests to climate change. Carbon Management 2011 2(1).
- Dina Fine Maron 2010. FORESTS: Researchers find carbon offsets aren't justified for removing understory (E&E Report 08/19/2010, reporting on the WESTCARB Project)[425]
- Restaino, Joseph C.; Peterson, David L. 2013. Wildfire and fuel treatment effects on forest carbon dynamics in the western United States. Forest Ecology and Management 303:46-60.[426] ("… C costs associated with fuel treatments have can exceed the magnitude of C reduction in wildfire emissions, because a large percentage of biomass stored in forests (i.e., stem wood, branches, coarse woody debris) remains unconsumed, even in high-severity fires (Campbell et al., 2007; Mitchell et al., 2009). … Wildfire occurrence in a given area is uncertain and may never interact with treated stands with reduced fire hazard, ostensibly negating expected C benefits from fuel treatments. Burn probabilities in treated stands in southern Oregon are less than 2%, so the probability that a treated stand encounters wildfire and creates C benefits is low (Ager et al., 2010).)"

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[422] http://nnrg.org/files/CampbellJohn-65945.pdf; http://scholarsarchive.library.oregonstate.edu/xmlui/bitstream/handle/1957/26174/CampbellJohn.Forestry.CanFuelReductionTreatments.pdf.
[423] http://www.fs.fed.us/pnw/pubs/journals/pnw_2009_mitchell001.pdf.
[424] http://www.fs.fed.us/rm/pubs_other/rmrs_2010_reinhardt_e002.pdf
[425] https://pacificforest.org/pft-in-the-media-2010-climatewire-8-19-10.html.

[426] http://www.fs.fed.us/pnw/pubs/journals/pnw_2013_restiano001.pdf

- Goslee, K., Pearson, T., Grimland, S., Petrova, S., Walls, J., Brown, S., 2010. Final Report on WESTCARB Fuels Management Pilot Activities in Lake County, Oregon. California Energy Commission, PIER. CEC-500-XXXX-XXX; AND Pearson, T.R.H., Goslee, K., Brown, S., 2010. Emissions and Potential Emission Reductions from Hazardous Fuel Treatments in the WESTCARB Region. California Energy Commission, PIER. CEC-500-XXXX-XXX. (Summarized by Restaino & Peterson (2013) as follows: "Pearson et al. (2010) and Goslee et al. (2010) developed methodologies to evaluate C dynamics associated with fuel treatment projects in low to mid-elevation forest in northern California and Oregon. The authors, with consultation from teams of scientists, quantify C storage and release within the context of a six-point conceptual framework: annual fire risk, treatment emissions, fire emissions, forest growth and re-growth, re-treatment, and the shadow effect (i.e., treatment effect outside the treated area). Results indicate that the mean annual probability of wildfire for the study region is less than 0.76%/year, and treatments reduce C stocks by an average of 19%. Where timber is removed, 30% of extracted biomass is stored in long-lasting wood products. Wildfire emissions in treated stands, quantified with the Fuel Characteristic Classification System, are reduced by 6% relative to untreated stands. Growth estimates for a 60-year simulation horizon, derived from FVS, indicate that in the absence of wildfire, untreated stands sequester 17% more C than treated stands. However, in simulations that include wildfire, treated stands sequester 63% more C than untreated stands. The shadow effect is unlikely to be large enough to affect net GHG emissions. In summary, initial reductions in C stocks (e.g., thinning), combined with low annual probability of wildfire, preclude C benefits associated with fuel treatments, even if harvest residues are used for biomass energy.")
- Chiono, Lindsay 2011. Balancing the Carbon Costs and Benefits of Fuels Management. Research Synthesis for Resource Managers. Joint Fire Science Program Knowledge Exchange.[427] ("[T]he net carbon impact of fuel treatments is further complicated by the probabilistic nature of wildfire occurrence and the impermanence of post-treatment stand conditions … [T]reatment activities produce an immediate carbon emission while future wildfire emissions are uncertain … Depending on the intensity of treatment, the quantity of carbon removed may be substantial enough to negate gains from avoided wildfire emissions. … cumulative emissions from fuels reduction activities repeated in order to maintain low hazard conditions over time can overwhelm avoided wildfire emissions, resulting in a net carbon loss.")

Mitchell, Harmon, O'Connell. 2009. Forest fuel reduction alters fire severity and long-term carbon storage in three Pacific Northwest ecosystems. Ecological Applications. 19(3), 2009, pp. 643–655 [428]

ABSTRACT:... *Our simulations indicate that fuel reduction treatments in these ecosystems consistently reduced fire severity. However, reducing the fraction by which C is lost in a wildfire requires the removal of a much greater amount of C, since most of the C stored in forest biomass (stem wood, branches, coarse woody debris) remains unconsumed even by high-severity wildfires. For this reason, all of the fuel reduction treatments simulated for the west Cascades*

[427] https://static.squarespace.com/static/50083efce4b0c6fedbca9def/t/51632bf8e4b00b25a8fa21d3/1365453816037/CFSC_Chiono_Carbon_and_Fuel_Mngmt.pdf
[428] http://www.fs.fed.us/pnw/pubs/journals/pnw_2009_mitchell001.pdf

and Coast Range ecosystems as well as most of the treatments simulated for the east Cascades resulted in a reduced mean stand C storage. One suggested method of compensating for such losses in C storage is to utilize C harvested in fuel reduction treatments as biofuels. Our analysis indicates that this will not be an effective strategy in the west Cascades and Coast Range over the next 100 years. We suggest that forest management plans aimed solely at ameliorating increases in atmospheric CO2 should forego fuel reduction treatments in these ecosystems, with the possible exception of some east Cascades Ponderosa pine stands with uncharacteristic levels of understory fuel accumulation. Balancing a demand for maximal landscape C storage with the demand for reduced wildfire severity will likely require treatments to be applied strategically throughout the landscape rather than indiscriminately treating all stands.

Notes on Mitchell & Harmon:

- The authors assumed that fire severity was determined exclusively by fuel variables but not weather. This may over-estimate the efficacy of fuel treatments on fire severity. The conclusion that fuel manipulation leads to reduced fire behavior may be an unavoidable result of the assumptions, rather than a reflection of reality.

- The only treatment that showed some promise was understory removal (not canopy removal) in fire-suppressed dry pine stands, but the carbon storage benefit from reduced fire severity in this best case scenario was minuscule, only about 0.6-1.2%. The modeled treatments on the eastside of the Cascades failed to include canopy removal which is a common practice in fuel reduction efforts and one that removes more carbon than understory treatments. Also, this analysis might give too much credit to fuel treatments because they excluded climatic variation from the analysis (meaning that in their analysis the treated stands never burned uncharacteristically <u>in spite</u> of the treatments.

Similar results were found at the stand scale by Reinhardt and Holsinger (2010):

> *We simulated effects of fuel treatments on 140 stands representing seven major habitat type groups of the northern Rocky Mountains using the Fire and Fuels Extension to the Forest Vegetation Simulator (FFE-FVS). Changes in forest carbon due to mechanical fuel treatment (thinning from below to reduce ladder fuels) and prescribed fire were explored, as well as changes in expected fire behavior and effects of subsequent wildfire. Results indicated that fuel treatments decreased fire severity and crown fire occurrence and reduced subsequent wildfire emissions, but did not increase post-wildfire carbon stored on-site. Conversely, untreated stands had greater wildfire emissions but stored more carbon. ... The results do not support the use of fuel treatments soley to protect carbon stocks or reduce emissions. Although wildfire emissions were reduced by fuel treatments, the fuel treatments themselves produced emissions, and the untreated stands stored more carbon than the untreated stands even after wildfire. [and even considering carbon stored in wood products derived from treated stands.]*[429]

And by Campbell, Harmon & Mitchell 2011:

[429] Reinhardt, Elizabeth, and Lisa Holsinger 2010. Effects of fuel treatments on carbon-disturbance relationships in forests of the northern Rocky Mountains. Forest Ecology and Management 259 (2010) 1427–1435.

Abstract: *It has been suggested that thinning trees and other fuel-reduction practices aimed at reducing the probability of high-severity forest fire are consistent with efforts to keep carbon (C) sequestered in terrestrial pools, and that such practices should therefore be rewarded rather than penalized in C-accounting schemes. By evaluating how fuel treatments, wildfire, and their interactions affect forest C stocks across a wide range of spatial and temporal scales, we conclude that this is extremely unlikely. Our review reveals high C losses associated with fuel treatment, only modest differences in the combustive losses associated with high-severity fire and the low-severity fire that fuel treatment is meant to encourage, and a low likelihood that treated forests will be exposed to fire. Although fuel-reduction treatments may be necessary to restore historical functionality to firesuppressed ecosystems, we found little credible evidence that such efforts have the added benefit of increasing terrestrial C stocks.*

Summary:

• Carbon (C) losses incurred with fuel removal generally exceed what is protected from combustion should the treated area burn

• Even among fire-prone forests, one must treat about ten locations to influence future fire behavior in a single location

• Over multiple fire cycles, forests that burn less often store more C than forests that burn more often

• Only when treatments change the equilibrium between growth and mortality can they alter long-term C storage

Conclusions

Across a range of treatment intensities, the amount of C removed in treatment was typically three times that saved by altering fire behavior.

the protection of one hectare of forest from wildfire required the treatment of 10 hectares, owing not to the low efficacy of treatment but rather to the rarity of severe wildfire event.

Long-term simulations of forest growth, decomposition, and combustion illustrate how, despite a negative feedback between fire frequency and fuel-driven severity, a regime of low-frequency, high-severity fire stores more C over time than a regime of high-frequency, low-severity fire.

John L Campbell, Mark E Harmon, and Stephen R Mitchell. 2011. Can fuel-reduction treatments really increase forest carbon storage in the western US by reducing future fire emissions? [430] It is important to recognize that "the equilibrium between growth and mortality" must consider all forms of mortality, not just that caused by fire, but also mortality caused by logging.

Restaino & Peterson (2013) conducted a literature review of this issue and reported:

[430] Front Ecol Environ 2011; doi:10.1890/110057
http://scholarsarchive.library.oregonstate.edu/xmlui/bitstream/handle/1957/26174/CampbellJohn.Forestry.CanFuelReductionTreatments.pdf

All studies agree unequivocally that untreated stands release more emissions to the atmosphere during wildfire than treated stands…. However, most studies in this review include assumptions of future wildfire frequency and probability that skew long-term trade-off analyses by overestimating the ability of fuel treatments to reduce wildfire emissions over long time scales. For example, fuel treatments have a finite life expectancy, and fire hazard increases over time as fuels accumulate in treated areas. Repetition and maintenance of fuel treatments are necessary in order to effectively maintain reduced fire hazard over time (Peterson et al., 2005; Johnson et al., 2007, 2011) and thus must be included in analyses of long-term C storage. Although Rhodes and Baker (2008) suggest that 2.0–4.2% of areas treated to reduce surface fuels are likely to encounter wildfires that would otherwise be high or moderate-high severity without treatment, most studies assume future wildfire probability of 100%, reporting inferences that essentially detail a ''best-case scenario'' for wildfire missions mitigation. Annual probability of wildfire in dry temperate forests for a given stand is approximately 1% (Ager et al., 2010; Pearson et al., 2010; Campbell et al., 2011). … To benefit total ecosystem C storage, the removal and release of C through fuel treatments must not exceed the expected reductions in wildfire emissions. Substantial treatment costs through timber harvest, prescribed fire, and milling waste exceed observed and simulated reductions in wildfire emissions. … The ability of fuel treatments to mitigate future fire behavior and move forest structure to a more fire-resistant condition is well documented. However, C costs associated with fuel treatments have can exceed the magnitude of C reduction in wildfire emissions, because a large percentage of biomass stored in forests (i.e., stem wood, branches, coarse woody debris) remains unconsumed, even in high-severity fires (Campbell et al., 2007; Mitchell et al., 2009). … Wildfire occurrence in a given area is uncertain and may never interact with treated stands with reduced fire hazard, ostensibly negating expected C benefits from fuel treatments. Burn probabilities in treated stands in southern Oregon are less than 2%, so the probability that a treated stand encounters wildfire and creates C benefits is low (Ager et al., 2010).)[431]

Lindsay Chiono (2011) of the Wildland Fire Science Laboratory at UC Berkeley prepared a synthesis of the research for resource managers and said:

[T]he net carbon impact of fuel treatments is further complicated by the probabilistic nature of wildfire occurrence and the impermanence of post-treatment stand conditions … [T]reatment activities produce an immediate carbon emission while future wildfire emissions are uncertain … Depending on the intensity of treatment, the quantity of carbon removed may be substantial enough to negate gains from avoided wildfire emissions. East of the Cascade crest in Oregon, a modeling study of carbon dynamics that included modeled wildfires found that while understory removal treatments slightly enhanced carbon storage over the long term, higher levels of biomass removal reduced mean ecosystem carbon (Mitchell et al., 2009)." … [W]hen treatments must be repeated in the interim between wildfires in order to maintain low hazard conditions. Similarly,

[431] Restaino, Joseph C.; Peterson, David L. 2013. Wildfire and fuel treatment effects on forest carbon dynamics in the western United States. Forest Ecology and Management 303:46-60. http://www.fs.fed.us/pnw/pubs/journals/pnw_2013_restiano001.pdf

> *when wildfire frequency is low, the quantity of carbon removed in treatments over time can overwhelm likely wildfire losses. Net emissions were most pronounced in the west Cascades where historical fire return intervals were very long… [I]n southern Oregon and northern California, Goslee and others (2010) took an approach that incorporates the stochastic nature of wildfire occurrence. Rather than scheduling a wildfire event soon after fuel treatment, a calculation that maximizes treatment benefits, they used an estimate of the local fire return interval for the period of 2001 to 2008 -- an annual burn probability of 0.6% -- to assess carbon emissions. Partly owing to this low wildfire risk, they found that fuel treatments, which included commercial timber harvest and pile burning of noncommercial biomass, produced an effective immediate net emission of 10-20.8 tons of carbon per acre. … [S]ome general principles have begun to emerge. Achieving a net carbon gain appears more likely when the quantity of carbon removed during treatment is minimized, when harvested biomass is converted to long-lived wood products, and where the risk of wildfire occurrence is high… Conversely, cumulative emissions from fuels reduction activities repeated in order to maintain low hazard conditions over time can overwhelm avoided wildfire emissions, resulting in a net carbon loss.*[432]

Even the Chief of the Forest Service recognizes these trade-offs. "[M]anagement practices, designed to restore ecosystem health, may in the near-term reduce total stored carbon below current levels."[433]

Hudiburg et al (2001 state:

> *Strategies for reducing carbon dioxide emissions include substitution of fossil fuel with bioenergy from forests, where carbon emitted is expected to be recaptured in the growth of new biomass to achieve zero net emissions, and forest thinning to reduce wildfire emissions3. Here, we use forest inventory data to show that fire prevention measures and large-scale bioenergy harvest in US West Coast forests*
>
> *Lead to 2–14% (46–405 Tg C) higher emissions compared with current management practices over the next 20 years.*
>
> *In our study region, we found that thinning reduced NBP under all three treatment scenarios for 13 of the 19 ecoregions, representing 90% of the region's forest area. The exceptions where NBP was not reduced were primarily due to high initial fire emissions*

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[432] Chiono, Lindsay 2011. Balancing the Carbon Costs and Benefits of Fuels Management. Research Synthesis for Resource Managers. Joint Fire Science Program Knowledge Exchange. https://static.squarespace.com/static/50083efce4b0c6fedbca9def/t/51632bf8e4b00b25a8fa21d3/1365453816037/CFSC_Chiono_Carbon_and_Fuel_Mngmt.pdf

[433] Gail Kimball, March 2009 Testimony before House Committee On Natural Resources, Subcommittee On National Parks, Forests, And Public Lands. http://www.fs.fed.us/congress/111thCongress/Documents/CY%202009%20Hearings/HNRC%202009-03-03%20Climate%20Change/2009-03-03A.Kimbell.pdf.

compared to NEP (for example, Northern Basin and North Cascades; Supplementary Fig. S2). The dominant trend at the ecoregion level was mirrored at the regional level, with the bioenergy production scenario (highest thinning level) resulting in the region becoming a net carbon source (Supplementary Table S2 and discussion of state-level estimates). Regionally, forest biomass removals exceeded the potential losses from forest fires, reducing the in situ forest carbon sink even after accounting for regrowth, as found in previous studies with different approaches or areas of inference8,18.

Because we have assumed high reductions in fire emissions for the areas treated in each scenario, it is unlikely we are underestimating the benefit of preventive thinning on NBP.[434]

North and Hurteau (2009) note that the carbon costs of fuel reduction may be mitigated by focusing on small fuels -

When evaluating carbon released by different fuels treatments, managers will need to weigh tradeoffs between immediate prescribed burn emissions, increased fuel reduction with thinning and an increase in milling waste, and potential future wildfire emissions. … Previous Teakettle studies (Innes et al. 2006, North et al. 2007, Hurteau and North 2009) coupled with this research suggest treatments could be modified to more effectively minimize carbon stock reductions while still significantly reducing fuels and promoting large tree development. Significant increases in wildfire resistance can be achieved by thinning only smaller ladder fuels and fire-sensitive intermediate trees without reducing the majority of the live-tree carbon pool in intermediate pines and large trees of all species. … Thinning and prescribed fire treatments that reduce small tree densities may influence stand development by redirecting growth resources and carbon storage into more stable stocks such as large, long-lived fire-resistant pines (Hurteau and North 2009). … Our research suggests most of the benefits of increased stand-level fire resistance can be achieved with small reductions in carbon pools.[435]

XV. THE DEIS UNDERESTIMATES THE SOCIAL COST OF CARBON

NEPA's requirement to take a "hard look" requires BLM to consider the effects of logging-related GHG emissions. This includes disclosing the social cost of carbon (SCC) as a proxy for the impacts of GHG emissions. GHG emissions from logging (and other land management activities) impose significant costs on society, such as the cost of damage caused by climate

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[434] Tara W. Hudiburg, Beverly E. Law, Christian Wirth, and Sebastiaan Luyssaert. 2011. Regional carbon dioxide implications of forest bioenergy production. Nature - Climate Change. Letters. 23 OCTOBER 2011 | DOI: 10.1038/NCLIMATE1264.
http://www.dnr.wa.gov/Publications/em_fp_biomass_regional_carbon_dioxide_implications_of_forest_bioenergy_production.pdf

[435] North, Hurteau, Innes. 2009. Fire suppression and fuels treatment effects on mixed-conifer carbon stocks and emissions. Ecological Applications, 19(6), 2009, pp. 1385–1396.
http://www.plantsciences.ucdavis.edu/affiliates/north/Publications/Eco%20Apps%20article%20North%20et%20al%20Fuel%20treatments%20forest%20carbon.pdf

change and ocean acidification, the costs of adapting to climate change, and the cost of sequestering carbon to mitigate emissions. CEQ's draft guidance on NEPA and Climate Change recognizes that the social cost of carbon ("SCC") is a "harmonized, interagency metric that can provide decision-makers and the public with some context for meaningful NEPA review." 79 Fed. Reg. 77802, 77827. "The SCC estimates the benefit to be achieved, expressed in monetary value, by avoiding the damage caused by each additional metric ton (tonne) of carbon dioxide (CO2) put into the atmosphere. Ruth Greenspan and Dianne Callan, World Resources Institute, More than Meets the Eye: The Social Cost of Carbon in U.S Climate Policy, in Plain English (July 2011) at 1. The EIS should carefully disclose these social costs. The express purpose of SCC analysis is to provide an apples-to-apples basis for comparing a project's economic benefits (e.g. timber receipts) with GHG pollution impacts (Social Cost of Carbon). Where SCC is not analyzed and disclosed, these impacts (costs) are hidden from the public and, in fact, often "paid for" by the broader environment and public in the form of degraded ecological resiliency, public health impacts, and more.

The DEIS (p 483) made two estimates of the Social Cost of Carbon Dioxide ($37/tonne and $109/tonne based on the expected *average* SCC and the *95th percentile* case) and concludes "Of the two estimates presented, the BLM considers the "average" scenario to be more likely." BLM needs to explain why they think the average case is more likely. There is a lot of evidence that the average case vastly under-estimates the true social cost of carbon pollution. The Interagency Working Group that developed these estimates admits that they did not include all the costs of greenhouse gases emissions in their estimates, (e.g. ocean acidification). Furthermore, the IPCC report-writing process tends to be conservative in estimating the effects of climate change. Extreme outcomes tend to be discounted until the evidence supporting them is highly compelling. Nevertheless, there is a real and significant possibility that extreme climate outcomes will occur and high social costs will manifest. Several sources support this:

- Glenn Scherer and DailyClimate.org 2012. Climate Science Predictions Prove Too Conservative - Checking 20 years worth of projections shows that the Intergovernmental Panel on Climate Change has consistently underestimated the pace and impacts of global warming. December 6, 2012. http://www.scientificamerican.com/article/climate-science-predictions-prove-too-conservative/ ("Across two decades and thousands of pages of reports, the world's most authoritative voice on climate science has consistently understated the rate and intensity of climate change and the danger those impacts represent, say a growing number of studies on the topic.").

- Chris Mooney 2014. The world's climate change watchdog may be underestimating global warming. October 30, 2014. http://www.washingtonpost.com/blogs/wonkblog/wp/2014/10/30/climate-scientists-arent-too-alarmist-theyre-too-conservative/ ("According to a number of scientific critics, the scientific consensus represented by the IPCC is a very conservative consensus. IPCC's reports, they say, often underestimate the severity of global warming, in a way that may actually confuse policymakers (or worse). The IPCC, one scientific group charged last year, has a tendency to "err on the side of least drama." And now, in a new study just out in the Bulletin of the American Meteorological Society, another group of researchers echoes that point. In scientific parlance, they charge that the IPCC is focused on avoiding what are called "type 1" errors -- claiming something is happening when it really is not (a "false positive") --

rather than on avoiding "type 2" errors -- not claiming something is happening when it really is (a "false negative"). The consequence is that we do not always hear directly from the IPCC about how bad things could be.”).

- SkepticalScience.com. How the IPCC is more likely to underestimate the climate response http://www.skepticalscience.com/ipcc-scientific-consensus.htm (“A recent study (Freudenburg 2010) investigated what it calls 'the Asymmetry of Scientific Challenge', the phenomenon in which reports on science fail to evaluate all outcomes, favoring certain probabilities while ignoring others. In the case of the IPCC, the researchers found that the media steadfastly challenge the predictions on the basis that they are exaggerated, worst-case scenarios. What they fail to speculate on is whether the opposite is true; that it may be equally correct to suggest that things might be far worse.

Niemi (2015) prepared a critique showing that BLM under-estimated the Social Cost of Carbon and explained how the analysis can be improved:

> **Summary**
> *Actions that reduce the amount of carbon stored in federal forests contribute to disruption of the global climate by increasing atmospheric concentrations of carbon dioxide. The climate disruption raises the risk of economic harm—locally, nationally, and globally—from extreme weather events, higher temperatures, changes in precipitation, rising sea levels, acidification of oceans, and changes in ecosystems. Laws and executive orders require managers of federal forests to account for these risks. This paper describes the recent failure of the Bureau of Land Management (BLM), to satisfy the requirements. It also describes the steps the BLM must take to meet its obligations, and illustrates the method the BLM and other federal forest management agencies should use to account for carbon-related risks in the future.*
>
> *The BLM failed to account for climate-related risks when it selected its Preferred Alternative for managing federal forests in western Oregon. If implemented, this alternative would yield more timber but less forest carbon than another alternative. Using old data and a conservative view of risk, the BLM provided information that indicates the additional climate-related costs may:*
> *• Outweigh the additional timber-related benefits by 2-to-1.*
> *• Equal $91,000 per additional timber-related job.*
> *• Equal $4 for every $1 of additional timber-related payments to local counties.*
> *Current data, plus a widely accepted view of risk indicates the additional climate-related costs may:*
> *• Outweigh the additional timber-related benefits by more than 30-to-1.*
> *• Equal $1.6 million per additional timber-related job.*
> *• Equal $68 for every $1 of additional timber-related payments to local counties.*
> *The BLM disregarded this information when choosing its Preferred Alternative. To satisfy its legal and administrative requirements, the BLM should fully and clearly describe the climate related risks that accompany the Preferred Alternative, and explain its justification for imposing these risks on the individuals, households, businesses, and communities that would bear them. This justification should address both the reduction in overall economic wellbeing that would result from implementing the Preferred*

Alternative and the moral issues that arise from imposing climate-related risk on those that would not enjoy the timber benefits.[436]

Niemi (2015) explained that, "Moore and Diaz (2015) found that accounting for the impacts of climate on economic growth increases the Interagency Working Group's estimates of the social cost of carbon by a factor of six." [437]

One way that economists deal with uncertain outcomes with high social costs is to account for uncertainty itself as a cost. The DEIS (p 502) says the analysis "addresses the value of carbon storage from a social perspective, where the value of carbon storage is derived from nonmarket valuation techniques such as avoided cost and avoided risk." However, the EIS does not fully account for uncertainty so it underestimates the value of conserving forests to avoid risk.

The agency must recognize that the federal estimate of SCC likely underestimates—perhaps significantly—the climate impacts of GHG pollution. As the U.S. Environmental Protection Agency has concluded:

> *Given current modeling and data limitations, [the federal SCC values] do[] not include all important damages. As noted by the IPCC Fourth Assessment Report, it is "very likely that [SCC] underestimates" the damages. The models used to develop SCC estimates, known as integrated assessment models, do not currently include all of the important physical, ecological, and economic impacts of climate change recognized in the climate change literature because of a lack of precise information on the nature of damages and because the science incorporated into these models naturally lags behind the most recent research.*[438]

Ackerman & Stanton (2010) do not support using the average or "central estimate":

> *Agencies seeking to incorporate climate change considerations in rules and regulations often rely on a cost-benefit analysis, weighing the cost of curbing emissions against the expected damages from every ton of carbon dioxide (CO2) that goes into the atmosphere*

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[436] Niemi, E. 2015. Accounting for Climate-Related Risks In Federal Forest-Management Decision, 10 May 2015 [draft]. Federal Forest Carbon Coalition Background Paper 2015–2. http://static1.1.sqspcdn.com/static/f/551504/26259333/1432605642583/SocialCostsOfCarbonOClandsNiemiMay2015.pdf?token=wDqoa5RkP8EoBLlsRWIPPRuahzg%3D

[437] c*iting* Moore, F.C., and D.B. Diaz. 2015. "Temperature Impacts on Economic Growth Warrant Stringent Mitigation Policy." Nature Climate Change. 12 January. http://www.eenews.net/assets/2015/01/13/document_cw_01.pdf ("Optimal climate policy in this model stabilizes global temperature change below 2 ◦C by eliminating emissions in the near future and implies a social cost of carbon several times larger than previous estimates. A sensitivity analysis shows that the magnitude of climate change impacts on economic growth, the rate of adaptation, and the dynamic interaction between damages and GDP are three critical uncertainties requiring further research. In particular, optimal mitigation rates are much lower if countries become less sensitive to climate change impacts as they develop, making this a major source of uncertainty and an important subject for future research.")

[438] EPA, The Social Cost of Carbon, http://www.epa.gov/climatechange/EPAactivities/economics/scc.html.

— a value known as the "social cost of carbon" (SCC). … While no definite SCC has been set so far, an interagency working group has endorsed a "central" estimate of $21 per ton of CO2 in 2010, or roughly 20 cents per gallon of gasoline — far too small a price incentive to prompt substantive mitigation measures.

In the United Kingdom, which started estimating prices for carbon emissions several years ago, the government's latest calculation is a range of $41 – $124 per ton of CO2, with a central case of $83. An expanded calculation of carbon prices for the United States should at least explore prices in this range …[439]

The 2006 "Stern Review" from the UK Treasury concluded that each ton of carbon dioxide emitted will cause $85 worth of damage to the world's economy.[440] According to the Congressional Research Service, capturing and storing most of the carbon from coal as it is combusted costs between $43-89/ton of CO_2, and this price will likely increase after the many safety, environmental, and efficiency problems with carbon capture and storage (CCS) are fully accounted for. [441] That's another good indication of the value of a storing a ton of carbon in forests.

ABSTRACT: The 2013 Interagency Working Group on the Social Cost of Carbon (IWG) updated the U.S. social cost of carbon (SCC) for 2015 from a central value of $24 to $37 using three integrated assessment models (IAMs): DICE-2010, FUND 3.8, and PAGE09. The SCC is the additional economic damage caused by one ton of carbon dioxide. While some have questioned the increase in the SCC as too high, a thorough examination of the latest scientific and economic research shows that $37 should be viewed as a lower bound. This is because the studies available to estimate the SCC omit many climate impacts—effectively valuing them at zero. Where estimates are available for a given type of impact, they tend to include only a portion of potential harms. This paper represents the first attempt to systematically examine and document these omissions for the latest versions of the three IAMs used by the IWG, as well as earlier versions when they are used in calibrating the updated models. … [H]ot spot damages include[e] increases in forced migration, social and political conflict, and violence; weather variability and extreme weather events; and declining growth rates. A better accounting of catastrophic damages is also needed, as well as many other impacts.[442]

We reestimate the values from the models (1) using a range of discount rates and methodologies considered more appropriate for the very long time horizons associated with climate change and (2) using a methodology that assigns "equity weights" to

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[439] Frank Ackerman, Elizabeth A. Stanton. 2010. The Social Cost of Carbon - A Report for the Economics for Equity and the Environment Network. April 1, 2010. http://www.e3network.org/papers/SocialCostOfCarbon_SEI_20100401.pdf.

[440] http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_index.cfm.

[441] Parker, Folger & Stine. 2008. Capturing CO2 from Coal-Fired Power Plants: Challenges for a Comprehensive Strategy. CRS Report for Congress. http://www.fas.org/sgp/crs/misc/RL34621.pdf *citing* S. Julio Friedmann, Carbon Capture and Sequestration As a Major Greenhouse Gas Abatement Option (November 2007), p. 11.

[442] Howard, P. 2014. OMITTED DAMAGES: What's Missing From the Social Cost of Carbon. http://costofcarbon.org/files/Omitted_Damages_Whats_Missing_From_the_Social_Cost_of_Carbon.pdf

damages based upon relative income levels between regions—i.e., a dollar's worth of damages occurring in a poor region is given more weight than one occurring in a wealthy region. Under our alternative discount rate specifications, we find an SCC [social cost of carbon] 2.6 to over 12 times larger than the Working Group's central estimate of $21"…[443] [444]*, If the agency chooses to disclose the economic and other benefits of logging, they must also disclose the social costs.* [445]

ENVIRONMENTAL JUSTICE

In spite of the DIES admission that the timber industry is inherently volatile and increased timber harvest may have an adverse effect on community stability, as well as the high social cost of carbon, the DEIS (p 472) still concludes that alternatives with more logging (e.g., alternatives B and C) will provide greater benefits in terms of "community capacity and resiliency" and environmental justice. BLM chose 13 metrics of community capacity and resiliency, but these were chosen among a larger set of metrics. We are concerned that the subset of metrics chosen failed to accurately reflect the community benefits of forest conservation. BLM's analysis of these issues need to better reflect the adverse effects of timber industry volatility and the fact that the cost of climate change will fall disproportionately on the poor and disadvantaged communities. BLM also limited it's analysis to communities in the planning area even though the adverse effects of climate change and ocean acidification will be felt far beyond that limited geographic scope.

University of California-Berkeley environmental health scientist Rachel Morello-Frosch studied low-income communities in the U.S. and found something she calls a "climate gap" -

> *The effects of climate change would likely hit hardest in places with the fewest resources to adapt. And we're not just talking about the developing world or tiny island nations. …*
>
> *… the climate gap describes a hidden pattern that we have found that indicates that communities of color and poor households within the United States are gonna be suffering more from the economic and health consequences of climate change than other Americans. In other words the climate gap is not only an international question, which has been the focus of a lot of climate change debates over the years, it's also very much an acute domestic problem within the United States.*[446]

Morello-Frosch's reports includes:

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[443] Laurie T. Johnson & Chris Hope, 2012. The social cost of carbon in U.S. regulatory impact analyses: an introduction and critique, J Environ Stud Sci. DOI 10.1007/s13412-012-0087-7. http://www.springerlink.com/content/863287021p06m441/fulltext.pdf?MUD=MP

[444] See *High Country Conservation Advocates v. U.S. Forest Service*, — F.Supp.3d —, 2014 WL 2922751 (D. Colo. June 27, 2014) (holding that BLM's NEPA analysis of climate change impacts was inadequate, and that the EIS must provide a justification for not using the social cost of carbon as a protocol to evaluate impacts).

[445] See *Sierra Club v. Sigler*, 695 F.2d 957, 979 (5th Cir. 1983), *Hughes River Watershed Conservancy v. Glickman*, 81 F.3d 437, 448 (4th Cir. 1996); *Columbia Basin Land Prot. Assn v. Schlesinger*, 643 F.2d 585, 594 (9th Cir. 1981).

[446] Climate Change and America's Poor. Living on Earth Radio Transcript. Air Date: Week of June 12, 2009.

http://loe.org/shows/segments.html?programID=09-P13-00024&segmentID=2.

Key Findings

> *There is a climate gap. The health consequences of climate change will harm all Americans—but the poor and people of color will be hit the worst.*
>
> ***What hasn't made headlines—yet—is the climate gap: the disproportionate and unequal impact the climate crisis has on people of color and the poor.*** *Unless something is done, the consequences of America's climate crisis will harm all Americans—especially those who are least able to anticipate, cope with, resist and recover from the worst consequences. This analysis is of California, which in many ways is a microcosm of the entire United States.*
>
> *Climate change is an issue of great importance for human rights, public health, and social fairness because of its profound consequences overall and the very real danger that poor neighborhoods and people of color will suffer even worse harms and hazards than the rest of Americans. This "climate gap" is of special concern for California, home to one of the most ethnically and economically diverse populations in the country.*
>
> ***The climate gap means that communities of color and the poor will suffer more during extreme heat waves.*** *For instance, African Americans in Los Angeles are nearly twice as likely to die from a heat wave than other Los Angeles residents, and families living below the poverty line are unlikely to have access to air conditioning or cars that allow them to escape the heat.*
>
> ***The climate gap means that communities of color and the poor will breathe even dirtier air.*** *For example, five of the smoggiest cities in California also have the highest densities of people of color and low-income residents. These communities are projected to suffer from the largest increase in smog associated with climate change.*
>
> ***The climate gap means that communities of color and the poor will pay more for basic necessities.*** *Low-income and minority families already spend as much as 25 percent of their entire income on just food, electricity and water—much more than most Americans.*
>
> ***The climate gap is likely to mean fewer job opportunities for communities of color and the poor.*** *The climate crisis may dramatically reduce or shift job opportunities in sectors such as agriculture and tourism, which predominantly employ low-income Americans and people of color.* [447]

California's Office of the Attorney General prepared a report on the "unequal impacts" of global climate change, saying -

> *Global warming will not affect everyone equally. As the Office of Environmental Health Hazard Assessment stated in its 2010 report, the adverse impacts of climate change are expected disproportionately to affect those who are socially and economically*

[447] Rachel Morello-Frosch, Ph.D., MPH | Manuel Pastor, Ph.D. | James Sadd, Ph.D. | Seth B. Shonkoff, MPH. The Climate Gap - Inequalities in How Climate Change Hurts Americans & How to Close the Gap. http://loe.org/images/content/090612/ClimateGapReport_full_report_web.pdf (emphasis in original).

disadvantaged, including the urban poor, the elderly, children, traditional societies, agricultural workers and rural populations. Disproportionate impacts can occur where certain groups lack the social and economic resources necessary to relocate to avoid impacts, or to purchase the technology necessary to adapt to our changing climate. According to a 2009 report by California's Climate Change Center, "[w]ithout proactive policies to address these equity concerns, climate change will likely reinforce and amplify current as well as future socioeconomic disparities, leaving low-income, minority, and politically marginalized groups with fewer economic opportunities and more environmental and health burdens."[448]

Lynn et al (2011) state:

The effects of climate change are expected to be more severe for some segments of society than others because of geographic location, the degree of association with climate-sensitive environments, and unique cultural, economic, or political characteristics of particular landscapes and human populations. Social vulnerability and equity in the context of climate change are important because some populations may have less capacity to prepare for, respond to, and recover from climate-related hazards and effects. Such populations may be disproportionately affected by climate change. … [C]onsiderations that pertain to the effects of climate change on socially vulnerable populations are identified.[449]

BLM's analysis of environmental justice must include the full geographic scope of the impacts of climate change. Many of the adverse social impacts of climate change will occur elsewhere in the U.S. and the world.

One important way to avoid unequal distribution of the costs of climate change is to avoid those costs in the first place. EPA just released a report on the impacts of climate change and the value of mitigation. They only looked at environmental justice in one section of the report dealing with coastal property impacts such as sea level rise, but they found that many disadvantaged communities along the west coast are especially vulnerable and would benefit from mitigation efforts (such as optimizing carbon storage in BLM forests). "Areas of higher social vulnerability are more likely to be abandoned than protected in response to unmitigated sea level rise and storm surge." The basic message is that taking action to store carbon today helps avoid imposition of high costs of adaptation on communities least able to afford those costs.[450] The example of coastal property damage is just a small part of the environmental justice implications of climate change. As another example, the cost of any adverse health impact associated with

[448] State of California Department of Justice - Office of the Attorney General. https://oag.ca.gov/environment/climate-change/unequal-impacts *referencing* Linda Mazur, Carmen Milanes, Karen Randles, David Siegel, 2010. INDICATORS OF CLIMATE CHANGE IN CALIFORNIA: ENVIRONMENTAL JUSTICE IMPACTS December 2010. http://oehha.ca.gov/multimedia/epic/pdf/ClimateChangeEJ123110.pdf

[449] Kathy Lynn, Katharine MacKendrick, and Ellen M. Donoghue. 2011. Social Vulnerability and Climate Change: Synthesis of Literature. General Technical Report, PNW-GTR-838, August 2011. http://www.fs.fed.us/pnw/pubs/pnw_gtr838.pdf

[450] EPA 2015. Climate Change in the United States: Benefits of Global Action. http://www2.epa.gov/cira/downloads-cira-report; http://www2.epa.gov/sites/production/files/2015-06/documents/coastalproperty.pdf

climate change will fall disproportionally on poor people with limited access to health care. In fact, nearly all future adaptation costs caused by global climate change will fall unfairly on those least able to pay.

BLM should adopt an alternative that minimizes carbon emissions and timber harvest and maximizes forest carbon store and other non-consumptive ecosystem services.

I. BLM SHOULD OPTIMIZE FOREST CARBON STORAGE TO HELP MEET CLIMATE MITIGATION GOALS

The DEIS should disclose whether the cumulative effects of logging-related GHG emissions are consistent with emissions reduction goals established by state and federal government and international agreements.

In 2007, the Oregon legislature passed HB 3543 that codifies greenhouse gas reduction goals for the state: namely, by 2010 to begin to reduce greenhouse gas emissions, by 2020 to achieve greenhouse gas levels 10% less than 1990 levels and by 2050 to achieve greenhouse gas levels 75% below 1990 levels. ORS § 468A.205. Logging-related GHG emissions will conflict with attainment of these goals. Greater conservation of BLM forests will help meet these goals.

BLM should also strive to harmonize with State of Oregon statewide land-use planning goals (adopted in administrative rules) that prohibit land use activities that exceed the "carrying capacity" of air and water resources. OAR 660-015-0000(5) - (6). The Department of Land Conservation and Development (DLCD) defines "carrying capacity" as a "Level of use which can be accommodated and continued without irreversible impairment of natural resources productivity, the ecosystem and the quality of air, land, and water resources." There is a large body of science indicating that we are already beyond the level of CO2 in our atmosphere that can be described as safe or reversible.

> *In November 2014, in a historic joint announcement with China, President Obama laid out an ambitious but achievable target to reduce greenhouse gas emissions in the United States in the range of 26 to 28 percent below 2005 levels by 2025.* [451]

On June 25, 2013, President Obama released his Climate Action Plan, which includes forest conservation among the "first pillar"[452] of efforts to reduce emissions, saying:

> *Preserving the Role of Forests in Mitigating Climate Change: America's forests play a critical role in addressing carbon pollution, removing nearly 12 percent of total U.S. greenhouse gas emissions each year. … Conservation and sustainable management can help to ensure our forests continue to remove carbon from the atmosphere…* [453]

Advancing efforts to protect our forests" is also mentioned in the 6th U.S. Climate Action Report under the United Nations Framework Convention on Climate Change (UNFCCC). The agency should advance this national climate goal by conserving public forests. Carbon emissions from

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[451] https://www.whitehouse.gov/climate-change; https://www.whitehouse.gov/the-press-office/2014/11/11/fact-sheet-us-china-joint-announcement-climate-change-and-clean-energy-c

[452] U.S. Dept of State 2013. draft 6th Climate Action Report http://www.state.gov/e/oes/climate/ccreport2014/index.htm (page 12).

[453] http://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf

logging public lands directly conflict with this important national goal and indicate potential significant impacts requiring an EIS.

Logging related GHG emissions (and forgone opportunities for increased storage of carbon in forests) will conflict with these state, federal and international GHG reduction goals.

COMMUNITY STABILITY AND PROSPERITY

BLM appears to be emphasizing "sustained yield" for its own sake, while sacrificing opportunities to increase carbon storage and recreation, even though the DEIS clearly shows that the economic value of recreation and carbon storage on BLM lands greatly exceed the value of wood products. This makes no sense. BLM needs to consider alternatives that do more to optimize carbon storage, provide more low-impact recreation opportunities, and produce other ecosystem services and non-commodities. Sustained yield should not be a goal unto itself, but an outcome of sound forest conservation.

Goals related to timber production and carbon storage are in direct conflict with each other. Alternatives that increase logging and increase timber revenue, sacrifice economic benefits of carbon storage that vastly exceed the value of wood products. Furthermore, increased logging tends to be destabilizing to local communities, while emphasizing non-consumptive ecosystem services will tend to have a stabilizing economic influence. All these economic factors should play an important role in BLM's final choice among alternatives. BLM should maximize economic benefits for public lands management by minimizing logging and emphasizing non-consumptive values like clean water, carbon storage, biodiversity conservation, and low impact recreation.

The DEIS creates the appearance of a false dichotomy: timber jobs vs recreation jobs, e.g., Table 3-177 (DEIS p 536). The EIS needs to reflect the fact that "recreation" is far too narrow view of the economic alternative to logging, because forest conservation provides economic benefits across virtually every sector of the economy. It is more accurate to recognize that Oregon's greatest economic asset is our quality of life which offers a "second paycheck" to every Oregonian and attracts high quality workers and diverse new businesses that want to hire those people. The DEIS needs to accurately reflect the fact that conserving BLM forest contributes to Oregon's quality of life, while timber harvest degrades habitat, water quality, climate stability, scenic views, and harms Oregon's quality of life. The choice is not timber versus recreation, but rather, timber versus every other economic sector in the state that depends very much on the flow of these ecosystem services to support its diversified economy.

The DEIS (p 545) says "Changes in timber harvest are the primary influences on projected future BLM-based employment and earnings in local economies in the planning area. This is because changes by alternative for other resources are either unavailable or very small." There are several problems with this analysis:

- The conclusion that BLM can positively influence the local timber economy is brought into question by the fact that the timber industry is volatile, declining, and subject to a wide range of forces beyond BLM's control, e.g., "commodity-based industries are subject to the highs

and lows of business cycles not only in the United States, but also internationally." DEIS (p 568).

- BLM assumes inappropriately that recreation and other economic sectors are insensitive to logging on BLM lands. This ignores the fact that logging degrades not only the recreation experience, but also degrades a wide variety of ecosystem services and amenity values that must be carefully conserved in order to sustain and grow other sectors of the economy. BLM needs to disclose the fact that the overall economy is likely to thrive, not just "in spite" of reductions in federal log supply caused by increased emphasis on conservation, but "because" of greater conservation of public lands.[454]
- This conclusion also ignores the adverse effects of volatility in the wood products sectors, which diminishes the social value of jobs in those sectors and adds to a variety of social problems related to job insecurity. "If industries increase that exhibit historic instability, they may inject greater economic instability into their host communities." DEIS (p 568).

DEIS (p 569) says "Industrial specialization can be beneficial to an area, though it may, at the same time, subject the area to greater volatility. Growth and stability are both important though sometimes competing concepts in a portfolio of economic growth and development considerations." This seems to imply that BLM can stimulate increased rates of economic growth by increasing federal timber supply. The DEIS fails to recognize that this is highly unlikely given the fact that the timber industry is a mature industry that is stagnant and declining relative to other sectors that are growing much faster.

The DEIS failed to adequately consider trends. For instance, timber jobs are trending down; recreation (and other) jobs are trending up.

> *Between 1990 and 2000, employment grew by 29 percent in the 72 counties in the Plan area. During the same period, manufacturing grew by 3 percent, compared to 56 percent employment growth in the services sector. Most of the other major industries grew at rates varying between 23 and 32 percent (fig. 3-1). [p 37]*
>
> *Federal forests were becoming highly valued for recreation, visual quality, and the protection of water, wildlife, and fish. The regional economy was also maturing. Agriculture and industries based on the extraction of forest resources showed little growth. The percentage of people in the region whose livelihood was based on the extraction of goods and services from federal lands shrank. [p 38]*
>
> *The total decline of 30,000 jobs in the primary processing industries (SIC 24 and SIC 26) [during the 1990s] is contrasted to changes in total employment across all industries in the Plan area. During the 1990s, there was an increase in total employment of 1.4 million jobs. Primary wood-products processing accounted for 2 percent of all jobs in the Plan area in 1990 and dropped to 1 percent by 2000. [p 41]*[455]

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[454] See Neimi, Whitelaw, & Johnston 1999. The Sky Did NOT Fall. ECONorthwest. http://pages.uoregon.edu/whitelaw/432/articles/SkyDidNotFallFull.pdf

[455] USDA/USDI. 5-volume Northwest Forest Plan, 10-Year Socioeconomic Monitoring Report, http://www.fs.fed.us/pnw/publications/gtr649/pnw-gtr649_vol3_pt5.pdf.

Other notable economic trends include:

- Declining real wages in the timber industry, especially when compared to other industries. It does not makes sense to encourage growth in an industry that is systematically trying to break-up unions, reduce wages, reduce benefits, etc.
- Declining jobs per million board feet of timber harvest. If the goal is to create jobs, it does not make much sense to feed more public wood to an industry that uses more machines and computers and fewer people.
- Shrinking share of total employment in the timber industry relative to the economy as a whole. It is unwise economic policy to prop up declining/polluting industries like timber. It is better to focus limited public resources on clean, growing industries.
- Increasing consolidation in the industry. Jobs are becoming concentrated in areas near the I-5 corridor, where communities have more options for economic growth and diversification. BLM cannot stop this trend by increasing the wood supply.
- "Areas with high levels of natural amenities have enjoyed growing populations and income levels in the past decade. Much of this growth has come from the immigration of people with income from self-employment or investments. These new migrants are usually well-educated and often work as executives or professionals or in such industries as finance, insurance, and real estate or business services. Communities may find that policies that enhance the quality of life (better schools, environmental protection, etc) can attract more of these people who are in a financial position to act upon their residential preferences. This in turn can stimulate economic development." [456]

Many of the tables in the socio-economic section of the DEIS are labelled "total jobs" even though the DEIS really only looked at timber jobs and recreation jobs, and failed to disclose amenity-induced job creation. "Total jobs" should not be used to describe jobs in just two sectors of the economy.

The DEIS makes several statements about conservation alternatives causing "disproportionately negative economic effect" for certain counties, but these conclusions do not consider all of the economic factors or even all of the job creation factors.

The DIES implicitly recognizes that lands close to communities are disproportionately valuable for recreation. DEIS (p 489) says that BLM manages about 50% of the land located within 30-minute driving time of the 12 largest communities in western Oregon, and 34% within 60-minute driving time. However, the DEIS also implies that the economic value of recreation is similar across alternatives. DEIS (p 526) says that the economic value of $250 million for recreation is "consistent across all alternatives." This fails to recognize that logged over lands are far less desirable for recreation. Logged areas are unsightly and tend to have a lot of trip-hazards from brush and logging debris, plus a lot of thistles and blackberries which are barriers to recreation. The EIS should disclose how much of the BLM land within 30 and 60-minute driving time is in timber harvest land allocation versus reserve land allocations. The EIS must disclose the adverse

[456] Peter B. Nelson. 1999. Quality of Life, Nontraditional Income, and Economic Growth New Development Opportunities for the Rural West. Rural Development Perspectives, vol. 14, no. 2. http://www.ers.usda.gov/publications/rdp/rdpsept99/rdpsept99e.pdf

economic impact of increased timber harvest within a 60 minute drive of communities large and small.

The DEIS uses economic multipliers from OFRI which tend to inflate the economic importance of the timber industry.

To understand local communities, the ID Team interviewed elected officials. These people have a clear economic conflict of interest, so they are unlikely to provide unbiased information about the overall wants and needs of the county with respect to public lands.

The DEIS does not accurately represent the relationship between big cities/small cities. Money flows from big cities to small, so small cities will enjoy trickle down benefits if BLM emphasizes conservation and amenity-based economic growth, even if those effects are felt first in larger cities.

BLM's attempt to switch from thinning back toward regeneration might gain some economic efficiency in terms of sale preparation and logging implementation, but it also creates uncertainty in terms of social acceptability of clearcutting and risk of litigation. The DEIS did not account for this.

The analysis assumes that BLM is a "price taker." This means that BLM has such a minor effect on supply that the market does not notice if they supply more or less timber and prices do not change. This has a variety of implications in terms of "leakage" in the carbon storage analysis, etc.

I. DEIS ANALYSIS OF NON-MARKET ECONOMIC VALUES NEEDS IMPROVEMENT

DEIS Tables 3-159 and 3-173 provides some information on non-consumptive and non-market economic values but this analysis is inadequate:

- The DEIS failed to quantify many economic benefits of conservation even though there are tools available to do so, such as surveys inquiring about people's "willingness to pay" for endangered species recovery, old growth restoration, biodiversity, etc...
- The DEIS failed to recognize variation among alternatives, and thus failed to recognize the value of conservation. The DEIS (P 480) says "it is not possible to calculate how BLM actions could affect the values of these goods and services using market prices." For instance, Table 3-173 seems to indicate that all the alternatives have similar economic values for recreation, which ignores the fact that logged lands are far less desirable for recreation. (See recreation comments) BLM can provide quantitative estimate of these economic impacts or at least predict the relative economic values based on each alternative's relative emphasis on logging versus conservation. The EIS must clearly reflect that fact that alternatives with greater conservation will tend to provide greater non-market economic benefits.
- The DEIS failed to integrate the extensive analysis of timber economics with these non-consumptive and non-market economic values. It is critical that the EIS provide some way of comparing the economic value of conservation versus logging. If the EIS puts a dollar value on timber, but leaves non-market values unquantified, the unavoidable effect will be to artificially elevate the importance of timber and devalue non-market economic benefits of conservation.

- The value of water quality protection is likely underestimated. The DEIS focused on source water protection for drinking watersheds. High quality water is valuable for many purposes other than drinking water, including: swimming, fishing, supporting biodiversity, diluting downstream pollution, etc. The DEIS needs to disclose the value of providing water quality that goes beyond the bare minimum necessary to meet legal requirements. The law allows some pollution, and BLM timber sales often contribute sediment to streams, but BLM can provide social and economic benefits by preventing any degradation of water quality.
- The DEIS fails to quantify and underestimates the economic value of conserving biodiversity. Maintaining biodiversity is critical for climate change mitigation, maintaining the genetic resources for developing future crops sources of medicine, preserving genes and proteins that could be useful in future technology, conserving pollination services, hunting/fishing/wildlife-watching, etc. The DEIS needs to disclose the value of providing biodiversity that goes beyond the bare minimum necessary to meet legal requirements. Instead of just striving to conserve threatened and endangered species, BLM should strive to prevent other species from being listed, and should strive to maintain and restore healthy populations of native wildlife. The law may allow some degradation of wildlife resources, and BLM regeneration timber sales often degrade habitat, but BLM can provide social and economic benefits by preventing degradation of biodiversity.

Table 3-159. Summary of economic value of goods and services derived from BLM-administered lands in western Oregon, 2012.

Good or Service	Type of Valuation	Economic Value in 2012
Biodiversity and Sensitive Species	Qualitative	Not Monetized
Carbon Storage	Non-Market	$99 million
Cultural Meaning	Qualitative	Not Monetized
Energy Production	Market	$0.032 million
Grazing	Market	$0.022 million
Minerals	Market	$0.015 million
Recreation	Non-Market	$222.8 million
Scenic Amenities	Qualitative	Not Monetized
Source Water Protection	Qualitative	Not Monetized
Special Forest Products	Market	BLM Revenue: $0.2 million; Market Value Low $0.4 million, Market Value High $6.5 million
Timber	Market	$20.8 million (Harvest Value)

[DEIS p 508]

Table 3-173. Table summary of effects on economic value of goods and services derived from BLM-administered lands in Western Oregon.

Good/Service	Type of Valuation	Economic Value in 2012	Impact by Alternative				
			No Action	Alt. A	Alt. B	Alt. C	Alt. D
Biodiversity and Sensitive Species	Qualitative	Not Monetized	-	Lower valueless increase associated with less increase in structurally-complex forest.	Higher increase associated with more increase in structurally-complex forest.	Less increase associated with less increase in structurally-complex forest.	Higher increase associated with more increase in structurally-complex forest.
			-	Diminished economic well-being associated with less butterfly habitat. Economic values associated with species generally protected or enhanced in the long run.			
Carbon Storage	Non-Market ($ millions)	$99	$131.4	$179.3	$165.0	$54.6	$232.8
			Average per year 2013 - 2022				
Cultural Meaning	Qualitative	Not Monetized	Value of cultural sites and artifacts protected across all alternatives. Overall effect on cultural meaning impossible to assess at the present scale of analysis.				
Energy Production	Market	$0.032 million	Value of energy production across all alternatives limited by lack of demand. Supply of biomass would increase; Supply of land available for wind/ROW development would decrease.				
Grazing	Market	$0.022 million	No change in supply or value of grazing.				No grazing would reduce value to $0.
Minerals	Market	$0.015 million	Small change in acres available for quarry development would not likely be large enough to change quantity or value of minerals produced. No change in value of locatable or leasable minerals.				
Recreation	Non-Market ($ millions)	$222.8	$250.1 (Consistent under all alternatives)				
Scenic Amenities	Qualitative	Not Monetized	Potential 77% reduction in VRI Class II could reduce value of aesthetic resources	Potential 75% reduction in VRI Class II could reduce value of aesthetic resources	Potential 82% reduction in VRI Class II could reduce value of aesthetic resources	Potential 82% reduction in VRI Class II could reduce value of aesthetic resources	Potential 90% reduction in VRI Class II could reduce value of aesthetic resources
Source Water Protection	Qualitative	Not Monetized	No change under any alternative.				
Special Forest Products	Market	BLM Revenue: $0.2 million; Market Value Low $0.4 million, High $6.5 million	Changes in supply of lands suitable for the production of Category 1 and Category 2 species produce relatively small changes and would likely have a small effect on the overall supply, and thus the value, of each category of special forest product in the planning area.				
Timber	Market ($ millions)	$20.8	$93.0	$56.2	$72.9	$134.9	$37.4
			Average per year 2013 - 2022				

[DEIS p 526]

Several sources support our recommendation to take a broader view of the economic value of biodiversity, and the need for BLM to strive to do much more than just conserve species that are already listed:

> *Preserving biodiversity also means preserving a reservoir of as-yet-undiscovered medical treatments and cures. … Ecological policies that seek to preserve biodiversity and limit human influences on ecosystem organization may thus be in the best interest of public health, both because biodiversity can yield treatments for existing diseases and*

provide a buffer against exposure to emergent ones. … Conservation makes good sense in just the same way that preventive medicine does.[457]

[B]iodiversity is positively related to the ecological functions that underpin the provision of ecosystem services. … [E]cological restoration is likely to lead to large increases in biodiversity and provision of ecosystem services, offering the potential of a win-win solution in terms of combining biodiversity conservation with socio-economic development objectives.[458]

Recently, some scientists have expressed renewed interest in natural products research following the failure of alternative drug discovery methods to deliver lead compounds in key therapeutic areas such as immunosuppression, anti-infectives and metabolic diseases.

"Natural products research remains invaluable when it comes to providing that initial lead," Wani said. "Before we explored the Pacific Yew tree we had no idea that we could treat cancer and other diseases through microtubule overproduction."

Wani said such discoveries support his contention that "nature is the best chemist."

Another proponent of natural products research at RTI, Dr. David Kroll researches milk thistle compounds as a possible way to treat prostate cancer.

"The natural world has 10 times more chemical diversity than synthetic compounds," said Kroll, a senior research pharmacologist. "We just have to get to it in time." [459]

It is also important to conserve biodiversity because it could prove useful to humans in was that have not yet been investigated. Only a fraction of plant species have been tested for activity against cancer, AIDS, Alzheimer's, infectious bacteria, etc. For example, Research Triangle Institute International (RTI.org) is funded by a grant from the American Cancer Society, to test more than 10,000 mushroom extracts for the presence of chemicals that have potential as chemotherapy drugs. BLM forests harbor tremendous fungal diversity, much of which remains unsurveyed and unrecognized when logging projects are proposed.

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[457] American Council on Science and Health. Why Biodiversity Is a Public Health Issue. November 2, 2005. http://www.acsh.org/factsfears/newsID.658/news_detail.asp.

[458] José M. Rey Benayas, Adrian C. Newton, Anita Diaz, and James M. Bullock. 2009. Enhancement of Biodiversity and Ecosystem Services by Ecological Restoration: A Meta-Analysis. Science 28 August 2009: 1121-1124.

[459] Taxol Pioneer Calls for Greater Emphasis on Natural Products Research , Feb 18, 2005.

http://www.rti.org/newsroom/news.cfm?obj=9BB6E900-3E77-4CEC-9EB6321166A3E61C.

THE COQUILLE LANDS

Reading the DEIS, we do not see clearly what BLM is proposing to do with the lands surrounding the Coquille Tribal Forest, but we do know that the BLM has been trying to decouple tribal management from BLM management standards.

In 1995, Congress granted the Coquille Tribe approximately 5,400 BLM lands with explicit conditions on forest management. It is Congress's intent, as written in law, that management of the Coquille Tribal Forest shall be managed "subject to the standards and guidelines of Federal forest plans on adjacent or nearby Federal lands, now and in the future." [460] BLM says it's purpose is to coordinate with the Coquille Tribe on management of "adjacent and nearby" BLM lands. This purpose will undermine Congressional intent by weakening standards on adjacent federal lands, for the express purpose of ensuring the Tribal forest is managed different than the rest of BLM lands. Congress' intent was to manage lands *similarly*, but the purpose of BLM's effort here is to ensure that tribal trust lands are managed *different* than most of BLM lands in western Oregon.

DEIS at 582 expressly states that, "The Tribe specifically wants to decouple management of the Coquille Forest from BLM management practices." BLM must not accommodate this decoupling because it very clearly violates Congressional intent that management of the tribal forest be coupled to management of BLM lands. Congress explicitly said management of the tribal forest shall be managed "subject to the standards and guidelines of Federal forest plans on adjacent or nearby Federal lands, now and in the future."[461] The phrase "subject to" makes clear that BLM management standards lead, and tribal forest management must follow.

We encourage BLM to coordinate with the Coquille Tribe (and others), especially developing and considering alternatives that will lead to meaningful advances in conservation and community stability.

DEAD AND DOWN WOOD STANDARDS

Dead wood habitat is associated with the abundance or presence of approximately one quarter to one third of vertebrate wildlife in Northwest forests. At least 47 species deemed sensitive or special-status have associations with dead wood such as downed logs and snags, and at least 20% of birds in the western Oregon Doug-fir forests depend on snags for feeding or nesting.[462] Pileated woodpeckers play a crucial keystone species role in Oregon's forests, and are directly affected by snag habitat availability. Over two dozen bird species have been shown to use cavities that have been previously excavated by Pileated woodpeckers. Species which subsequently use pileated-created cavities to nest or roost include the flammulated owl, the bufflehead, and Vaux's swifts, which are on sensitive species lists or are considered priority species in Oregon or Washington. Other vertebrate species include the northern flying squirrel,

[460] 25 U.S.C. 715c(d).
[461] Id.
[462] Hagar 2007, Cline et al. 1980.

which is the primary prey of the northern spotted owl, as well as the common merganser, silver haired bat, and fisher, and American marten.[463]

Many BLM special status bat species are also dependent on standing dead trees. These bats are associated with decadent live trees and large snags with sloughing bark, which are used variously as solitary roosts, maternity roosts, and hibernacula by bat species associated with Douglas-fir forests.

Over the past 100 years, most of Oregon's native old-growth forests have been logged, taking with them their potential to grow large, die naturally and become snags that provide essential wildlife habitat, and many parts of the management area are currently in a deficit of large snags. To protect this essential wildlife habitat, the Northwest Forest Plan establishes mandatory minimum snag retention standards for timber sales on federal public lands, which has been incorporated in to the existing BLM District RMPs: Retain snags in a timber harvest unit at levels sufficient to support species of cavity nesting birds at 40% of potential population levels. This 40% requirement must be met throughout the Matrix with per acre requirements met on areas averaging no larger than forty acres. *See e.g., Salem BLM RMP at 21*

The BLM's draft RMP for Western Oregon does away with this biologically-driven snag retention standard, replacing it with draft standards that treat existing and newly created snags as interchangeable, and averages the snag density standards across the "scale of the harvest unit" which could be hundreds, if not thousands, of acres.

While each alternative offers a slightly different quantification for snags, both existing and created, the approach is essentially the same: no specific snag retention standards – just a vague direction to "retain existing snags and existing down woody material during silivicultural treatments except for safety or operational reasons." This is coupled with the direction to create new snags at the time of harvest. *See RMP EIS at 962, 974, 984*. The lack of quantified retention standards coupled with a reliance on human-created snags poses the threat of significant habitat loss for snag-dependent species.

As large snags are required for the habitat requirements of many species but are in short supply due to past and present management the Western Oregon RMP should exclude stands with high snag densities from harvest, or utilize buffers in order to protect snags, particularly legacy snags.[464]

Ease of human access, along with timber harvest, has a significant negative impact on snag density.[465] Forest stands which are thinned retain snag densities approximately three times lower than in stands with no history of logging, and snag densities in forest stands adjacent to roads are approximately three times lower than those not adjacent to roads. [466]

None of the draft RMP EIS alternatives take the necessary steps to protect or retain existing snags, and so will exacerbates the current deficit of legacy snags. Since all alternatives allow for

[463] Aubrey & Raley 2002.
[464] Cline et al. 1980, Windom and Bates 2008.
[465] Windom and Bates, 2008.
[466] Id.

snags to be cut as needed for "safety or operational reasons" and do not include any protective buffers for legacy snags, the alternatives do not ensure that essential snag habitat will be protected. Most snags could be considered a safety hazard if logging takes place nearby, or they could simply be knocked over during logging. This draft RMP fails does not explain how the BLM will maintain adequate snag density to provide for even minimum wildlife habitat needs. This is especially crucial because many of the management areas already exist in a state of insufficient snag density due to past management practices and numerous recent timber sales. A general statement of 'trying' to retain snags, which lacks any numeric standards or actual accountability, is insufficient to address the current snag deficiency crisis, or to ensure that existing snags are protected and retained.

I. CREATED SNAGS CANNOT BE RELIED ON TO PROVIDE QUALITY HABITAT

All the alternatives rely on the creation of new snags, rather than the specific retention of existing snags, to provide adequate wildlife habitat. There are two key problems with the approach that the draft RMP EIS did not adequately address. First, while snag density may be augmented by killing live trees, the range of diameters of the trees available in young stands from which to create snags may not be adequate for many cavity-using species. Snags < 50cm dbh are infrequently used as nest or roost sites by cavity-using wildlife in western Oregon (Mellen et al.: DecAID).

Second, there is a significant time lag between the creation of snags and their utility as habitat. A study that monitored 1,267 created snags in Willamette National Forest found trees killed within the last 10 years had little decay and had neither ant colonies nor adequate nesting roosting cavities. (Boleyn, et. al., 2002). Regarding the keystone snag species pileated woodpeckers, the study found foraging use in only 1.5% of created snags after 10 years. *Id.* A created snag is *not* interchangeable with an already existing snag as regards wildlife habitat needs and the RMP EIS should reflect this time lag and its impacts on species distribution after management actions that remove existing snags.

II. DEADWOOD RETENTION STANDARDS ARE NECESSARY IN RIPARIAN RESERVES

The draft RMP EIS does not seem to include snag and deadwood retention standards specific to Riparian Reserves. In fact, removing dead trees as needed for safety or operational reasons is explicitly allowed in Riparian Reserves, without any limitations on size of the tree or proximity to the waterbody.[467] A recently published peer-reviewed study by two research scientists from the National Oceanic and Atmospheric Administration (NOAA) directly addressed the need to retain large dead wood in Riparian Reserves, as it is the key driver of attaining riparian biodiversity.[468] The final management guidelines of the RMP should require a specific numeric standard for retention of large dead wood, both standing and downed, in Riparian Reserves.

[467] Draft RMP EIS at 917.
[468] Pollack & Beechie, 2014.

III. ADEQUATE SOURCES OF DEADWOOD ARE ESSENTIAL FOR SOIL PRODUCTIVITY

Retaining adequate sources of deadwood is also essential for long term soil health – an issue not addressed in the draft RMP's Management Direction for Soil, which focus primarily on limiting soil compaction and disturbance and does not include protecting the sources of long-term soil productivity.[469]

Soil and soil productivity are fundamental aspects of forested ecosystems that influence the composition and condition of vegetation, rates of vegetative recovery after disturbance, sediment flux, and the quantity, timing, and quality of water produced by watersheds, which, in turn, affect aquatic populations and habitats. [470]Large woody debris (LWD) provides important sources of organic matter and nutrients in soils, which are vital to the long-term maintenance and protection of soil productivity.[471]

Despite these the well-known importance of LWD to soil productivity the draft RMP EIS fails to disclose that scientific information has repeatedly noted that one of the most effective, efficient and important ways to restore degraded soil productivity is to retain all sources of LWD and organic matter and prevent additional soil disturbances in degraded areas. (Kattlemann, 1996; Beschta et al., 2004). The final RMP EIS should include specific numeric standards for retention of existing LWD in all management areas sufficient to provide for both habitat and long-term soil productivity.

LANDS WITH WILDERNESS CHARACTERISTICS

Pursuant to the Federal Land Policy and Management Act (FLPMA), "The Secretary shall prepare and maintain on a continuing basis an inventory of all public lands and their resource and other values (including, but not limited to, outdoor recreation and scenic values), giving priority to areas of critical environmental concern. This inventory shall be kept current so as to reflect changes in conditions and to identify new and emerging resource and other values." 43 U.S.C. §1711(a). Wilderness character is a resource for which BLM must keep a current inventory. As the U.S. Court of Appeals for the Ninth Circuit recently held: "wilderness characteristics are among the 'resource and other values' of the public lands to be inventoried under § 1711. BLM's land use plans, which provide for the management of these resources and values, are, again, to 'rely, to the extent it is available, on the inventory of the public lands, their resources, and other values.' 43 U.S.C. § 1712(c)(4)." *Oregon Natural Desert Ass'n v. Bureau of Land Management*, 531 F.3d 1114, 1119 (9th Cir. 2008). Therefore, BLM is required to consider "whether, and to what extent, wilderness values are now present in the planning area outside of existing WSAs and, if so, how the Plan should treat land with such values." *Id*. at 1143.

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[469] RMP EIS 929-30.
[470] Beschta et al., 2004.
[471] Beschta et al., 2004; Karr et al., 2004.

BLM now has current guidance requiring updating its inventory of lands with wilderness characteristics and considering protection of those values. Instruction Memorandum (IM) 2011-154 and Manuals 6310 and 6320 contain mandatory guidance on implementing that requirement. The IM directs BLM to "conduct and maintain inventories regarding the presence or absence of wilderness characteristics, and to consider identified lands with wilderness characteristics in land use plans and when analyzing projects under the National Environmental Policy Act (NEPA)." BLM must update its inventory of lands with wilderness characteristics as part of this land use planning process. Manual 6310 provides detailed guidance on conducting inventories of lands with wilderness characteristics. The manual identifies situations when BLM must update its inventory:

1. The public or the BLM identifies wilderness characteristics as an issue during the National Environmental Policy Act (NEPA) process.
2. The BLM is undertaking a land use planning process.
3. The BLM has new information concerning resource conditions, including wilderness characteristics information submitted by the public that meets the BLM's minimum standard described in the Wilderness Characteristics Inventory Process section of this policy.
4. A project that may impact wilderness characteristics is undergoing NEPA analysis.
5. The BLM acquires additional lands. (6310.06.A).

Many of these conditions apply to lands under consideration, which have not been actively re-inventoried by the BLM using the detailed standards and procedures set out in the current guidance. Once there is new information that meets the general submission standards, then "as soon as practicable, the BLM shall evaluate the information," including field checking as needed and comparing with existing data to see if previous conclusions remain valid. BLM is also required to document its rationale and *make it available to the public*. 6310.06.B.2 (emphasis added).

Further, BLM Manual 6310 also sets out detailed guidance on how to identify wilderness characteristics, including how to define "naturalness," "roads," "outstanding opportunities for solitude or primitive and unconfined recreation," and "supplemental values." The guidance explicitly cautions that, "undeveloped possessory interests (e.g., mineral leases) are not treated as impacts to wilderness characteristics because these rights may never be developed." 6310.06.C.3.d. Furthermore, the BLM is supposed to consider "existing conditions as opposed to potential future conditions" when evaluating lands for wilderness characteristics. 6310.06.B. Thus, BLM should not rule out lands as having wilderness characteristics (or for management to protect those characteristics) either because there are valid existing rights or the lands are in proximity to an area with other development or rights-of-way.

The current guidance was not available during BLM's previous evaluation of potential lands with wilderness characteristics and requires that the BLM update its inventory to comply with the agency's official interpretation of FLPMA.

BLM needs to identify wilderness areas being considered by congress, unroaded areas adjacent to forest service wilderness, and unroaded areas adjacent to forest service inventoried roadless areas.

The BLM cannot pre-empt the will of Congress by damaging areas currently being considered in wilderness legislation. Specifically the areas identified as "Wild Rogue Wilderness" and "Devils Staircase Wilderness" in Senator Wyden's O&C legislation must be reserved from timber harvest modeling and any management actions that would damage wilderness characteristics. These areas would also need to be identified for mineral withdrawal in the RMP. Additionally the BLM must conduct a geospatially explicit analysis to identify potential BLM wilderness adjacent to existing Forest Service wilderness and large inventoried roadless areas such as the South Kalmiopsis Roadless Area. For example, lands adjacent Forest Service lands in the Rough and Ready Creek drainage need to be evaluated for wilderness and mineral withdrawal. Other ultramafic lands on the west side of the Illinois Valley also need to be considered for eventual wilderness designation as a combined unit with Forest Service roadless areas.

BEST MANAGEMENT PRACTICES

Use of Best Management Practices traces its origins to the Clean Water Act as an approach to minimize impacts from nonpoint sources of water pollution. As defined by the CWA: Best Management Practices (BMPs), are methods, measures or practices selected by an agency to help minimize its nonpoint source control needs. BMPs include but are not limited to structural and nonstructural controls and operation and maintenance procedures. BMPs can be applied before, during and after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters. 40 CFR §130.2(m).

Environmental advocacy group Bark has surveyed many timber sales for compliance with Best Management Practices and found several violations. For example, in the Salem BLM's Missouri Ridge Timber Sale, the BMPs limit "ground based operations to relatively dry soil conditions". Based on what we saw on the ground we are confident in highlighting that soils were not dry while operations were taking place. The degree of soil damage on the roads, skid trails and landings, including deep ruts and compacted mud are good indicators that this BMP was not followed. A local resident also reported that logging and hauling occurred during rainy conditions when he visited the unit in fall 2013.

Similarly, when Bark staff and volunteers surveyed the Annie's Cabin Timber Sale after logging, they found that BMPs were not followed, specifically regarding erosion control measures were to be placed on the roads post-implementation. Bark found that the only such measures included shallow earthen waterbars, which were not effective in preventing channelization along the roads, carrying sediment down the roadbed (pictured at right). This road is obviously NOT fully stabilized.

These findings point to both the inability of the BLM timber sale administrators to ensure BMPs and timber contract specifications are fully complied with, and the insufficiencies of BMPs in preventing environmental harm. Thus, when the BLM asserts that resource extraction projects

will not have significant environmental impacts because of the BMPs, it can offer no assurance that these BMPs will be fully implemented, or will be effective at minimizing or mitigating the known environmental impacts.

Not only is the BLM unable to assure that the BMPs will, in fact, be followed and/or mitigate the adverse impacts, recent studies disclose that even if followed, BMPs do not consistently reduce adverse environmental effects. In the context of road construction BMPs, there is reliable data indicating that BMPs cannot always reduce the adverse impacts of road building on aquatic resources to ecologically negligible levels, especially within the context of currently pervasive watershed and aquatic degradation.[472] The nationwide assessment of BMP effectiveness commissioned by the USEPA performed by the Great Lakes Environmental Center (GLEC) specifically noted that BMPs aimed at reducing road impacts are not 100% effective, and, in particular, that efforts to prevent road drainage to streams have considerable potential for failure, especially in the Pacific Northwest. [473]

In its report, GLEC found that in the Pacific Northwest, "conventional BMPs for road construction may not be sufficient to prevent adverse effects on stream channels and fish habitat."[474] Activities implemented with somewhat effective BMPs still often contribute to negative cumulative effects on aquatic systems.[475] Espinosa et al. (1997) documented that aquatic habitats were severely damaged by roads and logging in several watersheds despite BMP application, and that blind reliance on BMPs in lieu of limiting or avoiding activities that cause aquatic damage serves to increase aquatic damage.

Not only is the effectiveness of the BMPs included unsupported by field data, the draft BLM RMP fails to include the most effective BMPs:

- avoidance of implementing damaging logging, landing, and road activities in high hazard, sensitive, or degraded areas, such as stream crossings, Riparian Reserves, and unstable terrain, such as earthflows; and
- full protection of an adequate width of riparian areas to prevent or reduce the transmission of upslope impacts to streams.

The management practice of avoiding high impact activities in sensitive terrain has long been recognized to be far more effective than attempting to reduce such impacts via other BMPs with limited effectiveness. Avoidance of sensitive areas is critical, because as GLEC (2008) noted with respect to road impacts, "in some cases, however, control of the problem may not be feasible: location 'trumps' management practice." It has long been recognized that full protection of the area of vegetation within 200 to >300 ft of the edge of all stream types is one of the most important and effective ways to limit the impacts from upslope logging-related disturbances, as numerous independent scientific assessments have repeatedly concluded.

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[472] Ziemer and Lisle, 1993; Espinosa et al., 1997; Beschta et al., 2004; GLEC, 2008
[473] GLEC, 2008.
[474] Id.
[475] Ziemer et al., 1993; Rhodes et al., 1994; Espinosa et al. 1997; Beschta et al., 2004; GLEC, 2008.

3P FALL BUCK AND SCALE

Page 39 of the DEIS indicates that the BLM intends to conduct pre-decisional falling of trees in proposed logging units as a timber cruising mechanism. The impacts of this proposed practice are not disclosed or analyzed in the document. Federal courts have already rejected pre-decisional falling as an irretrievable commitment of resources. No other state or federal land management agency finds it necessary to rely upon pre-decisional timber felling to achieve accurate timber cruise data. The proposal to revive 3P Fall Buck and Scale is arbitrary and capricious.

SUDDEN OAK DEATH

The DEIS analysis of the no action alternative is inaccurate because it assumes no treatment of SOD, even though it is routinely conducted under the no action alternative. This makes the effects analysis unrealistic and inaccurate.

BLM should consider the fact that SOD treatments have limited effectiveness because SOD continues to expand in spite of ongoing treatments. Does BLM know how much (if any) SOD treatments slow the spread of the disease? The pathogen has survived eradication treatments in many sites and 8 of the previously know sites expanded in spite of aggressive eradication efforts. The size of the Curry County quarantine area expanded from 9 to 11 square miles.[476]

DEIS at 746 indicates that BLM did not consider the effects of Sudden Oak Death (SOD) on spotted owls. ("The BLM analysis did not address these conservation needs because they are habitat-independent and would be unaffected by RMP decisions. ") This is inadequate. BLM specifically says they intend to adopt a RMP Revision that minimizes the spread of SOD (DEIS p 76). SOD treatment involves aggressive logging and burning of infected sites. This is a habitat effect that must be considered in the FEIS.

SOD eradication efforts pose their own threat to spotted owl habitat, because eradication means cutting all vegetation in infested sites (plus a buffer) and burning it in place. Thus eradication removes potential owl habitat and the burn intensity harms soils and retards the future growth of owl habitat. We are not suggesting that eradication should not be done, only that before the "SOD war" is over, lots of owl habitat may be lost to the cause.

Whether or not BLM adopts an alternative that does not aggressively treat SOD with logging, BLM should still consider the cumulative habitat effects of logging plus SOD-induced mortality among tree species that provide habitat for spotted owls and their prey. SOD adds to the cumulative uncertainty faced by the spotted owl and reinforces the need to conserve all suitable owl habitat. Jerry Franklin's summarized the "findings" of the Northern Spotted Owl Status Review scientific review panel as follows:

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[476] See ODF, Forest Log, Summer 2004. http://web.archive.org/web/20041109114540/http://www.odf.state.or.us/Portal/forestlogs04/ForestLogSum2004.pdf.pdf

The implications of the scientific findings with regards to conservation strategies. … … in view of current uncertainties, such as the eventual outcome of the Spotted Owl/Barred Owl competition, West Nile Virus, and Sudden Oak Death, and whatever else comes along -- such as global change and other kinds of introductions -- existing suitable habitat could be important to the persistence of the Northern Spotted Owl. [repeated with emphasis] Existing suitable habitat could be important to the persistence of the Northern Spotted Owl, i.e., risk to Northern Spotted Owl may increase if additional suitable habitat is removed. It is not clear where the Spotted Owl may find the refuge or refuges from new threats within existing suitable habitat. Barred Owl intrusions do not negate the need for structurally complex forest habitat to sustain Northern Spotted Owl based on existing knowledge.[477]

CONCLUSION

The proposal to abandon the unified cohesive forest, watershed and wildlife strategy of the NWFP is unwise and undermines many of the assumptions relied upon to facilitate recovery plans, habitat conservation plans, critical habitat designations, and ESA listing determinations throughout Oregon and the Northwest. A forest plan that increases riparian reserve logging, clearcutting, and the logging of known survey and manage habitat will create less certainty, not more, concerning timber harvest on BLM managed public forestlands.

[477] U.S. Fish & Wildlife Service Scientific Review Panel For The Northern Spotted Owl. June 22, 2004 Public Hearing. Washington State University, Vancouver Campus. Transcript Of Proceedings, page 121. http://www.sei.org/owl/meetings/minutes/june-meeting-transcripts.pdf.

Note: If any of web links in this document are broken, they may be resurrected using the Wayback Machine at Archive.org. http://wayback.archive.org/web/

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1. Anthony, R. G. 2013. Effects of Riparian Thinning on Marbled Murrelets and Northern Spotted Owls. Science Review Team.
2. Benda, Lee Use of Geospatial Data and Models in Natural Resource Management 20 July 2012.
3. BLM/FS/FWS/NOAA Fisheries-Memorandum dated June 6, 2013 concerning riparian reserve thinning.
4. Department of the Interior Fish and Wildlife Service 50 CFR Part 17 Endangered and Threatened Wildlife and Plants; Threatened Status for Oregon Spotted Frog; Proposed Rule
5. DEPARTMENT OF THE INTERIOR Fish and Wildlife Service 50 CFR Part 17 Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition To List a Distinct Population Segment of the Red Tree Vole as Endangered or Threatened.
6. Department of the Interior Fish and Wildlife Service 50 CFR Part 17 Endangered and Threatened Wildlife and Plants; Review of Native Species That Are Candidates for Listing as Endangered or Threatened; Annual Notice of Findings on Resubmitted Petitions; Annual Description of Progress on Listing Actions; Proposed Rule (fisher, red tree vole)
7. DEPARTMENT OF THE INTERIOR Fish and Wildlife Service50 CFR Part 17Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition to List Two Populations of Black-Backed Woodpecker as Endangered or Threatened
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10. Illinois Valley Salmon and Botanical Area Map
11. Illinois Valley Salmon and Botanical Area management recommendations
12. Illinois Valley Salmon strongholds map
13. Leinenbach et al. 2013. Effects of Riparian Management Strategies on Stream Temperature Science Review Team;
14. Appendix A – Synopsis of Literature Describing the Effects of Riparian Management on Stream Shade and Stream
15. Appendix B – Consolidated Summary of Literature Describing the Effects of Riparian Management on Stream Shade and Stream Temperature
16. Appendix C – Annotated Bibliography of Literature Describing the Effects of Riparian Management on Stream Shade and Stream Temperature
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Jasmine Benjamin

From: fpaulete@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Saturday, August 22, 2015 11:50 AM
To: RMP-Comments@heg-inc.com
Subject: Fwd: Comments, Statements, Request
Attachments: Scan 2 copy RMP Comments.pdf

---------- Forwarded message ----------
From: **RMPs_WesternOregon, BLM_OR** <blm_or_rmps_westernoregon@blm.gov>
Date: Fri, Aug 21, 2015 at 5:08 PM
Subject: Fwd: Comments, Statements, Request
To: BLM_OR RMPWO_Comments <blm_or_rmpwo_comments@blm.gov>

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Resource Management Plans for Western Oregon
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web: www.blm.gov/or/plans/rmpswesternoregon

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TWITTER: www.twitter.com/blmoregon

Before including address, phone number, email-address, or any other personal identifying information in your comments, be advised that your entire comment, including personal identifying information, may be made publicly available at any time. If you wish us to withhold your personal information you must state this prominently at the beginning of your comment. While individuals may request that the BLM withhold personal identifying information from public view, the BLM cannot guarantee it will be able to do so.

You have received this email because you have previously submitted a request to be on the mailing list, stakeholder list, submitted a comment, feedback or survey response and/or indicated interest in the RMPs for Western Oregon.

---------- Forwarded message ----------
From: **Jackleroy1** <jackleroy1@aol.com>
Date: Fri, Aug 21, 2015 at 4:50 PM
Subject: Comments, Statements, Request
To: blm_or_rmps_westernoregon@blm.gov

Dear Mr. Perez,

Please find the attached file containing our comments, statements, and request concerning the Western Oregon Resource Management Plan.

Jack LeRoy,
Motorcycle Riders Assoication
Medford, Oregon 97502

August 21, 2015

Via: Hand delivered and email
RMPs for Western Oregon
Bureau of Land Management
Mr. Jerome Perez, State Director
PO Box 2965
Portland, OR 97208
BLM_OR_RMPS_WesternOregon@BLM.gov

Dear Mr. Perez,

Please accept this letter with documents as our comments on the Bureau of Land Management's Draft Western Oregon Resource Management Plan.

The Motorcycle Riders Association hereby requests that the comment period be extended an additional 60 days.

We have found the furnished documents concerning the RMP to be extremely complex and deceptive. As we have only begun to peel back the layers and discover conflicting information for the proposed alternatives. We relate this to our Health Care Plan for difficulty in understanding. For the MRA, we will not pass it to find out what is in it.

Please consider our request to extend the review period.

Introduction

The Motorcycle Riders Association (MRA) was created in 1965 to promote the responsible enjoyment of off road motorcycling and ATV riding. We are a non-profit family oriented club welcoming riders of all ages and abilities. We promote several cross country races every year as well as several non-competitive events, including our two poker runs, which recently have been under permit with the BLM. The MRA owns several parcels of land in the Timber Mountain OHV Area. We are a major provider of many of the OHV activities and riding areas in southwest Oregon. We have approximately 1400 members and represent many other riders who are not members. We represent the interests of Class I (ATV), Class III (motorcycle), and Class IV (side by side).

Our ten person Executive Committee alone has combined OHV experience of over 400 years. We all have extensive experience in trail building, design and staging area building, design. We have worked or are working professionally in fields that increase our OHV expertise, such as environmental specialist, logging, road building, mechanics, electronics, excavation, and dirt bike accessory business owner. Combined, we have visited hundreds of OHV areas around the USA and the world. We have volunteered countless hours of OHV service both on the ground and in the meeting rooms, serving on many local committees and forums, including two members who have served a combined 12 years on the Oregon State Parks OHV Allocation Committee. We have attended many OHV conferences and classes, including trail layout-construction and sound testing. We all have differing backgrounds in education and life experiences, but we all are experts in OHV use

There is a lot of knowledge available to the BLM at no cost from the MRA, not just about OHVs, but also about the people who ride OHVs. The BLM needs to use us. We hope you will take advantage of our OHV expertise, common sense, and our effort to help create great trails and riding areas.

To Date, the MRA is disappointed and discouraged in the Medford Districts Woefully pathetic performance and management for responsible OHV recreation in the Timber Mountain OHV Area. With incredible MRA volunteer man hours of labor mapping, reviewing, meetings, ect., the Medford District does not have **any, not one designated trail** for OHV.

Other BLM Districts in Oregon have developed great OHV Recreational Areas.

And yet, the Medford District has been using Oregon State Parks grant funds (sticker money that users provide) to manage their resource area for OHV. The OHV recreationalist return on funds invested in the Medford District by the BLM is a disgrace.

Further, the Medford District method of "OHV Management" consists primarily of "Crisis Management". That is to say that when there are complaints, the solution is simply to close the area. A good example is the proposed closure for all alternatives for Elderberry Flats/Evans Creek. It is a great area for OHV Recreation. Many recreationalists have used the area since the early 1960's.

There is not one problem there that can't be solved through active management.

In addition to these comments MRA is submitting the following documents:

A Partial Literature Review of the Effects of Various Human Activities on Wildlife (this is a BLM document compiled by Nora Hamilton).

MOU between MRA and SUTA.

Trail Mileage

Under all alternatives there will be an increase in closed to OHV acreage and a decrease of open acreage when compared to the No Action Alternative (page xxxi). Our biggest fear is that the new RMP will reduce trail mileage to less than the existing condition. The existing trail system is, for the most part user built or adapted from prior

existing trails, skid trails, and roads. It has evolved over 50 years with little or no management from the BLM. It has evolved to have the current trail density because of need. **The current trail mileage reflects the current need of the users**. Reducing the trail mileage will not reduce the need for trails. It will cause excessive wear to the remaining trails. It will cause riders to seek out other places to ride where they may not be wanted. It will cause serious safety issues. And it will cause users to ride illegally on closed trails.

MRA requests that the RMP set a goal of increasing total OHV trail mileage or at a minimum keeping the current motorized trail mileage and creating a quality OHV experience. **We request that the RMP have provisions for easily creating new OHV trails and areas** as the need increases in the future.

What is a Quality OHV Experience?

Riders enjoy a varied experience. Having OHV areas with multiple types of terrain, soils, vegetation, viewpoints, etc. add to the personal experience of each user. Riders often enjoy riding all day, which may take one over 25 to 100 or more miles of terrain. On this daylong ride one prefers not to meet many other riders outside his group nor does he want to ride over the same ground more than once.

> *"As a rider, often, daily rides are summarized by the amount of other traffic encountered on the trails. So a quality day would be encountering no other, or just a few other riders (6-8 riders). I can currently spend a whole day (50-70 miles) and only encounter the above-described number of riders." - Steven Croucher*

What makes these miles enjoyable is different for every rider. Many off us use OHVs to enjoy the outdoors the same way a hiker would in a wilderness.

> *"Other parts of a quality experience are observation of wildlife and plant life at different elevations and micro climates. Sitting on a sunny side hill overlooking valleys and mountains and eating a lunch we carry in and just enjoying nature and the splendor of all creation." – Joe Fort*

Others of us love the challenge of riding hard terrain.

> *"Navigating through rough terrain is a challenge I enjoy. Demanding is the key word. I don't want a miniature version of a road or a groomed trail. I want to challenge myself over the natural contour of the land on an 8 inch wide single track trail with ruts, rocks, bumps and all." - Derek Steahly*

A quality OHV use area would contain the following:

- Multiple day-long riding opportunities in the form of multiple continuous loops ranging from 15 to 65+ miles.
- Opportunity for long stretches of uninterrupted single-track trail ranging from 2 to 10 miles in length with scenic overlooks, varying terrain and access to remote areas.

- Opportunity for OHV users to ride far enough from the staging area to leave the crowds. Most use occurs within approximately 5 to 10 miles of a staging area. Many riders like to leave these highly used areas and ride trails that have little use.
- Opportunity of all ability levels. Machine grooming trails often decreases their difficulty so advanced and Expert level class III trails need rustic and hand built trails.

MRA requests that the RMA state that the BLM will strive to supply the public with a quality OHV experience and with a definition of what that is.

Sound

Sound is an underlying issue for all OHV riding areas. The MRA currently supports a statewide or regional plan to reduce the current sound level of 99 to 96 decibels. According to sound experts, the difference between 99 and 96 decibels "to the ear" is a 50% reduction in perceived sound level. If a state wide law cannot be passed then we support having a BLM rule for Western Oregon included in the RMP.

The MRA requests that the BLM take an aggressive stand on sound from three positions. First, we would ask that a regimented plan be included in the RMP for enforcement of equipment violations from users. Second we would request that all sound complaints be either verified or rejected. By this we mean that complaints of excessive sound or user conflicts cannot be accepted by BLM unless they are verifiable. The reason for this is because anti-OHV groups use sound and other conflicts as a generic complaint that is levied without specific information. **We ask that all complaints of noise or conflicts with OHVs that are submitted as evidence of OHV problems for this RMA decision be thrown out unless the BLM confirms with proof that the complaints are real**. Also, in many cases, people believe that they are entitled to select which sounds they want to hear. An example would be someone who complains about noise from airplanes, but then uses a power mower in their own yard. **Again the MRA would request an aggressive verify or discount policy from the BLM. Third, the MRA recommends that a 96-decibel standard be set for the Western Oregon BLM area in the new RMP**. This sound level needs to be phased in over several years to allow users time to modify their equipment to meet the new standards. Additionally, this reduced sound level should only be applied to equipment manufactured after 1997, as that is when the manufacturers introduced a significant change in engine type.

Note: OHVs manufactured before 1997 will through attrition naturally phase out as they become obsolete. Lastly, there are limited products, such as quiet mufflers, available for older machines for sound reductions.

MRA has in the past suggested a reduced sound limit to Medford BLM only to be told it would be too difficult. However, it has been done successfully at Oregon Dunes Recreation Area for a number of years and 96 db is the legal sound limit for a number of other states.

Wildlife

It is a common misconception that wildlife are more disturbed by OHV activity than by humans on foot. In other words, a deer, elk, or many birds have as high or higher stress level and flight response when a hiker, bicycle, hunter, or dog approaches than when an OHV approaches. This may be because an animal that fears predators or hunters may have less stress when the approaching human on an OHV can be heard and their exact position can easily be determined. These phenomena can be seen in numerous studies, including the enclosed study by Nora Hamilton of the BLM. **We believe that if BLM closes an area or a trail to OHVs because of wildlife concerns, then it may be necessary to close the area or trail to many non-motorized users such as hikers, hunters, mushroom pickers, ect.**

Deer and Elk Winter Range

There are several problems with the current Winter Range rules that the MRA believes should be corrected before a new management plan is made. The area of our concern is Anderson Butte and any other BLM lands with Winter Range.

First, the boundaries. MRA believes that **the boundaries of Winter Range on Anderson Butte and other areas were not made scientifically, but are somewhat randomly and arbitrarily drawn**. Although the boundary lines include the west facing slopes and grassy meadows where deer and elk like to winter they often also include many ridges and small pieces of north and east slopes that the deer and elk are not likely to go. This causes OHV trails that run along these high ridges to be closed for several months of the year. **We request that in the RMA that Winter Range boundaries will be drawn according to where the deer/elk actually go, which should be determined by scientific studies and that consideration to be given to OHV trails so as to avoid closures when possible.**

Secondly, MRA believes that there is **a strong bias toward OHVs concerning closure rules**. OHVs are excluded from Winter Range from February through April 15, yet no other group is excluded. There are studies that show that hikers, bicyclists, skiers, dogs, shooters, and automobiles can all cause significate stress, and often more stress than an OHV, to deer and elk. We believe that if OHVs are excluded then all users that cause significant stress must also be excluded. **Since under the new RMP all cross county (off the trail) motorized use will be excluded, any argument for closing winter range to OHVs becomes weak**. There is really no difference to a deer or elk between an OHV on a legal trail and an automobile or OHV on a legal road (Anderson Butte has a number of legal and open roads in the Winter Range Area).

The ODFW information suggests that harassment of deer and elk by OHVs is the main issue. We would like to see the information that proves that harassment by OHVs is a bigger problem than harassment by hunters, dogs, or pedestrians, but we have doubts

that the proof exists. Even if it is a real problem there are many trails where harassment by OHVs would be impossible, such as where the trail is on a steep side slope, extremely rocky, or brushy where leaving the trail with enough speed to chase a deer could not be done. As stated before, leaving the trail will soon be illegal everywhere under the new RMP. **We request that instead of blanket closures to OHVs in all Winter Range Areas BLM needs to look at it on a trail by trail basis.**

Riparian

The RMP must state that OHV trails can cross riparian areas.

Invasive Species

MRA believes that BLM has shown **bias against OHVs in the RMP Draft Impact Statement**. Pages 337 through 339 are devoted to invasive species being spread by OHVs, but where are the charts and maps showing how they are spread by hikers, horses, dogs, nature and others means. You also state on page 325-326 that "the infestations associated with OHV use tend to spread along road and trail corridors. The combination of disturbed soil conditions from OHV use serving as invasive plant vectors create susceptibility." How much of that is from automobiles, animals, wind, hikers, horses, dogs, automobiles, ect. And why are OHVs blamed for invasive species along roads? And how much invasive species spread is done by disturbing the soil with the creation of or maintenance of a road, hiking, horse, bike trail.

There also should be a break down on type of OHV; since we believe jeeps and 4x4 have a much higher rate of spread than motorcycle or ATVs (MRA does not represent 4x4). **MRA requests that BLM add the above missing information to your invasive species studies or disregard your biased studies so that you are not singling out OHVs and so the information will be scientifically accurate when doing the RMP and TMP.**

Law Enforcement

MRA would like to work with Medford BLM to get illegal activities under control, both OHV related and dumping, partying, and shooting issues. OHV users, non-motorized recreationists, and private landowners are paying a price for the lack of law enforcement. The problem is MRA has no power to enforce law and BLM does not have the funds or the manpower. We propose a partnership between MRA and BLM for a year of intensive law enforcement to serve notice to the outlaws in the woods. MRA "Trail Volunteers" will serve as the eyes and ears on the ground and BLM will hire extra law enforcement officers using State OHV Funds to respond to the Trail Volunteers quickly. **The RMP should address using volunteers to aid with law enforcement.**

Trail Inventory

The RMP must state that a complete trail inventory be used as the "existing roads and trails" that OHVs will be limited to during the 5 years until the TMP is implemented. This inventory must be done in conjunction with local clubs and users, allowing the public to supply trail maps and GPS data. MRA does not feel that BLM can do an accurate inventory without help from the public.

Partnerships

MRA has attempted to reach agreement to develop a MOU with Medford BLM without success. As the largest stakeholder for responsible OHV recreation in the Medford District, we seek and support a strong partnership between us for our future. However, recent attempts have come up short to MRA expectations. MRA would like to play an active role in all OHV activities in Medford District. We want to be" keep in the loop" and be considered an important adviser to BLM. MRA has experienced many times where Medford BLM has keep important information that affected OHV users secrete and has undermined our attempts to maintain and improve OHV opportunities. We do not believe, judging from the past 30 years, that Medford BLM has the desire, funding, or manpower to do it "on their own". Medford BLM needs to partner with MRA to provide the best recreation values, motorized and non-motorized, possible in southern Oregon. **We would like the RMP to address partnerships between the BLM, MRA, and other OHV clubs, and that those clubs be treated as not just workers for on the ground projects, but as advisors and partners to all OHV activities on BLM land.**

MRA has formed a partnership with Siskiyou Upland Trails Association (SUTA) to develop and implement a recreation plan for the Anderson Butte to Wagner Butte area (copy of MOU supplied). SUTA is currently working with BLM on the Sterling Ditch Trail and the Jack Ash Trail and is committed to multi-use, as is MRA, of the area.

Our two clubs have a lot of experience and knowledge that we believe could be used by BLM to design and implement a world class recreation area and would like BLM to work hand in hand with us.

Shooting

MRA supports the right to own and use firearms on public land for recreation and practice, however, when a large number of other users of the land feel unsafe because shooting is haphazard and not done using common safety practices, then it is time for

the BLM to do something. This problem is very evident on Anderson Butte, where shooting is common and often done in dangerous areas. We have had riders come out of trails into quarries only to pop up over a gravel pile or dirt mound to find they are looking down the barrel of a gun. We have seen high powered riffles being shot from one ridge top to the next. We have seen trees being shot to pieces and target practicing with nothing to stop the bullets until they fall into the valley below. Shooting should not be directed towards trails or trail heads. **During the interim between the RMP and the TMP and after the TMP there will be many legal existing OHV trails that will be in the line of fire and this problem must be addressed.**

We have been told by Medford BLM that they can do nothing because of liability issues and EPA lead regulations. We believe that something must be done and that with all the resources of the BLM you have to come up with something. Aren't there laws on the books that you can use? Can't you put your lawyer on it for a few hours and come up with some solutions? MRA in co-operation with SUTA would like to propose some ideas for shooting areas on Anderson Butte. **We believe the new RPM should address the problem of uncontrolled and dangerous shooting. We believe there should be some SMRAs for shooting, especially on Anderson Butte.**

Areas with Wilderness Characteristics

Upon much diligence and effort by our members, We have discovered that the RMP is designating several new areas as "Wilderness Characteristics". The areas are Wellington, Burton Ninemile, and Dakubetede. All areas have existing OHV trails and routes inside their boundaries. Many of the trails are connector trails that provide for trail loops.

The MRA has been very involved in discussions concerning Wellington with the BLM. We did not discover the Wilderness Characteristics designation for Wellington until we discovered it in the RMP.

This is deceptive and "Flies-in-the Face" of your statements of transparency. Please be advised that we are conducting a thorough investigation on your planning and designation of Wellington. We will be requesting a foia for the Wellington Inventory Study that was conducted together with all records and correspondence relating to it.

The MRA conducts itself in good faith on all matters. The Wellington issue has completely undermined our trust and confidence in the BLM Medford District Office.

lands for their wilderness characteristics. We believe that areas should be either designated wilderness or not. We do not need a semi-wilderness designation used as an excuse to prohibit mechanized recreation. This is true regarding Wellington, Burton-Ninemile, and Dakubetede, which have OHV routes inside their boundaries. **If these areas are to be managed for Wilderness Characteristics then it must be stated in the RMP that they are still open to OHV trails until they are designated a "real wilderness".** MRA believes that having limited single track trails through these areas will not affect the management or in any way reduce the qualities of the land needed to make them real wilderness at a later date (OHVs can always be excluded at any time in the future). **If the RMP states that they are closed to OHV, then the boundaries must be adjusted so as to not conflict with the existing OHV trails**. There are existing OHV trails that run along the northwest, east and northeast borders of the Dakubetede that could become unusable by OHV.

RMA Comments

Using the maps presented by the BLM at the Recreation Workshop in Grants Pass on June 16, 2015 (alt D); these are our comments concerning the RMAs:

1. **Enchanted Timber-** We are in **favor of the alternative D**.

2. **Enchanted Well-** We are **not** in favor of any alternatives or making this RMA non-motorized for the following reasons:

There are a number of existing OHV trails in this area, including several of the last and only Timber Mtn/Johns Peak OHV Area trails that are over two miles in length. Many of these trails were built by MRA members back in the 70s and 80s and have been used and maintained almost exclusively by dirt bike riders. These special trails, including Little Italy, Fugawi (which connects to the Wellington Mine Road), and several other trails form a long loop that goes through Bunny Meadows, up the Poison Oak Trail, and back to the popular MRA staging areas. **The loss of these OHV trails will destroy the only remaining long loop that contains mostly single track trails that a large group of motorcycle riders now enjoy in the Johns Peak/Timber Mtn Area.**

We understand that the history of these trails, the fact that they were built with the blood, sweat and tears of MRA members, that we have used them almost exclusively for three or four decades, and that we are the only group that maintains them may not hold much value to the BLM in your RMP decision, but let it be known that the history holds a lot a value to the MRA. If the BLM takes these trails from us and gives them, so to speak, to the Applegate Trails Association (ATA), then MRA will feel that we have been stabbed in the back by BLM. You may be making an adversary out of a club that

could be your best and hardest working partner. We already feel that Medford BLM has been dishonorable by illegally closing the Wellington Mine Road at the urging of ATA, the erection of kiosks at hiking/OHV trail heads without OHV information, and failing to bring together MRA and ATA to work on a compromise.

We request that the RMA allow the existing motorized trails in the Enchanted Well RMA to remain motorized. This is of the highest importance to the MRA.

3. **Anderson Addition**- We are in favor of Alt D with the following exceptions:

MRA believes that this area should be a motorcycle only or **motorcycle** emphasis OHV area. This is one of things we have discussed with SUTA (see "partnerships") and both groups believe it would reduce conflicts and make trail building and maintance much easier. Much of the terrain on Anderson is steep and rocky and is suitable to more difficult motorcycle trails. We think this would be a great place to show that motorcycle only trails have fewer problems than ATV and Jeep trails. **We would like the RMP to state that the Anderson Addition area has a motorcycle (not ATV or 4WD) emphasis**.

The OHV Recreation Area needs to include all BLM land to the east of Anderson Addition in sections 17, 18, 20, 21, 22, 27, 28, and 29. There are a number of special OHV trails in this area, including the Point Mountain Trail, Bald Mtn Trail, and Goat Cabin Ridge Trail. These trails are special because they are over two miles long, they make a nice long distance loop, and offer a connection to Wagner Gap and Little Applegate for Dual Sport (street legal dirt bikes). There are also a number of shorter trails in these areas. Point Mtn Trail is special also because it was built by MRA members a number of years ago and is still used and maintained by us. SUTA has told us this trail is too steep to be used as part of the Jack-Ash Trail. Bald Mtn Trail is special to us because it was an old abandoned pack trail that was reopened by MRA members in about 2001. It was a lot of work to find the old trail bed and reopen and is still used and maintained by MRA. SUTA is interested in this trail, but Bald Mtn has plenty of room for both a motorized and non-motorized trails and I am sure we can come to a compromise.

The OHV Recreation Area should also include a small parcel to the north in section 30 that has a trail on it that is a connector to one of the more popular staging areas near Coleman Creek Road.

We agree with Alt D that all BLM lands down slope (to the west and south) of the Sterling Ditch should be non-motorized., with one exception; **Road 39-2-9 in Deming Gulch, which crosses the Sterling Ditch Trail, has an existing trail at the east end, so the entire length of this road needs to remain open to OHV until an alternative route can be made in the TMP.**

4. **Woodrat Mountain**- We are in **favor of Alt D**.

5. **Coyote Creek OHV Area-** We are in **favor of Alt D**.

6. **Quartz Creek OHV Area-** We are in favor of Alt D with the following exceptions:

The OHV Area should also include the following areas with existing OHV trails: to the west sections 5, 6, 7, 17, 18, 19, 20 29, 30, and 31.

There needs to be a connector corridor from Quarts Creek OHV Area to the FS Briggs Creek OHV Trail System via Straton Creek Road. At the end of Straton Creek Road we cross the highway and several hundred feet to the right we go up an existing BLM logging road, follow several roads through sections 9 and 17 to connect to the Briggs Creek OHV Trail System. Alt D shows the Buckhorn Mountain RMA as non-motorized, which MRA is not in favor of. The RMA must allow an OHV corridor to connect Quarts Creek OHV Area to Briggs Creek OHV Trail System.

7. **Thompson-Cantrall-** We are in **favor of Alt D** with the following **exceptions**:

Alt D says this area is for "dual Sport". We believe that the **RMA should not exclude the use of the existing OHV trails or the building of new OHV trails**.

8. **Buck Prairie / Hyatt-** We are in **favor of Alt D**

9. **Evans Creek / Elderberry Flat**- Although not list on any of the alternatives MRA believes that this should be an OHV RMA, as it is a very popular riding area. We also oppose the plan shown on the Alternative D map which shows that no OHVs are allowed near Evans Creek. That is because the best and most popular camping spots for riders are on the creek. **We request that the RMA has at least one OHV legal camping spot on Evans Creek and that this area be a OHV RMA.**

Sincerely,

Jack LeRoy, President
Motorcycle Riders Association

Enclosures

cc: Jackson County Board of Commissioner's
Senator Jeff A. Merkley
Senator Ron Wyden
Representative Earl Blumenauer
Representative Suzanne Bonamici
Representative Peter A. DeFazio
Representative Kurt Schrader
Representative Greg P. Walden

W-0017

A PARTIAL LITERATURE REVIEW OF THE EFFECTS OF VARIOUS HUMAN ACTIVITIES ON WILDLIFE

Compiled by Nora Hamilton
Bureau of Land Management
National Technical Assistant for Trails

September, 1997

ELK RESPONSES TO DISTURBANCES BY CROSS COUNTRY SKIERS IN YELLOWSTONE NATIONAL PARK

Elk were disturbed in this study by having a person or group of persons approach the elk wherever they were. Established trails were not used.

	number of disturbances	flight distance	distance moved	% of elk leaving drainage	time elapsed before return	number of elk not returning
habituated elk*	62	15 meters	40 mmeers	0	0	0
non-habituated elk	40	400 meters	1,700 meters	31 (78%)	2 days	5 (.125%)

* The authors define habituated elk as those elk whose home range enclosed a year round human development. Where elk encountered humans on foot in unexpected places around the developed area, the elk responses increased 3-fold.

Cassirer, E. Francis; David J. Freddy; Ables, Ernest D. "Elk Responses to Cross Country Skiers in Yellowstone National Park," *Journal of Wildlife Management* 1988

RESPONSE OF TRUMPETER SWANS TO HUMAN DISTURBANCE (6 nests, 2 adult birds each)
Henson, Paul & Todd A.. Grant 1991 *Wildlife Society Bulletin* v19

disturbance response	aircraft 21 incidents	heavy truck 72 incidents	moving motor vehicle *	stopped or noisey vehicle (horn, loud motor, and/or person emerging) *	pedestrian 36 incidents**
no response	male 3 female 5	male 19 female 42	all	0 0	0 0
head up	male 17 female 16	male 53 female 29	0	reacted to all stopped vehicles	0 0
hiding position on nest (female)	0 0	1	0	0 0	0 0
swimming away until concealed or in open water	0	0	0	0	27
normal flight	0 0	0 0	0 0	0 0	0 0
disturbed flight	0 0	0 0	0 0	male 0 female 4	18
duration of disturbance in seconds	30	10 to 20	not recorded	not recorded	not recorded
duration of response before birds returned to normal activities	male 53 seconds female 53 seconds	male 33 seconds female 20 seconds	not recorded	not recorded	incubating females 51 minutes. all others, until sight & sound of humans was gone

** Data on pedestrian disturbance was divided up according to "pedestrian" disturbance, where a person unknowingly approached; and "observer" disturbance, where a researcher unintentionally disturbed. All pedestrian disturbances were also broken up according to incubating/brooding/unspecified bird activities. I combined the pedestrian disturbances because all of them were more profound than any other disturbance .

* Motor vehicle activity was heavy because this was next to the Copper River Highway.

Responses of National Park Elk to Human Disturbances

The elk in this study were habituated to human activity, and were not hunted, and that had a significant effect on the elk responses. Habituated or unhunted elk Are less sensitive to humans than elk that are rarely exposed to human activity. The elk are more sensitive to persons afoot than vehicles, although in this study the difference is not statistically significant. Both these tendencies have been observed in other studies of large mammals' response to human recreation disturbances. The chart from the study that compares elk response to the different disturbances is reprinted here.

observer activity	Number of elk	mean flight distance*	range**	trotted away	walked away
approach by MV***	46	76.8 m	19-308 m	46%	54%
approach by person	52	85.8 m	29-208 m	79%	21%
approach by MV with spotlight	195	49.2 m	16-130 m	26%	74%
approach by person with flashlight	103	50.9 m	17-144 m	76%	24%

* Distance of the observer from the elk when they began to move away
** distance the elk moved away before resuming normal activities
*** MV stands for motor vehicle

Schultz, R. D. and James A. Bailey "Responses of National Park Elk to Human Activity" *Journal of Wildlife Management* v42 (1975)

Two Studies

The following is a chart (page 6) that attempts to compare the results of two seperate studies. The objective is to identify similarities or differences in responses of the same species (bighorn sheep) to two different human recreation activities: hiking and recreational vehicle use. Some research works do this comparison for us, selecting various human activities and recording in a methodical way the animals' reaction to each, with the same controls in place for each activity. This provides a workable basis for management decisions. Most research, however, examines only one human recreational activity, and compares it with the animals behavior when human recreational activities are absent. As the literature review shows, this method does not help us with management decisions in areas of multiple human uses, because almost every human activity appears to have some effect on the animals.

In the chart on page six, the two studies are not comparable in some areas because different methodologies are used in each. Paul Jorgenson, the author of one of the studies, conducts his research alone and provides no statistical or site controls to eliminate natural (or researcher) bias in his results. His is the only work found so far to lack this level of professionalism. However, by studying the data closely, and identifying the common questions in each work, a reasonable comparison can be drawn.

Where the data seems important but not comparable, an explanation is provided. Before you read to the end of the chart, try to determine which study was of hiking disturbances and which was of motor vehicle disturbances.

Author(s) & study Comparators	Jorgenson- ungulate use of perennial water source in desert environment	Hamilton & Holl-ungulate use of mineral lick in forested environment	Remarks
Statistical controls?	None: Author reports what was observed with no set models for accuracy or bias (eg other factors in the environment, or model failure) and provides speculative conclusions	Yes: the authors use a control site, Chi-square, linear correlation, and probability formulas to produce numeric results, eliminate bias, and establish confidence level	
Abandonment of resource?	No	No	animals always return when humans leave
Shift in use of resource during human presence?	Yes - animals are never observed at resource while humans are present	Yes - animals are never observed at resource while humans are present	
Time elapsed before animals return to site?	appears to be 1 hour *	minimum of 1 hour*	
Change in the number of animals using the resource ?	*	*	Methodologies are not comparable *
Distance animals kept from human activities?	no quantitative data supplied, appears to be up to 2,500 feet in desert environment	600 to 1,000 feet in forested environment	other research indicates this is related to visibility
Suckling young & mothers more sensitive to disturbance?	Yes	Yes	
Further animal uses of study site (resource)	**	**	Data not comparable (the sites are too different) **
Changes in animal travel patterns to and from the resource due to human activities?	None	None	Animals select routes based on the nature of their escape skills

* Indicates the two methodologies are too different to compare. The raw data for the two studies is very similar. In both projects, it was established that the animals visit the resource during daylight hours, at the same time as the humans. In the Jorgenson work, during 10 daylight hours of

animal utilization of the resource, human activity occurred during six hours. Jorganson gives no data on how long it took the animals to return after the humans left, although it is clear from the published results that they did always return. Using simple extrapolation (consistent with Jorgenson's methodology), animal use should drop 60%. However, the direct comparison used by Jorgenson only shows 46% drop. It *may* be claimed that if six of the 10 daylight hours were not available to the animals due to human presence, the animals would have to return in an hour (or less) for the 64% (if undisturbed = 100%) utilization to occur. Conversely, in the Holl & Hamilton work, the data indicates that the animals will not return to the resource for a minimum of one hour after the humans have left. Thus if six parties of humans pass by at one-hour intervals, in the 10 hours of daylight, without any statistical controls (as in Jorgenson's work) there would be a 60% reduction in the time available for the animals at the resource.

** The absence of statistical controls in the Jorganson work makes assumptions about the uses of nearby habitat difficult to support, because the variables, bias, or shortcomings in the model are not controlled. The simplest example could be, *if* the area directly adjacent is suitable, and *if* the animals do not use it, the researcher's ability to identify or at least eliminate reasons they do not use it requires a larger sample and/or a control sample. The use of a control site can resolve many anomolies. In addition, in the desert environment, the distance between areas of "suitable habitat" differs from the distances between areas of suitable habitat in forested environments. Comparison between the two is not supportable.

Jorgenson's discussion assigns special impacts from the vehicles, but provides no evidence that the sheep would respond any differently if the same number of visitors were walking. In the raw data, however, Jorgenson did note the presence of at least one non-motorized visitor, and conspicuous by its absence is a notation of any difference in sheep response. A control site, with equal number of non-motorized visitors to a similar resource, would answer his question "is the presence of the motor vehicles the cause of the reduced sheep use at the site?" He has answered his question with a self fulfilling prophesy: of course it causes less sheep use. As our other research has clearly shown, *every* human approach displaces the sheep.

Hamilton, Kathleen, Holl, Steven A., Charles Douglas; "An Evauation of the Effects of Recreational Activity on Bighorn Sheep in the San Gabriel Mountains, California" Desert Bighorn Council 1982 Transactions

Jorganson, Paul, "Vehicle Use at A Desert Bighorn Watering Area" Desert Bighorn Council 1974 Transactions

Telemetered Heart Rate of Three Elk As Affected by Human Activity

The base assumption for this work is that the human activity will cause an immediate response in the elk's heart rate. Heart rates for undisturbed activities were observed and recorded as the baseline. A "passive response" means the animal is alerted (increased heart rate) and an "active" response" means the animal fled immediately.

This research was conducted in the mid 1970's using radio transmitters attached surgically to the animals. The generation of trailbikes in use during that era were rarely muffled, and those that did have mufflers were extremely loud by today's standards.

Disturbance	Distance to Elk (meters)	Times Occurred	Passive Response	Active response
Gunshots	30 to 450 500	8 9	7 1	4 0
Human walking	20 to 100 100 to 300 300	10 11 10	10 9 4	9 5 2
Human and dog	150	2	2	2
Trailbike	15 to 50 50 to 150 150 to 200 400	4 5 4 8	4 3 1 3	1 0 0 0

It is not necessary for the number of responses to add up to the total number of disturbances, because not every animalreacted the same way. For example, of eight gunshot trials, seven elk responded "passively," and only one's response progressed to active. Hence, of the four actives, one overlaps with passive.

Ward, Lorin A., Jerry J. Cupal, "Telemetered Heart Rate of Three Elk as Affected by Activity and Human Disturbance" (1976) *Planning for Trailbike Recreation* pub. U.S. Department of the Interior Heritage Conservation and Recreation Service.

Influences of Cross Country Skiing on Distribution of Moose and Elk

This study indicated that cross country skiing influenced the general overwinter distribution of moose but not of elk. However, both species moved away from areas near heavily used trails during the ski season when skiers were present on the trails, and returned after the human activity stopped.

	Relative density of Moose		Relative density of Elk	
	No use on trail	some use	no use on trail	some use
Distance from trails (meters)				
0-100	3.3	1.65	6.5	3.25
101-200	2.97	1.98	5.2	1.3
201-300	2.64	2.64	1.95	.65
301-400	2.64	1.98	2.6	2.6
401-500	2.64	2.31	3.25	1.95

It appeared to these researchers that the trails themselves did not influence the movement of animals, and neither species used the trails for travelways. However, the presence of skiers caused both species to move away from trails.

Ferguson, Michael A. D.; Keith B. Lloyd, "Influence of Nordic Skiing on Distribution of Moose and Elk in Elk Island National Park, Alberta, *The Canadian Field Naturalist*

Comparing responses between pedestrian and motor vehicles

"Responses of Mule Deer to Persons Afoot and Snowmobiles" Freddy, David J.; Whitcomb M. Bronaugh Fowler, Martin C.; *Wildlife Society Bulleting 1986*

	distance from deer at first response (developing from left to right)			total duration of resonse	total duration of response	total duration of response	percent of total in which deer fled, and distance	
type of response	alert	activity change	flight	alert	activity change	flight		
persons afoot	340 meters	250 meters	175 meters	225 sec	475 sec	375 sec (6.25 min)	80 %	907 m
snowmobiles	450 meters	280 meters	125 meters	240 sec	125 sec	75 sec (1.25 min)	24 %	158m

Location of deer dictated the approaches in each trial. Established trails were not used.

76 percent of the snowmobile encounters never progressed beyond "activity change;" 20 percent of person disturbances never progressed past "activity change". No figures were given for how many responses never progressed past "alert." Tendencies for flight distances to increase after multiple flight responses to persons afoot indicated that deer do not habituate to persons afoot.

Effects of Human Intrusion on Selected Species of Songbirds

This was a three year study that examined the amount and the quality of songbird singing after the birds were subjected to controlled human intrusions. The authors could not provide consistent year to year statistics due to natural variations in bird populations; however, the authors were very thorough in "flattening" these and other natural biases.The results were given in different formats, hence the fairly complex table.

Singing consistency was calculated as the maximum number of consecutive censuses during which an individual species sang, out of the number of censuses it was detected on the site. Each site could be simplistically described as a 150 meter circle.

The authors state that the levels of disturbance administered were analogous to those caused by hikers, backpackers, nature viewers, and wildlife photographers. This reviewer would not include backpackers and hikers because the disturbances consisted of a human remaining conspicuously in the 150 meter area for one to two hours. Corresponding human activities are birdwatching, nature viewing, and photography.

Species	song occurrance	singing consistency*	
	control vs. intruded	control	intruded
Ruby crowned kinglet	8% reduction	4.38	3.76
Mountain Chickadee	no difference detected	2.36	1.82
Yellow-rumped Warbler 1989	30% reduction	3.33	2.54
American Robin	75% reduction	no difference detected	
Brown Creeper	no difference detected	no difference detected	
Yellow-rumped Warbler 1990	no difference detected	3.63	2.96
Hermit Thrush 1991 (3rd year of intrusions)	30% reduction	2.97	2.22

* Indicates contrast statistics for square-root transformed data. A lower figure reveals a negative impact.

Waterbird Behavioral Responses to Human Disturbances
Mary L. Klein *Wildlife Society Bulletin* v21

A chart of waterbird responses to human activities. Apologies to authors: the charts in the original works were shown in 20 point increments, so what is shown here is not precise. Rather, the majority response for each activity is shown. The numerical value shown is the percentage average for each response.
The trials were conducted at the J.N. Darling National Wildlife Refuge. Recreationists drove automobiles, rode two wheeled motor vehicles and pedal bikes, or walked on one main route through the refuge.The noises administered were tape recordings of human voices. The authors note that wildlife photographers and wildlife viewers (birdwatchers) had the most profound effects on the birds.

	DRIVE BY	STOP	GET OUT	NOISE	APPROACH
Brown Pelican	70 no response 20 look up 10 fled	30 no response 70 look up	25 no response 65 look up 10 fled	20noresponse 60 look up 20 fled	38 look up 12 move away 60 fled
Cormorant	40 no response 50 look up 10 move away	100 look up	100 look up	90 look up 10 move away	50 looked up 30 moved away 20 fled
Anhinga	35 no response 65 look up	15 no respone 85 look up	10 no response 80 look up 5 alarm call 5 fled	100 look up	55 look up 5 alarm call 20 move away 20 fled
Blue Heron	48 no response 37 look up 14 fled	15 no response 50 look up 15 move away 10 fled	7 no response 28 look up 5 move aw ay 60 fled	20 no response 20 look up 35 move away 25 fled	15 look up 35 move away 50 fled
Tricolor Heron	30 no response 50 look up 3 alarm call 17 fled	35 no response 62 look up 3 move away 10 fled	5 no response 45 look up 15 move away 35 fled	50 look up 10 move away 40 fled	40 look up 20 move away 40 flee
Grebe	4 no response 88 look up 8 move away	75 look up 25 move away	30 look up 40 move away 30 fled	30 look up 65 move away 5 fled	10 look up 50 move away 40 fled
White Ibis	50 no response 40 look up 10 move away	35 no response 35 move away 10 fled	25 no response 30 look up 35 move away 10 fled	15 no response 25 look up 30 move away 30 fled	10 noresponse 10 look up 20 move away 60 fled

MOTORCYCLE RIDERS ASSOCIATION

PO Box 1471, Medford, OR 97501

August 21, 2015

RE: COMMENTS TO THE WESTERN OREGON DRAFT EIS

Dear BLM Management,

Please accept this letter as a portion of the official comments of the Motorcycle Riders Association (MRA) on the Western Oregon Travel Management Plan.

MRA is a regional recreation group that champions responsible recreation and encourages individual environmental stewardship. With members throughout southern Oregon, MRA is focused on building enthusiast involvement with organizational efforts through membership, outreach, education and collaboration among recreationists. MRA has members who recreate throughout the BLM landscape, including access by all forms of motorized vehicles, horses, mountain bikes and hiking. These members have enjoyed this access in the past and have concrete, future plans to continue such access in the future.

MRA has long monitored designation and management of designated Wilderness and "wildernessCharacteristics", designations including recommended wilderness, wilderness study areas, and primitive ROS settings. MRA attended the public meeting in Grants Pass and has reviewed related documents on the Wilderness evaluation. It is essential that the agency carefully evaluate a full range of management options for all lands, and not foreclose reasonable alternatives for management through some preconceived assessment of the proper use of particular lands. The agency is on particularly controversial ground when it attempts to foreshadow Congressional designation by imposing Wilderness management requirements on lands that have not been formally designated as Wilderness.

We wish to make an important point, which is that the presence of a motorized trail is not the defining factor that should drive the wilderness suitability determination, but rather whether motorized use is a factor, among others, that reflects a low rating for wilderness character and potential for inclusion in the Wilderness Preservation System. It is not the existence or volume of motorized use that should determine the inventory outcome, but a broader assessment that includes historical use patterns and relation to other uses in the Forest. Properly considered, there are areas that receive motorized use that might be candidates for Wilderness designation, and conversely there are areas containing important, but perhaps infrequently traveled routes that provide critical connectivity and otherwise fail to meet Wilderness suitability criteria.

The MRA has worked closely for decades with BLM on management issues, and has donated thousands of hours of volunteer labor for trail maintenance; however the MRA is disappointed in the lack of history and working relationship in the latest RMP. It almost appears as though the BLM is treating motorized recreation as a lower-cast entity, therefore treating OHV users in a segregational environment.

MRA appreciates this opportunity to be involved in the public planning process on behalf of its members who enjoy responsible recreation in the project areas. Please contact us if you have questions or wish to discuss any aspect of these comments.

Introduction

The MRA was created in 1965 to promote the responsible enjoyment of off-road motorcycling and ATV riding. We are a non-profit family-oriented club welcoming riders of all ages and abilities. We promote several cross-country races every year as well as several non-competitive events, including our two poker runs, which recently have been under permit with the BLM. The MRA owns several parcels of land in the Timber Mountain OHV Area. We are a major stakeholder in many of the OHV activities and riding areas in southwest Oregon. We have approximately 1400 members and represent many other riders who are not members.

Our ten person Executive Committee alone has combined OHV experience of over 400 years. We all have extensive experience in trail-building design and staging-area building design. We have worked (or are working professionally) in fields that increase our OHV expertise, such as environmental specialist, logging, road building, mechanics, electronics, excavation, and dirt-bike accessory business owner. Combined, we have visited hundreds of OHV areas around the USA and the world. We have volunteered countless hours of OHV service both on the ground and in the meeting rooms, serving on many local committees and forums, including two members who have served a combined 12 years on the Oregon OHV Allocation Committee. We have attended many OHV conferences and classes, including trail layout-construction and sound testing. We all have differing backgrounds in education and life experiences, but we all are experts in OHV use

There is a lot of knowledge available to the BLM at no cost, not just about OHVs, but also about the people who ride OHVs. The BLM needs to use us. We hope you will take advantage of our OHV expertise, common sense, and our effort to help create great trails and riding areas.

In addition to this document MRA is also submitting *A Partial Literature Review of the Effects of Various Human Activities on Wildlife* (this is a BLM document compiled by Nora Hamilton).

Under all alternatives there will be an increase in closed-to-OHV acreage and a decrease of open acreage when compared to the No-Action Alternative. Our biggest fear is that the new RMP will reduce trail mileage to less than the existing condition. The existing trail system is for the most part user built, it has evolved over 50 years with little management from the BLM. It has evolved to have the current trail density because of need. The current trail mileage reflects the current need of the users. Reducing the trail mileage will not reduce the need for trails. It will cause excessive wear to the remaining trails. It will cause riders to seek out other places to ride where they may not be wanted. It will cause serious safety issues. And it will cause users to ride illegally on closed trails.

MRA requests that the RMP set a goal of keeping the current motorized trail mileage, and better yet increase motorized trails, just like all the other user groups. We believe that the RMP should have provisions for easily creating new OHV trails as the need increases in the future.

Sound is an important issue for all OHV riding areas. We support the MRA proposed plan to reduce the current sound level of 99 decibels to 96 decibels.

Objection Points

Generally, we object to the agency's failure to develop a substantive OHV management strategy from which subsequent project-level travel management plans must tier. Specific objection points are outlined below.

1. Instead of blanket OHV closures in all Deer and Elk Winter Range, BLM needs to look at it on a trail–by-trail basis. If trails are closed to OHV, then they also need to be closed to all other uses that cause stress to deer/elk.
2. We support a partnership between MRA and BLM for a year of intensive law enforcement to serve notice to the outlaws in the woods. MRA "Trail Volunteers" will serve as the eyes and ears on the ground and BLM will hire extra law enforcement officers using State OHV Funds to respond to the Trail Volunteers quickly. The RMP should address using volunteers to aid with law enforcement.
3. We believe BLM should not manage lands for their wilderness characteristics. We believe that areas should be either designated wilderness or not. We do not

need another semi-wilderness designation used as an excuse to prohibit mechanized recreation.

4. We request that the RMP set a goal of increasing total OHV trail mileage or at a minimum, keeping the current motorized trail mileage and that the RMP should have provisions for easily creating new OHV trails and areas as the need increases in the future.
5. We would like the RMP to address partnerships between the BLM, MRA and other active OHV clubs. The MRA should be treated as not just as a way to get workers for on-the-ground projects, but as advisors to all OHV activities on BLM land.
6. Enchanted Timber Recreation Management Area (RMA) - the MRA is in favor of alternative D and making it a motorized OHV area.
7. Enchanted Well RMA- we are not in favor of any of the alternatives or making this RMA non-motorized. There are a number of existing OHV trails in this area that are some of our favorites that we ride often, such as Little Italy, Fugawi (which connects to the Wellington Mine Road), and several other trails that form a long loop that goes through Bunny Meadows, up the Poison Oak Trail, and back to the MRA staging areas. The loss of these trails will destroy the only remaining long loop that contains mostly single-track trails that we now enjoy.
8. Anderson Addition RMA- we are in favor of Alt D and making it an OHV area, but it should also include all BLM land to the east of Anderson Addition in sections 17, 18, 20, 21, 22, 27, 28, and 29.
9. Quartz Creek OHV RMA- we are in favor of Alt D and keeping it as an OHV area, but it should also include the following areas to the west with existing OHV trails in sections 5, 6, 7, 17, 18, 19, 20 29, 30, and 31. There should also be a connection to the Forest Service Briggs Creek OHV Trail system.
10. Thompson-Cantrall RMA- we are in favor of Alt D and making it an OHV area with the following exceptions: Alt D says this area is for "dual sport". We believe that the RMA should not exclude the use of the existing OHV trails, the building of new OHV trails, or the use of non-licensed OHVs.
11. Woodrat Mountain RMA-we are in favor of Alt D and making it an OHV area.
12. Coyote Creek OHV Area- we are in favor of Alt D and making it an OHV area.

What is a Quality OHV Experience?

Riders enjoy a varied experience. Having OHV areas with multiple types of terrain, soils, vegetation, viewpoints, etc. add to the personal experience of each user. Riders often enjoy riding all day, which may take one over 25 to 100 or more miles of terrain. On this daylong ride one prefers not to meet many other riders outside his group nor does he want to ride over the same ground more than once.

"As a rider, often, daily rides are summarized by the amount of other traffic encountered on the trails. So a quality day would be encountering no other, or just a few other riders (6-8 riders). I can currently spend a whole day (50-70 miles) and only encounter the above-described number of riders." - Steven Croucher

What makes these miles enjoyable is different for every rider. Many off us use OHVs to enjoy the outdoors the same way a hiker would in a wilderness.

"Other parts of a quality experience are observation of wildlife and plant life at different elevations and micro climates. Sitting on a sunny side hill overlooking valleys and mountains and eating a lunch we carry in and just enjoying nature and the splendor of all creation." – Joe Fort

Others of us love the challenge of riding hard and fast and the thrill of living on the edge.

"Navigating through rough terrain is a challenge. Demanding is the key word. I don't want a miniature version of a road or a groomed trail. I want to challenge myself over the natural contour of the land on an 8 inch wide single track trail with ruts, rocks, bumps and all." - Derek Steahly

Sometimes over grooming or removing obstacles such as rocks, trees, and logs may make it easier to pass through a particular section of trail; but most riders are out for the challenge and enjoy navigating the trail in a state as close to its natural state as possible.

"As a rider, I prefer challenging terrain. The bulk of the trails in the plans that are slated to be closed are in most cases the more challenging ones. Respectfully, I understand that in most cases, the steeper the terrain, the more there is potential for environmental damage. Conversely, as a rider, I use the reverse of the closure reasoning and would propose slating steeper trails for more oversight and maintenance. The MRA has several steep terrain trails that are holding up nicely and I believe it is appropriate for the BLM to study these trails before invoking the closure option on existing trails. I recommend additional studies on steep terrain trail and adapt the appropriate management for each." –Steven Croucher

All of us want the opportunity to have a different experience each time we ride. We want to ride different loops and different stretches of trail. It must be considered that the majority of the users that use this area are local residents that use the Timber Mountain area as their primary riding destination. Many people ride here two or three times per week. Over the course of a year, these people may ride here as many as 100 days. The opportunities presented in the alternatives could not nearly or adequately provide for these peoples needs, as they do not want to ride the same trail every time they ride here.

"As a person who goes riding at least 1 time a week, there has to be enough trails to have a different experience many times over."

You have to have the chance to teach youth aspects of riding without damage, yet learning how to surpass multiple challenges and share areas with others.

A quality OHV use area would contain the following:

- Multiple day-long riding opportunities in the form of multiple continuous loops ranging from 15 to 65+ miles.
- Add in something about historic value
- Opportunity for long stretches of uninterrupted single-track trail ranging from 10 to 20 miles in length with scenic overlooks, varying terrain and access to remote areas.
- Opportunity for OHV users to ride far enough from the staging area to leave the crowds. Most use occurs within approximately 5 to 10 miles of a staging area. Many riders like to leave these highly used areas and ride trails that have little use.
- Opportunity of all ability levels. Easy to moderate level trails are abundant in the Timber Mountain area. Managing and grooming trails often decreases their difficulty so advanced and Expert level class III trails need to engineered and built.

Sound

Sound is an underlying issue for all OHV riding areas. The MRA currently supports a statewide plan to reduce the current sound level of 99 to 96 decibels. According to sound experts, the difference between 99 and 96 decibels "to the ear" is a 50% reduction in perceived sound level. If a state wide law cannot be passed, then we support having a BLM rule for Western Oregon included in the RMP.

The MRA requests that the BLM take an aggressive stand on sound from two positions. First, we would ask that a regimented plan be included in the RMP for enforcement of equipment violations from users. Second we would request that all sound complaints be either verified or discounted. By this we mean that complaints of excessive sound or user conflicts cannot be excepted unless they are verifiable. The reason for this is because anti-OHV groups use sound and other conflicts as a generic complaint that is levied without specific information. Also, in many cases, people believe that they are entitled to select which sounds they want to hear. An example would be someone who complains about noise from airplanes, but uses a power mower in their own yard. Again the MRA would request an aggressive verify or discount policy from the BLM.

MRA recommends that a 96-decibel standard be set for the Western Oregon BLM area in the new RMP. This sound level needs to be phased in over several years to allow users time to modify their equipment to meet the new standards. Additionally, this reduced sound level should only be applied to equipment manufactured after 1997, as that is when the manufacturers introduced a significant change in engine type.

Note: OHVs manufactured before 1997 will (through attrition) naturally phase out as they become obsolete. Lastly, there are limited products, such as quiet mufflers, available for older machines for sound reductions.

MRA has suggested a reduced sound limit to Medford BLM only to be told it would be too difficult. However, it has been done successfully at Oregon Dunes Recreation Area for a number of years.

Wildlife

It is a common misconception that wildlife are more disturbed by OHV activity than humans on foot. In other words, a deer, elk, or many birds have as high or higher stress level and flight response when a hiker, bicycle, hunter, or dog approaches than when an OHV approaches. This may be because an animal that fears predators or hunters may have less stress when the approaching human can be heard and their exact position can easily be determined. These phenomena can be seen in several studies, including the enclosed study by Nora Hamilton of the BLM. We believe that if BLM closes an area or a trail because of wildlife concerns, then it may be necessary to close the area or trail to hikers, hunters, mushroom pickers, ect.

Deer and Elk Winter Range

There are several problems with the current Winter Range rules that the MRA believes should be corrected before a new management plan is made.

First, the boundaries: MRA believes that the boundaries of Winter Range in southern Oregon were not made scientifically, but are somewhat randomly and arbitrarily drawn. Although the boundary lines include the west facing slopes and grassy meadows where deer and elk like to winter, they often also include many ridges and small pieces of north and east slopes that the deer and elk are not likely to use. This causes many OHV trails that run along these high ridges to be closed for 5 months of the year. We would request that the boundaries to be drawn according to where the deer/elk actually go, which should be determined by scientific studies and that consideration to be given to OHV trails so as to avoid closures when possible.

Secondly, MRA believes that there is a strong bias toward OHVs concerning closure rules. OHVs are excluded from Winter Range from October through April 15, yet no other group is excluded. There are studies that show that hikers, bicyclists, skiers, dogs, shooters, and automobiles can all cause significate stress, and often more stress than an OHV, to deer and elk. We believe that if OHVs are excluded then all users that cause significant stress must also be excluded. Since under the new RMP all cross-county (off the trail) motorized use will be excluded, any argument for closing winter range to OHVs becomes weak. There is really no difference to a deer or elk between an

OHV on a legal trail and an automobile or OHV on a legal road, which is allowed in most winter range areas.

The ODFW information suggests that harassment of deer and elk by OHVs is the main issue. We would like to see the information that proves that harassment by OHV is a real problem, we have doubts that the proof exists. Even if it is a real problem, there are many trails where harassment by OHVs would be impossible, such as where the trail is on a steep side slope, extremely rocky, or brushy, where leaving the trail with enough speed to chase a deer could not be done. As stated before, leaving the trail will soon be illegal everywhere under the new RMP. Instead of blanket closures in all Winter Range BLM needs to look at it on a trail-by-trail basis.

Invasive Species

MRA believes that BLM has shown bias against OHVs in the RMP Draft Impact Statement. Many pages are devoted to invasive species being spread by OHVs, but where are the charts and maps showing how they will be spread by hikers, horses, dogs, nature and others means?

Jasmine Benjamin

From: fpaulete@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Saturday, August 22, 2015 11:54 AM
To: RMP-Comments@heg-inc.com
Subject: Fwd: Draft EIS western Oregon
Attachments: AOLblmDEISComment082115.rtf

---------- Forwarded message ----------
From: **Rex Storm** <rstorm@oregonloggers.org>
Date: Fri, Aug 21, 2015 at 9:50 PM
Subject: Draft EIS western Oregon
To: "blm_or_rmpwo_comments@blm.gov" <blm_or_rmpwo_comments@blm.gov>

BLM planners:

My 17-page comment letter is attached. The same is also pasted below.

Rex Storm

Forest Policy Manager, CF

Associated Oregon Loggers, Inc.

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August 21, 2015

BLM Oregon -- Draft EIS for Western Oregon

P.O. Box 2965

Portland, OR 97204 email: blm_or_rmpwo_comments@blm.gov

RE: AOL Comment on BLM Western OR Forest Plan—Draft Environmental Impact Statement (DEIS)

Dear Planning Team:

This letter is in response to your request for public comment on Draft Environmental Impact Statement—Bureau of Land Management, Resource Management Plans for Western Oregon (DEIS).

This comment letter is submitted on behalf of Associated Oregon Loggers, Inc. (AOL), which represents over 1,000 logging and allied forest businesses comprising AOL member companies. These companies play a major role in management of public & private forests throughout Oregon, as contractors and purchasers of forest operations contracts and timber products. These Oregon forest professionals employ approximately 10,000 workers in sustainable forest management operations.

AOL member companies are key stakeholders in actively conducting professional forest management of federal forests—and adjacent non-federal forests—within Oregon and neighboring states. As our work transcends both public and private forestlands, we often see how the increasingly unhealthy and overcrowded BLM forestlands adversely impact their non-federal neighbors. These member companies own or manage BLM-adjacent lands; and we are gravely concerned that the health of neighboring non-federal property is increasingly degraded by mismanaged and unhealthy BLM forestland. As such, AOL represents substantial expertise in BLM forest management. AOL members are directly impacted by the decisions that will be made as a result of the BLM's Plan.

We are troubled that our previous written input to this planning process has been completely disregarded through the DEIS planning criteria, purpose & need, alternatives, the range of alternatives, affected environment, plus the environmental and socio-economic consequences of each alternative.

Most of AOL's members—and our forest sector peers—rely on an integrated and sustainable future of these BLM forests to supply marketable sawlogs and cost-effective forest management operations. The continued existence of a sustainable forest sector infrastructure and the social and economic well-being of our county governments and communities rely upon markedly-improved future management of the BLM forests. The existing forest plans are simply failing.

We look forward to your sincere consideration of our recommendations concerning plan decision-making. As current management of these lands is unacceptable to forestry professionals and local governments alike, we anticipate that the Final Environmental Impact Statement (FEIS) Record of Decision would direct more effective BLM forest management of current unhealthy BLM forest conditions, which increasingly-threaten neighboring properties and impair Oregon's forest economy.

The foolhardy DEIS would stifle experienced professionals in their active management necessary to improve and maintain favorable forest conditions and related benefits. Broad-scale, extended-term plans such as the DEIS should focus on clarifying goals and objectives for forest management. The DEIS also should avoid overly prescriptive directives that provide little forestry professional discretion to prescribe appropriate remedies for complex local site-specific challenges. The DEIS's overreach in precautionary/restrictive directives and land allocations (e.g., "no-touch" reserves) would not reliably produce desirable environmental results; and such overreach would not effectively address dynamic changing economic and environmental conditions.

The DEIS is a patent failure to define, analyze, determine, and authorize opportunities and benefits of forest growth, production and management for economically-valuable commercial forest products. A significant increase in active management of federal forest lands can substantially improve forest resource and community health, diversity and sustainability. Active management, including outputs of commercial forest products, represents an opportunity rather than a threat to achieving and maintaining forest health and ecological diversity. Forest product production is arguably the most environmentally sustainable of BLM resources needed to sustain society. From the basis of both existing federal law and a visionary approach to meeting future human needs, federal forest lands have a key role in providing a significant source of these products. The DEIS has failed to propose a single Alternative that would sufficiently foster this key forest product role. Management that includes outputs of commercial forest products greater than those proposed by the DEIS would be highly compatible with the maintenance or enhancement of environmental values.

When wildfire, disease, pests or invasives spread from passively-managed overcrowded BLM lands to surrounding non-federal property, serious negative consequences result that impact non-federal forest landowners and contractors in the region. The 2003 Timbered Rock Fire, the 2013 Douglas Complex Fire, and the 2015 Stouts Fire are three glaring examples of how BLM forests pose costly threats to neighboring private property, and how unhealthy BLM forests encumber the future sustainability of the region's forest sector. Forest landowners and contractors suffered tens of millions of dollars in business losses surrounding these catastrophic fires—because the fire extreme volatility, rapid spread, destructive spread onto private forests, harmful destruction, and costly control—were all exacerbated by the very combustible overcrowded BLM forestlands. This DEIS and existing BLM forest plans are an abject failure at managing BLM forests to reduce the risk and impact of such BLM fires on the environment, on BLM resources, and on neighboring non-federal lands.

Therefore, AOL is extremely disappointed by 26 significantly flawed elements of your DEIS—which we have described in this comment letter. Any single one of these flaws is sufficient to derail the plan, were it to be implemented as written. We strongly concur with other community stakeholders that the BLM's DEIS is out-of-touch with the forest's needs, out-of-touch with its business partners, out-of-touch its local communities, out-

of-touch with its forest sector, out-of-touch with county governments, a perverse deviation from FLPMA, and a blatant violation of the 1937 O&C Act.

Accordingly, AOL submits that you should withdraw the DEIS, and work directly with community and business stakeholders to prepare a much-simplified DEIS and forest plan that would redress a truly integrated and balanced assessment of the socio-economic and environmental aspects of the BLM forestlands. We urge you to re-write the purpose, need for action, alternatives, and the environmental and socio-economic consequences of each alternative. Our comments regarding the DEIS fatal flaws follow on subsequent pages. We appreciate the opportunity to comment.

AOL requests that the DEIS and forest plan be rewritten to reflect the Congressional intent of the 1866 Railroad Grant, and the purpose of the 1916 Chamberlain-Ferris Act and 1937 O&C Act.

AOL's comments are organized to include specific topics within the following 26 significantly-flawed elements of the draft plan:

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1. Planning Process Violates the Purpose of the Oregon & California Railroad Grant.

The assumptions that drive the DEIS and the identified alternatives, fail to properly recognize that the purpose and need of the DEIS must be consistent with the purposes underlying the Settlers Clause in the 1866 Railroad Grant and the Chamberlain-Ferris Act of 1916.

All DEIS alternatives must be evaluated in the context of their achieving the purposes of the Railroad Grant. By disregarding the original purpose of Congress when it adopted these Acts, BLM forest management has resulted in a socio-economic death spiral for the counties, and great environmental damage to ecosystems

through lacking active management, rather than a pathway to the enriching the community. It is implausible that Congress meant for any of the Grant or O & C legislation to be interpreted to operate in a manner that further retarded the Western Oregon counties.

2. The 'Purpose and Need' departs from the O&C Act definition of sustained yield.

While Congress determined that "sustained yield" of timber was to be a mechanism for achieving the original purposes of the Oregon and California Railroad Grant, the BLM planning effort is adopting a wrong-headed definition of sustained yield that violates the original Congressional intent. In the DEIS, the BLM has ignored the purpose that Congress sought to achieve by adopting the sustained yield concept in the 1937 O&C Act. The original intent of the sustained yield concept was to provide a long term production of timber and thereby a significant income stream to achieve the purpose of the Railroad Grant Settlers Clause. The BLM has taken illegally interpreted the phrase "sustained yield," such that results in a total disregard of the context in which Congress adopted the sustained yield concept in the 1937 O&C Act.

It is therefore in violation of the O&C Act for the BLM to reserve or otherwise manage O&C lands classified as timberlands for any dominant purpose other than timber production.

3. The DEIS limits the public's ability to knowingly review and comment.

The Federal Land Policy and Management Act of 1976 (FLPMA) requires the BLM to allow opportunities for public involvement. Likewise, under the Council on Environmental Quality (CEQ) and national Environmental policy Act (NEPA) regulations, the BLM is to provide the public with an appropriate opportunity to knowingly review and comment on proposed actions.

Since the DEIS alternatives assist in understanding and evaluating the proposed action, itis clear that for the public to have the ability to knowingly comment requires that the BLM must include have a range of alternatives that fully explore the options available to achieve the true purpose -namely the achievement of the Congressional intent in adopting the Railroad Grant and O & C legislation.

The DEIS failure to include alternatives that address the purposes of the Oregon and California Railroad Grant has not only pre-ordained the decision but has also limited the public's ability to knowingly comment on the proposed actions in the context of the O & C Railroad Grant purposes. To timely disclose the impacts, one or more DEIS alternatives must be included that are consistent to the fullest extent with Congressional intent and the Federal trust obligation to local communities.

4. The Social & Economic Effects Analysis does not properly inform public or decision-maker.

Notwithstanding the clear context of the various O & C legislation, the DEIS candidly acknowledges that under all action alternatives employment "effects to low-income populations in Coos, Curry, Douglas, and Klamath Counties would be disproportionately negative" under either the lowest harvest level of Alternative A or the higher harvest level under Alternative D. Likewise, in addition to the impact from lower employment, the impact to the local communities resulting from lower earnings and reduction in revenue to counties would further result in disproportionate impacts to low income communities. The low income communities and tribes in these counties would be most vulnerable.

As the community leaders and tribal leaders repeatedly advised the BLM during outreach, the BLM management practices have resulted in a forest that is not well managed; has very few jobs generated; and, management is litigation prone—all these situations which have created a financial burden on the local communities and tribes.

While the DEIS economic analysis purports to address the local economic impacts, it does so by reference to county payments, rather than a more appropriate discussion of how these payments are utilized by the counties to provide essential services. To offset the loss of O & C revenues, the counties are forced to curtail or terminate these services. With reduction in revenues, Counties have been forced to reduce their workforce and reduce hours of service.

Rather than address the social and economic conditions of the Counties, or the O & C region, the BLM wrongly assumes that any harvest -no matter how minimal - will satisfy the Congressional mandates for the O & C lands. The DEIS action alternatives simply ignore these mandates and establish a process that destabilizes the local communities. The DEIS wrongly and illegally would revert the region back to experiencing the very damages that the 1937 Act was designed to resolve.

5. The Planning Criteria have Deprived the Public of Ability to Comment on "Reasonable and Prudent Alternatives" to Avoid Jeopardy.

The BLM methodology is also flawed in that it is improperly limiting the public's ability to comment by purposefully hard wiring the regulatory agency comments while excluding alternatives that fulfill the 1937 O&C Act and Railroad Grant. The BLM has essentially hard wired regulatory agency comments without affording the public the opportunity to knowingly review and comment on the accuracy of the comments or other alternative measures that could prevent jeopardy while achieving the purposes of the O & C Act.

By wrongly designing alternatives that are driven by regulatory agency guidelines which have elevated secondary purposes over the primary purpose, the BLM fails to set forth and explore a range of alternatives that allow for fulfillment of the Railroad Grant. Further, when the regulatory agencies drive the alternatives development process they are operating outside the normal checks and balances afforded the public under the regulatory agencies' principal acts *(e.g.* Endangered Species Act).

By illegally short-circuiting the ESA process and imbedding the Service's comments into the alternatives, the public does not have the opportunity to fully and knowingly comment, nor is the decision-maker afforded the information to fully understand the options available.

6. The Flawed Purpose and Need Statement Taints Planning Effort.

AOL identified flaws in the planning criteria early in our comment letter dated March 31, 2014. The Association of Oregon Counties and Douglas County also identified fundamental flaws in the process early when the County representatives met with State Director Perez and Mark Brown in July, 2013, to express grave reservations about the path the BLM had chosen. Following that meeting, the Counties reiterated their concerns in a letter sent to Mr. Perez in early August.

The BLM planning effort has not only failed to coordinate and be consistent with local plans and policies relating to the O & C lands, it has chosen to ignore the comments and concerns of the Counties and forest sector stakeholders, such as AOL. The FLPMA is clear that the BLM is not only to coordinate with the local counties, it is also to be consistent with the plans and policies of the counties. The DEIS has largely disregarded the local input of Counties and the forest sector stakeholders. Before the local forest plans and policies of the Counties and the forest sector stakeholders are overridden by the DEIS, the BLM must first actually undertake the consistency review in good faith; and, secondly, make a finding that there is no possible alternative that will allow consistency with the local plans and policies.

There is no documentation in the DEIS that evidences these reviews and analysis have occurred.

7. Consistency with Local Authorities' Fire Protection Policies.

The DEIS fails to discuss the consistency with the Douglas Fire Protection Association, Douglas County, and/or the Oregon Dept. of Forestry fire protection and management requirements and practices. The 1937 O&C Act specified that when the BLM formulates regulations for the protection of the revested lands, it is mandated that: "rules and regulations for the protection of the revested lands from fire shall conform with the requirements and practices of the State of Oregon insofar as the same are consistent with the interests of the United States."

While the DEIS contains an informative discussion on the ability of each of the alternatives to improve the forest fire resiliency, it does not address whether the requisite consistency review has occurred. Congress recognized that to avoid problems, the fire protection on the O &C revested lands must be in conformity with the fire protection programs of the State of Oregon.

The local Douglas Forest Protective Association, has expressed grave concerns with the BLM's DEIS snag retention; fuels management programs; road closures; and, failure to control brush fields. These deficiencies are not only creating significant risk to fire fighters, forest workers and the public, it is increasing the risk of fire to the neighboring private lands. Given the checkerboard nature of the O&C lands, the lack of fire prevention on the O&C lands effectively increases the risk to private lands. This "transfer of risk" from combustible BLM forests to well-managed neighboring non-federal forests is clearly evident-- as illustrated by the increased spread of the 2013 Douglas Fire Complex within overcrowded BLM forests, and the severe fire risk posed by the current BLM Late Successional Reserves.

While the DEIS addressed limited fire risk in the context of creating fire resilient forests, it does not address the many concerns raised by DFPA.

The DFPA correctly noted the risk of fire is shared in the O&C checkerboard, and that it is "imperative that all landowners take significant and timely actions to reduce the risk of large high severity fires in the future." The DEIS harmfully fails to address how the action alternatives would reduce the risk, not only to the BLM lands, but also to the neighboring non-federal forestlands in the checkerboard.

State of Oregon forest fire protection agencies have concerns about the DEIS fire analysis flaws. These agency's concerns not only illustrate the concerns that are not addressed in the DEIS, but also to illustrate that the requisite consistency review has not been undertaken and documented in this DEIS. The consistency review needs to be completed and disclosed for public review and comment prior to the issuance of a FEIS and Record of Decision.

The DEIS proposal wrongly designates large areas as LSR; yet the DEIS fails to include or develop any alternative that effectively reduces the stand level fire hazard within Late Successional Reserves. The DEIS excludes the range of alternatives that would provide the opportunity to fully understand the risks of the proposed alternatives.

While the BLM asserts there would be no difference between alternatives—relative to wildfire response—it is ignoring that very real differences occur, given the variations in the following: riparian area size and juxtaposition; Late Successional Reserves; post fire management of Late Successional Reserves; snag & structure retention; large block forest retention; and, variations in road systems necessary to manage for,

prevent, and fight wildfires. The BLM DEIS needs to address more than just fire resilience, but also wildfire response—both in the context of active fire as well as post-fire restoration, harvest and reforestation activities.

8. Maximize O&C Act timber harvest volume annually

We urge that the BLM Plan and DEIS to be rewritten to strictly responsive to the O&C Act of 1937. Please keep in mind that 2,151,200 acres of the land addressed by this revision has been directed by Congress to be managed under the O&C Act. The Act states in part that the land shall be managed, *"for permanent forest production, and the timber thereon shall be sold, cut and removed in conformity with the principal of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries and providing recreational facilities"*. The O&C Act clearly directs these lands are to be managed for timber production for the benefit of local communities. Under the 1994 Northwest Forest Plan (NWFP), the BLM has failed to accomplish the O&C Act timber supply mandate for 20 years.

The Planning Criteria and range of Alternatives considered is too narrow—in that the proposed Alternatives fail to include an Alternative(s) that would optimize/maximize O&C Act timber sale volume. There is not presently considered an Alternative that would sufficiently manage a majority of the O&C acreage primarily for sustainable timber growth and yield. The BLM Plan must include a wider range of Alternatives, including at least two Alternatives, which would address a *maximum* predictable & sustainable timber offer volume, on an annual basis to benefit West Oregon communities and industry. Furthermore, such "maximum harvest volume" Alternatives would also provide the greatest reduction in fire hazards and other forest health problem reduction.

The revision challenge is how to achieve the O&C timber mandate, while accommodating wildlife species habitat listed under the ESA. The status review for the n. spotted owl identified that there are numerous risks to the survival of the species—none of which was timber harvest. In fact, greater risks such as catastrophic wildfire can be mitigated with a proactive timber harvest program that reduces hazardous fuel loads, and restores more forest acreage to a healthy growing condition. Listed salmon species and the marbled murrelet should be protected using a combination of actively-managed forest landscapes and a few block reserves strategically located. Modern forest practices in use today largely provide, of foster future, habitat attributes necessary to recover and sustain these species. Extraordinary large block reserves envisioned by the NWFP and the proposed BLM Plan are excessive and in the long-term would lead toward increased forest catastrophic losses due to wildfire, pests, disease and storms.

There is urgent need to replace the current obstructive maze of conflicting standards, guidelines, District Resource Management Plans, NWFP, Survey & Manage Standards, plan amendments, State office guides, and other policies that confound forestry projects on the Western Oregon BLM forests. It is our opinion that current management of BLM forests is *not* sustainable from either an economic, social or an environmental basis.

9. Purpose and Need requires major revision

AOL disagrees with the stated Purposes and Needs for this Plan decision, because they are wrongly biased to favor old tree ecological outcomes, at the expense of economic and social outcomes. The proposed Purposes are incomplete and harmfully discriminate against important economic and social outcomes.

Such old tree bias places these old shade-tolerant forest characteristics in preeminence—to the wrongful exclusion of the necessary ecosystem diversity of younger-open-smaller forests and trees, including shade intolerant vegetation. Additionally, the preeminence of old tree characteristics also discriminates against productive, healthy tree characteristics—to the wrongful exclusion of the necessary economic and societal benefits of forests managed to optimize timber, revenue, employment, and recreation outcomes.

We urge you to consider that the following four important additional "Purposes" be added to offer greater balance among the additional action Alternatives that must be added to provide critical economic and social values—responsive to the O&C Act, Railroad Grant, FLMPA, forest users, forest sector, timber industry, County governments, and communities:

a. Provide optimum non-declining revenue to reliably maintain vibrant forest industry, recreation and county government sectors
b. Provide prompt post-damage reforestation, harvest and restoration of forest condition
c. Maintain & improve road access investments for recreation use & forest management
d. Respect neighbor forest values of non-federal landowners during BLM management
e. Provide sufficient forest protection provisions, agreeable to local forest fire protection agencies
f. Accomplish O&C Act-directed optimum sustainable timber harvest volume, agreeable to Counties

10. Sustainable timber supply -- first priority

The Purposes should be placed in a different order, ranking first, those maintaining economies, revenues and social outcomes on a reliable/predictable basis. Purpose accomplishment should necessitate active land management. Over the last 20 years, management activities dropped-off substantially, putting forest health in decline and fire/pest/disease/storm losses on the increase. Also, the economic stability of our communities and the timber supply has been inadequate to support existing forest sector infrastructure. Additionally, with a trend toward larger more severe wildfires, the amenities that enhance communities as a safe place to live and work are more at a threat of loss. The resultant burned/dying landscapes—the likely result of the current proposed Alternatives— would neither enhance our communities, nor foster industry, nor spur recreation, nor beatify aesthetics, nor improve forest habitat or water.

11. Forest sector expansion possible

The forest products sector has the ability to expand its capacity if the timber becomes available. It is foolhardy and presumptuous for the BLM to presume that the forest sector—or Oregon counties—could not absorb additional timber volume and revenue envisioned by a new BLM forest Plan. The infrastructure (mills and forest contractors) is operating at a level below capacity, due solely to the lack of supply. Oregon is importing logs. Over recent years, logs commonly come into Oregon from Arizona, Alaska, California, Washington, Idaho, and Canada. Even with this costly imported log volume transported at great distance and cost into Oregon business, there is more existing Oregon primary forest product mill capacity than is currently being utilized. Mills operating "under capacity", on a single-shift, are doing so in a very marginal economic manner—and are less comparative than those running two or three shifts.

12. Respond to unhealthy forest conditions and address how to deal with & catastrophic losses

Several major topics that are not addressed, which should be modeled. That is the impacts and projections of natural forest destructive agents-damages-threats. These catastrophic "threats" to forest heath and sustainability include: 1/ wildfire; 2/overcrowded & decadence; 3/insects, 4/diseases, and 5/weather events & storms. These destructive threats should be addressed in a rewritten DEIS. These threats are far more destructive in the absence of active forest management than when harvesting happens. Also, the strategies and alternatives should address how these destructive agents will be dealt with when they do occur. Will land be promptly salvaged and reforested in the wake of a wildfire, or/and epidemic of insects or diseases, or a major timber blowdown or ice storm event? What will be the impacts of not salvaging after one of these events? Will fuel levels and the risk of additional catastrophes increase if the areas are not salvaged? Will overcrowded and decadent forests be treated to improve their resiliency from other forest threats?

Provisions in the DEIS need to provide for *promptly* treating damaged forests after catastrophic events, which have been part of the historical development of western Oregon forests. In the past 100 years, we have witnessed floods, large-scale windstorms and large-scale fires—all of which prior to the early 1990's resulted in timely restoration activities. More recently however legal gridlock and delay under NEPA challenges have prevented timely responses to catastrophic events. Something other than the standard NEPA process must be available and planned for in the new Plans to address how to restore the forest after a catastrophic event that damages a thousand of acres of forested lands.

13. Direct rapid establishment of reforestation, "free-to-grow" after stand damage or harvest

The current reforestation backlog of young, poorly stocked BLM stands is abysmal—and must be corrected to accomplish forest sustainability. Such a backlog is illegal for non-federal forest landowners in Oregon. Why do federal forests disregard Oregon reforestation law? Far too many acres of BLM forest remain poorly regenerated after stand disturbances occurring over the past 1-2 decades. Require prompt reforestation, young

stand care, and establishment after any disturbance or management action reduces stocking. Apply all available & modern site preparation and regeneration practices, including prudent application of herbicides. BLM reforestation standards *must* comply with Oregon Forest Practices Act "Free-to-Grow" requirements.

14. Forest sector and BLM timber economic contributions vital to Oregon economy

The DEIS does a poor job of addressing and comparing alternative socio-economic consequences. Offering a predictable and sustainable harvest volume is necessary to fulfill the community obligation of the O&C Act. Maintaining present wood products processing and forestry infrastructure must be a goal. Presently, in the Coos Bay/Roseburg/Eugene working circle there is over 1 billion bf of installed mill capacity [and 40% of that capacity is designed to process larger logs over 26" diam.]. In addition, these mills are designed to process all of the commercial tree species found on the O&C lands. This milling diversity accommodates timber harvests representative of the O&C forests. If these BLM forests are to be actively managed to accomplish desired conditions, then these mills must be sustained by the wide range of all species and size harvested.

Forest Sector economic contributions. Oregon Forest Resources Institute prepared a report, *'The 2012 Forest Report: An Economic Assessment of Oregon's Forest & Wood Products Manufacturing Sector'*, which is an excellent compilation of information and data about the forest sector's contribution to Oregon's economy. We encourage BLM planners to use it as a source for evaluating the economic tradeoffs of various alternatives for management. This is a valuable source of information for the BLM planning team. Over the last two decades, O&C lands have sadly failed to contribute to Oregon's economy in a manner consistent to its 2.5 million acres of productive lands. The Plan must assure improved economic outputs from BLM forests.

It's not about resiliency; it's about rural productivity, prosperity and self-reliance. Determining so-called "community resiliency" is a fruitless and misleading assessment of alternative consequences of BLM forest management on Oregon's economy. Just because a community such as Salem or Eugene is labeled as "resilient" to perturbations in the forest product output, does not mean that a change of 10 million or a 100 million board feet of timber harvest would not affect their respective economies. This "community resiliency" metric is nothing more than a distraction that mischaracterizes the economic benefit or impact of timber harvest variations. Forest products derived employment, or similar metric, would be more useful.

Comprehensive socio-economic assessment needed. AOL requests that any final planning document provide a complete assessment of the social and economic impacts of all alternatives, including any reasonably foreseeable impacts to the forest sector infrastructure and local forest communities and county governments.

Sustaining and protecting the forest sector infrastructure. The western Oregon region has experienced a dramatic decline in forest sector infrastructure in the past 24 years. Much of this elimination of sector capacity is attributable to the decline in BLM forest timber sale sawlog volume. The forest sector industry and BLM

forests are mutually reliant upon increased future federal forest management—the industry needs the federal timber supply and forestry production work, while the agency needs the operational management of its forests.

Future Sector Growth: There is tremendous opportunity for strengthening the forest sector infrastructure in the western Oregon working circle. With increased BLM timber sale volume, the forest sector infrastructure could grow to compete on a sustained, long-term basis in North American markets. Without a predictable increased sawlog timber supply in the future from BLM forests, there is existing infrastructure capacity vulnerable to further permanent loss. This outcome would be a tragedy for the future management of the working circle's BLM forests, harmful for private forests, and thoroughly devastating for the unique rural livelihood of local communities.

Community and societal prosperity declining: Communities and rural residents in the western Oregon region are experiencing declining middle-income population, which has resulted from declining forest sector employment under falling federal forest management, and less timber harvest and federal forest access. Not only are direct jobs being lost, so is secondary and induced employment that's derived from primary forest product management and harvest.

Key social considerations of managed forests not addressed. The plan fails to adequately address many of the key social considerations associated with forest management such as; what is the employment situation, what is the school situation, and then, how do the decisions about forest management affect these conditions. What are the other true social conditions of communities, including mental health, drug and alcohol addiction, or domestic violence?

Missing Socio-economic metrics. A couple of issues which are paramount to social well-being and which were not addressed in the Proposed Plan DEIS are: a) impacts to school enrollment, which ultimately affects future workforce availability, school funding, and ability to offer services; b) labor force size trends; and c) employment participation numbers relative to unemployment, which is reflected in the related social consequences of unemployment such as domestic violence, drug and alcohol addiction, etc. These issues were not addressed adequately in the DEIS.

15. Effects of 'No Action' Alternative are not fully-addressed.

The DEIS fails to equitably describe the consequences of the "No Action" Alternative. The document only articulates what would not happen. It would be more accurate to clearly identify the realistic expected effects of "no action," by stating comparable and commensurate effects into the future—on similar terms as the descriptions of effects stated about action alternatives. These expected "no action" effects might be simply stated for example: "No Action Alt." would increase wildfire size & intensity, add smoke pollution, impact timber growth, decrease future economic contributions from timber, reduce road maintenance and habitat restoration, harm access and recreation uses, and add long-term fish & wildlife impacts to the landscape."

16. Damage risk in overcrowded forests / air quality effects of wildfire weakly addressed

The DEIS fails to identify, analyze, or display for each alternative, the environmental and economic consequences of smoke pollution for wildfires and prescribed burning. Especially glaring is the omission of smoke pollution consequences of predictable future increased BLM forest wildfires—due to the large acreage of large block old forests, LSR reserves, and massive riparian buffers. A recent study by the Oregon Health Authority concluded that wildfire human health impacts from smoke pollution were unacceptably severe from the 2012 Pole Creek Fire, on the Deschutes National Forest. Oregon DEQ daily collects air quality data around the state; and such data has shown that wildfire smoke impacts are monumental. It is aberrant that the DEIS fails to assess wildfire smoke pollution to Oregon's air quality.

The DEIS fails to adequately address the predicable increase in wildfire, pests, disease and storm damages due to overcrowded & decadent forest outcomes from BLM plan mandated large block old forests, LSR reserves, and massive riparian buffers. Please refer to the January/Feb 2006 Journal of Forestry article titled, '*Investment in Fuel Removals to Avoid Forest Fires Result in Substantial Benefits'*, C.L. Mason et.al. The basic findings of this study are, "A cost/benefit analysis broadened to include market and non-market considerations indicates that the negative impacts of crown fires are underestimated, and that the benefits of government investments in fuel reductions are substantial." Please use this document as a reference for the Fire and Fuels section as well as Air Quality.

17. Soils disturbance edicts overreaching

The presumed "detrimental disturbance" levels are over-reaching and misrepresent modern forest practices—thereby overstating the amount of damage. Literature citations are outdated, studies used outdated forest practices, and the Plan misinterprets the study conclusions cited. Road effects were included in studies, yet misrepresented by the Plan narratives as excluding rod effects. This abuse of science data is outlandish. Stated effects to be used as an analytical tool (ground based–35%; cable–12%; helicopter-6%) are inaccurate. This needs to be modified. Not all ground-based operations create these presumed disturbances; the same applies to other methods. Therefore, to make blanket assumptions using outdated information about "disturbance," when it can be and often is avoided is misleading and wrong.

Furthermore, the determination by the Plan soils effects that all forest roads create a 40 foot wide corridor of acreage "unavailable for plant growth" is also outlandish and nonsensical. I know of nowhere in the US that a forest road is rocked and maintained for a 40' wide running surface, and where no plants can grow, and where no tree crowns can encroach into this 40-foot zone. Such incorrect blanket assumptions about road "disturbance," is misleading, overstated, and wrong.

18. Road access investment must be maintained & improved

A large, well-constructed, permanent road system has been developed to access the O&C and adjacent privately held timberlands. Focused management of the lands having this capital investment should utilize, maintain, and protect existing road facilities. In many cases this road system has fallen into disrepair because of the lack of an active BLM timber sale program. Because of brush encroachment, access for fire suppression to both O&C and the adjacent private lands places these lands at risk for a catastrophic fire. Yes, these roads can be opened with the proper equipment, but when a fire starts to make it's run it is too late to bring in that equipment and start brushing roads. The new plans need to specifically bring this road system back up to the standards to which it was originally built.

19. Regeneration harvest is an essential tool

The regeneration method and even-aged silvicultural applications must necessarily be authorized by the Plan to be commonly-used tools. Without a full suite of time-proven silvicultural tools—such as regeneration method and even-aged systems—the Plan's economic and social Purposes cannot be accomplished.

20. Active forest management is beneficial for long-term water quality

The public has asked that clean water is held in high regard. The new plan needs to identify, not only how active forest management can be conducted to maintain water quality, but also how mistakes of past management have been mitigated and corrected under modern forest practices. The Plan can develop the basis to sustain water and riparian values without the exorbitant & confounding wide riparian buffers dictated needlessly by the NWFP aquatic strategy.

Wide NWFP riparian buffers are unsubstantiated by contemporary science. Now emerging headwaters forest stream research conducted in three Oregon westside watersheds, by the Oregon State University-led '*Watershed Research Cooperative,*' is finding that modern Oregon forest practices do not adversely affect fish—the protected stream resource. The BLM Plan should utilize the latest findings of the *Cooperative,* to temper the Plan's proposed excessively-wide, homogenous, harmful, proposed riparian buffers.

21. Delineate two new land categories: *'Ownership Perimeter Zones'* and *'Wildland-Urban Interface'*

BLM lands are surrounded by non-federal neighbors. There are also significant private timberland holdings in the alternating the checker-board O&C sections. These neighboring landowners share a road system with the

BLM, which is used for access to manage their lands and to protect them from catastrophic wildfire. The plan revisions *MUST* address the major issue that poorly managed federal lands are a clear & present danger to adjacent property owners—unhealthy BLM forests, catastrophic hazards spreading from BLM, road access limits due to BLM, etc.

There must be a defined category that includes "Wildland-Urban Interface" *AND* "Ownership Perimeter Zones", located near the BLM forest boundary [within 1 mile]. Such "Ownership Perimeter Zones" would address the forest protection values of adjacent non-federal landowners [roads, wildfire, pests, etc], and the impact of lacking BLM management on these neighboring non-federal lands. The BLM's growing problem of BLM wildfire and pest hazards are an imminent danger to neighboring non-federal lands. These BLM Perimeter Zones should be placed into a category that allows application of a full array of modern and intensive forest management tools.

22. Border Lands Myopia; BLM Threats to Neighbors

The DEIS fails to address the impact and effect of how the "border" BLM forests are managed, or not managed—where BLM forest lands are within one-mile of non-federal property. The BLM forests have thousands of miles of such border lands. The proposed plan ignores neighboring non-federal forest/range/farm property owner issues—by impacting neighbors with private property losses originating from federal lands. Federal threats are often unilateral (impacting only the private neighbor), because federal forest legal "sovereign immunity" from damage liability claims by a private landowner, resulting from a federal spread to private property of fire/pest/damage.

The DEIS neglects to address the severe potential and ongoing impacts about how "border" BLM forest management often negatively impact their neighbors.

Border forests impact the neighbors. Federal forest management has direct effects and encumbrances that unilaterally impact their nonfederal neighbors. The DEIS fails to address these impacts during consideration about how the "border" BLM forests are managed, or not managed. Proposed Plan ignores neighboring non-federal forest/range/farm property owner issues—by impacting neighbors with private property losses originating from federal lands, such as: big game damages, spreading fire & pest losses, easement barriers, irrigation/water use impairment, punitive delays for reasonable special use or access needs, road prohibitions, and prohibitions against other customary neighborly activities. DEIS must change its border management Standards within 1-mile of its boundary to direct future national forest border-land management that respects neighboring property values.

There are currently many unmitigated national forest impacts on private neighbors that could amount to private property takings by the federal government. When BLM forest lands severely impact their neighboring private forest and rangelands with unwanted losses from spreading federal fires and pests, private forest owners lose the

value of their timber and land. Lacking economic value from growing and harvesting private trees, these neighboring private landowners may be more likely to clear their forests for land-use conversion to non-forested uses (eliminating forest cover: home development, agriculture, mining, grazing, or fallow land).

The DEIS Plan simply fails to mention or consider the very real concerns of the neighboring non-federal property owners. Through past Forest Plan public involvement these issues have been voiced and written to forest planners—yet, the current proposed DEIS neglects to address the severe potential and ongoing impacts about how "border" BLM forest management effects their neighbors.

Transference of risk to private property (from unhealthy BLM forests). Many federal forest threats are very often one-way in their "transference of risk" unilaterally from federal lands to their nonfederal neighbors. The Oregon private forest landowner is increasingly confronted by the "unhealthy" condition of neighboring national forests, which may be either adjacent to, or nearby the private forest/range/farm land ownership. These "border" BLM forests threaten neighboring non-federal forests via their overcrowded and hazardous conditions that foster the spread of unwanted federal wildfire, pests, disease, invasives, and big game damages—which readily spread to damage private forests.

Legally and in-reality, the spread of national forest hazards are a one-way street, where the federal threats most often unilaterally spread to impact primarily the non-federal forest/ range/ farm. Federal threats are often unilateral (impacting the private neighbor) because of the following: 1) federal forest legal sovereign immunity from damage liability claims by private landowner, resulting from a federal spread to private property of fire/pest/damage; 2) legal precedence of federal government winning fire damage claims against private forest fires (damaged federal forests); 3) federal forests more overcrowded, combustible, diseased, pest-ridden, invasive-spreading, decadent; 4) federal forests less road-accessible to firefighters; 5) federal forests historically greater wildfire acreage; and 6) federal forest barriers to easement and access sharing.

These BLM forest-originated threats affect neighboring private forest landowners indirectly a less-than-obvious manner; yet very costly way. The transference of risk unilaterally from federal lands to their nonfederal neighbors can adversely impact forest sector infrastructure—where private timber/regeneration destroyed by spreading federal forest fires, pests, or big game damages cannot contribute to timber mill production and long-term viability. Also, small forest landowners who lose their timber value to spreading federal fires, pests, or big game damages may choose to not reforest—instead clearing the land, and converting to a non-forest land use (reducing future timber supply to mills). The transference of risk to non-federal forests, and the chronic management reductions in local national forests currently severely impacts these private forest and range landowners; and the landowner's long-term sustainability is truly impaired by unmanaged neighboring national forests.

Plan proposals fail to acknowledge that spreading federal forest fires negatively impact private property neighbors. Oregon's private forestlands uniquely are personally responsible for paying one-half of their own large forest firefighting costs. This means that the greater risk of large forest fires spreading from overcrowded

unhealthy BLM forests, the private property owners statewide collectively are fiscally indebted to pay half of the firefighting expenses annually.

We are concerned that forest management practices in these federal forests would, if this ill-advised plan were adopted, ignore the very real fiscal impacts that those practices are likely to have on private forest and rangeland neighbors. Without more careful thought and planning that includes consideration of such impacts, federal management choices could result in loss of control over resource land management by private landowners. "No management" allocations are especially troublesome, because no effective forest management is likely to occur on those BLM lands that border private forests and rangelands.

Border BLM forests limit neighboring access. Federal forest management has direct effects and access-related encumbrances that unilaterally impact their nonfederal neighbors. The DEIS Plan fails to address the impact during consideration about how the "border" national forests are managed—to facilitate prompt, reasonable, cost-effective, and fair access to neighboring non-federal property owners (easement, rights-of-way, roads & trails, temporary special use access, cable logging tailhold access, irrigation/water use, utility corridor, and so forth. The Plan must change its border management Standards within 1-mile of its boundary to direct future BLM forest border-land management to respect neighbor's property access.

Plan proposals would negatively impact small private property neighbors. We are concerned that forest management practices in these federal forests would, if this ill-advised plan were adopted, ignore significant impacts that those practices are likely to have on its small private forest and rangeland neighbors. Without more careful thought and planning that includes consideration of such impacts, BLM management choices could result in loss of control over resource land management by private landowners.

Experience teaches us that failure to provide family landowners with some measure of control over their lands can lead to huge demographic shifts in land ownership patterns in western Oregon. The unwanted risk of changing land-use to non-forest uses (home-sites or agriculture) is very real, if growing & harvesting timber and forest products becomes uneconomical.

Without drawing neighboring landowners permanently into the planning and implementing processes, the proposed DEIS alternatives can only guess at what additional impacts proposed practices might have on small adjacent landowners. Wildlife corridors, wildfires, pests, roads and other access, blow down, water management -- each is likely to impact neighboring lands more than the national forests themselves.

The lesson here is that the BLM forests do not exist in a vacuum. Whatever practices are implemented within the national forests will generate consequences for neighboring properties and their owners. Those landowners deserve a formal seat at the table.

AOL recommends building into the adopted plan a consulting requirement for working with neighboring landowners with a goal of achieving results from management practices and Management Area allocations that provide predictable and safe benefits across BLM forest boundaries.

We urge planners, before adopting any alternative, to consult with local landowners on every aspect of the proposed Plan that might affect border areas of these BLM Forests—such as Management Area allocations. Without such consultation, no alternative can be considered complete or reasonable. Moreover, consultation must be built into the alternative ultimately selected, because management, road access, and other issues are not static "problems" that can be "solved" at a single point in time. The final adopted plan must include ways for federal managers to consult and work with their neighbors at every step.

Interface of wildland-urban areas (WUI): Similar to boundary forests, neighboring forests having residential development warrant plan management strategies that would respect the non-federal property structural values. In these WUI areas, distances of up to 5 miles may be necessary to conduct active management of BLM forests, which would not subject those non-federal neighbors to undue wildfire hazards. The plan should identify, address and propose solutions for this challenge.

23. Wildlife diversity relies on diverse forest structures / NSO Critical Habitat considered

While the DEIS acknowledged a diversity of forest wildlife species, the Purposes, Needs, and Alternatives are wrongly-driven by the destructive preeminence of a few old-forest ESA prima-donnas. The DEIS Plan should instead provide a balanced variety of forest structures/ages that can accommodate the prosperity of species diversity (such as 33% young; 33% mid-age; 33% old). A sustainable and diverse forest landscape should include a mosaic of a three age/structural conditions, including: open/young forest, dense-closed forest, layered forest, park-like stands, older forest structures, and a few reserves in sensitive habitats.

Somehow, the ESA has been misconstrued, and wildlife species management on federal lands became obsessed with n. spotted owls and marbled murrelets—to the detriment of absolutely all else—including other species, forest health, ecosystems, sustainability, recreation, humans, wildfire and air pollution, and socio-economic priorities. It is about time that federal forests be managed for a mix of forest age structures—including young/open forests and mid-aged forests.

The Alternatives failed to sufficiently address the northern spotted owl Critical Habitat (CH) designated in the NSO Recovery Plan. This indirectly results in extra Defacto n. spotted owl reserves, since there appears to be no logic in the lacking overlap in LSR, CH, and the large forest blocks.

The excessive allocation of “no harvest” reserves for the large tree species alone—mandated by numerous management areas, standards and guidelines—simply leaves insufficient acreage remaining available for sustained timber yield and production. This unacceptable flaw is discussed earlier. The DEIS Plan’s unilateral attention to old-forest wildlife species would be destructive to young- and middle/mixed-age forest species. Furthermore, the dominance of old forest blocks would foster catastrophic fires, pests, dieses and wind damage—that would ultimately harm the very species the old forest reserves were designed to promote. This is a significant flaw in the DEIS, which warrants revision of the Purposes, Needs, and Alternatives.

24. Favor conventional logging systems, with road construction

We recommend the BLM Plan authorize sufficient logging/ transportation designs that would facilitate all, or nearly all, logging by ground-based or cable systems. The Plan should construct roads (temporary or other) to facilitate conventional logging (ground/cable) for long-term management of the BLM lands—in consideration of reciprocal rights-of-way holder access—rather than hastily accepting helicopter yarding. Conventional logging with sufficient road access, built if necessary, would be far more economical and environmentally rational than helicopter yarding (especially low volume/acre).

Furthermore, the Plan language should accommodate a full range of modern harvest technologies; rather than needlessly prescribing one specifically-limiting system or method. Express harvest objectives as outcomes, rather than prescriptive equipment requirements. For example, whole-tree logging, shovel logging, grapple skidding, and mechanized falling should be viable methods, subject to the professional discretion of the decision maker, considering real-time, on-site conditions. The Plan must not limit these sorts of operational decisions before the contract is offered.

The Plan language should accommodate a full range of modern road and logging access technologies; rather than needlessly prescribing a narrow set of specifically-limiting methods. Forest roads are necessary; please fully disclose where and what they are proposed. Harvest cannot be successful without sufficient road development.

The Plan language should accommodate a full range of modern logging slash treatment technologies; rather than needlessly prescribing a narrow set of specifically-limiting methods that would obstruct management project contracts from achieving project objectives. Mechanized felling, whole-tree skidding, cable yarding, shovel logging, grapple piling, and machine piling should be allowable options. Also, machine fireline and site preparation should be allowable. Please make it “purchaser optional” for removal of unmerchantable material from the sale area—as removal of fiber is typically marginally-economical at best, and is week-to-week market-based. Plan must not limit operational decisions before contracting.

25. Timber management recommendations

Prompt post-damage salvage and restoration. All DEIS Alternatives should include authorizing provisions that assure prompt post-damage salvage and restoration operations can be implemented within 12 months of the damaging catastrophic event. Emergency authorization should be defined in the Plan. Post-damage salvage and restoration operations should include: expedited panning, salvage harvest of valued timber, fuels treatment, erosion control, road reconstruction/repair, reforestation, and establishment of free-to-growth healthy forests.

Urgent priority need to reforest this large landscape-scale fire-killed forest. The long-term sustainability of damage-killed forests is dependent upon prompt and successful reforestation. Salvage harvest, slash treatment, and reforestation—for the purpose of reforesting large acreages of dead and dying forest—should be planned for all areas where stands are dead and where imminent mortality is projected by certified silviculturists. The DEIS must clearly state the purpose and authority of the silviculturist and decision maker to define imminent mortality, where reforestation & slash treatment is prescribed, and where salvage harvesting and slash treatment is necessary to precede reforestation actions.

Safe, long-term access must be assured on forest roads. Regeneration salvage harvest and reforestation should be planned for 300 feet on each side of forest roads in BLM fire-damaged stands.

Fire-safe, property boundaries must be assured along fire-damaged BLM stands. Salvage harvest—for the purpose of removing fire-killed trees—should be planned for 300 feet within the BLM side of private property boundaries in BLM fire-damaged stands.

Fire-safe BLM forest in a checkerboard landscape. Salvage harvest all snags—for the purpose of removing fire-killed trees—should be planned for the upper two-thirds of slopes in the in BLM fire-damaged stands of the project area.

Restoration on all acres possible. Post damage salvage/restoration should be available in both 'Timber' and 'Large Block' stands.

Limit number/location of snags left on the landscape. The DEIS should plan to reduce the number of fire-killed trees remaining across the BLM landscape resulting from wildfires. Any snags—fire-killed trees—remaining after project operations should be strategically located in clumps of one-acre in size or less, on lower slope locations, and suitably associated near or with riparian areas or wetlands.

Safety First provisions stated in the DEIS. As required by OR-OSHA Forest Activities Safety Code, safe snags and wildlife trees for which Oregon workers can safely work near are those snags determined safe by the qualified person on-site of the work. Therefore, snag leave tree designation by "purchaser select" is the recommended method of individual snag designation.

26. Riparian reserve recommendations

- Recommend fish stream treed buffer be defined as 50% of Site Potential Tree height, with a suggested 70' to 105' width each side. These are similar, but wider, to the OR Forest Practices Act buffers, which *Watershed Research Cooperative* science finds sufficiently protects fish and water.

- Recommend non-fish stream treed buffer be defined as 30% of Site Potential Tree height, with a suggested 30'-50' width each side. These are similar, but wider, to the OR Forest Practices Act buffers, which *Watershed Research Cooperative* science is finding sufficiently protects fish and water. Stream treed buffer be defined as slope distance.
- Active management of riparian areas should be encouraged to promote habitat diversity, productivity and function for the designated use – fish or domestic or irrigation.
- Small non-fish streams need only minimal buffering—primarily limited machine/log skid activity, wildlife tree location, 2-4 wildlife trees/acre along stream, vegetation retention, hardwood and reforestation incentives, etc.
- Fish streams without salmon, steelhead or bull trout should receive significantly narrower treed buffer definition

Thank you for the opportunity to comment about the proposed BLM Western Oregon Resource Management Plan DEIS. Please consider our enclosed comments.

Sincerely,

/s/ Rex D. Storm

Rex Storm, CF

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August 21, 2015

BLM Oregon -- Draft S for Western Oregon
P.O. Box 2 65
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R : AOL Comment on BLM Western OR Forest Plan—Draft nvironmental mpact Statement D S

Dear Planning Team:

This letter is in response to our re uest for public comment on Draft nvironmental mpact Statement—Bureau of Land Management, Resource Management Plans for Western Oregon D S .

This comment letter is submitted on behalf of Associated Oregon Loggers, nc. AOL , which represents over 1,000 logging and allied forest businesses comprising AOL member companies. These companies pla a major role in management of public private forests throughout Oregon, as contractors and purchasers of forest operations contracts and timber products. These Oregon forest professionals emplo approximatel 10,000 wor ers in sustainable forest management operations.

AOL member companies are e sta eholders in activel conducting professional forest management of federal forests—and adjacent non-federal forests—within Oregon and neighboring states. As our wor transcends both public and private forestlands, we often see how the increasingl unhealth and overcrowded BLM forestlands adversel impact their non-federal neighbors. These member companies own or manage BLM-adjacent lands and we are gravel concerned that the health of neighboring non-federal propert is increasingl degraded b mismanaged and unhealth BLM forestland. As such, AOL represents substantial expertise in BLM forest management. AOL members are directl impacted b the decisions that will be made as a result of the BLM's Plan.

We are troubled that our previous written input to this planning process has been completel disregarded through the D S planning criteria, purpose need, alternatives, the range of alternatives, affected environment, plus the environmental and socio-economic conse uences of each alternative.

Most of AOL's members—and our forest sector peers—rel on an integrated and sustainable future of these BLM forests to suppl mar etable sawlogs and cost-effective forest management operations. The continued existence of a sustainable forest sector infrastructure and the social and economic well-being of our count governments and communities rel upon mar edl -improved future management of the BLM forests. The existing forest plans are simpl failing.

We loo forward to our sincere consideration of our recommendations concerning plan decision-ma ing. As current management of these lands is unacceptable to forestr professionals and local governments ali e, we anticipate that the Final nvironmental mpact Statement F S Record of Decision would direct more effective BLM forest management of current unhealth BLM forest conditions, which increasingl -threaten neighboring properties and impair Oregon's forest economy.

The foolhard D S would stifle experienced professionals in their active management necessar to

improve and maintain favorable forest conditions and related benefits. Broad-scale, extended-term plans such as the D S should focus on clarif ing goals and objectives for forest management. The D S also should avoid overl prescriptive directives that provide little forestr professional discretion to prescribe appropriate remedies for complex local site-specific challenges. The DEIS's overreach in precautionar /restrictive directives and land allocations (e.g., "no-touch" reserves) would not reliabl produce desirable environmental results and such overreach would not effectivel address d namic changing economic and environmental conditions.

The D S is a patent failure to define, anal e, determine, and authori e opportunities and benefits of forest growth, production and management for economicall -valuable commercial forest products. A significant increase in active management of federal forest lands can substantiall improve forest resource and communit health, diversit and sustainabilit . Active management, including outputs of commercial forest products, represents an opportunit rather than a threat to achieving and maintaining forest health and ecological diversit . Forest product production is arguabl the most environmentall sustainable of BLM resources needed to sustain societ . From the basis of both existing federal law and a visionar approach to meeting future human needs, federal forest lands have a e role in providing a significant source of these products. The D S has failed to propose a single Alternative that would sufficientl foster this e forest product role. Management that includes outputs of commercial forest products greater than those proposed b the D S would be highl compatible with the maintenance or enhancement of environmental values.

When wildfire, disease, pests or invasives spread from passivel -managed overcrowded BLM lands to surrounding non-federal propert , serious negative conse uences result that impact non-federal forest landowners and contractors in the region. The 2003 Timbered Roc Fire, the 2013 Douglas Complex Fire, and the 2015 Stouts Fire are three glaring examples of how BLM forests pose costl threats to neighboring private propert , and how unhealthy BLM forests encumber the future sustainability of the region's forest sector. Forest landowners and contractors suffered tens of millions of dollars in business losses surrounding these catastrophic fires—because the fire extreme volatilit , rapid spread, destructive spread onto private forests, harmful destruction, and costl control—were all exacerbated b the ver combustible overcrowded BLM forestlands. This D S and existing BLM forest plans are an abject failure at managing BLM forests to reduce the ris and impact of such BLM fires on the environment, on BLM resources, and on neighboring non-federal lands.

Therefore, AOL is extremel disappointed b 26 significantl flawed elements of our D S—which we have described in this comment letter. An single one of these flaws is sufficient to derail the plan, were it to be implemented as written. We strongl concur with other communit sta eholders that the BLM's D S is out-of-touch with the forest's needs, out-of-touch with its business partners, out-of-touch its local communities, out-of-touch with its forest sector, out-of-touch with count governments, a perverse deviation from FLPMA, and a blatant violation of the 1 37 O C Act.

Accordingl , AOL submits that ou should withdraw the D S, and wor directl with communit and business sta eholders to prepare a much-simplified D S and forest plan that would redress a trul integrated and balanced assessment of the socio-economic and environmental aspects of the BLM forestlands. We urge ou to re-write the purpose, need for action, alternatives, and the environmental and socio-economic conse uences of each alternative. Our comments regarding the D S fatal flaws follow on subse uent pages. We appreciate the opportunit to comment.

AOL re uests that the D S and forest plan be rewritten to reflect the Congressional intent of the 1866 Railroad rant, and the purpose of the 1 16 Chamberlain-Ferris Act and 1 37 O C Act.

AOL's comments are organi ed to include specific topics within the following 26 significantl -flawed elements of the draft plan:

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1. Planning Process Violates the Purpose of the Oregon & California Railroad Grant.

The assumptions that drive the D S and the identified alternatives, fail to properl recogni e that the purpose and need of the D S must be consistent with the purposes underl ing the Settlers Clause in the 1866 Railroad rant and the Chamberlain-Ferris Act of 1 16.

All D S alternatives must be evaluated in the context of their achieving the purposes of the Railroad rant. B disregarding the original purpose of Congress when it adopted these Acts, BLM forest management has resulted in a socio-economic death spiral for the counties, and great environmental damage to ecos stems through lac ing active management, rather than a pathwa to the enriching the communit . t is implausible that Congress meant for an of the rant or O C legislation to be interpreted to operate in a manner that further retarded the Western Oregon counties.

2. The 'Purpose and Need' departs from the O&C Act definition of sustained yield.

While Congress determined that "sustained yield" of timber was to be a mechanism for achieving the original purposes of the Oregon and California Railroad rant, the BLM planning effort is adopting a wrong-headed definition of sustained ield that violates the original Congressional intent. n the D S, the BLM has ignored the purpose that Congress sought to achieve b adopting the sustained ield concept in the 1 37 O C Act. The original intent of the sustained ield concept was to provide a long term production of timber and thereb a significant income stream to achieve the purpose of the Railroad rant Settlers Clause. The BLM has ta en illegall interpreted the phrase "sustained yield," such that results in a total disregard of the context in which Congress adopted the sustained ield concept in the 1 37 O C Act.

t is therefore in violation of the O C Act for the BLM to reserve or otherwise manage O C lands classified as timberlands for an dominant purpose other than timber production.

3. The DEIS limits the public's ability to knowingly review and comment.

The Federal Land Polic and Management Act of 1 76 FLPMA re uires the BLM to allow opportunities for public involvement. Li ewise, under the Council on nvironmental ualit C and national nvironmental polic Act PA regulations, the BLM is to provide the public with an appropriate opportunit to nowingl review and comment on proposed actions.

Since the D S alternatives assist in understanding and evaluating the proposed action, it is clear that for the public to have the abilit to nowingl comment re uires that the BLM must include have a range of alternatives that full explore the options available to achieve the true purpose - namel the achievement of the Congressional intent in adopting the Railroad rant and O C legislation.

The D S failure to include alternatives that address the purposes of the Oregon and California Railroad rant has not onl pre-ordained the decision but has also limited the public's abilit to nowingl comment on the proposed actions in the context of the O C Railroad rant purposes. To timel disclose the impacts, one or more D S alternatives must be included that are consistent to the fullest extent with Congressional intent and the Federal trust obligation to local communities.

4. The Social & Economic Effects Analysis does not properly inform public or decision-maker.

otwithstanding the clear context of the various O C legislation, the D S candidl ac nowledges that under all action alternatives emplo ment "effects to low-income populations in Coos, Curr , Douglas, and Klamath Counties would be disproportionately negative" under either the lowest harvest level of Alternative A or the higher harvest level under Alternative D. Li ewise, in addition to the impact from lower emplo ment, the impact to the local communities resulting from lower earnings and reduction in revenue to counties would further result in disproportionate impacts to low income communities. The low income communities and tribes in these counties would be most vulnerable.

As the communit leaders and tribal leaders repeatedl advised the BLM during outreach, the BLM management practices have resulted in a forest that is not well managed has ver few jobs

generated and, management is litigation prone—all these situations which have created a financial burden on the local communities and tribes.

While the D S economic anal sis purports to address the local economic impacts, it does so b reference to count pa ments, rather than a more appropriate discussion of how these pa ments are utili ed b the counties to provide essential services. To offset the loss of O C revenues, the counties are forced to curtail or terminate these services. With reduction in revenues, Counties have been forced to reduce their wor force and reduce hours ofservice.

Rather than address the social and economic conditions of the Counties, or the O C region, the BLM wrongl assumes that an harvest – no matter how minimal - will satisf the Congressional mandates for the O C lands. The D S action alternatives simpl ignore these mandates and establish a process that destabili es the local communities. The D S wrongl and illegall would revert the region bac to experiencing the ver damages that the 1 37 Act was designed to resolve.

5. The Planning Criteria have Deprived the Public of Ability to Comment on "Reasonable and Prudent Alternatives" to Avoid Jeopardy.

The BLM methodolog is also flawed in that it is improperl limiting the public s abilit to comment b purposefull hard wiring the regulator agenc comments while excluding alternatives that fulfill the 1 37 O C Act and Railroad rant. The BLM has essentiall hard wired regulator agenc comments without affording the public the opportunit to nowingl review and comment on the accurac of the comments or other alternative measures that could prevent jeopard while achieving the purposes of the O C Act.

B wrongl designing alternatives that are driven b regulator agenc guidelines which have elevated secondar purposes over the primar purpose, the BLM fails to set forth and explore a range of alternatives that allow for fulfillment of the Railroad rant. Further, when the regulator agencies drive the alternatives development process the are operating outside the normal chec s and balances afforded the public under the regulatory agencies' principal acts *(e.g.* ndangered Species Act .

B illegall short-circuiting the SA process and imbedding the Service's comments into the alternatives, the public does not have the opportunit to full and nowingl comment, nor is the decision-ma er afforded the information to full understand the options available.

6. The Flawed Purpose and Need Statement Taints Planning Effort.

AOL identified flaws in the planning criteria earl in our comment letter dated March 31, 2014. The Association of Oregon Counties and Douglas Count also identified fundamental flaws in the process earl when the Count representatives met with State Director Pere and Mar Brown in ul , 2013, to express grave reservations about the path the BLM had chosen. Following that meeting, the Counties reiterated their concerns in a letter sent to Mr. Pere in earl August.

The BLM planning effort has not onl failed to coordinate and be consistent with local plans and policies relating to the O C lands, it has chosen to ignore the comments and concerns of the Counties and forest sector sta eholders, such as AOL. The FLPMA is clear that the BLM is not onl to coordinate with the local counties, it is also to be consistent with the plans and policies of the counties. The D S has largel disregarded the local input of Counties and the forest sector

sta eholders. Before the local forest plans and policies of the Counties and the forest sector sta eholders are overridden b the D S, the BLM must first actuall underta e the consistenc review in good faith and, secondl , ma e a finding that there is no possible alternative that will allow consistenc with the local plans and policies.

There is no documentation in the D S that evidences these reviews and anal sis have occurred.

7. Consistency with Local Authorities' Fire Protection Policies.

The D S fails to discuss the consistenc with the Douglas Fire Protection Association, Douglas Count , and/or the Oregon Dept. of Forestr fire protection and management re uirements and practices. The 1 37 O C Act specified that when the BLM formulates regulations for the protection of the revested lands, it is mandated that: "rules and regulations for the protection of the revested lands from fire shall conform with the re uirements and practices of the State of Oregon insofar as the same areconsistent with the interests of the United States."

While the D S contains an informative discussion on the abilit of each of the alternatives to improve the forest fire resilienc , it does not address whether the re uisite consistenc review has occurred. Congress recogni ed that to avoid problems, the fire protection on the O C revested lands must be in conformit with the fire protection programs of the State of Oregon.

The local Douglas Forest Protective Association, has expressed grave concerns with the BLM's D S snag retention fuels management programs road closures and, failure to control brush fields. These deficiencies are not onl creating significant ris to fire fighters, forest wor ers and the public, it is increasing the ris of fire to the neighboring private lands. iven the chec erboard nature of the O C lands, the lac of fire prevention on the O C lands effectivel increases the ris to private lands. This "transfer of risk" from combustible BLM forests to well-managed neighboring non-federal forests is clearl evident-- as illustrated b the increased spread of the 2013 Douglas Fire Complex within overcrowded BLM forests, and the severe fire ris posed b the current BLM Late Successional Reserves.

While the D S addressed limited fire ris in the context of creating fire resilient forests, it does not address the man concerns raised b DFPA.

The DFPA correctl noted the ris of fire is shared in the O C chec erboard, and that it is "imperative that all landowners ta e significant and timel actions to reduce the ris of large high severit fires in the future." The D S harmfull fails to address how the action alternatives would reduce the ris , not onl to the BLM lands, but also to the neighboring non-federal forestlands in the chec erboard.

State of Oregon forest fire protection agencies have concerns about the D S fire anal sis flaws. These agency's concerns not onl illustrate the concerns that are not addressed in the D S, but also to illustrate that the re uisite consistenc review has not been underta en and documented in this D S. The consistenc review needs to be completed and disclosed for public review and comment prior to the issuance of a F S and Record of Decision.

The D S proposal wrongl designates large areas as LSR et the D S fails to include or develop an alternative that effectivel reduces the stand level fire ha ard within Late Successional Reserves.

The D S excludes the range of alternatives that would provide the opportunit to full understand the ris s of the proposed alternatives.

While the BLM asserts there would be no difference between alternatives—relative to wildfire response—it is ignoring that ver real differences occur, given the variations in the following: riparian area si e and juxtaposition Late Successional Reserves post fire management of Late Successional Reserves snag structure retention large bloc forest retention and, variations in road s stems necessar to manage for, prevent, and fight wildfires. The BLM D S needs to address more than just fire resilience, but also wildfire response—both in the context of active fire as well as post-fire restoration, harvest and reforestation activities.

8. Maximize O&C Act timber harvest volume annually

We urge that the BLM Plan and D S to be rewritten to strictl responsive to the O C Act of 1 37. Please eep in mind that 2,151,200 acres of the land addressed b this revision has been directed b Congress to be managed under the O C Act. The Act states in part that the land shall be managed, *"for permanent forest production, and the timber thereon shall be sold, cut and removed in conformity with the principal of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries and providing recreational facilities".* The O C Act clearl directs these lands are to be managed for timber production for the benefit of local communities. nder the 1 4 orthwest Forest Plan WFP , the BLM has failed to accomplish the O C Act timber suppl mandate for 20 ears.

The Planning Criteria and range of Alternatives considered is too narrow—in that the proposed Alternatives fail to include an Alternative s that would optimi e/maximi e O C Act timber sale volume. There is not presentl considered an Alternative that would sufficientl manage a majorit of the O C acreage primaril for sustainable timber growth and ield. The BLM Plan must include a wider range of Alternatives, including at least two Alternatives, which would address a *maximum* predictable sustainable timber offer volume, on an annual basis to benefit West Oregon communities and industr . Furthermore, such "maximum harvest volume" Alternatives would also provide the greatest reduction in fire ha ards and other forest health problem reduction.

The revision challenge is how to achieve the O C timber mandate, while accommodating wildlife species habitat listed under the SA. The status review for the n. spotted owl identified that there are numerous ris s to the survival of the species—none of which was timber harvest. n fact, greater ris s such as catastrophic wildfire can be mitigated with a proactive timber harvest program that reduces ha ardous fuel loads, and restores more forest acreage to a health growing condition. Listed salmon species and the marbled murrelet should be protected using a combination of activel -managed forest landscapes and a few bloc reserves strategicall located. Modern forest practices in use toda largel provide, of foster future, habitat attributes necessar to recover and sustain these species. xtraordinar large bloc reserves envisioned b the WFP and the proposed BLM Plan are excessive and in the long-term would lead toward increased forest catastrophic losses due to wildfire, pests, disease and storms.

There is urgent need to replace the current obstructive ma e of conflicting standards, guidelines, District Resource Management Plans, WFP, Surve Manage Standards, plan amendments, State office guides, and other policies that confound forestr projects on the Western Oregon BLM forests. t is our opinion that current management of BLM forests is *not* sustainable from either an economic, social or an environmental basis.

9. Purpose and Need requires major revision

AOL disagrees with the stated Purposes and eeds for this Plan decision, because the are wrongl biased to favor old tree ecological outcomes, at the expense of economic and social outcomes. The proposed Purposes are incomplete and harmfull discriminate against important economic and social outcomes.

Such old tree bias places these old shade-tolerant forest characteristics in preeminence—to the wrongful exclusion of the necessar ecos stem diversit of ounger-open-smaller forests and trees, including shade intolerant vegetation. Additionall , the preeminence of old tree characteristics also discriminates against productive, health tree characteristics—to the wrongful exclusion of the necessar economic and societal benefits of forests managed to optimi e timber, revenue, emplo ment, and recreation outcomes.

We urge ou to consider that the following four important additional "Purposes" be added to offer greater balance among the additional action Alternatives that must be added to provide critical economic and social values—responsive to the O C Act, Railroad rant, FLMPA, forest users, forest sector, timber industr , Count governments, and communities:

a. Provide optimum non-declining revenue to reliabl maintain vibrant forest industr , recreation and count government sectors
b. Provide prompt post-damage reforestation, harvest and restoration of forest condition
c. Maintain improve road access investments for recreation use forest management
d. Respect neighbor forest values of non-federal landowners during BLM management
e. Provide sufficient forest protection provisions, agreeable to local forest fire protection agencies
f. Accomplish O C Act-directed optimum sustainable timber harvest volume, agreeable to Counties

10. Sustainable timber supply -- first priority

The Purposes should be placed in a different order, ran ing first, those maintaining economies, revenues and social outcomes on a reliable/predictable basis. Purpose accomplishment should necessitate active land management. Over the last 20 ears, management activities dropped-off substantiall , putting forest health in decline and fire/pest/disease/storm losses on the increase. Also, the economic stabilit of our communities and the timber suppl has been inade uate to support existing forest sector infrastructure. Additionall , with a trend toward larger more severe wildfires, the amenities that enhance communities as a safe place to live and wor are more at a threat of loss. The resultant burned/d ing landscapes—the li el result of the current proposed Alternatives— would neither enhance our communities, nor foster industr , nor spur recreation, nor beatif aesthetics, nor improve forest habitat or water.

11. Forest sector expansion possible

The forest products sector has the abilit to expand its capacit if the timber becomes available. t is foolhard and presumptuous for the BLM to presume that the forest sector—or Oregon counties—could not absorb additional timber volume and revenue envisioned b a new BLM forest Plan. The infrastructure mills and forest contractors is operating at a level below capacit , due solel to the lac of suppl . Oregon is importing logs. Over recent ears, logs commonl come into Oregon from Ari ona, Alas a, California, Washington, daho, and Canada. ven with this costl imported log volume transported at great distance and cost into Oregon business, there is more existing Oregon primar forest product mill capacit than is currentl being utilized. Mills operating "under capacity", on a single-shift, are doing so in a ver marginal economic manner—and are less comparative than those running two or three shifts.

12. Respond to unhealthy forest conditions and address how to deal with & catastrophic losses

Several major topics that are not addressed, which should be modeled. That is the impacts and projections of natural forest destructive agents-damages-threats. These catastrophic "threats" to forest heath and sustainabilit include: 1/ wildfire 2/overcrowded decadence 3/insects, 4/diseases, and 5/weather events storms. These destructive threats should be addressed in a rewritten D S. These threats are far more destructive in the absence of active forest management than when harvesting happens. Also, the strategies and alternatives should address how these destructive agents will be dealt with when the do occur. Will land be promptl salvaged and reforested in the wa e of a wildfire, or/and epidemic of insects or diseases, or a major timber blowdown or ice storm event What will be the impacts of not salvaging after one of these events Will fuel levels and the ris of additional catastrophes increase if the areas are not salvaged Will overcrowded and decadent forests be treated to improve their resilienc from other forest threats

Provisions in the D S need to provide for *promptly* treating damaged forests after catastrophic events, which have been part of the historical development of western Oregon forests. n the past 100 ears, we have witnessed floods, large-scale windstorms and large-scale fires—all of which prior to the early 1990's resulted in timel restoration activities. More recentl however legal gridloc and dela under PA challenges have prevented timel responses to catastrophic events. Something other than the standard PA process must be available and planned for in the new Plans to address how to restore the forest after a catastrophic event that damages a thousand of acres of forested lands.

13. Direct rapid establishment of reforestation, "free-to-grow" after stand damage or harvest

The current reforestation bac log of oung, poorl stoc ed BLM stands is ab smal—and must be corrected to accomplish forest sustainabilit . Such a bac log is illegal for non-federal forest landowners in Oregon. Wh do federal forests disregard Oregon reforestation law Far too man acres of BLM forest remain poorl regenerated after stand disturbances occurring over the past 1-2 decades. Re uire prompt reforestation, oung stand care, and establishment after an disturbance or management action reduces stoc ing. Appl all available modern site preparation and regeneration practices, including prudent application of herbicides. BLM reforestation standards *must* compl with Oregon Forest Practices Act "Free-to-Grow" re uirements.

14. Forest sector and BLM timber economic contributions vital to Oregon economy

The DEIS does a poor job of addressing and comparing alternative socio-economic consequences. Offering a predictable and sustainable harvest volume is necessar to fulfill the communit obligation of the O C Act. Maintaining present wood products processing and forestr infrastructure must be a goal. Presentl , in the Coos Ba /Roseburg/ ugene wor ing circle there is over 1 billion bf of installed mill capacit and 40% of that capacity is designed to process larger logs over 26" diam. . n addition, these mills are designed to process all of the commercial tree species found on the O C lands. This milling diversit accommodates timber harvests representative of the O C forests. f these BLM forests are to be activel managed to accomplish desired conditions, then these mills must be sustained b the wide range of all species and si e harvested.

Forest Sector economic contributions. Oregon Forest Resources nstitute prepared a report, *'The 2012 Forest Report: An Economic Assessment of Oregon's Forest & Wood Products Manufacturing Sector',* which is an excellent compilation of information and data about the forest sector's contribution to Oregon's economy. We encourage BLM planners to use it as a source for evaluating the economic tradeoffs of various alternatives for management. This is a valuable source of information for the BLM

planning team. Over the last two decades, O&C lands have sadly failed to contribute to Oregon's economy in a manner consistent to its 2.5 million acres of productive lands. The Plan must assure improved economic outputs from BLM forests.

It's not about resiliency; it's about rural productivity, prosperity and self-reliance. Determining so-called "community resiliency" is a fruitless and misleading assessment of alternative conse uences of BLM forest management on Oregon's economy. Just because a community such as Salem or Eugene is labeled as "resilient" to perturbations in the forest product output, does not mean that a change of 10 million or a 100 million board feet of timber harvest would not affect their respective economies. This "community resiliency" metric is nothing more than a distraction that mischaracterizes the economic benefit or impact of timber harvest variations. Forest products derived emplo ment, or similar metric, would be more useful.

Comprehensive socio-economic assessment needed. AOL re uests that an final planning document provide a complete assessment of the social and economic impacts of all alternatives, including an reasonabl foreseeable impacts to the forest sector infrastructure and local forest communities and count governments.

Sustaining and protecting the forest sector infrastructure. The western Oregon region has experienced a dramatic decline in forest sector infrastructure in the past 24 ears. Much of this elimination of sector capacit is attributable to the decline in BLM forest timber sale sawlog volume. The forest sector industr and BLM forests are mutuall reliant upon increased future federal forest management—the industr needs the federal timber suppl and forestr production wor , while the agenc needs the operational management of its forests.

Future Sector Growth: There is tremendous opportunit for strengthening the forest sector infrastructure in the western Oregon wor ing circle. With increased BLM timber sale volume, the forest sector infrastructure could grow to compete on a sustained, long-term basis in orth American mar ets. Without a predictable increased sawlog timber suppl in the future from BLM forests, there is existing infrastructure capacit vulnerable to further permanent loss. This outcome would be a traged for the future management of the working circle's BLM forests, harmful for private forests, and thoroughl devastating for the uni ue rural livelihood of local communities.

Community and societal prosperity declining: Communities and rural residents in the western Oregon region are experiencing declining middle-income population, which has resulted from declining forest sector emplo ment under falling federal forest management, and less timber harvest and federal forest access. Not only are direct jobs being lost, so is secondary and induced employment that's derived from primar forest product management and harvest.

Key social considerations of managed forests not addressed. The plan fails to ade uatel address man of the e social considerations associated with forest management such as what is the emplo ment situation, what is the school situation, and then, how do the decisions about forest management affect these conditions. What are the other true social conditions of communities, including mental health, drug and alcohol addiction, or domestic violence

Missing Socio-economic metrics. A couple of issues which are paramount to social well-being and which were not addressed in the Proposed Plan D S are: a impacts to school enrollment, which ultimatel affects future wor force availabilit , school funding, and abilit to offer services b labor force si e trends and c emplo ment participation numbers relative to unemplo ment, which is reflected in the related social

conse uences of unemplo ment such as domestic violence, drug and alcohol addiction, etc. These issues were not addressed ade uatel in the D S.

15. Effects of 'No Action' Alternative are not fully-addressed.

The D S fails to e uitabl describe the conse uences of the "No Action" Alternative. The document onl articulates what would not happen. t would be more accurate to clearl identif the realistic expected effects of "no action," by stating comparable and commensurate effects into the future—on similar terms as the descriptions of effects stated about action alternatives. These expected "no action" effects might be simply stated for example: "No Action Alt." would increase wildfire si e intensit , add smo e pollution, impact timber growth, decrease future economic contributions from timber, reduce road maintenance and habitat restoration, harm access and recreation uses, and add long-term fish wildlife impacts to the landscape."

16. Damage risk in overcrowded forests / air quality effects of wildfire weakly addressed

The D S fails to identif , anal e, or displa for each alternative, the environmental and economic conse uences of smo e pollution for wildfires and prescribed burning. speciall glaring is the omission of smo e pollution conse uences of predictable future increased BLM forest wildfires—due to the large acreage of large bloc old forests, LSR reserves, and massive riparian buffers. A recent stud b the Oregon ealth Authorit concluded that wildfire human health impacts from smo e pollution were unacceptabl severe from the 2012 Pole Cree Fire, on the Deschutes ational Forest. Oregon D dail collects air ualit data around the state and such data has shown that wildfire smo e impacts are monumental. t is aberrant that the D S fails to assess wildfire smoke pollution to Oregon's air quality.

The D S fails to ade uatel address the predicable increase in wildfire, pests, disease and storm damages due to overcrowded decadent forest outcomes from BLM plan mandated large bloc old forests, LSR reserves, and massive riparian buffers. Please refer to the anuar /Feb 2006 ournal of Forestr article titled, '*Investment in Fuel Removals to Avoid Forest Fires Result in Substantial Benefits'*, C.L. Mason et.al. The basic findings of this study are, "A cost/benefit analysis broadened to include market and non-mar et considerations indicates that the negative impacts of crown fires are underestimated, and that the benefits of government investments in fuel reductions are substantial." Please use this document as a reference for the Fire and Fuels section as well as Air ualit .

17. Soils disturbance edicts overreaching

The presumed "detrimental disturbance" levels are over-reaching and misrepresent modern forest practices—thereb overstating the amount of damage. Literature citations are outdated, studies used outdated forest practices, and the Plan misinterprets the stud conclusions cited. Road effects were included in studies, et misrepresented b the Plan narratives as excluding rod effects. This abuse of science data is outlandish. Stated effects to be used as an anal tical tool ground based–35 cable–12 helicopter-6 are inaccurate. This needs to be modified. ot all ground-based operations create these presumed disturbances the same applies to other methods. Therefore, to ma e blan et assumptions using outdated information about "disturbance," when it can be and often is avoided is misleading and wrong.

Furthermore, the determination b the Plan soils effects that all forest roads create a 40 foot wide corridor of acreage "unavailable for plant growth" is also outlandish and nonsensical. now of nowhere in the S that a forest road is rocked and maintained for a 40' wide running surface, and where no plants can grow,

and where no tree crowns can encroach into this 40-foot one. Such incorrect blan et assumptions about road "disturbance," is misleading, overstated, and wrong.

18. Road access investment must be maintained & improved

A large, well-constructed, permanent road s stem has been developed to access the O C and adjacent privatel held timberlands. Focused management of the lands having this capital investment should utili e, maintain, and protect existing road facilities. n man cases this road s stem has fallen into disrepair because of the lac of an active BLM timber sale program. Because of brush encroachment, access for fire suppression to both O C and the adjacent private lands places these lands at ris for a catastrophic fire. es, these roads can be opened with the proper e uipment, but when a fire starts to make it's run it is too late to bring in that e uipment and start brushing roads. The new plans need to specificall bring this road s stem bac up to the standards to which it was originall built.

19. Regeneration harvest is an essential tool

The regeneration method and even-aged silvicultural applications must necessaril be authori ed b the Plan to be commonl -used tools. Without a full suite of time-proven silvicultural tools—such as regeneration method and even-aged s stems—the Plan's economic and social Purposes cannot be accomplished.

20. Active forest management is beneficial for long-term water quality

The public has as ed that clean water is held in high regard. The new plan needs to identif , not onl how active forest management can be conducted to maintain water ualit , but also how mista es of past management have been mitigated and corrected under modern forest practices. The Plan can develop the basis to sustain water and riparian values without the exorbitant confounding wide riparian buffers dictated needlessl b the WFP a uatic strateg .

Wide WFP riparian buffers are unsubstantiated b contemporar science. ow emerging headwaters forest stream research conducted in three Oregon westside watersheds, b the Oregon State niversit -led '*Watershed Research Cooperative,'* is finding that modern Oregon forest practices do not adversel affect fish—the protected stream resource. The BLM Plan should utili e the latest findings of the *Cooperative,* to temper the Plan's proposed excessively-wide, homogenous, harmful, proposed riparian buffers.

21. Delineate two new land categories: *'Ownership Perimeter Zones'* and *'Wildland-Urban Interface'*

BLM lands are surrounded b non-federal neighbors. There are also significant private timberland holdings in the alternating the chec er-board O C sections. These neighboring landowners share a road s stem with the BLM, which is used for access to manage their lands and to protect them from catastrophic wildfire. The plan revisions *MUST* address the major issue that poorl managed federal lands are a clear present danger to adjacent propert owners—unhealth BLM forests, catastrophic ha ards spreading from BLM, road access limits due to BLM, etc.

There must be a defined category that includes "Wildland- rban nterface" *AND* "Ownership Perimeter ones", located near the BLM forest boundar within 1 mile]. Such "Ownership Perimeter ones" would address the forest protection values of adjacent non-federal landowners roads, wildfire, pests, etc , and the impact of lac ing BLM management on these neighboring non-federal lands. The BLM's growing problem of BLM wildfire and pest ha ards are an imminent danger to neighboring non-federal lands.

These BLM Perimeter ones should be placed into a categor that allows application of a full arra of modern and intensive forest management tools.

22. Border Lands Myopia; BLM Threats to Neighbors

The D S fails to address the impact and effect of how the "border" BLM forests are managed, or not managed—where BLM forest lands are within one-mile of non-federal propert . The BLM forests have thousands of miles of such border lands. The proposed plan ignores neighboring non-federal forest/range/farm propert owner issues—b impacting neighbors with private propert losses originating from federal lands. Federal threats are often unilateral impacting onl the private neighbor , because federal forest legal "sovereign immunity" from damage liability claims by a private landowner, resulting from a federal spread to private propert of fire/pest/damage.

The D S neglects to address the severe potential and ongoing impacts about how "border" BLM forest management often negativel impact their neighbors.

Border forests impact the neighbors. Federal forest management has direct effects and encumbrances that unilaterall impact their nonfederal neighbors. The D S fails to address these impacts during consideration about how the "border" BLM forests are managed, or not managed. Proposed Plan ignores neighboring non-federal forest/range/farm propert owner issues—b impacting neighbors with private propert losses originating from federal lands, such as: big game damages, spreading fire pest losses, easement barriers, irrigation/water use impairment, punitive dela s for reasonable special use or access needs, road prohibitions, and prohibitions against other customar neighborl activities. D S must change its border management Standards within 1-mile of its boundar to direct future national forest border-land management that respects neighboring propert values.

There are currentl man unmitigated national forest impacts on private neighbors that could amount to private propert ta ings b the federal government. When BLM forest lands severel impact their neighboring private forest and rangelands with unwanted losses from spreading federal fires and pests, private forest owners lose the value of their timber and land. Lac ing economic value from growing and harvesting private trees, these neighboring private landowners ma be more li el to clear their forests for land-use conversion to non-forested uses eliminating forest cover: home development, agriculture, mining, gra ing, or fallow land .

The D S Plan simpl fails to mention or consider the ver real concerns of the neighboring non-federal propert owners. Through past Forest Plan public involvement these issues have been voiced and written to forest planners— et, the current proposed D S neglects to address the severe potential and ongoing impacts about how "border" BLM forest management effects their neighbors.

Transference of risk to private property (from unhealthy BLM forests). Man federal forest threats are ver often one-way in their "transference of risk" unilaterally from federal lands to their nonfederal neighbors. The Oregon private forest landowner is increasingly confronted by the "unhealthy" condition of neighboring national forests, which ma be either adjacent to, or nearb the private forest/range/farm land ownership. These "border" BLM forests threaten neighboring non-federal forests via their overcrowded and ha ardous conditions that foster the spread of unwanted federal wildfire, pests, disease, invasives, and big game damages—which readil spread to damage private forests.

Legall and in-realit , the spread of national forest ha ards are a one-wa street, where the federal threats most often unilaterall spread to impact primaril the non-federal forest/ range/ farm. Federal threats are

often unilateral impacting the private neighbor because of the following: 1 federal forest legal sovereign immunit from damage liabilit claims b private landowner, resulting from a federal spread to private propert of fire/pest/damage 2 legal precedence of federal government winning fire damage claims against private forest fires damaged federal forests 3 federal forests more overcrowded, combustible, diseased, pest-ridden, invasive-spreading, decadent 4 federal forests less road-accessible to firefighters 5 federal forests historicall greater wildfire acreage and 6 federal forest barriers to easement and access sharing.

These BLM forest-originated threats affect neighboring private forest landowners indirectl a less-than-obvious manner et ver costl wa . The transference of ris unilaterall from federal lands to their nonfederal neighbors can adversel impact forest sector infrastructure—where private timber/regeneration destro ed b spreading federal forest fires, pests, or big game damages cannot contribute to timber mill production and long-term viabilit . Also, small forest landowners who lose their timber value to spreading federal fires, pests, or big game damages ma choose to not reforest—instead clearing the land, and converting to a non-forest land use reducing future timber suppl to mills . The transference of ris to non-federal forests, and the chronic management reductions in local national forests currentl severel impacts these private forest and range landowners; and the landowner's long-term sustainabilit is trul impaired b unmanaged neighboring national forests.

Plan proposals fail to acknowledge that spreading federal forest fires negatively impact private property neighbors. Oregon's private forestlands uniquely are personally responsible for paying one-half of their own large forest firefighting costs. This means that the greater ris of large forest fires spreading from overcrowded unhealth BLM forests, the private propert owners statewide collectivel are fiscall indebted to pa half of the firefighting expenses annuall .

We are concerned that forest management practices in these federal forests would, if this ill-advised plan were adopted, ignore the ver real fiscal impacts that those practices are li el to have on private forest and rangeland neighbors. Without more careful thought and planning that includes consideration of such impacts, federal management choices could result in loss of control over resource land management b private landowners. "No management" allocations are especiall troublesome, because no effective forest management is li el to occur on those BLM lands that border private forests and rangelands.

Border BLM forests limit neighboring access. Federal forest management has direct effects and access-related encumbrances that unilaterall impact their nonfederal neighbors. The D S Plan fails to address the impact during consideration about how the "border" national forests are managed—to facilitate prompt, reasonable, cost-effective, and fair access to neighboring non-federal propert owners easement, rights-of-wa , roads trails, temporar special use access, cable logging tailhold access, irrigation/water use, utilit corridor, and so forth. The Plan must change its border management Standards within 1-mile of its boundar to direct future BLM forest border-land management to respect neighbor's property access.

Plan proposals would negatively impact small private property neighbors. We are concerned that forest management practices in these federal forests would, if this ill-advised plan were adopted, ignore significant impacts that those practices are li el to have on its small private forest and rangeland neighbors. Without more careful thought and planning that includes consideration of such impacts, BLM management choices could result in loss of control over resource land management b private landowners.

xperience teaches us that failure to provide famil landowners with some measure of control over their lands can lead to huge demographic shifts in land ownership patterns in western Oregon. The unwanted

ris of changing land-use to non-forest uses home-sites or agriculture is ver real, if growing harvesting timber and forest products becomes uneconomical.

Without drawing neighboring landowners permanentl into the planning and implementing processes, the proposed D S alternatives can onl guess at what additional impacts proposed practices might have on small adjacent landowners. Wildlife corridors, wildfires, pests, roads and other access, blow down, water management -- each is li el to impact neighboring lands more than the national forests themselves.

The lesson here is that the BLM forests do not exist in a vacuum. Whatever practices are implemented within the national forests will generate conse uences for neighboring properties and their owners. Those landowners deserve a formal seat at the table.

AOL recommends building into the adopted plan a consulting re uirement for wor ing with neighboring landowners with a goal of achieving results from management practices and Management Area allocations that provide predictable and safe benefits across BLM forest boundaries.

We urge planners, before adopting an alternative, to consult with local landowners on ever aspect of the proposed Plan that might affect border areas of these BLM Forests—such as Management Area allocations. Without such consultation, no alternative can be considered complete or reasonable. Moreover, consultation must be built into the alternative ultimatel selected, because management, road access, and other issues are not static "problems" that can be "solved" at a single point in time. The final adopted plan must include wa s for federal managers to consult and wor with their neighbors at ever step.

Interface of wildland-urban areas (WUI): Similar to boundar forests, neighboring forests having residential development warrant plan management strategies that would respect the non-federal propert structural values. n these W areas, distances of up to 5 miles ma be necessar to conduct active management of BLM forests, which would not subject those non-federal neighbors to undue wildfire ha ards. The plan should identif , address and propose solutions for this challenge.

23. Wildlife diversity relies on diverse forest structures / NSO Critical Habitat considered

While the D S ac nowledged a diversit of forest wildlife species, the Purposes, eeds, and Alternatives are wrongl -driven b the destructive preeminence of a few old-forest SA prima-donnas. The D S Plan should instead provide a balanced variet of forest structures/ages that can accommodate the prosperit of species diversit such as 33 oung 33 mid-age 33 old . A sustainable and diverse forest landscape should include a mosaic of a three age/structural conditions, including: open/ oung forest, dense-closed forest, la ered forest, par -li e stands, older forest structures, and a few reserves in sensitive habitats.

Somehow, the SA has been misconstrued, and wildlife species management on federal lands became obsessed with n. spotted owls and marbled murrelets—to the detriment of absolutel all else—including other species, forest health, ecos stems, sustainabilit , recreation, humans, wildfire and air pollution, and socio-economic priorities. t is about time that federal forests be managed for a mix of forest age structures—including oung/open forests and mid-aged forests.

The Alternatives failed to sufficientl address the northern spotted owl Critical abitat C designated in the SO Recover Plan. This indirectl results in extra Defacto n. spotted owl reserves, since there appears to be no logic in the lac ing overlap in LSR, C , and the large forest bloc s.

The excessive allocation of "no harvest" reserves for the large tree species alone—mandated b numerous management areas, standards and guidelines—simpl leaves insufficient acreage remaining available for sustained timber ield and production. This unacceptable flaw is discussed earlier. The D S Plan's unilateral attention to old-forest wildlife species would be destructive to oung- and middle/mixed-age forest species. Furthermore, the dominance of old forest bloc s would foster catastrophic fires, pests, dieses and wind damage—that would ultimatel harm the ver species the old forest reserves were designed to promote. This is a significant flaw in the D S, which warrants revision of the Purposes, eeds, and Alternatives.

24. Favor conventional logging systems, with road construction

We recommend the BLM Plan authori e sufficient logging/ transportation designs that would facilitate all, or nearl all, logging b ground-based or cable s stems. The Plan should construct roads temporar or other to facilitate conventional logging ground/cable for long-term management of the BLM lands—in consideration of reciprocal rights-of-wa holder access—rather than hastil accepting helicopter arding. Conventional logging with sufficient road access, built if necessar , would be far more economical and environmentall rational than helicopter arding especiall low volume/acre .

Furthermore, the Plan language should accommodate a full range of modern harvest technologies rather than needlessl prescribing one specificall -limiting s stem or method. xpress harvest objectives as outcomes, rather than prescriptive e uipment re uirements. For example, whole-tree logging, shovel logging, grapple s idding, and mechani ed falling should be viable methods, subject to the professional discretion of the decision ma er, considering real-time, on-site conditions. The Plan must not limit these sorts of operational decisions before the contract is offered.

The Plan language should accommodate a full range of modern road and logging access technologies rather than needlessl prescribing a narrow set of specificall -limiting methods. Forest roads are necessar please full disclose where and what the are proposed. arvest cannot be successful without sufficient road development.

The Plan language should accommodate a full range of modern logging slash treatment technologies rather than needlessl prescribing a narrow set of specificall -limiting methods that would obstruct management project contracts from achieving project objectives. Mechani ed felling, whole-tree s idding, cable arding, shovel logging, grapple piling, and machine piling should be allowable options. Also, machine fireline and site preparation should be allowable. Please ma e it "purchaser optional" for removal of unmerchantable material from the sale area—as removal of fiber is t picall marginall -economical at best, and is wee -to-wee mar et-based. Plan must not limit operational decisions before contracting.

25. Timber management recommendations

Prompt post-damage salvage and restoration. All D S Alternatives should include authori ing provisions that assure prompt post-damage salvage and restoration operations can be implemented within 12 months of the damaging catastrophic event. mergenc authori ation should be defined in the Plan. Post-damage salvage and restoration operations should include: expedited panning, salvage harvest of valued timber, fuels treatment, erosion control, road reconstruction/repair, reforestation, and establishment of free-to-growth health forests.

Urgent priority need to reforest this large landscape-scale fire-killed forest. The long-term sustainabilit of damage- illed forests is dependent upon prompt and successful reforestation. Salvage harvest, slash treatment, and reforestation—for the purpose of reforesting large acreages of dead and d ing

forest—should be planned for all areas where stands are dead and where imminent mortalit is projected b certified silviculturists. The D S must clearl state the purpose and authorit of the silviculturist and decision ma er to define imminent mortalit , where reforestation slash treatment is prescribed, and where salvage harvesting and slash treatment is necessar to precede reforestation actions.

Safe, long-term access must be assured on forest roads. Regeneration salvage harvest and reforestation should be planned for 300 feet on each side of forest roads in BLM fire-damaged stands.

Fire-safe, property boundaries must be assured along fire-damaged BLM stands. Salvage harvest—for the purpose of removing fire- illed trees—should be planned for 300 feet within the BLM side of private propert boundaries in BLM fire-damaged stands.

Fire-safe BLM forest in a checkerboard landscape. Salvage harvest all snags—for the purpose of removing fire- illed trees—should be planned for the upper two-thirds of slopes in the in BLM fire-damaged stands of the project area.

Restoration on all acres possible. Post damage salvage/restoration should be available in both 'Timber' and 'Large Block' stands.

Limit number/location of snags left on the landscape. The D S should plan to reduce the number of fire- illed trees remaining across the BLM landscape resulting from wildfires. An snags—fire- illed trees—remaining after project operations should be strategicall located in clumps of one-acre in si e or less, on lower slope locations, and suitabl associated near or with riparian areas or wetlands.

Safety First provisions stated in the DEIS. As re uired b OR-OS A Forest Activities Safet Code, safe snags and wildlife trees for which Oregon wor ers can safel wor near are those snags determined safe b the ualified person on-site of the wor . Therefore, snag leave tree designation b "purchaser select" is the recommended method of individual snag designation.

<u>26. Riparian reserve recommendations</u>

- Recommend fish stream treed buffer be defined as 50 of Site Potential Tree height, with a suggested 70' to 105' width each side. These are similar, but wider, to the OR Forest Practices Act buffers, which *Watershed Research Cooperative* science finds sufficientl protects fish and water.
- Recommend non-fish stream treed buffer be defined as 30 of Site Potential Tree height, with a suggested 30'-50' width each side. These are similar, but wider, to the OR Forest Practices Act buffers, which *Watershed Research Cooperative* science is finding sufficientl protects fish and water. Stream treed buffer be defined as slope distance.
- Active management of riparian areas should be encouraged to promote habitat diversit , productivit and function for the designated use – fish or domestic or irrigation.
- Small non-fish streams need onl minimal buffering—primaril limited machine/log s id activit , wildlife tree location, 2-4 wildlife trees/acre along stream, vegetation retention, hardwood and reforestation incentives, etc.
- Fish streams without salmon, steelhead or bull trout should receive significantl narrower treed buffer definition

Than ou for the opportunit to comment about the proposed BLM Western Oregon Resource Management Plan D S. Please consider our enclosed comments.

Sincerel ,
/s/ Rex D. Storm
Rex Storm, CF
Forest Polic Manager, Associated Oregon Loggers, nc.

From: fpaulete@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Saturday, August 22, 2015 11:46 AM
To: RMP-Comments@heg-inc.com
Subject: Fwd: Native Plant Society of Oregon, Comment on Draft Resource Management Plan/Environmental Impact Statement for Western Oregon, announced on April 24, 2015 by BLM

---------- Forwarded message ----------
From: **Billy Don Robinson** <bdmeme@gmail.com>
Date: Fri, Aug 21, 2015 at 4:21 PM
Subject: Native Plant Society of Oregon, Comment on Draft Resource Management Plan/Environmental Impact Statement for Western Oregon, announced on April 24, 2015 by BLM
To: blm_or_rmpwo_comments@blm.gov
Cc: "Sen. Michael Dembrow" <sen.michaeldembrow@state.or.us>, rep.lewfrederick@state.or.us, "Rep. Alissa Keny-Guyer" <rep.alissakenyguyer@state.or.us>, Stu Garrett <garrett@bendcable.com>, Jason Clinch <jason.clinch@gmail.com>, Judi Sanders <judi.sanders@gmail.com>, Kevin Weitemier <kweitemier@gmail.com>, Desiree Johnson <calypsobulbosa@gmail.com>, Sara Wu <wusara96@yahoo.com>

Bureau of Land Management
P.O. Box 2965
Portland, Oregon 97208

Electronic mail (email):
blm_or_rmpwo_comments@blm.gov

To Whom it may concern,

I am submitting this comment on the behalf of the Native Plant Society of Oregon (NPSO) regarding the Draft Resource Management Plan/Environmental Impact Statement for Western Oregon, announced on April 24, 2015 by BLM. I am Billy Don Robinson, Legislative Committee Chair, and Immediate Past NPSO State Vice-president

NPSO is a statewide organization of about 900 members founded in 1964. As our mission statement indicates, we are dedicated to the study and conservation of Oregon's native plant species, especially the endemics. NPSO remains vitally interested in the conservation of special status plant species and native plant communities in the area managed by BLM in Western Oregon and subject to the proposed Plan Revision, that is, the above-mentioned Draft Resource Management Plan/Environmental Impact Statement for Western Oregon.

NPSO shares BLM's concern about the impacts of all human activities on the native vegetation in the area encompassed by the proposed plan and, in particular, the rare, threatened, endangered, and otherwise identified as 'sensitive' or 'survey and manage' species that are found within the area encompassed by the proposed plan. This includes certain healthy forest ecosystem indicator species such as Corydalis aqua-gelidae, Cimicifuga elata, Cypripedium fasciculatum, Frasera umpquaensis, Kalmiospis fragrans, Iliamna latibracteata, several rare Calochortus and other Lily sp., and several serpentine soil endemics, among others. These key indicator species reflect the overall health and viability of native plant communities in many forest ecosystems in the area covered by the proposed plan. This is not meant to exclude, limit, or otherwise minimize NPSO's deep and abiding concerns over the vast number of native species and communities that are equally threatened by human activities and provide an unmeasurable amount of ecosystem services. The decline of any of these above-mentioned species represents a red flag warning that the plan is deficient as implemented and will be seen as a clear signal of RMP's failure therefore requiring further action.

NPSO hopes the primary objective of the Draft Resource Management Plan/Environmental Impact Statement for Western Oregon, particularly in riparian zones, is the protection and maintenance of the special status plant species there and restoration of the native plant communities. In line with this primary objective, NPSO would support scientifically valid, data driven management, along with restoration/rehabilitation only with local-to-area plant species. We would be concerned with the use of non-native species for restoration, erosion control, or any other applications. An example would be the use of so-called “native” cultivars in the area covered by the plan that might adversely impact the status of any of the endemic species listed in the plan in the supporting documentation contained in the current document options A, B, C, D, and No Action.

NPSO notes Alt D seems to focus on riparian protections along with increased ACEC's, Wild & Scenic River designations and recreation at the expense of LSR and wilderness designation. This stance is insufficient and in conflict with the overall intent of the majority of the public with regards to best use of resources.

NPSO further notes the lack of surveying for special status species and strategic species under Alt D (page 429). "Alternative D does not include any requirement for pre-disturbance surveys for Bureau Sensitive species and the BLM would protect known Bureau Sensitive species sites in the Harvest Land Base on O&C lands only where protection would not conflict with sustained-yield timber production." This position is completely objectionable.

NPSO is deeply concerned that under Alt D, BLM states that potential (un-surveyed) habitat could harbor sensitive species but that due to disturbance from logging, previously unknown sites could be potentially lost. This begs the question, how do any of these alternative plans maintain rare species? BLM's justification is that Alt D has the most area in other reserves which would limit the potential effects from the loss of genetic diversity in un-surveyed areas (page 430). When NPSO looks at page 5 of the Executive Summary which depicts Land Use Allocations, Alt D has the second least amount of reserve lands (after Alt C). This indicates severe internal inconsistency

within the document itself, and requires resolution. Furthermore, Alt D has the highest number of sensitive species sites other than the No-action Alternative in the Harvest Land Base designation of any alternative (page 430) ,apparently assuming these don't need surveys and denying protection on O&C lands. This approach is fundamentally flawed and deeply concerning. Basically, it appears BLM wants to write off these sites in exchange for more riparian reserve, but with an unacceptably damaging level of timber harvest in remaining areas.

Understandably, having received adverse rulings twice already before the 9th Circuit Court over Survey and Manage requirements, BLM proposes to drop these scientifically sound principles entirely and stick with just Special Status and Strategic species. While acknowledging BLM has incomplete information (aka surveys) on S&M species, BLM seems more than happy to dump them and this "cumbersome" requirement.

NPSO notes riparian areas are likely richer in native plant diversity throughout the action area save for the special habitat situations like serpentine outcrops, balds, oak woodland, and other non-water features, hence the list of key indicator species mentioned above.

Due to disturbing internal inconsistencies within the document, as well as BLM's fundamental misreading of general public intent with regard to the best and highest use of natural resources under BLM's protection, NPSO is severely limited in options to support BLM's proposals. Given this situation, NPSO leans toward support of Alternative D, so long as the concerns addressed above are resolved, especially by specifically including Survey and Manage requirements found in the No Action Alternative, as defined by repeated rulings of the Court of Appeals, and excluding proposed limits on LSR and wilderness designation. Failing these essential modifications, NPSO reserves the right to support the No Action Alternative in light of the rulings by the Court of Appeals.

Consequently, NPSO requests If there are any restoration plantings in riparian areas, please provide NPSO with details on what is planned there, as well as any actions related to the above-mentioned serpentine outcrops, balds, oak woodland, and other non-water related features, as well as any and all communications to the public regarding RMPs for Western Oregon.

This comment was prepared with the invaluable contributions of Jason Clinch, Chair of NPSO's Rare and Endangered Species Committee, as well as those of Dr. Stu Garret, NPSO Liason to the High Desert Chapter of the Native Plant Society of Oregon. Any errors or omissions are my own.

NPSO expresses gratitude to BLM staff present at the open house held in Portland as part of the roll out of these proposals. From the moment I walked in the door, every BLM staffer I encountered was courteous, professional, cheerful, and informative. They were very helpful in understanding the broad outlines of policy, particularly the option of selecting sections from among the different alternatives in order to craft an option most closely mirroring NPSO's concerns.

Please include NPSO, at my addresses below, in any further discussion
on this plan. Digital versions of documents are preferred, by email, whenever possible.

Respectfully submitted,

Billy Don Robinson,
Legislative Committtee Chair,
Immediate Past NPSO State Vice-president

PO Box 12251
Portland, Oregon 97212

bdmeme@gmail.com

503.515.1708

From:	"RMPWO_Comments, BLM_OR" <blm_or_rmpwo_comments@blm.gov>
To:	RMP-Comments@heg-inc.com
CC:	
Date:	8/17/2015 11:13:02 AM
Subject:	Fwd: RMP's - Little North Fork Wilson River
Attachments:	ANWS Comments Little North Fork Wilson.pdf

---------- Forwarded message ----------
From: **Ian Fergusson** [redacted]
Date: Thu, Aug 13, 2015 at 7:46 PM
Subject: RMP's - Little North Fork Wilson River
To: blm_or_rmpwo_comments@blm.gov

Attached are comments of the Association of Northwest Steelheaders regarding the proposed Little North Fork ACEC.

Ian Fergusson
Co-Resources Director

Association of Northwest Steelheaders
6641 SE Lake Rd. • Milwaukie OR 97222
503-653-4176 • 503-653-8769 (fax)
office@anws.org • www.nwsteelheaders.org

Established 1960

August 13, 2015

RMP's For Western Oregon
Bureau of Land Management
PO Box 2965
Portland, OR 97208

Re: RMP's for Western Oregon, Little North Fork Wilson River ACEC

Dear Sirs:

The Association of Northwest Steelheaders has advocated for fish conservation and sport fishing since our inception in 1960. The majority of our 1600 active members reside in Oregon and Southwest Washington. We are deeply concerned with land management impacts on fish habitat. We tend to operate at local scales, having found that the clearest voices can come from those impassioned about a particular locale.

The Little North Fork of the Wilson River (Salem District) is a watershed we believe is worth championing. The Little North Fork has been proposed as an Area of Critical Environmental Concern (ACEC) in the Draft RMP/EIS. This designation would apply under all of the alternatives, including the No Action Alternative.

We support the ACEC designation for the Little North Fork. We support the proposed management directions for the Little North Fork, except for timber harvest. For the reasons discussed below, we believe "no timber harvest" to be the appropriate management direction, rather than the proposed action of "manage to promote development of maintenance of late seral habitat".

In the absence of a management direction of "no timber harvest", we would find the No Action alternative the only acceptable alternative for this important area. We oppose any weakening of the riparian protections afforded by the Aquatic Conservation Strategy.

Landscape Context and Habitat Values

The relict community of 450 year old Douglas fir, Sitka spruce, Western hemlock, and Western red cedar (RMP/EIS, Appendix F) found within the Little North Fork drainage is the northernmost example of an intact block of late-successional forest in the Oregon Coast Range. This forest type provides critical habitat for terrestrial species such as the northern spotted owl, marbeled murrelet, and red tree vole. Equally important, this forest type supports ecological and hydrological processes necessary for numerous aquatic species.

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Old-growth forest habitat is extremely rare in Northwest Oregon, for the most part represented only by scattered small stands and a few isolated large trees. The Coast Range landscape is dominated by clearcuts and young plantations on private land, and clearcuts and young to barely mature stands recovering from widespread fires (the "Tillamook Burns") on State-owned lands. The management of non-Federal lands on the North Coast must be considered when weighing options for the proposed ACEC.

BLM ownership accounts for 13.8% of the Little North Fork watershed, State-owned forest 81.9%, with the remainder in private ownership (Wilson River Watershed Assessment, 2001).

The 2010 NOAA Biological Review Team (Stout et al., 2012), in reviewing and affirming the threatened status of Oregon Coast coho salmon, found that the negative effects of timber harvest are most pronounced on private and state lands, where requirements for management of riparian zones are less protective than on federal lands; Oregon forest practice regulations reduce the size of the streamside riparian area to less than that needed to maintain a full suite of ecological processes. Regulations allow for removal of trees from within this zone, which further reduces ecological effectiveness. The review team added that on private lands there is no requirement for protection on small intermittent streams, which are important sources of wood.

In January 2015, the U.S. EPA and NOAA disapproved Oregon's coastal pollution control program as inadequate to protect water quality, after 17 years of warnings that Oregon's logging practices pollute water and harm fish.

Stout et al. (2012) noted that freshwater habitat complexity is a key factor in the decline of coho and a key limiting factor in their recovery. In the review, stream complexity was considered the primary limiting factor for the Tillamook population, with water quality (temperature, sediment) identified as a secondary limiting factor.

Anlauf et al. (2011) evaluated trends in salmonid habitat in the Oregon Coast Range, using habitat monitoring datasets developed under the Oregon Coastal Salmon Restoration Initiative. The authors found that wood volume in the North Coast stratum had decreased by 5% per year over the monitoring period (1998-2007). This decline occurred in spite of numerous stream rehabilitation projects that added large wood. In addition, although fine sediment levels were found to be decreasing on the North Coast, that stratum had the highest levels of fine sediment of any of the coastal strata.

Given the overall poor habitat quality on the North Coast, and the importance of late seral forests in promoting stream channel complexity and other watershed functions, we believe the best management option is to allow no timber harvest.

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We are skeptical of the efficacy of management prescriptions intended to promote development/maintenance of late seral habitat, as proposed for the Little North Fork in the RMP/EIS. Timber harvest requires roads. The Little North Fork drainage has the lowest road density in the Wilson River watershed (Wilson River Watershed Assessment, 2001). As of 2001, there were 0.5 road-stream crossings per square mile in the Little North Fork, compared to the watershed average of 2.3. We believe control of fine sediment delivery depends in large part on minimizing road density.

Thinning in riparian areas to promote tree growth has a negative effect on habitat for fish and wildlife that utilize large-diameter deadwood (Pollock and Beechie, 2014). The level of thinning required to promote growth in the remaining trees removes too many trees that might otherwise end up on the ground or in streams. We would argue that the same mechanism would apply in the uplands as well, with potential impacts to in-stream wood recruitment; Reeves et al. (2003) found that 65% of the large wood pieces in a small watershed on the central Oregon coast originated in areas outside of the stream-adjacent riparian zone.

Disturbance in forests adjacent to intact late seral blocks increases the probability of incursions by opportunistic species such as corvids and barred owls, increasing the threat to marbled murrelet and spotted owl populations.

Fish Production

Salmonids found in the Little North Fork are fall Chinook salmon, coho salmon, chum salmon, winter steelhead, and cutthroat trout. (ODFW, 2015).

Bio-Surveys(2007) conducted a three-year "rapid bio-assessment" of Tillamook Bay rivers for the Tillamook Estuaries Partnership. The Little North Fork was considered one of the 6 most important anchor habitats for coho in the Tillamook Bay complex. The Little North Fork was the leading producer of coho in the 2007 summer inventory. Bio-Surveys considers the Little North Fork to be critical habitat for survival of coho in the Tillamook Bay watershed, possessing among the best spawning gravels, summer habitat refugia, highest wood complexities, and lowest land use impacts. According to this assessment, the Little North Fork was one of four key anchor habitats where land use management is critical to the long term persistence of salmonids.

The Oregon Department of Fish and Wildlife maintained a rotary trap on the Little North Fork from 1998 to 2013. Total downstream migrants (including fry, parr, and smolts) are estimated based on captures in the trap. The following charts show estimated downstream migrants through 2013 for all but cutthroat (ODFW, 2015).

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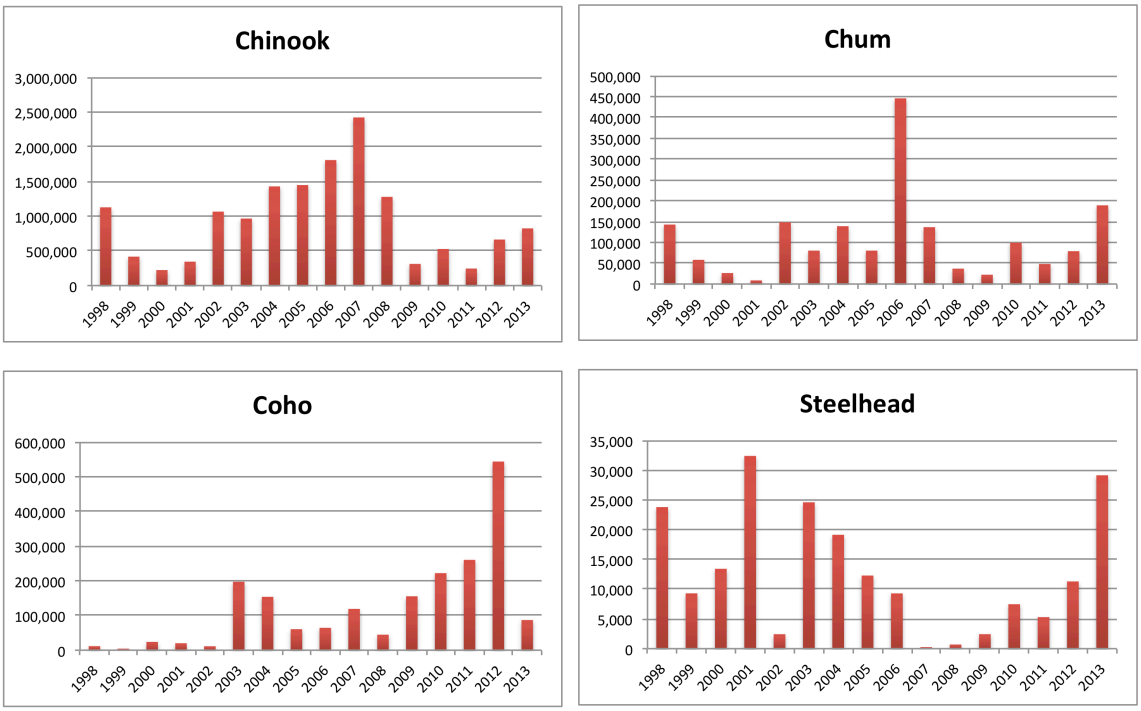

Thank you for the opportunity to comment.

Ian Fergusson, Co-Resources Director

Literature Cited:

Anlauf, K.J., W. Gaeuman & K.K. Jones. 2011. Detection of Regional Trends in Salmonid Habitat in Coastal Streams, Oregon. Transactions of the American Fisheries Society, 140:1, 52-66.

Bio-Surveys, LLC. 2007. Rapid Bio-Assessment 2007. Prepared for Tillamook Estuaries Partnership. Alsea, OR.

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ODFW, 2015. Spreadsheet containing screw trap results for 1998-2013, provided by Chris Knutsen, district biologist.

Pollock, M. M. and T. J. Beechie, 2014. Does Riparian Forest Restoration Thinning Enhance Biodiversity? The Ecological Importance of Large Wood. Journal of the American Water Resources Association (JAWRA) 50(3): 543-559.

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Stout, H.A., P.W. Lawson, D.L. Bottom, T.D. Cooney, M.J. Ford, C.E. Jordan, R.G. Kope, L.M. Kruzic, G.R. Pess, G.H. Reeves, M.D. Scheuerell, T.C. Wainwright, R.S. Waples, E. Ward, L.A. Weitkamp, J.G. Williams, and T.H. Williams. 2012. Scientific conclusions of the status review for Oregon coast coho salmon (*Oncorhynchus kisutch*). U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-118, 242 p.

Wilson River Watershed Assessment, 2001. E&S Environmental Chemistry, Inc. Corvallis, OR.

From: fpaulete@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Saturday, August 22, 2015 11:43 AM
To: RMP-Comments@heg-inc.com
Subject: Fwd: NFS Comments on Draft 2015 Resource Management Plan/EIS for Western Oregon
Attachments: NFS Comments on BLM DEIS FINAL (1).pdf

---------- Forwarded message ----------
From: **Erica Stock** <erica@nativefishsociety.org>
Date: Fri, Aug 21, 2015 at 3:00 PM
Subject: NFS Comments on Draft 2015 Resource Management Plan/EIS for Western Oregon
To: blm_or_rmpwo_comments@blm.gov
Cc: Jake Crawford <jake@nativefishsociety.org>, Bill Bakke <bmbakke@gmail.com>, Jim Myron <myrons@canby.com>

Dear Mr. Perez,

Please find attached comments on the Draft 2015 Resource Management Plan/EIS for Western Oregon submitted on behalf of the Native Fish Society.

We appreciate this opportunity to provide input. Please don't hesitate to reach out if you have additional questions.

Sincerely,

Erica Stock
Executive Director
Native Fish Society
c: 720-314-1219
nativefishsociety.org

Please note our new address and phone number:
813 7th Street, Suite 200A
Oregon City, OR 97045
o: 503-344-4218

NATIVE FISH SOCIETY

Advancing the Recovery of Native, Wild Fish in Their Homewaters

August 20, 2015

TO: Jerome E. Perez
State Director
Washington/Oregon
Bureau of Land Management
PO Box 2965
Portland, OR 97208

CC: Mark Brown (blm_or_rmpwo_comments@blm.gov)

RE: NFS Comments on Draft 2015 Resource Management Plan/EIS for Western Oregon

Mr. Perez,

Thank you for the opportunity to provide comments on the Bureau of Land Management (BLM) Western Oregon Resource Management Plan - Draft Environmental Impact Statement (DEIS). Native Fish Society is a 501c3 conservation non-profit dedicated to the protection and recovery of wild, native fish across the Northwest. We have over 3,000 active members and supporters and 80 community-based, volunteer River Stewards.

For over fifty years, the region's wild, native fish have been in precipitous decline. A history of habitat degradation has threatened the survival of many of the these native fish species, and their long-term survival greatly depends on the protections afforded them by the Endangered Species Act, Clean Water Act, the standards and guidelines set forth in the Aquatic Conservation Strategy (ACS) of the Northwest Forest Plan (NWFP), and other policies and laws that govern the management of public and private lands.

The nine objectives outlined in the ACS provide an important safeguard for wild, native fish by protecting their essential habitat needs through associated Standards and Guidelines (S&Gs) that link key watershed, riparian, hydrologic, physical, chemical and biological processes to types of land and water management actions and individual or groups of projects. It is our concern that the current DEIS, including all action alternative as described in the DEIS, would eliminate these ACS standards and guidelines, and would further jeopardize imperiled native fish species and degraded water quality throughout Western Oregon by reducing the width of riparian reserves, eliminating key watersheds, replacing the ACS objectives with weaker management objectives and optional "best management practices" (BMPs) and, in general, eliminating the aquatic restoration focus of the NWFP.

Native fish species of concern across the scope of the BLM lands in the DEIS include but are not limited to chinook salmon, coho salmon, chum salmon, winter and summer steelhead, resident and sea-run cutthroat trout, bull trout, resident rainbow trout and pacific lamprey. Of these populations, the coho salmon (*Oncorhynchus kisutch*) Oregon Coast Evolutionarily Significant Unit (ESU) and Southern Oregon – Northern California ESU, the chinook salmon (*O. tshawytscha*) Upper Willamette River ESU, and steelhead (*O. mykiss*) Upper Willamette River Distinct Population Segment (DPS) are listed as "Threatened" under the Endangered Species Act. Other populations of salmon, steelhead, trout, and lamprey (including, but not limited to, Tillamook, Nestucca, South Umpqua, and North Umpqua Spring

chinook salmon; Nehalem summer run chinook salmon; Siletz and North Umpqua summer steelhead; Nestucca and Wilson chum salmon; Oregon Pacific

Lamprey Salmon Management Unit (SMU) Lower Columbia/Willamette populations, and Oregon Western Brook Lamprey SMU Lower Columbia/Willamette populations) throughout this planning region are considered "At Risk" populations in serious decline and could result in future ESA petitions (Native Fish Status Report, 2005). Similarly, almost every river on the Oregon coast is currently listed as "Water Quality Impaired" under section 303(d) of the Clean Water Act (CWA).

We are concerned that the timber harvest bias of the DEIS asserts the supremacy of the O&C Lands Act over all other environmental laws, while disregarding the past management actions and current habitat conditions on Western Oregon's public and private lands that have contributed to all of these ESA and CWA determinations. We argue that these pervasive pre-existing conditions and evolving climatic circumstances warrant *more*, not less protections for critical habitat refugia in the region. Similar arguments have been made by the Oregon Department of Fish and Wildlife in the Coastal Multi-Species Conservation and Management Plan (CMP), in which they state, "Preventive efforts should be made to ensure existing habitat quality is not degraded due to human activities." Areas that currently contain high quality fish habitat should be identified and protected, and other areas with the potential to support high quality habitat, but are degraded, should be protected from further degradation (CMP 2014, page 83).

Private timberland dominates much of the checkerboard landscape along Western Oregon and the comparatively smaller percentage of BLM land in essence provides islands of ecologically significant habitat that can help offset the extremely poor conditions of surrounding timberlands. It is our view that further degradation on BLM lands via reduced ACS and riparian protection in all BLM action alternatives would significantly impact ecologically significant fish habitats on BLM lands and would jeopardize the long-term survival of native fish species.

In particular, we are concerned that all of the draft action alternatives currently included in the BLM's DEIS will result in increased timber harvest, accelerated physical disturbance, renewed road construction, loss of restoration focus, reduced riparian reserve widths, and weaken other protective standards and guidelines more than the No Action alternative, and these protections are central to the success of the NWFP's ACS. Moreover, of these concerns, sedimentation has been identified as a limiting factor for Chinook salmon, chum salmon, winter steelhead and summer steelhead along the entire Oregon Coast (CMP, 2014). All of these actions, among other undesirable outcomes, potentially threaten the continued existence of threatened and depressed native fish populations and health of impaired waters throughout Western Oregon.

Because of the unique and precarious state of the aforementioned threatened species, habitat protection efforts beyond current NWFP ACS S&Gs are needed. Additionally, shifting temperature and uncertain climate regimes, which scientific studies suggest will create the potential for increased late season stream temperatures, altered hydrologic regimes, and more frequent or longer duration extreme weather events will require increased, not decreased protections for critical salmon habitat.

Maintaining the life history diversity of Oregon Coastal chinook salmon is absolutely critical to the long-term survival of the species. BLM actions could jeopardize the imperiled spring-run and summer-run Coastal chinook salmon populations and put these animals closer to extinction. Consequently, the BLM actions as expressed in the DEIS could result in petitions to upgrade the overall listing to Endangered or to consider and list these two species separately from the fall-run Coastal chinook salmon populations.

Cumulative impacts analysis in the final EIS must address the existing highly degraded condition of the watersheds as a whole, including the adjacent private lands, and should incorporate this information when examining the impacts of each alternative on threatened and depressed native fish species in the region.

Furthermore, we assert that a more pro-active and science-based precautionary alternative should be developed that would improve the current ACS standards and require more consistent implementation to ensure its effectiveness. This new alternative would *increase* the levels of riparian and key watershed protection currently afforded native fish populations under "no action", particularly in light of new ESA listings since 1994, cumulative impacts of non-federal forest practices on surrounding lands, and climate change impacts projections which pose even greater risk and uncertainty for ongoing native fish conservation efforts.

Thank you for the opportunity to comment.

Respectfully submitted,

Erica Stock, Executive Director

Appendix 1. Western Oregon Native Fish Species of Concern. (*Including, but not limited to*)

Chinook salmon (*Oncorhynchus tshawytscha)*

Chinook salmon are mainstem and large tributary spawners, entering coastal rivers over a protracted period of time and include early (returning in spring or summer) and late (returning in the fall) life history components (CMP, 2014). In western Oregon, ODFW has classified the entire Oregon Coastal Spring Chinook SMU (from the South Umpqua up to the Tillamook) populations at risk "Sensitive-Vulnerable" and both the Tillamook and Nestucca populations are failing abundance, productivity, and independence indicators established by ODFW (ODFW, Native Fish Status Report, 2005).

Additionally, the Tillamook and Nestucca populations have declined dramatically since the 1980s; the South Umpqua spring Chinook population is considered at an extinction risk; and in 1999, the Willamette Valley Spring Chinook salmon ESU was listed as Threatened under the ESA. The largest remaining natural production population in the Willamette Valley Spring Chinook SMU is the McKenzie River, and the Molalla, North Santiam, South Santiam, Calapooia, and Upper Willamette River populations all fail ODFW criteria for abundance and production (Native Fish Status Report, 2005).

Limiting factors for South Umpqua spring Chinook salmon include temperature, toxic pollutants, sediment, low water quantity, and flashy hydrology (CMP, 2014). For the Nehalem; Tillamook; Yaquina; Alsea; Middle, North and South Umpqua; Coos and Coquille Fall Chinook populations, sedimentation has been identified as a limiting factor (CMP, 2014).

Chum Salmon (*Oncorhynchus keta)*

Chum salmon have the widest natural geographic and spawning distribution of any Pacific salmonid, and coastal Oregon chum are part of the Pacific Coast ESU, which includes all natural populations from the Pacific coasts of California, Oregon, and Washington (Johnson et al. 1997). The Oregon Coastal Chum salmon population is considered "At Risk" and the Siletz, Salmon, Nestucca, and Netarts populations fail ODFW criteria for productivity and independence (Native Fish Status Report, 2005).

Coho Salmon *(Oncorhynchus kisutch*)

Coho salmon are low gradient, small tributary spawners and both the Oregon Coastal Coho ESU and Southern Oregon – Northern California Coho ESU are currently listed as threatened under the Endangered Species Act (CMP, 2014).

Summer and Winter Steelhead (*Oncorhynchus mykiss*)

Winter steelhead are widely distributed along the coast and are upper mainstem and tributary spawners, and coastal summer steelhead populations are found in the Siletz and North Umpqua Rivers (Native Fish Status Report, 2005). For Siletz Summer Steelhead, some of this species' most import habitat is found above Siletz Falls, notably in the North Fork in which its tributaries Boulder and Warnicke Creeks are two of the areas that appear to be targeted for increased timber harvest in the DEIS (Siletz Basin Management Plan, 1998). The wild Siletz summer steelhead population is considered vulnerable and potentially at risk, and is also listed as a Candidate species under the ESA as part of the Oregon Coast Steelhead ESU (Siletz HGMP, 2014).

Oregon Pacific Lamprey and Oregon Western Brook Lamprey (*Entosphenus tridentatus*)

Both SMUs of lamprey are widely distributed throughout western Oregon, but both of their distribution and abundance have likely decreased in recent years, with habitat loss, road passage barriers and pollution as main contributors to their decline (Native Fish Status Report, 2005).

*All current Key Watersheds, all LSRs, all interim and designated riparian reserves on all streams and waterbodies in the entire NWFP area, including BLM Lands are currently in need of *increased* protection relative to the No Action alternative, whether or not they would meet BLM's criteria as "ACECs."

Appendix 2. ODFW Assessment Methods for Classification (Native Fish Status Report, 2005).

Habitat Use Distribution – Criteria: Naturally produced members of a population occupy at least 50% of the historically-used (pre-development) habitat in at least three of the last five years for at least 80% of existing populations.

Abundance – Criteria: Number of naturally-produced fish is greater than 25% of average levels in at least three of the last five years for at least 80% of existing populations.

Productivity – Criteria: Population replacement rate for at least 80% of existing populations is at least 1.2 naturally-produced adult offspring per parent in three of the last five years when total abundance was less than average returns of naturally-produced fish.

Independence – Criteria: 90% or more of spawners are naturally produced in at least three of the last five years for at least 80% of existing populations.

Sources:

Oregon Department of Fish and Wildlife. "Coastal Multi-Species Conservation and Management Plan (CMP)" (2014).

Oregon Department of Fish and Wildlife. "Native Fish Status Report" (2005).

Oregon Department of Fish and Wildlife. "Siletz Basin Management Plan" (1998).

Oregon Department of Fish and Wildlife. "Siletz Hatchery Genetic Management Plan" (Revised, 2014).

From: fpaulete@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Saturday, August 22, 2015 11:39 AM
To: RMP-Comments@heg-inc.com
Subject: Fwd: O&C Lands RMP DEIS Comments
Attachments: BLM_RMP DEIS_Comments_8_15.docx; O&C Watershed Protection petition_2_11_15.doc

---------- Forwarded message ----------
From: **shannon wilson** <tsuga@efn.org>
Date: Fri, Aug 21, 2015 at 1:33 PM
Subject: O&C Lands RMP DEIS Comments
To: blm_or_rmpwo_comments@blm.gov

August 21, 2015

State Director Bureau of Land Management Oregon/Washington State office PO Box 2965 Portland OR 97208

RE: Comments on BLM's Western Oregon Resource Management Plans.

To Whom It May Concern: We will start off with these brief comments to remind the BLM of the legal standards governing these management plan revisions. In section III we will discuss specific areas of the Resource Management Plan Draft EIS.

Background.

I. THE OREGON AND CALIFORNIA LANDS ACT

The Oregon and California Lands Act ("O&C Act") governs railroad grant lands that revested in the federal government due to the railroad company's breach of its statutory duties. In the Act, Congress sought to put an end to wasteful and destructive logging practices that clear-cut large forest areas for short-term gains without safeguarding the forests and other resources.

The O&C Act provides that O&C lands:

shall be managed . . . for permanent forest production, and the timber thereon shall be sold, cut and removed in conformity with the principal [sic] of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities.

II. BLM'S DUTIES TO MANAGE THE O&C LANDS

Numerous statutes establish duties that BLM must meet in managing the O&C lands.1 The timber industry has long contended that BLM must manage the O&C lands under a timber- first mandate, drawing from the permanent forest production goal set out in the O&C Act. BLM has recognized, however, that it must manage the O&C lands for multiple purposes both to comply with the O&C Act and its duties under other laws. The timber-first construction is at odds with both the O&C Act and the interplay between that Act and other statutory mandates.

A. Safeguards Drawn From the O&C Act

Although some have called the O&C Act the first multiple-use statute, others have dubbed it a "dominant" use statute, with timber production being the dominant use. Under the Act, O&C lands "shall be managed . . . for permanent forest production," but subject to other constraints. 43 U.S.C. § 1181a.

First, permanent forest production is not synonymous with commercial logging. A 1979 Interior Solicitor memorandum clarified the forest production need not be for commercial use. That is but one of the uses. The forest production could be to protect watersheds, stream flows, or recreation. Interior Solicitor Mem. (Aug. 27, 1979).

Second, the goal of the timber production is to promote economic stability of local communities. In the O&C Act, Congress sought to curtail the type of boom and bust logging frenzies that had generated economic instability. Congress decidedly did not support maximizing timber production for short-term economic gain. Instead, it sought to institute long- term sustainability.

Third, the Act does not seek to promote other resource extraction activities, such as grazing. Such activities should not occur where they conflict with any of the Act's other goals or BLM's duties under other laws.

Fourth, the O&C Act explicitly lays out other goals for management of the O&C lands. Specifically, the lands must be managed for the purpose of "protecting watersheds, regulating stream flow, . . . and providing recreational facilities." 43 U.S.C. § 1181a. The mandate to protect watersheds and stream flow supports establishing safeguards like those embodied in the Aquatic Conservation Strategy of the Northwest Forest Plan.

1 These comments address only management of the O&C lands, but the RMP revisions pertain to all BLM lands, including vast tracts of public domain lands that are fully subject to all land management and environmental laws.

Safeguards Drawn From Other Laws

BLM must comply with other laws unless they expressly carve out an exception for the O&C Act. The courts strive to reconcile overlapping statutory duties so that all applicable statutes retain their vitality. A statutory obligation is overridden only in the event of a direct conflict that makes it impossible to comply with competing mandates or explicit legislative language indicating an intent for one to be preeminent over another.

1. FLPMA

Initially, BLM and the courts focused on the role of the Federal Land Policy and Management Act ("FLPMA"), enacted decades after the O&C Act. In *Headwaters v. BLM*, 914 F.2d 1174, 1183-84 (9th Cir. 1990), the Ninth Circuit held that BLM did not err in construing the O&C Act to make timber production a dominant or primary use of the lands. Headwaters had challenged a particular timber sale and argued that BLM erroneously emphasized timber production over conservation of wildlife habitat and old-growth forests. Before rejecting this construction of the O&C Act, the majority opinion had held that BLM appropriately tiered its environmental assessment for the timber sale to a programmatic environmental impact statement addressing wildlife and old-growth habitat, and it rejected Headwaters' challenge to BLM's multiple use determination, which emphasized timber production for the lands at issue. As later cases confirm, the result is often far different where BLM is subject to other statutory duties that lead it to protect O&C lands in order to protect wildlife or old-growth forests.

2. Other Laws

Timber interests rely almost exclusively on *Headwaters* to support their view that the O&C Act is not a multiple use statute. Yet while the Ninth Circuit in *Headwaters* stated that the O&C Act was a timber dominant statute, that simple statement does not mean that BLM has a non-discretionary duty to sell a prescribed amount of timber. To the contrary, the appellate court in *Headwaters* found that BLM did complete a multiple-use analysis for the challenged project, the Wilson Peak timber sale, considering "all pertinent factors, including, but not limited to, ecology, existing uses, and the relative values of the various resources in particular areas." 914 F.2d at 1182. Moreover, the Wilson Peak timber sale provides an excellent example of the discretion BLM retains over management of its lands—BLM was not required to emphasize timber production on every acre, but instead "BLM elected to emphasize the production of timber on particular parcels in the Unit while managing over half of the public domain lands in the Unit for non-timber uses." *Id.* at 1183.

After Headwaters, the courts retreated from a timber-centric vision for O&C lands. Instead, the operating principle has become one of dual responsibilities. BLM must meet all of its statutory obligations, many of which call for environmental safeguards even where such safeguards result in less intensive or pervasive logging.

In *Portland Audubon Soc'y v. Lujan*, 998 F.2d 705 (9th Cir. 1993), the Ninth Circuit found no unavoidable conflict between an injunction stopping old-growth logging pending compliance with the National Environmental Policy Act, and the O&C Act, even though the Act's timber targets (stated as a minimums) could not be met under the injunction. BLM and the O&C Counties had argued that "the district court erred in issuing an injunction which prevents the BLM from selling a minimum of 500 million board feet of timber per year as directed by the" O&C Act. *Id.* at 709. The court rejected this argument, stating: "We find that the plain language of the Act supports the district court's conclusion that the Act has not deprived the BLM of all discretion with regard to either the volume requirements of the Act or the management of the lands entrusted to its care. Because there does not appear to be a clear and unavoidable conflict between statutory directives, we cannot allow the Secretary to 'utilize an excessively narrow construction of its existing statutory authorizations to avoid compliance [with NEPA].'" *Id.* at 709. Under this ruling, BLM must comply with NEPA, the ESA, and other

environmental laws in its management of O&C lands. In the Northwest Forest Plan, the agencies construed this interplay to mean that other environmental laws take precedence over the O&C Act in the absence of a conflict, and that prudent management to avoid future conflicts with such other laws is within the BLM's discretion, as it could promote economic stability in the long-run. For example, "That Act does not limit the Secretary's ability to take steps now that would avoid future listings and additional disruptions." NWFP Record of Decision at 50. The Secretaries made the finding that the adopted plan "will provide the highest sustainable timber levels from Forest Service and BLM lands of all action alternatives that are likely to satisfy the requirements of existing statutes and policies." ROD at 61.

In *Seattle Audubon Soc'y v. Lyons*, 871 F. Supp. 1291 (W.D. Wash. 1994) (appeal history omitted), Judge Dwyer rejected the contention that the Northwest Forest Plan violated the O&C Act, stating that BLM must fulfill its conservation duties under other environmental statutes in managing the O&C lands. He also rejected the contention that the agency need not comply with the NEPA or the ESA because it has no power under its enabling statute to modify its management activities based on the other environmental statutes;; "the Secretary of the Interior has, and for many years has exercised, broad authority to manage the O & C lands; the BLM is steward of these lands, not merely a regulator." *Id.* at 1314.

III. O&C RMP

A. Stated Purpose and Need

The RMP lists primary considerations in its purposes and needs section. The BLM claims that the RMP revisions are necessary to "Provide a Sustained Yield of Timber". However, the O&C Act states that this will be done "in conformity with the principles of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flows". The O&C Act does not state that one of the above described mandates has priority over another therefore if timber production degrades the mandate to "protecting watersheds" and "regulating stream flow" as well as degrades the lands ability to provide "permanent forest production" then the current RMP Alternatives as proposed are in violation of the O&C Act. Permanent is defined as in perpetuity. Not 20 years or 50 years or even 100 years but in perpetuity. The only way to accomplish this is working within the constraints of the ecosystem's ability to sustain itself over hundreds of thousands of years. In other words maintaining human relationships and extraction of resources without disrupting natural selection (evolutionary) processes.

Furthermore, under the Purpose of Need Section of RMP DEIS it states that, "In Addition, the FLPMA specifically provides that if there is any conflict between its provisions and the O&C Act related to management of the timber resources or the deposition of revenues from the O&C lands and resources, the O&C Act prevails (i.e., takes precedence). Thus the multiple-use management direction of the FLPMA does not apply to the O&C lands that are suitable for timber production." It appears that the RMP DEIS is stating FLPMA "multiple use and sustained yield" provisions does not apply to O&C lands and thus the BLM does not have to follow the provisions of FLPMA if it so chooses. We challenge the suppositions and assertions inside the RMP DEIS that timber production can be increased by any amount over current levels without violating the O&C Act, the Clean Water Act, and Endangered Species Act. In fact, the current levels of logging are likely already violating all the above

mentioned Acts. However, politics on both alleged sides seem to be refusing to enforce current federal laws.

1. Alternatives of the RMP

All the Alternatives in the RMP DEIS depart from the standards, guidelines, and use designations of the Northwest Forest Plan. The DEIS did not fully analyze the cumulative impacts to the entire region administered by the Northwest Forest Plan by removing the BLM lands from the ecosystem-wide management plan.

a. Water Temperature

In the Draft EIS the BLM states that "Sufficiently cold water, present at all times of year, is essential for the survival, growth, reproduction, and migration of the aquatic species present on all O&C lands." "Increased stream temperatures can result from the removal of shade producing vegetation along fish bearing streams and smaller tributary streams that supply cold water to the fish bearing streams."

All alternatives in the RMP DEIS reduces riparian buffers significantly as compared to the Northwest Forest Plan. This is an unacceptable in light of the mandate in the O&C Act to "protecting watersheds" and "regulating stream flow". The proposed weakening of riparian protections will also lead to the violation of the Endangered Species Act and the Clean Water Act.

b. Aquatic Species and Habitat

There are numerous endangered and threatened aquatic species on O&C Lands. Lower Columbia River Chinook, Upper Willamette River Chinook, Southern Oregon/Northern California Coho, Lower Columbia Coho, Oregon Coast Coho, Lower Columbia chum, Lower Columbia River steelhead, and Upper Willamette Valley steelhead are the anadromous populations listed under the ESA.

The RMP departs from the ACS by reducing riparian reserves, eliminating the concepts of key watersheds and watershed analysis, and eliminating the mandate that the BLM find that each action proceeding under the RMP will meet attain, not retard, or not prevent attainment of the ACS objectives, which in turn require that the BLM manage the O&C Lands to maintain and restore nine functions of healthy aquatic ecosystems.

c. Northern Spotted Owls

All the action alternatives analyzed in the RMP DEIS will eliminate reserves or allow logging within the reserves that currently serve as habitat for the Northern Spotted Owl. The No Action Alternative – compliance with the Northwest Forest Plan-would result in the greatest increase in large blocks of suitable habitat by 2050. All other alternatives result in the less suitable habitat in large blocks, with a

decrease of overall habitat acres by 2050. Based on current Agency research that shows population declines of at least 3% per year over the last 20 years for the northern spotted owl this is unacceptable.

The RMP EIS fails to discuss or consider any of the scientific studies finding that further loss of owl habitat may drive the northern spotted owl to extinction. Sustainable Ecosystem Institute, Scientific Evaluation of the Status of the Northern Spotted Owl (2004).

d. Marbled Murrelet

All the RMP DEIS alternatives predict a decrease in the habitat for the Marbled Murrelet over the next 50 years. The Northwest Forest Plan Late Successional Reserves are critical for the murrelet recovery. The Recovery Plan also stresses the importance of the riparian reserves under the Northwest Forest Plan.

Recent research done by the State and Federal agencies has revealed the population of the marbled murrelet have declined in the Pacific Northwest by nearly 30 percent in the last 10 years and nearly 50% over the last 20 years.

e. Climate Change

There is overwhelming evidence that climate change is occurring due to anthroprocentic industrial land use practices primarily for agriculture (like forestry), fossil fuel emissions, and other practices releasing heat trapping gasses that are driving dangerous and irreversible changes in the earth's climate. This is creating dramatic changes in snow and rainfall patterns in the Pacific Northwest and across the entire North American continent.

Climate change is extremely relevant to the effects of the RMP on Northwest ecosystem and human environments in two critical ways. As snowfall becomes sparing or even absent and rainfall becomes erratic the ability of natural intact ecosystems on O&C Lands to store and regulate water becomes imperative for human habitation that depend on O&C Lands for their water supplies. The Oregon DEQ estimated that nearly 1.6 million Oregon citizens depend on O&C watersheds for their water supplies.

Secondly the new RMP if adopted as proposed greatly contributes to climate change by substantially reducing the amount of carbon that is stored inside the ecosystem and could even foreclose the ability for impacted/logged areas to take in carbon for decades into the future.

We suggest a new alternative be created that would:

- Manage non native forest stands under Natural Selection management criteria where a percentage of the dead and dying as well as introduced off-site genetically inferior trees would be removed for tree fiber needs and employment.

- Protect all native forest stands of all ages from logging until all tree plantations are returned to a pre-logged and natural genetic composition.

- Eliminate clear cutting – the Variable Retention Harvest scheme.

- Maintain stream protections and restoration standards under the current Northwest Forest Plan and the Aquatic Conservation Strategy at a minimum.

- Expand “no cut” buffers in addition to ACS standards for streams that support ESA listed aquatic species.

- Emphasis non-motorized and non-destructive recreational opportunities.

- Maintain and expand the Survey & Manage Guidelines to protect rare and sensitive plants and animals.

- Focus on restoring watersheds including removing anadromous fish killing culverts, closing and obliterating the most impacting logging roads.

Oregon citizens need is an alternative that uses the best and latest science as well as current realities on climate change, water availability to streams, rivers and 1.5 million human inhabitants that currently depend on watersheds flowing off O&C lands, and current population trends of ESA listed species. This alternative is the Natural Selection Alternative as described above. If implemented on all O&C lands we may yet attain the ability of the Northwest ecosystem to sustain human habitation throughout the 21st century.

Also Attached below is the "O&C Watersheds Protection Petition".

Thank you for your time and serious consideration of our comments and input.

Shannon Wilson

Director

Eco Advocates NW

A project of the League of Wilderness Defenders

PO Box 327

Eugene, OR 97440

Jasmine Benjamin

From: fpaulete@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Saturday, August 22, 2015 11:31 AM
To: RMP-Comments@heg-inc.com
Subject: Fwd: RMP comment letter
Attachments: KBO BLM RMP Comments SUBMITTED.pdf

---------- Forwarded message ----------
From: **Jaime Stephens** <jlh@klamathbird.org>
Date: Fri, Aug 21, 2015 at 9:42 AM
Subject: RMP comment letter
To: blm_or_rmpwo_comments@blm.gov
Cc: John D Alexander <jda@klamathbird.org>

On behalf of Klamath Bird Observatory, we respectfully submit the attached comment letter regarding the BLM's resource management planning effort.

--
Jaime Stephens
Science Director
Klamath Bird Observatory
(541) 201-0866 ext.2#

Klamath Bird Observatory

Advancing bird and habitat conservation through science, education, and partnerships

August 20, 2015

Bureau of Land Management
Oregon/Washington State Office
ATTN: Draft RMP/EIS for western Oregon
PO Box 2965
Portland, OR 97204

RE: Klamath Bird Observatory comments regarding Western Oregon Draft RMP/EIS

On behalf of the Klamath Bird Observatory we respectfully submit the following comments regarding the BLM's resource management planning effort. Our comments focus on 1) our concern about not being able to collaborate with the BLM during the scoping and development of the RMP; 2) support for addressing the Migratory Bird Treaty Act, using landbird focal species in the analysis of alternatives, and the use of Avian Knowledge Northwest and the Partners in Flight conservation plan in that analysis; 3) recommendations that are intended to make that analysis more clear; and 4) our interest in engaging with the BLM to apply the best available regional science to the application of the RMP at the district level.

In early 2013, Klamath Bird Observatory staff had a series of meetings and conference calls with Bureau of Land Management planning team members. During the meetings we collectively acknowledged that the integration of science into planning is limited by a lack of resources needed to fully apply novel approaches and new technologies related to avian science. Despite our best efforts to engage in the RMP planning process early on, the interdisciplinary team did not work with Klamath Bird Observatory or Partners in Flight during the scoping and development of the Draft RMP, leaving unused many of the scarce resources being offered in support of the planning effort.

Our proposed integration of avian science into planning uses a focal species approach and applies existing conservation plans, data, decision support tools, and expertise available from Partners in Flight, Avian Knowledge Northwest, and Klamath Bird Observatory. These science-based tools have resulted in part from Klamath Bid Observatory collaborations with the BLM on numerous regional studies relevant to the management of western forests (e.g. studies of wildfire, fuel reduction, grazing, and timber harvest). Results from these studies have been delivered to the BLM through multiple mechanisms (e.g. publications, written syntheses, interactive Decision Support Tools, workshops, and one-n-one meetings).

The application of this science is not intended solely for the conservation of birds. Instead the approach is intended to support development of Resource Management Plans that integrate a sustained-yield of

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timber, conservation and recovery of threatened and endangered species, and restoration of fire-adapted ecosystems. Information about the focal species includes measurable habitat and population objectives that can be used to describe current conditions and design desired conditions. Our science-based tools can be used to (a) assess management alternatives based on their Purpose and Needs, (b) set related and measurable management targets, (c) design management to meet these targets, and (d) provide a cost effective means for measuring the effectiveness of resulting management actions. We have found that this body of science is most effectively applied during plan scoping and development and, generally, we do not feel that the public comment period is an effective time for us to engage in the planning process.

We are pleased to see that the RMP acknowledges the Migratory Bird Treaty Act, recognizing the BLMs role in managing the ecosystems on which those migratory birds depend. We are also pleased to see the plan using landbird focal species to illuminate the differences in effects amongst alternatives. Additionally, the use of Avian Knowledge Northwest and the Partners in Flight coniferous conservation plan is very appropriate and the integration of both into the landbird analysis is excellent.

The analysis presented in Tables R-46 to 51 is informative in understanding some of the finer scale differences between alternatives, although, it is unclear how it relates to Figure 3-162 (e.g. Stand Establishment will decrease from 14% to 11-12% depending on alternative, but Black-throated Gray Warbler, associated with Stand Establishment, will be reduced to 6%-36% of current habitat depending on the alternative). It is unclear if Tables R-46 to 51 refer to the decision area or planning area. Additional details in the headers for Tables R-46 to 51, and the analytical methods section, are needed to fully understand the application of this analysis.

We remain interested in working with the BLM to apply the best available regional science to the application of the RMP at the district level. The use of landbirds as focal species will be an important and cost effective contribution to identifying, applying, and monitoring ecosystem components indicative of healthy forests as the RMP is implemented.

Sincerely,

John D. Alexander
Executive Director
(541) 201-0866 ext.1#

Jaime L. Stephens
Science Director
(541) 201-0866 ext.2#

Jasmine Benjamin

From: fpaulete@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Saturday, August 22, 2015 11:25 AM
To: RMP-Comments@heg-inc.com
Subject: Fwd: RMP comments

---------- Forwarded message ----------
From: **RMPs_WesternOregon, BLM_OR** <blm_or_rmps_westernoregon@blm.gov>
Date: Fri, Aug 21, 2015 at 9:08 AM
Subject: Fwd: RMP comments
To: BLM_OR RMPWO_Comments <blm_or_rmpwo_comments@blm.gov>

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Resource Management Plans for Western Oregon
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Before including address, phone number, email-address, or any other personal identifying information in your comments, be advised that your entire comment, including personal identifying information, may be made publicly available at any time. If you wish us to withhold your personal information you must state this prominently at the beginning of your comment. While individuals may request that the BLM withhold personal identifying information from public view, the BLM cannot guarantee it will be able to do so.

You have received this email because you have previously submitted a request to be on the mailing list, stakeholder list, submitted a comment, feedback or survey response and/or indicated interest in the RMPs for Western Oregon.

---------- Forwarded message ----------
From: **boyd peters** <boyd.wolfcreek@gmail.com>
Date: Thu, Aug 20, 2015 at 11:14 PM
Subject: RMP comments
To: BLM_OR_RMPs_WesternOregon@blm.gov
Cc: boyd peters <boyd.wolfcreek@gmail.com>

To: BLM, P.O. Box 2965, Portland, OR 97208

From: Legacy Lands Project for Symbiota Land Trust & Nomenus
Boyd Peters, 800 Railroad Ave., Wolf Creek, OR 97497

Re: Draft RMP comments

Date: 8/21/2015

Legacy Lands Project is submitting comments for many residents of Sunny Valley and Wolf Creek, particularly two non-profit land holding organizations named above who are adjacent to BLM lands and actively manage their forests. Our decades of participation spans the existence of NEPA's application on BLM lands in Western Oregon.(1969 National Environmental Policy Act)

Based upon many thousands of hours of volunteer hours researching, ground truthing and participation with the agency, we advocate the following priorities so that the BLM may realize its mission to "manage and conserve public lands for present and future generations."

1. Commit to restoration of <u>all</u> remaining mature and old growth forests, enabling a sustainable local economy that includes commercial cutting of second growth while expanding our recreation economy.

2. Stabilize the existing transportation network. Scarce budget dollars should focus on related aquatic restoration. Road mile reductions would also focus available maintenance dollars. New road building should rarely occur.

3. Restore fire adapted ecosystems, managing for diversity in second growth stands, while protecting and enhancing already resistant older stands.

4. Endangered species, aquatic and terrestrial, need an aggressive restorative plan, benefitting clean air, water, sustainable forests and mitigating climate change.

5. Expand Heritage Tourism. (see list of local assets) It "encompasses elements of living cultures, history, and natural history of place . . ." (Oregon Heritage Commission) Oregon State Parks commissioned consultants Mandala Research LLC who documents "these travelers contributed an estimated $19.6 billion to the state economy . . ." What part of the income stream is currently attributable directly or indirectly to BLM assets and planning? What is the potential for growth? This prospect is pivotal to our rural communities' future.

London Peak's centuries old forest is the backdrop for the Wolf Creek Inn, and the most accessible on Interstate 5. It and other like stands are most economically valuable left standing.

In order for the remnant old growth forest groves to retain vigor they must be connected by corridors. The BLM has made incomplete steps in this direction in past and current planning. In 2005 a corridor proposal titled Rogue River to King Mountain was

nominated as an ACEC. Despite agency rejection the need for in depth analysis remains. Like the East West connection at the Siskiyou Pass, the Umpqua-Rogue Divide corridor connects the Cascade Mountains with the Coast Range, Crater Lake to the Pacific. As documented in the Grave Creek Watershed Analysis, 1999, the three old growth islands along the northern edge are of particular value. Overcoming the I-5 impediment to connectivity requires extra effort. Working with other agencies to expand, for example, the London-Maloney Peak old growth island (ODF,County,etc.) on the west side would strengthen the corridor, linking much larger Late Successional Forest Reserve islands at each end of our watershed. (hard copy map will follow) The King Mountain ACEC needs expansion to include the nearby older forest island. At a mile high this subalpine habitat connects with other mountain top stepping stones.

Other likely agency partners are ODT and FHA who, at the urging of local activists, regional conservation organizations and ODFW, recently installed fencing in Sunny Valley to funnel wildlife under the Interstate, thereby reducing roadkill and benefitting landscape connections.

And finally, a note caution regarding the proposed Coyote Creek OHV Area (map no. 124) in Alternative D. Given the history of unregulated activity associated with OHV designated areas on and near BLM lands and damages incurred, this proposal should be dropped unless and until the agency can show a decade of properly budgeted and effective OHV law enforcement and regulation.

None of the RMP alternatives develop the priorities outlined above. They fail to generate a "full spectrum of different management alternatives."

Heritage Tourism Assets (a partial list, in no particular order)

- Sunny Valley Applegate Trail Museum
- Wolf Creek Inn
- Ghost town of Golden-mining history
- Golden Coyote Wetlands (National Historic District)
- Golden Lodge
- Contour mining ditches (miles of trail opportunities)
- King Mt. ACEC-rare plants, stunning celestial displays
- Wild and Scenic Rogue River Loop
- Public library with "heritage" resources
- Grave Creek Covered Bridge
- Old Pacific Highway 99 bridge and road segments
- London Peak Barrier free trail
- County Park with 2 mile trail to the top of London Peak
- Applegate Trail segments on Mt. Sexton with associated native trail story of Rock Old Woman
- Century old Railroad structures- steel trestle, tunnels, underpass, wooden culverts, utility lines, etc.
- Rogue River Trail-access to Marial, among the oldest known sites of human habitation in Western Oregon, over 10,000 years

Jasmine Benjamin

From: fpaulete@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Saturday, August 22, 2015 11:56 AM
To: RMP-Comments@heg-inc.com
Subject: Fwd: RMPWO Comment - Specific XY

---------- Forwarded message ----------
From: <no_reply@blm.gov>
Date: Fri, Aug 21, 2015 at 11:36 PM
Subject: RMPWO Comment - Specific XY
To: blm_or_rmpwo_comments@blm.gov
Cc: conrad@nativefishsociety.org

Name: Conrad Gowell
Contact: conrad@nativefishsociety.org
Comment: The headwaters of Drift Creek has a very dense network of streams and supports coastal cutthroat, lamprey, marbled murrelet, spotted owls, Bald Eagles, red tree voles, and flying squirrels. This area is currently being harvested, and rotation age seems to be decreasing through time. Ecosystem services have seen cumulative impacts, such as reductions in stream flows, increases in flood events due to hydrological impacts from roads, and the reduction of stream connectivity through building culverts.

This patch of BLM land contributes large wood to the very important downstream spawning reaches of salmonids in main-stem Drift Creek Creek, and thus buffer sizes should not be decreased. Many amphibians, such as the red-legged frog, pacific giant salamander, and tailed frog still persist here, and need increased protections.

Previous impacts, which have been accumulating on BLM land and in adjacent private land above and below the BLM ownership have been seen over time, including water temperature modifications (303-d listings), reductions in Large Woody Debris recruitment, incised stream channels due to loss of large woody debris, hydrological impacts through road building, loss of stream floodplain due to road building and excess sediment inputs as noted through macro invertebrate data in the preliminary MidCoast TMDL sediment assessment. Beavers have also been lost through much of this habitat area due to loss of forage material, and large wood structure that provides cover from predation.

The surrounding watershed is designated as a Tier 1 watershed, representing the best 10% of aquatic habitats on the Siuslaw National Forest, and should be considered for inclusion in the special area of environmental concern. The 2015 Draft Resource Management Plan/ EIS for Western Oregon does not adequately assess important ecological factors for this area, and is therefore insufficient. Losses of protection from the current aquatic conservation strategy are not acceptable, and thus the no-action alternative is preferable to any of the proposed alternatives (A-D). A more environmentally focused alternative, if provided, would have been preferred, but no such choice was presented.

Localized conditions contain large densities of perennial and intermittent streams sensitive to impacts described in alternatives A-D. Continued stressors from anthropogenic impacts, including climate change, have decreased soil moisture content, and altered hydrological processes relative to old growth reference areas in the

surrounding watershed. Site potential trees in the surrounding undisturbed forest reach 305 feet, and thus should be used for measuring site potential trees in calculating buffer sizes, an increase (not decrease) from existing standards.

None of the alternatives discuss how buffer widths are measured, so I do not know how to comment on the differing options will impact natural fluvial processes especially in areas of very steep slopes such as these. It also seems that only a narrow suite of environmental factors of interest are discussed in the EIS. For example, it has been documented in the scientific literature that stream and riparian forest communities are linked through processes beyond temperature and shade. In fact, habitat integrity is upheld through habitat heterogeneity that is often not the focus of timber harvest regimes. This is evident in this stand through single species reforestation efforts (Douglas Fir), and significant reductions in biodiversity.

Date and Time Submitted: 8/21/2015 11:36:58 PM
UTM10 X: 435913.300867153
UTM10 Y: 4977856.0753451
All Alts: True
Alt A Specific: False
Alt B Specific: False
Alt C Specific: False
Alt D Specific: False
Alt Unknown: False

From: fpaulete@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Saturday, August 22, 2015 11:40 AM
To: RMP-Comments@heg-inc.com
Subject: Fwd: Southern Oregon Forest Restoration Collaborative BLM Draft RMP Comments
Attachments: SOFRC RMP Comments 8_25_15.pdf

---------- Forwarded message ----------
From: **collaborative** <collaborative@jeffnet.org>
Date: Fri, Aug 21, 2015 at 2:04 PM
Subject: Southern Oregon Forest Restoration Collaborative BLM Draft RMP Comments
To: blm_or_rmpwo_comments@blm.gov

Please find the attached Draft RMP comments provided by the Southern Oregon Forest Restoration Collaborative.

Sincerely, George McKinley

George McKinley
Southern Oregon Forest Restoration Collaborative
www.sofrc.org

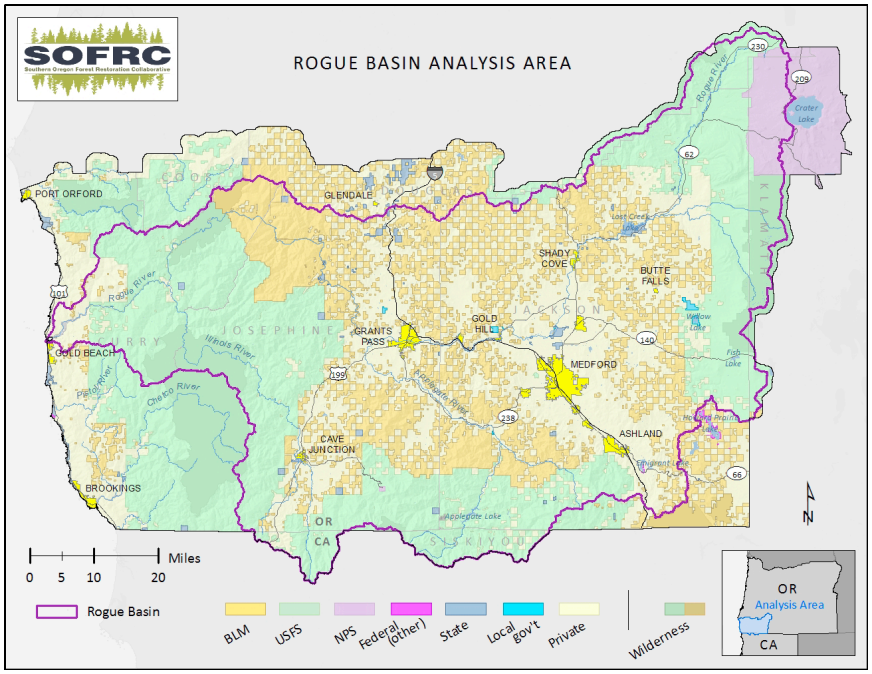
Attn: Bureau of Land Management
From: Southern Oregon Forest Restoration Collaborative (SOFRC)
Re: Comments on Draft Resource Management Plan (RMP)
Contact: George McKinley, SOFRC Executive Director, collaborative@jeffnet.org

---

Please find the below comments related primarily to the Medford District BLM. The comments provide new information, suggest reasonable alternatives and question several basic assumption of the Draft RMP. Our goal in submitting these comments is to strengthen future forest management success in the primarily dry forests of southwest Oregon. We look forward to working with the BLM and other federal, state and local agencies, as well as communities across the region, to promote resilient forests, fire adapted communities and a sound natural resource management infrastructure in our region.

Comments are organized below as focus themes. Primary themes include: Fire Adapted Communities, Northern Spotted Owl habitat considerations, a closer look at the economics of planning and implementation, a series of questioned assumptions related to the draft RMP and summary thoughts on strategies to prioritze action to maximize acres treated to achieve a comprehensive set of benefits to enhance forest resilience.

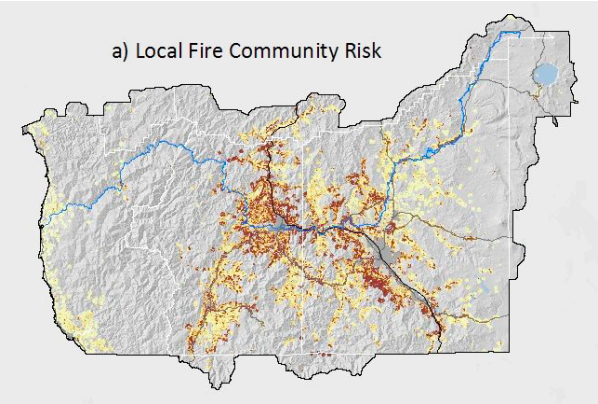
Comments reference and are largely predicated upon findings and suggested direction included in SOFRC's recently completed *Rogue Basin Cohesive Forest Restoration Strategy: A Collaborative Vision for Resilient Landscapes and Fire Adapted Communities.* A copy of the *Strategy* is submitted along with the below comments. BLM Medford District lands are at the heart of the *Strategy's* Analysis Area, as shown below.

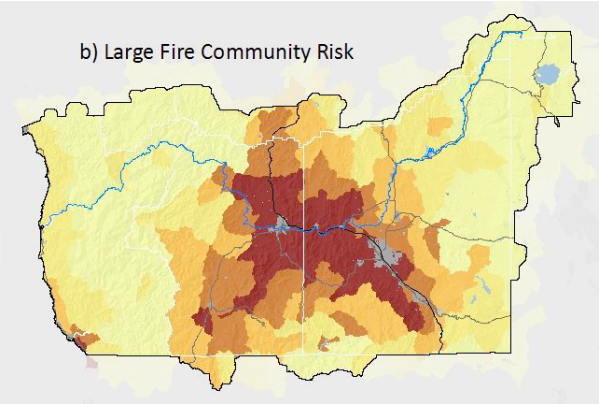


Theme I: Fire Adapted Communities and a Fuels Management Emphasis Area

The “Purpose and Need” of the RMP speaks to the need for action to restore fire-adapted ecosystems, particularly in the dry forests southern Oregon. A glance at the Analysis Area map on the previous page shows Medford BLM lands set within the commonly recognized checkerboard of public-private lands that are part of the legacy of the O&C Act in SW Oregon. All action alternatives to the RMP include a shared set of land use allocations, tiered primarily to the Northwest Forest Plan, that set management direction on BLM lands in this interface (e.g. Late-Successional Reserve, Riparian Reserve, etc.).

However, what this landscape configuration fails to recognize - or prioritize for action - is the common fate of this landscape in the face of wildfire. The below maps from the SOFRC *Strategy* show several scenarios of risk to communities from wildfire.





On the left, small localized fires (< 35acres), driven by development density, pose greatest threat to the darkest areas. On the right, large fires (> 35 acres) originating in the darkest watersheds pose the greatest risk to communities.

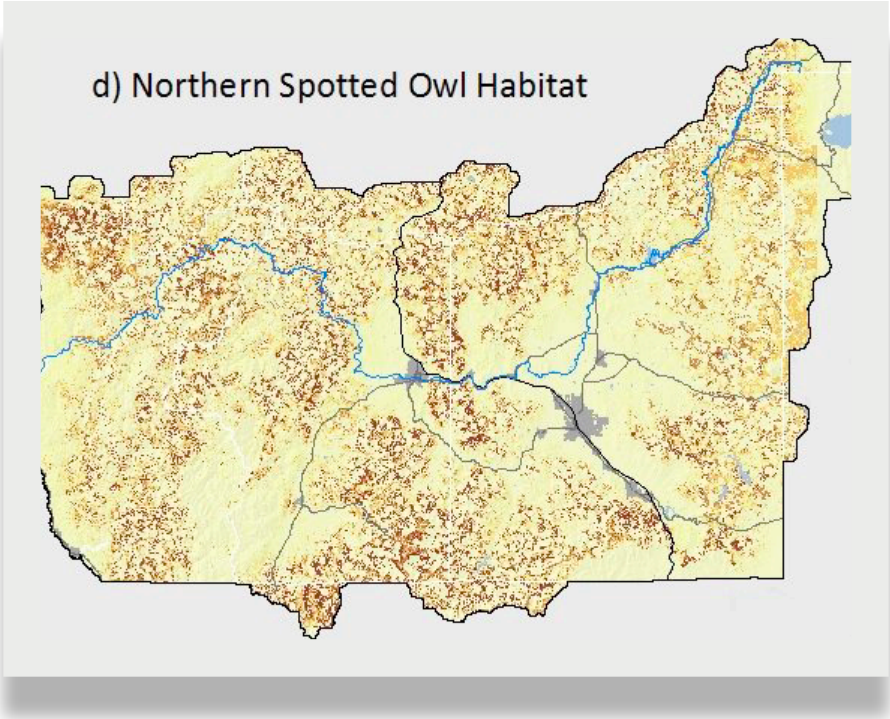
SOFRC suggests priority action should be taken to reduce the risk of fire by treating forests in this “Fuels Management Emphasis Area.” Prescriptions could include those to reduce surface and ladder fuels, as well as those to reduce density with broader forest resilience considerations in mind. This work would include both commercial and non-commercial components.

Josephine and Jackson Counties rank #1 and #2 amongst western counties in the number of acres in the public-private interface (Headwaters Economics, 2008). The National Cohesive Wildland Fire Strategy highlights the need to integrate action to promote resilient forests, efficient and effective wildfire response, and fire adapted communities. Increasingly, “all-lands” approaches to forest management are recognized as necessary to accomplish a wide range of established landscape goals in the public/private interface. Including a “fuels management emphasis area” slice of the RMP Alternative pie chart would serve the Medford District BLM and SW Oregon communities well.

Theme II: Northern Spotted Owl Habitat

The RMP “Purpose and Need” and associated discussion continues to link the fate of the northern spotted owl in the dry forests of SW Oregon to “large, contiguous blocks of late-successional forests.” However, this large block reserve approach may be ill suited to strengthening species recovery in the region, and exacerbates the conflict between timber harvest and habitat considerations in forest planning and project implementation.

In addition, RMP alternatives currently fail to capture the majority of known sites in the proposed reserve design, underestimating populations, and exacerbating the conflict between project design and habitat need. In sum, it remains a question if current alternatives conserve the ecosystems necessary to support owl recovery as required by the Endangered Species Act.



The SOFRC Strategy advocates forest management planning based on identification of priority areas that include current occupancy and known high value nesting, roosting and foraging habitat (Recovery Action 10). In these areas no treatments are necessary. In other areas, treatments can be designed to promote nesting, roosting and foraging habitat, as well as promote dispersal habitat, the reduced risk of wildfire and forest resilience. In the latter instance, treatments to thin young stands not only generate products, they place stands on a trajectory to become future high quality habitat.

The above map reflects priority opportunities to conserve northern spotted owl habitat.

Theme III: Economics

Economic considerations in the draft RMP appear, in general, to be abstracted from the forest itself. Expected board feet harvested generate gross volumes converted into estimated payments to counties. This provides a framework for addressing the alternatives and the their relationship to the O&C Act, but does not advance an understanding of the economics of project planning and implementation, nor facilitate the identification of a cost-effective treatment landscape.

The SOFRC Strategy relies on three general landscape treatment themes to achieve cohesive forest restoration in the Rogue Basin. These include the previously mentioned Fuels Management Area around communities at risk and the Complex Forest Habitat Area that tiers to management opportunity in forests favored by the northern spotted owl and other values associated with older, complex forests.

The Ecosystem Resilience and Forest Productivity Area embraces broad forest management objectives. Restoration of open forest habitats and promotion of fire and drought resistant tree species promotes long-term sustainable forests resilient to a variety of stressors, with the potential to provide economic return from harvest.

Restoration goals include:

i. Maintain and restore diversity of habitat, species, and stand structure;
ii. Reduce loss to fire, insects, and drought;
iii. Conserve old trees and stands outside complex forest habitat areas;
iv. Establish conditions for controlled underburning to maintain landscape resilience;
v. Foster conditions for timber production using restoration forestry principles; and
vi. Generate ongoing products and employment through long-term management.

The SOFRC Strategy identifies desired stand densities and structures based on collaboratively defined restoration targets for each of the above treatment themes. Excess density is available for harvest consistent with goals for each area. Total available volume can be estimated.

With an eye toward improved economic efficiency and cost-effective treatments, the SOFRC strategy has modeled economic viability based on seasoned contractor experience to determine an “economically viable” treatment landscape. The below table shows harvest systems linked to available restoration volume in order to conceptually and spatially identify an economically viable treatment landscape. This approach can help plan cost effective treatments. It can also be used to predict treatment areas that - while perhaps needing treatment - will require subsidies for implementation.

Haul system	Definition	Restoration byproduct (MBF/ac)		
		< 2	2-6	>6
Road based	<200 feet of existing roads	Subsidy Required	Economically Viable	Economically Viable
Skidder	Accessible via existing roads with slopes <35%	Subsidy Required	Economically Viable	Economically Viable
Short cable	200-800 downhill of existing roads	Subsidy Required	Economically Viable	Economically Viable
Long cable	800-1600 downhill of existing roads	Subsidy Required	Subsidy Required	Economically Viable
Helicopter	Within ½ mile of existing roads	Subsidy Required	Subsidy Required	Subsidy Required
Limited	Inaccessible via existing road system	Inaccessible	Inaccessible	Inaccessible

The primary intent of this analysis is to identify - and expand - acres available for cost-effective treatments that achieve the above-mentioned restoration goals. This tool can also help identify areas where additional subsidies may be required to achieve intended outcomes, for instance reducing the risk of fire to communities identified in the Fuels Management Emphasis Area.

Current SOFRC analysis prioritizes and recognizes the utility of focussing on volume available from within the existing road network. (Helicopter harvest is considered, though generally not currently economically viable without subsidies.) Road building remains a socially, ecologically and economically challenging tool to use on the primarily steep ground of SW Oregon. Long term maintenance is a key concern, as the current backlog of road maintenance testifies. SOFRC recommends a prioritized focus on management activity within the currently existing road infrastructure.

Stewardship Contracting and Agreements remain a largely underutilized tool in SW Oregon. However, this mechanism has been shown effective in treating landscapes across the dry forests of the west. SOFRC suggests Stewardship can be a useful tool treat more acres for resilience and reduced risk of fire, while generating jobs on the ground and in mills of the region. Well conceived projects provide an avenue to treat more acres in a cost-effective means.

Theme IV: Assumptions

SOFRC's work to better understand restoration need related to available volume at the stand and landscape scale leads to questions about the draft RMP's inventory analysis in SW Oregon. Our work leads to fundamental concern about RMP assumptions of productivity estimates, standing volume per acre and growth rate projections. Overestimation at the stand scale can lead to unrealistic expectations at the landscape scale. It can also complicate the task of BLM field staff to find project-level volume sufficient to meet expected planning targets.

It appears the methods of rating landscape productivity, site class, and GIS imputation to mapped areas never sampled have inflated productivity estimates. At the same time,

the dry forest of SW Oregon has many acres simply not suitable for economic, short rotation timber production. The most productive portions of the landscape have been previously harvested over the last 50 years and require maintenance prior to re-entry. What remains of the older, larger forest is now needed to support other resource goals such as riparian protection, NSO habitat and other societal goals.

Theme V: Promoting Forest Resilience and Fire-Adapted Communities through Prioritized Treatments

The Draft RMP has little to say about the process that would lead the agency to decision-making regarding project design and implementation (placement) beyond generalized identification of expected yield. There is little direction on “where to go, when and why.”

While this may be appropriate given the necessity of ground-truthing project design before completing NEPA - particularly in consideration of proposed impact to the northern spottted owl - this approach can appear random and not transparent, prone to ill-placed projects that fail to fully identify project need.

The SOFRC Strategy and Draft RMP comments suggest serious consideration of incorporating a spatially explicit, prioritized treatment landscape into future agency planning across the Medford District BLM. Such an effort could better identify restoration need, maximize acres treated as a primarily goal (as opposed to volume generated) and work to strategically achieve key goals, including the reduced risk of fire to homes in the Fuels Management Emphasis Area, landscape-scale conservation of northern spotted owl habitat and advances in “all-lands” implementation.

This approach would provide opportunity for agencies and communities to more easily work together in project design, and provide greater assurance that long term agency goals are met. The Southern Oregon Forest Restoration Collaborative welcomes the opportunity to work with the BLM to accomplish this strategy.

These comments are submitted in support of effort to increased agency efficiency and effectiveness, and promote broad-scale forest health and resilience, fire adapted communities and the maintenance of a vibrant workforce able to implement projects consistent with long-term vision and need.

Jasmine Benjamin

From:	fpaulete@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent:	Saturday, August 22, 2015 11:58 AM
To:	RMP-Comments@heg-inc.com
Subject:	Fwd: The Nature Conservancy's Comments on BLM's Draft Resource Management Plan for Western Oregon
Attachments:	Untitled attachment 00205.htm; image001.gif; image002.jpg; TNC WOC #3 V1 Rogue Basin Cohesive Forest Restoration Strategy 2015 FINAL.pdf; Untitled attachment 00208.htm; Untitled attachment 00211.htm

---------- Forwarded message ----------
From: **Paulete, Francisca** <fpaulete@blm.gov>
Date: Sat, Aug 22, 2015 at 9:14 AM
Subject: Fwd: The Nature Conservancy's Comments on BLM's Draft Resource Management Plan for Western Oregon
To: BLM_OR RMPWO_Comments <blm_or_rmpwo_comments@blm.gov>

---------- Forwarded message ----------
From: **Mark Brown** <m4brown@blm.gov>
Date: Fri, Aug 21, 2015 at 6:54 PM
Subject: Fwd: The Nature Conservancy's Comments on BLM's Draft Resource Management Plan for Western Oregon
To: Francisca Paulete <fpaulete@blm.gov>, Richard Hardt <rhardt@blm.gov>, Michael Allen <m1allen@blm.gov>

Sent from my iPhone

Begin forwarded message:

> **From:** Mark Stern <mstern@tnc.org>
> **To:** "M4Brown@blm.gov" <M4Brown@blm.gov>
> **Cc:** Cathy Macdonald <cmacdonald@tnc.org>, Darren Borgias <dborgias@tnc.org>, Nav Dayanand <ndayanand@tnc.org>, Leslie Bach <lbach@tnc.org>
> **Subject: The Nature Conservancy's Comments on BLM's Draft Resource Management Plan for Western Oregon**
>
> August 21, 2015
>
> Mark Brown

Bureau of Land Management

P.O. Box 2965
Portland, OR 97208

Re: Draft Bureau of Land Management Resource Management Plan Comment

Dear Mark,

Greetings. The Nature Conservancy (TNC) appreciates the extensive effort of the Bureau of Land Management (BLM) in revisioning the Resource Management Plan (RMP) for western Oregon, and the opportunity to provide these comments. TNC has a long and successful partnership with the BLM in Oregon through which we support the ongoing and future management by BLM of lands that are critical for the representation and conservation of biodiversity, including cooperative and collaborative management at important landscapes such as the Table Rocks, Eight Dollar Mountain, French Flat, Round Top Butte ACEC's and ongoing engagement in the BLM's efforts in dry forest restoration in southern Oregon. We support the efforts of the BLM to include analysis of the "dry forests" in southwest Oregon and to propose a management plan which sustains these ecosystems and the habitat and sensitive species they support which are the focus for our mission of conserving the lands and waters on which all life depends. Given our intensive effort to collaborate via the Southern Oregon Forest Restoration Collaborative (SOFRC) and to engage and gather input from the federal land management agencies, including the BLM, and regulatory agencies, we endorse the recommendations of SOFRC on the Rogue Basin Cohesive Forest Restoration Collaborative and offer this assessment (attached) as an opportunity for BLM to make adjustments accordingly in the Draft RMP, and to potentially use this type of assessment further in adopting core management strategies in similarly appropriate habitats.

Also, as BLM goes forth in evaluating and implement management strategies on these important lands, we encourage and support BLM in developing a rigorous adaptive management strategy that would allow the BLM and partners to evaluate management practices, effects and outcomes, and to make appropriate adjusts going forth over the life of the plan.

We welcome the opportunity to engage further with you and BLM staff on these matters.

Sincerely,

Mark Stern
Director, Forest Conservation Program
The Nature Conservancy

Mark Stern
Director, Forest Conservation & Klamath Conservation Area

mstern@tnc.org
(503) 802-8133 (Phone)
(503) 802-8199 (Fax)

nature.org<http://nature.org/>

The Nature Conservancy

821 SE 14th Ave.
Portland, OR 97214

[email-signature]<http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/oregon/50thanniversary/index.htm>

Please consider the environment before printing this email

--
Panchita Paulete
Associate IDT Lead
Resource Management Plans for Western Oregon

3106 Pierce Parkway, Suite E
Springfield, OR 97477
541.683.6976
fpaulete@blm.gov

From: fpaulete@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Saturday, August 22, 2015 11:32 AM
To: RMP-Comments@heg-inc.com
Subject: Fwd: Umpqua Watersheds Comments
Attachments: d.e.i.s. comments, etc.zip

---------- Forwarded message ----------
From: **Hardt, Richard** <rhardt@blm.gov>
Date: Fri, Aug 21, 2015 at 9:47 AM
Subject: Fwd: Umpqua Watersheds Comments
To: comments <blm_or_rmpwo_comments@blm.gov>

---------- Forwarded message ----------
From: **Brown, Mark** <m4brown@blm.gov>
Date: Thu, Aug 20, 2015 at 5:33 PM
Subject: Fwd: Umpqua Watersheds Comments
To: Richard Hardt <rhardt@blm.gov>, Francisca Paulete <fpaulete@blm.gov>, Michael Allen <m1allen@blm.gov>

---------- Forwarded message ----------
From: **Joseph Patrick Quinn** <jquinn@mydfn.net>
Date: Thu, Aug 20, 2015 at 10:23 AM
Subject: Umpqua Watersheds Comments
To: Mark Brown <m4brown@blm.gov>

Mark:

Attached is a folder containing UW's d.e.i.s. comments and some supporting documents. Can you please acknowledge their receipt to me at jquinn@mydfn.net

Thanks,

Joseph Patrick (Pat) Quinn
Conservation Chair, Umpqua Watersheds, Inc.

--

Mark A. Brown

Project Manager

Resource Management Plans for Western Oregon

Bureau of Land Management

(503) 808-6233, Cell (971) 275-2710

--

Richard Hardt
Interdisciplinary Team Leader
RMPs for Western Oregon
Bureau of Land Management
(541) 683-6690

Federal Forest Carbon Coalition

Federal Forest Carbon Report Card

An Urgent Call to the Obama Administration to Modernize Federal Forest Management to Mitigate and Prepare for Climate Disruption

Email: forestcarbon@trig-cli.org
Website: www.forestcc.org

Contacts:
Bob Doppelt, Executive Director, The Resource Innovation Group and Co-Chair FFCC
Ernie Niemi, Economist with Natural Resource Economics Inc. and Co-Chair FFCC
Jim Furnish, Retired Deputy Chief of the Forest Service and Senior Advisor to the FFCC

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Federal Forest Carbon Report Card

An Urgent Call to the Obama Administration to Modernize Federal Forest Management to Mitigate and Prepare for Climate Disruption

The U.S. National Academy of Sciences, Intergovernmental Panel on Climate Change, and many other science organizations have recently said that large and rapid reductions in greenhouse gas emissions are urgently needed to prevent uncontrollable climate disruption. *This means that carbon dioxide is now a civilization-changing resource*.

Federal forests can and must play an important role in responding to the imperative of reducing atmospheric concentrations of carbon emissions. However, research by the Federal Forest Carbon Coalition, a national consortium of organizations concerned about the management of forest carbon, found that the U.S. Forest Service, Bureau of Land Management, and other federal forest management agencies lack clear policy and field direction about how to manage forest carbon. Furthermore, optimizing carbon storage is not an explicit decision criterion. As a result, most planning processes, Environmental Assessments and Environmental Impact Statements, and on-the ground projects fail to adequately consider the impacts of forest management on the Earth's climate.

This document offers an assessment of how federal agencies are currently managing forest carbon. It also offers a set of recommendations for how federal agencies can manage forest carbon in a scientifically credible manner. Finally, it includes a checklist that can be used by conservationists and federal agency personnel alike to ensure that of all of the key issues related to sound forest carbon management have been addressed.

Federal Forest Carbon Report Card

An Urgent Call to the Obama Administration to Modernize Federal Forest Management to Mitigate and Prepare for Climate Disruption

I. Federal Forests Must Play a Critical Role in Reducing the Climate Crisis

Forests are the lungs of the Earth and have helped regulate global carbon for millennia. Excessive logging, road building, and other development activity have reduced the amount of carbon stored in America's forests. Most of that carbon has been released into the Earth's atmosphere where it contributes to global climate change. If forests are not managed to maintain their existing stocks of carbon and optimize additional carbon stores, climate change will grow much worse.

However, with careful science-based management, U.S. forests can help mitigate climate change, become more resilient to its affects, and generate numerous economic, social and ecological benefits.

Federal forests, in particular, must play a leading role. The annual carbon emissions of the U.S. were 6.5 billion metric tonnes in 2012. National Forests in the U.S. hold more than 10 billion metric tonnes of carbon, which means they store about 50 percent more carbon than annual U.S. emissions.[1] Every possible action must be taken to prevent these existing stocks of carbon from being released into the atmosphere. If the right policies and practices are adopted, federal forests can store even more carbon. These actions will help minimize the likelihood of uncontrollable climate change. They will also offer a much-needed exemplary model that state and private forest in the U.S., and forests managers worldwide can emulate to manage forest carbon.

To protect the climate and serve as a role model, federal agencies must grasp how urgent it is to act now to maintain existing stores of carbon and increase the amount of carbon stored in federal forests. Atmospheric carbon dioxide increased by 25 percent in the last 50 years to over 400 parts per million, and it continues to rise. The world's top climate scientists have issued urgent warnings that we are fast approaching a point of no return—where climate change will become uncontrollable. If this occurs, we can expect devastating social, economic, and environmental consequences for centuries to come. This means that carbon can no longer be ignored or even looked at as merely one of many resources to manage. *We are compelled to say this again*: *carbon is now a civilization-changing resource*.

Federal forest management agencies have taken some positive steps to address this need by, for example, quantifying some carbon stocks and analyzing changes in carbon held in federal forests. However, assessing carbon is by no means sufficient. The agencies must quickly and definitively elevate their efforts to the scale of the climate crisis by adopting clear policies and direction to field staff on how forest carbon should be managed. The policies must lead to amendments to existing policies, regulations, planning processes, and practices as well as to the enactment of new directives to reduce the sources of climate change and increase resilience to climate and other natural disturbances, as President

Obama's Executive Order 13653 *Preparing the United States for the Impacts of Climate Change* and Executive Order 13514 *Federal Leadership in Environmental, Energy and Economic Performance* require.

The necessity for new policy directives for federal forests is great because most of the current policies, programs, and management practices were instituted well before the risks of runaway climate change were understood. Consequently, many current policies and programs either offer little direction for how federal agencies should manage forests to minimize the release of carbon emissions and prepare for climate impacts or promote activities that produce the opposite effects.

In addition, many of the tools used by, as well as the training and expertise of most of the personnel of federal forest management agencies, reflect conditions that existed prior to today's understanding of great risks of runaway climate disruption. This has led many federal agencies to apply timber management principles and practices to carbon management, when in fact they are very different issues that require a different mindset, goals, policies, regulations, programs, and management tools.

Similarly, many current commercial, recreational, and other uses of federal forests were established before the risks of runaway climate disruption were understood. Consequently, many ongoing uses and practices often cause the release of carbon into the atmosphere. For the sake of current and future generations, it is essential to rapidly modernize the way federal forests are managed and utilized to reduce the profound ecological, economic, and social risks associated with uncontrolled climate disruption.

II. Three Case Studies Reveal the Failure of Federal Agencies to Manage Forest Carbon to Reduce the Risks of Uncontrollable Climate Disruption

In response to a request from federal officials for examples of how carbon is being managed in the field, in 2014 FFCC Senior Policy Advisor and Retired Deputy Chief of the Forest Service, Jim Furnish, with assistance from FFCC staff, completed a brief survey of National Forests. We found that, contrary to the urgency of responding to the climate crisis, the U.S. Forest Service is taking few, if any, meaningful on-the-ground actions to maintain existing stocks and increase the carbon stored in the nation's 155 National Forests. We believe this failure is systemic.

Our research found that the National Forest system has not:

- Established an explicit goal of maintaining and increasing forest carbon on each forest.
- Analyzed the quantity of carbon in specific forest locations or the implications for those stocks of different management options when completing environmental assessments, forest plans, or proposals for field projects.
- Required that the effects on existing and future stores of carbon be considered in all decision-making; to the contrary, often carbon is not even mentioned as a consideration.

Three National Forests in diverse locations illustrate the status of forest carbon management on the national forests. They generally show the Forest Service's failure to give forest carbon the consideration it now requires. However, the case studies also show that past forest-management decisions that have lengthened harvest rotations or prohibit timber cutting altogether are having an unplanned positive impact on the amount of forest carbon. This should not be a surprise. Forests absorb carbon as they grow. But this unintended benefit should not be confused with purposeful forest carbon management.

<u>The Siuslaw (Oregon) and National Forest in the Pacific Northwest</u>

Situated in Oregon's Coast Range, this forest has undergone dramatic changes following the necessary reduction of industrial logging on public lands due to concerns about impacts to fish, wildlife, and water. The Siuslaw once had the highest levels of timber productivity in the US (on a per acre basis), producing 300-500 million board feet of wood products per year for decades. It also had the highest levels of carbon depletion. Adverse impacts on Pacific salmon, spotted owls, and other species led to President Clinton's 1994 Northwest Forest Plan, which brought much-needed change. For the last 20 years, the Siuslaw forest has followed a common-sense vision of protecting mature forests and thinning dense forests, while reducing the road system to better match current priorities. Through natural processes, the forest has been persistently restoring itself and increasing in carbon density. Yet, this has occurred absent any intentional actions to increase carbon.

Until the last few years, forest managers gave little thought to the effects of forest-management policy on carbon and climate change. The remaining mature and old-growth forests in the Pacific Northwest are among the most carbon dense forests in the world. Research has shown that clearcutting these forests can release up to 85 percent of the carbon in the trees, *with as little as 15 percent retained long-term in wood products*. Thus, former logging policies resulted in these forests being a very *large source of atmospheric carbon* during the latter 20th century. With the dramatic reduction in logging, the last 20 years have seen these same forests return to functioning as a *carbon sink*.

Clearcutting big trees was abandoned on the Siuslaw in 1994 in favor of thinning remnant logging plantations–but for the purpose of accelerating *creation of old-growth forest* rather than producing more timber. This policy was primarily driven by concerns for wildlife and fish habitat and water quality. Carbon was never a consideration.

Today, though, these mature coastal forests store vast amounts of carbon, and the amount is increasing every year. Fish habitat has improved, as has water quality. These outcomes demonstrate *a powerful relationship between carbon and water* in mature forests. Other important environmental services that closely correlated to increasing forest carbon include air quality, diverse wildlife habitats, recreation and solitude.

Thinning of the plantation stands occupying past clearcuts now provides a stable, sustainable flow of about 40 million board feet per year, while retaining forests that will continue to sequester and store carbon indefinitely as they age to maturity. But since this has occurred without an explicit focus on maintaining and increasing forest carbon, the Siuslaw's approach raises the question of *how much additional carbon the forest could store if it adopted an explicit goal of maintaining and increasing carbon*?

This question applies to national forests—and forests administered by the Bureau of Land Management as well—throughout the Pacific Northwest. Although the rate of carbon losses on PNW federal forests has been reduced as the total timber harvest on public lands has declined from a high of 11 billion board feet (1988) to about 2.5 billion today, *standard forest management practices regionwide still do not prioritize retaining and/or increasing forest carbon*. Thus, *the biggest trees* – highly valued for wood products but even more valuable for the carbon they keep from the atmosphere – continue to fall on many forests, triggering the loss of thousands of tons of carbon.

As mentioned, it is important to note that *research has found that the claim that cutting trees and converting them into lumber sequesters most of the carbon in wood products is false*. Because of the fossil fuels used and wood waste that is generated throughout the entire value-chain, including the process of cutting trees, transporting, milling the logs, and delivering them to end users, studies have shown that *only 15-30% of the carbon stored in trees becomes sequestered in wood products fifteen years after harvest*. The other 70-85% is released into the atmosphere.[2]

As the gravity of the climate crisis becomes evident, the Siuslaw demonstrates some increased carbon gains, even though *this has occurred inadvertently*. The adoption of

specific goals, policies, regulations, assessment procedures and management practices intended to maintain and increase carbon stores would enhance the Siuslaw's approach and likely lead to even more carbon storage. Not only would this reduce the risks of uncontrollable climate change, it would also produce a suite of natural co-benefits for water, wildlife, fish, air, biotic diversity, scenic beauty, recreation opportunities, and jobs.

<u>The Black Hills National Forest (S. Dakota and NE Wyoming)</u>

This island of ponderosa pine forest sits in the midst of America's Great Plains. This forest exhibits a *fire-adapted character*, with studies showing that they characteristically burned every 5-10 years due to abundant lightning-ignited fires in dry summer seasons. Under natural conditions, ponderosa forests have an open, park-like structure, with big old, thick-barked trees capable of surviving ground fires that then act as a seed source for new saplings.

Extensive, persistent logging of this highly valuable wood resulted in removal of the prized big, dominant trees that were the keystone for ecological resilience, and, as we now know, forest carbon storage. Also, aggressive firefighting throughout the 20th century deprived these forests of the benefits of frequent "cool" fires that sustained forest health. By 1980, after much of the Black Hills had been logged two and even three times, the predictable result was a homogenous, relatively young forest largely devoid of fire's influence and most of the big trees. Longer, dryer summers are leading to large-scale, catastrophic, all-consuming conflagrations when efforts to extinguish small fires fail (such as the 100,000 acre Jasper Fire of 2000, the largest in Black Hills' history). Things are slowly changing. Policy has shifted a bit, some of the more egregious practices have changed, and timber production is no longer the sole consideration, but there is no evidence that forest managers explicitly consider maintaining and increasing forest carbon as an objective in any management plan or decision. Current management seeks to reduce the density of live trees to decrease the likelihood of wildfire mortality, and reintroduces fire through prescription burning to mimic natural fire regimes. This management regime, however, does not reflect any analysis to determine its impacts on the amount of carbon stored on the forest, *despite a growing number of studies that suggest that many fuel treatment activities can result in the release of more, not less carbon.*

The Forest Service estimates that the Black Hills currently contains more than 55 million tons of carbon. Soil organic matter represents the largest forest ecosystem carbon stock, at more than 24 million tons, followed by trees (including roots) at more than 18 million tons. The majority of forest carbon is in 60-100 year-old stands.[3] Early in stand development, most carbon is below ground but as the forest grows more and more is found above ground.

In sum, our assessment found that the Black Hills has reduced some (but not all) of the practices that were counterproductive for forest ecosystems, wildlife habitat, water resources, and the climate. *However, maintaining and increasing forest carbon is not an explicit goal and consequently the forest is failing to optimize forest carbon.* The as yet unrealized benefits of increasing and sustaining below ground and above ground carbon

including the abundance of old, big, mature trees to boost carbon storage and anchor ecosystem health is a regrettable oversight.

<u>The Idaho Panhandle National Forest</u>

As the name suggests, this large, 2.5 million-acre area encompasses all national forest land in the Panhandle area of northern Idaho. Moist, relatively carbon-dense forests characterize this landscape. Aggressive timber harvesting following WWII produced about 300 million board feet per year, although the level has fallen over the past 25 years to about 50 mmbf today. The IPNF is heavily roaded, with about 11,000 miles.

The IPNF in 2010 released a more than 100-page report on climate change issues associated with its revised forest plan, but the FFCC found in it *no mention* of the role this 2.5 million-acre forest plays in sequestering and storing carbon and the effects on climate change.[4] In planning documents released in August 2013, the IPNF reveals a concern about current "thick" forest conditions exacerbating fire risk, both from decades of regeneration harvesting (yielding a large acreage of dense, young trees) and fire suppression leading to exclusion of fire's natural role in the ecosystem. The documents briefly discuss the relationship between forest carbon and climate change, but without any statement related to the goal of maintaining and increasing carbon stores.

The Forest Service estimates the IPNF contains 177 million metric tons of forest carbon, and sequesters 27-31 metric tons/acre/year, making the forest a carbon sink. These numbers raise questions about their validity, though, insofar as sequestration of 30 metric tons/ac/yr would yield 75 million metric tons per year, or 42 percent of the IPNF's estimated total carbon. This projection appears to be off by at least a factor of ten. A comprehensive rate of carbon sequestration in Oregon and Washington National Forests was recently calculated at only 0.37 metric tons/ac/yr (0.91 Mg/ha/year), and results produced by the Carbon Online Estimator (COLE) for forested areas in the Idaho Panhandle show rates for the uptake of carbon in all forest types that are less than 1 metric ton of Carbon/ac/yr.[5] Although the IPNF highlights wood products for their capacity to store carbon, it makes no mention of the associated carbon losses from logging and the loss of carbon through the entire economic value chain leading to the use of lumber (as previously stated, research indicates that 70-85% or more of forest carbon is released into the atmosphere and only 15-30% is retained in wood products after 15 years—which also continues to degrade over time). This position displays a limited awareness of and concern for forest carbon, and a failure to investigate the full literature regarding the relationship between timer harvest and the storage of forest carbon.

It is clear that a pervasive bias exists in the Idaho Panhandle NF: the belief that carbon must be <u>*removed*</u> in order to <u>*save*</u> carbon. *This perception points to what the FFCC has found to be a fundamental tenet within many federal forest management agencies*: federal forest policy is to remove live trees through thinning, or dead trees through salvage logging, in order to reduce risk of *potential loss* of forests. But the <u>*real loss*</u> of carbon from removing live trees, as well as the carbon held in the roots and soil, is not accounted for as the agency focuses on addressing a *possible loss* in the future.

IPNF management is being conducted today without proper goals or analysis of forest carbon and consideration of research that conflicts with this tenet. It may be true that the IPNF functions as a carbon sink today but that is the result of totally unplanned measures–and even then the FFCC questions the Forest Service's estimates. Forest managers have demonstrated that they have not asked and answered the question: "*How much more carbon could be stored if management focused on this objective?"*

Case Study Conclusions

These case studies lead us to conclude the following:

- Senior officials and field staff in federal forest agencies have limited awareness of the importance of forest carbon in reducing the likelihood of uncontrollable climate change.
- No evidence exists of intentional policies issued by the Chief's Office or Regional Offices to conserve existing stocks of forest carbon and increase carbon stores.
- No procedures exist to assess the effect of plans or projects on forest carbon.
- In many cases a mindset and set of assumptions exist that timber harvest and other activities are scientifically sound methods of managing forest carbon, when in reality they are not.
- Forest managers do not yet provide a thorough, transparent analysis of the effects on carbon, nor do they utilize decision criteria that recognize the importance of carbon in planning processes, environmental assessments, or project proposals.
- No recognition exists of the benefits of managing forest carbon for other strongly correlated values, such as water quality, habitat diversity, and job creation.
- No recognition exists of the need to assess the social costs of carbon—the costs of the damage to people, infrastructure, and society as a whole now and in the future— in planning documents, timber harvest, road building, or other development projects.

In sum, the Forest Service has failed to explicitly manage forests in ways that address the urgency of the climate crisis. *As previously stated, carbon is now a civilization changing resource*, but these case studies illustrate that the Forest Service has not yet recognized this. The FFCC believes *these failings are systemic and exist in most other federal forest management agencies as well.*

III. Recommendations for Modernizing Federal Forest Management to Mitigate and Prepare for Climate Change

Based on our analysis of the current state of the science of forest carbon management, the FFCC believes that federal forests should modernize their policies, regulations, planning processes, management programs and practices in accordance with the following six goals:

> Goal I: Recognize Carbon as a Significant Public Resource and Establish Carbon and Climate Change-Centered Goals for All Decisions Affecting Federal Forest Management.
>
> Goal II: Maintain the Existing Stocks of Carbon on Federal Forests, Including Carbon in Live and Dead Materials, Above and Below Ground.
>
> Goal III: Increase the Amount of Carbon Stored in Federal Forests.
>
> Goal IV: Enhance, Consistent with Goals I, II, and III, the Resilience of Federal Forests to Climate Change-Related and Other Natural Disturbances.
>
> Goal V: Generate Social, Economic, and Ecological Benefits Consistent with Goals I, II, III, and IV.
>
> Goal VI: Fully Account for the Benefits and Costs of Any Decreases or Increases in Atmospheric Carbon and Other Greenhouse Gasses in All Forest-Related Policies, Programs, Regulations and Development Proposals.

Detailed Recommendations

This section describes the details embedded within each of the six goals.

Goal I: Recognize Carbon as a Significant Public Resource and Establish Carbon and Climate Change-Centered Goals for All Decisions Affecting Federal Forest Management.

Recent reports by the National Academy of Science, Intergovernmental Panel on Climate Change, and the U.S. Global Change Research Program make clear that climate change is already having significant impacts in the U.S., and that major rapid changes are needed to reduce the risks of runaway climate change. Because federal forests store large amounts of carbon, and managerial decisions for these forests can determine how well they continue to play this vital role, all federal forest management agencies should be required to recognize carbon as a significant public resource and adopt clear carbon and climate change-centered goals.

The FFCC therefore recommends that The White House issue clear directives to the Departments of Interior and Agriculture and all other federal forest management agencies

to adopt goals to maintain existing carbon stocks while also increasing carbon stored, especially where it is harmonious with other multiple-use objectives, such as clean water, high quality habitat for fish and wildlife, recreation, and scenic values. These goals should direct forest management agencies to do whatever is possible to harmonize carbon storage and climate resilience, resolving conflict in favor of carbon storage because uncontrollable climate change will overwhelm many resilience measures that can be taken today while causing devastating impacts for all of humanity, now and in the future.

<u>Goal II</u>: Maintain the Existing Stocks of Carbon on Federal Forests, Including Carbon in Live and Dead Materials, Above and Below Ground.

A. Permanently Withdraw High-Biomass Forested Areas Nationwide from Further Commercial Timber Harvest and Other Development Activities.

Runaway climate change will devastate the U.S. and global economy and diminish the resilience of federal forests. To reduce these risks, quick and decisive action is needed to prevent, whenever feasible, the release of carbon into the atmosphere. Federal forests must be a core role in reducing emissions. The annual carbon emissions of the U.S. were 6.5 billion metric tonnes in 2012. Research suggests that, if managed appropriately, the nation's terrestrial ecosystems could offset as much as 40% of these emissions.[6] While this total includes agricultural and other lands, the FFCC will limit its recommendations to federal forests.

A vital early action needed to reduce carbon emissions is to prevent, whenever feasible, the release of stored carbon on federal forests. The largest amount of carbon on federal forests is found in high-biomass forests, as defined by Krankina et al.[7] Protecting high-biomass forest areas is an essential starting point for any scientifically credible forest response to the President's Executive Order 13653.

The FFCC specifically recommends that all federal forest management agencies immediately withdraw all high-biomass forests on federal lands and place a moratorium on further commercial timber harvest, road building, post-fire logging, oil and gas drilling, mining, and other development activities. Agencies should use the definition and process described by Krankina et al. to identify these areas.[8] After these areas are withdrawn, thorough scientific analysis should be completed to develop plans to reduce the risks of these forests to climate change-related and other natural and human disturbances.

B. Authorize Commercial Timber Harvest and Other Development Activities in Other Mature Forests Only When Analysis Shows the Carbon Benefits Exceed the Full Costs over the Mid-Term (i.e. 20-40 years).

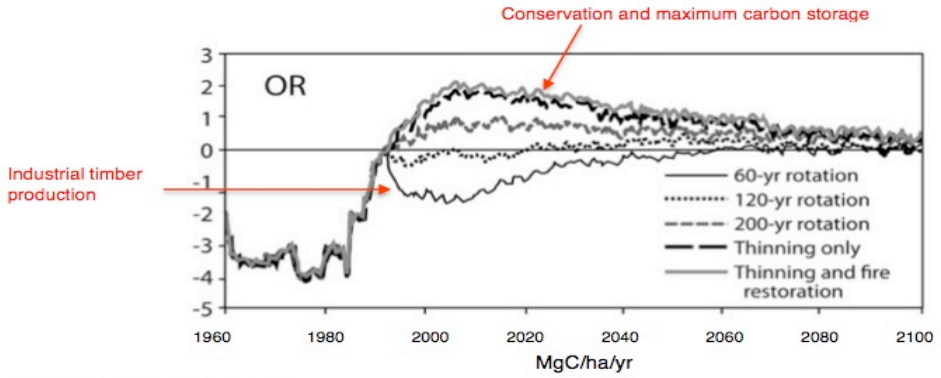
Mature forested areas, as defined by federal forest management agencies, also provide opportunities for maintaining carbon stocks on federal lands. The release of carbon from these areas must also be avoided. The FFCC therefore recommends that commercial harvest, road building, and other development activities should be authorized in mature forests only after federal agencies have completed scientific, comprehensive, transparent

analysis that shows that the carbon benefits of the activities substantially outweigh the costs.

Two recent publications illustrate an approach for estimating the economic value of the carbon stored or emitted under forest-management alternatives. One publication estimates the social cost of carbon, i.e., the value of the economic damage that will result from the emission of one metric tonne of carbon dioxide or, conversely, the value of the damage that will be prevented by sequestering the same amount.[9] The mid-level estimates range from about $33 in 2015 to $71 in 2050 (2007 dollars).

The second publication, by forest scientists at Oregon State University, estimates the amount of carbon dioxide that would be emitted or sequestered under forest-management alternatives for federal lands managed by the Northwest Forest Plan (NWFP).[10] This research traced carbon stores on these lands from 1960 until the adoption of the NWFP in 1993, and then projected carbon stores under five alternatives: industrial logging with 60-year rotations, logging with 120-year rotations, logging with 200-year rotations, conservation with the thinning and fire-management currently allowed by the NWFP, and conservation with current level of thinning and restoration of historical fire regimes. The researchers did not assess an alternative with no thinning. The modeling found that, through 2100, the first of the alternatives (60-year rotations) would convert the greatest amount of forest carbon to atmospheric carbon dioxide, and the last of the alternatives (thinning and fire restoration) would store the most carbon.

The graph below shows the annual results for lands in Oregon, measured in Mg of carbon per hectare per year. These results, converted to the equivalent annual metric tonnes of carbon dioxide emitted or sequestered and multiplied by the social cost of carbon for each year, can support a comparison of the carbon-related social costs, or benefits, of one alternative versus another.



Source: Krankina, et al. (2012 p. 176).

Such a comparison would provide only an initial estimate of the carbon-related costs or benefits of one alternative relative to another. Additional consideration should be given to accounting for, even if qualitatively, major sources of uncertainty in the analysis. The analysis also should transparently account for other effects, such as the value of each alternative's effects on clean water, habitat, and other co-benefits of carbon stored by

federal forests, as well as effects not included in the estimates of the social cost of carbon. These include effects, like those associated with the acidification of freshwater and seawater resulting from rising atmospheric carbon dioxide levels, that cannot be monetized with currently available information.

C. In Planning Rules, Establish a Process to Classify, Designate, and Conserve Forested Areas with High Carbon Stocks.

The growing risks of runaway climate change mean that the long-term conservation of forested areas with high carbon stocks must become a top priority for federal forest management agencies.

FFCC therefore recommends that a process be initiated to incorporate into planning rules a new land-use classification that leads to the designation and permanent conservation of forested areas with high carbon stocks. The FFCC also recommends that a formal process be established to define the criteria that will be used to determine such classifications and to nominate forest areas that satisfy these criteria. While the criteria are being established, the FFCC recommends using levels above regional forest biomass averages for specific forest types to determine relative significance of carbon stores because similar techniques have been used in the literature. [11]

Establishing a new classification for the conservation of forested areas with high carbon stocks is consistent with both the National Forest Management Act (NFMA) and the Federal Land Policy and Management Act (FLPMA). The NFMA language (16 U.S.C. § 1603) states, for example, that "the Secretary of Agriculture shall develop and maintain on a continuing basis a comprehensive and appropriately detailed inventory of all National Forest System lands and renewable resources. This inventory shall be kept current so as to *reflect changes in conditions and identify new and emerging resources and values*" (italics added). The emergence of climate change certainly reflects new conditions and scientists have identified high-biomass forests as an incredibly important emerging resource and value.

<u>Goal III</u>: Increase the Amount of Carbon Stored in Federal Forests.

A. Prevent Management Activities, Including but Not Limited to Timber Harvests That Would Reduce Increases in Carbon Stocks on a Federal Forest.

The FFCC strongly believes that federal forest management agencies must adopt policies, programs, regulations, and practices to increase carbon sequestration on federal forests through practices that *also* maintain the existing stocks of carbon. In other words, actions to accelerate the sequestration of carbon from the atmosphere must not lead to the loss of carbon already stored in the trees and soils of federal forests.

A starting point for achieving this goal is to prevent deforestation from clearcutting, road building, oil and gas development and other actions that would degrade a forest's ability to maintain existing stores and increase the sequestration of carbon. The FFCC therefore recommends that policies, programs, and regulations be adopted to prevent deforestation

resulting from road building, energy production, and other development activities as well as the conversion of forests to pasture, or scrub lands. The FFCC opposes policies and projects that would reduce a forest's capacity to sequester and store carbon.

B. Increase the Carbon Stored on Federal Forests by Reducing Human Disturbances.

Older forests sequester and store additional carbon as they age. Thus, increasing rotation ages and lengthening the interval between commercial timber harvests will, over time, increase carbon stored in forests. By contrast, harvesting trees in short rotations generally reduces the amount of carbon held in a forest, especially when fully accounting for the damage to soils and biodiversity often created by heavy equipment and the emissions generated by the equipment and other practices associated with commercial timber harvest. [12]

The FFCC therefore recommends that federal forest management agencies increase forest growth by reducing both the frequency and intensity of human disturbances. This will also increase the resilience of federal forests to climate and other natural disturbances by increasing the diversity of vegetation and age classifications. In addition, longer rotations will significantly enhance ecological co-benefits such as habitat diversity and cleaner supplies of water and reduced risk of landslides and flooding for downstream agricultural and urban uses.

<u>Goal IV</u>: Enhance, Consistent with Goals I, II, and III, the Resilience of Federal Forests to Climate Change-Related and Other Natural Disturbances.

A. Use Principles of Conservation Biology, Including Restoration of More Natural Fire Regimes in Mesic and Xeric Forests, as the Basis for Building the Resilience of Federal Forests

> *Conservation biology is a "mission-oriented crisis" multidisciplinary science that has developed to address the loss of biological diversity (Soulé 1986)*

Climate change presents a new set of challenges for federal forests that traditional forest-management principles and practices do not adequately address. For example, respected conservation biologist Reed Noss states:

> *Among the land-use and management practices likely to maintain forest biodiversity and ecological functions during climate change are (1) representing forest types across environmental gradients in reserves; (2) protecting climatic refugia at multiple scales; (3) protecting primary forests; (4) avoiding fragmentation and providing connectivity, especially parallel to climatic gradients; (5) providing buffer zones for adjustment of reserve boundaries; (6) practicing low-intensity forestry and preventing conversion of natural forests to plantations; (7) maintaining natural fire regimes; (8) maintaining diverse gene pools; and (9) identifying and protecting functional groups and keystone species. Good forest management in a time of rapidly changing climate differs little from good forest management under more*

static conditions, but there is increased emphasis on protecting climatic refugia and providing connectivity. [13]

Similarly, recommendations made by the Climate Leadership Initiative at the University of Oregon in its 2008 *Framework for Integrative Preparation Planning* include [14]:

- *Reduce anthropogenic stress in anticipation of increased climate stress, which means less logging, less roads, less weeds, and etc.*
- *In the face of uncertainty, "no regrets" decisions are preferable.*
- *Maintain diversity of native species, genes, and ecosystem composition and structure.*
- *Maintain self-organized ecosystem resilience and resistance.*
- *Maintain natural disturbance regimes such as recurrent wild fire and flood plain inundation.*
- *Maintain connectivity for wildlife interaction with food supply and migration to more suitable habitat under new climate conditions.*
- *Complementarity – this concept captures the co-benefits that climate change preparation strategies will create by improving wildlife habitat, biodiversity, water quality, carbon storage, scenic values, and other "ecosystem services."*
- *Equity should be adhered to across generations, among human communities and between human and natural systems.*
- *Humility requires recognizing that interventions to prepare ecosystems for climate change should be informed, limited, and strategic.*
- *Abundance and redundancy will spread the risks of habitat loss due to climate change spatially across landscapes.*

In many cases these principles conflict with existing approaches to federal forest management. However, the risks of uncontrollable climate change are large and growing. The FFCC therefore recommends that all federal forest-management agencies use the principles stated above, and other principles and strategies of conservation biology, as the basis for efforts to build the resilience of federal forests nationwide to climate change-related and other natural disturbances.

B. Where Needed, Focus Fire-Related Forest Thinning in the Immediate Vicinity of Human Habitation and Infrastructure and Avoid Thinning Elsewhere Unless Careful Analysis Shows Net Carbon Benefits over the Mid-Term (20-40 years).

The FFCC recognizes that on-going and expected future changes in climate will continue to increase the risk of disturbances, such as fire and insect infestation, or as more intense droughts and other changes in growing conditions retard the growth of or kill trees. Species distribution shifts are also likely in response to climate change over decades to centuries. In addition, the FFCC recognizes the hazards of wildfires for communities and essential built infrastructure and that members of the public often have a visceral reaction to wildfire, especially when a fire threatens their lives or property.

However, it is important to remember that fire has in the past and continues today to play a major role in maintaining forest health, diversity, and resilience. While recent studies have shown an increase in the onset and length of the fire season, and in the extent of wildfires

in certain places, some research suggests that in most locations *there is an overall deficit in wildfire compared to historical conditions*.[15] In addition, as climate becomes more of a top-down driver of fire behavior, *thinning will become less effective and will require increasing effort over large landscapes,* thereby i*ncreasing carbon emissions above the level released by even severe fire*.

In addition, a growing body of research has raised significant questions about the need for, and the carbon implications of, thinning treatments. A good summary of some of these questions is provided below. It is excerpted from "Wildland fire emissions, carbon, and climate: Seeing the forest and the trees – A cross-scale assessment of wildfire and carbon dynamics in fire-prone, forested ecosystems" recently published in the *Journal Forest Ecology and Management* [16]:

> The stochastic and variable nature of fires, the relatively fine scale over which fuels treatments are implemented, and potentially high carbon costs to implement them suggest that fuel treatments are not an effective method for protecting carbon stocks at a stand level (Reinhardt et al., 2008; Reinhardt and Holsinger, 2010). For example, in fire-prone forests of the western US, because of the relative rarity of large wildfires and limited spatial scale of treatments, most treated areas will not be exposed to wildfire within the 10–25 year life expectancy of the treatment (Rhodes and Baker, 2008; Campbell et al., 2012; North et al., 2012). Further, some studies show that the difference in carbon emissions between low-severity and high-severity fire is small when scaled across an entire wildfire because consumption of fine surface fuels associated with low-severity fire occurs across broad spatial extents, while consumption of standing fuels associated with high-severity fires occurs in small patches within the larger wildfire perimeter (Campbell et al., 2012). Fuel treatments designed to reduce wildfire severity and wildfire-related carbon emissions have carbon costs in the form of fossil fuel emissions from harvesting activities, transportation of removed material, and milling waste (North et al., 2009). In addition, because probability of fire increases with time since fire, fires cannot be excluded indefinitely from fire-prone forests, and large surface and ladder fuel loads associated with long-unburned stands are more likely to result in high-severity wildfires and large carbon releases (Peterson et al., 2005; Stephens et al., 2009a). High carbon stocks resulting from fire exclusion and in-growth, particularly in forests adapted to frequent fire, are unlikely to be sustainable (Hurteau et al., 2011).
>
> Fires confer ecological benefits that may (e.g., nutrient release and redistribution and stimulation of plant growth, increased productivity in soil systems from decomposition of burned material, initiation of vegetation succession and forest regeneration, increased availability of resources for surviving trees) or may not (e.g., increased plant species richness, creation of critical wildlife habitat, biodiversity and heterogeneity) be directly measurable in units of carbon (Habeck and Mutch, 1973; Boerner, 1982; Delong and Tanner, 1996; Hirsch et al., 2001; Saab et al., 2004; Turner et al., 2004; Hutto, 2008; Keane et al., 2009; Schoennagel et al., 2009). In addition, suppression of wildfires in fire-prone landscapes, while initially increasing forest carbon density (Canadell and Raupach, 2008), may increase vulnerability of systems to transformation; i.e., reduce resistance (Walker et al., 2004; Briske et al., 2006; Pausas and Keeley, 2009). Because of inherent difficulties in tracking long-term benefits of treatments, recent papers have suggested that we should question not *how* forests can be managed for carbon, but *whether* they can be managed for carbon, especially using current management practices (Mitchell et al., 2009; Campbell et al., 2012; Bowman et al., 2013).

Because scientific questions that have been raised about the degree to which forests in many regions of the nation are actually outside of their natural fire regime, and because questions have been raised about efficacy of forest thinning as a tool to reduce the risks of wildfire and associated loss of carbon, the FFCC recommends that federal forest management agencies should adopt a goal to avoid interfering with the return of more natural forest fire regimes.

If thinning for wildfire-related reasons is considered, the FFCC recommends that it should be approved only under the following conditions: a) There is high risk of damage due to wildfire in the immediate vicinity of structures inhabited by people and/or critical built infrastructure; b) Analysis shows that reduced fuel loads will increase the survival of those structures and infrastructure; c) Thinning treatments can be readily maintained over time; d) Careful analysis indicates that thinning is clearly needed to preserve critical habitats or ecosystem structure and function; and e) Rather than being applied to broad areas without understanding how it will affect fire dynamics, thinning projects are strategically designed to function within the context of the local landscape and seek to direct fire in specific directions.

C. Prohibit the Burning and Salvage Logging of Dead Wood in High Biomass and Mature Forests.

While it is often assumed that salvage logging provides ecological benefits, significant scientific questions have been raised about the efficacy of this practice. For example, it is often assumed that salvage logging focuses only on dead trees. In practice, however, salvage logging typically includes harvesting live green trees as well, which reduces carbon stored on federal lands. It is often wrongly assumed that burned or other dead trees do not store significant carbon for long periods of time. In addition, carbon emissions are generated from harvesting equipment, transportation of material, milling, and wood waste.[17] Due to the heavy equipment used, salvage logging also often damages or kills native seedlings, compacts and disturbs soils, releases sediment into streams, and produces other impacts that reduce the resilience of forests.[18]

The replanting and establishment of forest monocultures also typically follow salvage logging. This results in conditions that are less resilient to climate change-related and other natural disturbances. Complex native forests that develop naturally after disturbance are more resilient to climate change and much more biodiverse than simplified plantations.[19]

In addition, scientific questions have been raised about the effectiveness of salvage logging as a fuel reduction strategy because evidence indicates that it often makes forests more prone to damage in subsequent fires. [20] For example, the 2014 report by the Intergovernmental Panel on Climate Change states that [21]:

> ... [*R*]*educing emissions from deforestation and degradation may also yield co-benefits for adaptation by maintaining biodiversity and other ecosystem goods and services, while plantations, if they reduce biological diversity may diminish adaptive capacity to climate change (e.g., (Chum et al., 2011). Primary forests tend to be more resilient to climate change*

> *and other human-induced environmental changes than secondary forests and plantations (Thompson et al., 2009). The impact of plantations on the carbon balance is dependent on the land-use system they replace, while plantation forests are often monospecies stands, they may be more vulnerable to climatic change (see IPCC WGII Chapter 4) ... Adaptation measures in return may help maintain the mitigation potential of land-use systems. For example, projects that prevent fires and restore degraded forest ecosystems also prevent release of GHGs and enhance carbon stocks (CBD and GiZ, 2011). ... Forest and biodiversity conservation, protected area formation, and mixed-species forestry-based afforestation are practices that can help to maintain or enhance carbon stocks, while also providing adaptation options to enhance resilience of forest ecosystems to climate change* (Ravindranath, 2007)...

For these reasons, the FFCC recommends that salvage logging be prohibited in high-biomass forest areas, and allowed in other forests only after a comprehensive, transparent assessment shows a high likelihood that the carbon benefits of the proposed project substantially outweigh the costs. Such an outcome might be possible, for example, where salvage logging can be accomplished using horse logging or other reduced-impact techniques with low carbon emissions, and short hauls to a mill. In addition, the FFCC recommends prohibiting the purposeful combustion of dead wood (slash burning) in high-biomass areas of federal forests.

D. Place a 5-Year Moratorium on New Leases for Fracking for Oil and Natural Gas on Federal Forests to Allow for an Assessment of Hydrofracking Consequences and the Values at Risk on Our National Forests.

The FFCC recommends that a 5-year moratorium be established on new leases and renewal of dormant leases for the purpose of fracking for oil and natural gas on federal forests to allow for an assessment of hydrofracking consequences and the values at risk on our national forests. When a lease has already been executed the FFCC recommends that every possible method be used to monitor the project and to minimize the ecological impacts to the extent possible.

Existing laws and policies provide sufficient foundation for this recommendation. U.S. Forest Service policy states that withdrawing lands from mineral leasing shall be requested only in circumstances where there are *sensitive, unique surface resources that cannot be adequately protected under current public laws and federal regulations.* For example, areas within limits of incorporated cities or wilderness areas are closed to leasing. The Federal Government's Mining and Minerals Policy of 1970 states that the Forest Service is directed to provide commodities for current and future generations while continuing to *sustain the long-term health and biodiversity of ecosystems.* The Federal Land Policy and Management Act of October 21, 1976 requires that public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and *atmospheric, water resource*, and archeological values; that, where appropriate, *will preserve and protect certain public lands in their natural condition*; that will provide food and habitat for fish and wildlife and domestic animals; and that will provide for outdoor recreation and human occupancy and use.

The FFCC believes these requirements provide sufficient cause—and authority—to prohibit future leases for fossil fuel extraction on federal forests.

In addition, the natural gas and oil generated by fracking on federal forests constitutes only a tiny fraction of the energy used in the U.S. However, the risks to the climate, ecosystems, and biodiversity as well as the resilience of federal forests to climate related and other natural disturbances resulting from fracking are great. The Obama Administration will demonstrate its commitment to maintaining the health and resilience of federal forests and addressing the climate crisis by prohibiting new leases and the renewal of dormant leases for fracking for natural gas.

E. Deny Proposals to Extract Biomass for Energy or to Harvest Timber for Wood Products Unless Analysis Shows Net Carbon Benefits over the Mid-Term (20-40 years).

The Obama Administration has voiced a great deal of support for the idea of forest biomass as a source of energy that generates fewer greenhouse gas emissions than fossil fuels while also providing jobs and income. Similarly, claims have been made that the use of wood for construction materials leads to lower carbon emissions than the use of aluminum and steel. However, many scientific questions have been raised about the validity of both claims and both run the risk of reducing the resilience of federal forests.

The FFCC therefore recommends that scientific, comprehensive, transparent analysis of proposed biomass energy development and timber harvest projects intended to provide wood for construction be completed before any such proposals are approved. The assessments should unequivocally show that the carbon benefits of the proposed projects substantially outweigh the costs over the mid-term (i.e. 20-40 years).

In concept, harvesting and burning wood derived from certain forests as a source of energy could reduce fossil fuel emissions. Similarly, in concept, using wood in construction could lead to increased carbon stores. However, research has not substantiated these claims. To the contrary, a synthesis of research concluded that the benefits of logging forests for biomass energy or to substitute for other construction materials could be more than offset by reductions in stored forest carbon.[22]

In addition, the carbon benefits of biomass energy would accrue only if it actually substitutes for fossil fuels. When the regional electrical grid already contains substantial amounts of clean renewable energy (e.g. wind, solar), or when biomass energy is merely added on to energy generated by fossil fuels rather than substituting for it, the carbon benefits would be small to none. [23] In addition, incentives for and investment in current, inherently inefficient wood burning technologies detract from development of much-needed advanced clean energy sources.

The risks of runaway climate change are now so great that the White House and federal forest management agencies should take a precautionary approach and make every effort

to avoid mistakes that lead to the release of more carbon from federal forests. For this reason the FFCC recommends that biomass energy proposals and timber harvest for wood product proposals be approved only if compelling evidence is provided on a case-by-case basis through comprehensive verifiable scientific assessments that the projects generate net climate and ecological benefits over 20-40 years.

F. Significantly Reduce Emissions Generated by the Use of Fossil Fuels in Forest Related Activities.

The FFCC recommends that fossil fuels used by federal forest managers, timber operators, recreational users, tourists, and others in conjunction with commercial and non-commercial activities on federal forests be substantially reduced. The combustion of fossil fuels associated with management, commercial, and noncommercial activities on federal lands contributes to climate disruption that increases the risk of large scale natural disturbances that undermine the resilience of federal forests. In addition, the greenhouse gas emissions generated by long transportation distances often associated with wood and pulp industries contribute to climate disruption and thus add greater risks to federal forests.[24] The FFCC therefore believes that the social costs of carbon resulting from management, commercial, and noncommercial activities on federal forests should be assessed through scientific, comprehensive, transparent analysis. Emissions should then be minimized by policies requiring a reduction in the use of vehicles and heavy equipment, a shift to clean, renewable fuels, the use of public transportation for recreation and other noncommercial purposes, and other similar strategies.

<u>Goal V</u>: Generate Social, Economic, and Ecological Benefits Consistent with Goals I, II, III, and IV.

A. Increase the Supply of Ecosystem Services Compatible with Storing Carbon on Federal Forests.

> *Healthy forest ecosystems are ecological life-support systems. Forests provide a full suite of goods and services that are vital to human health and livelihood, natural assets we call* ***ecosystem services.***[25]

The FFCC recommends that federal forest-management agencies acknowledge that the storage of carbon on federal forests provides multiple ecosystem services vital to human health and livelihood and use their efforts to conserve and increase carbon stores to optimize the supply of compatible ecosystem services. Maintaining existing stocks of carbon, increasing carbon sequestration, and maintaining or enhancing the resilience of federal forests will have positive social and economic co-benefits by increasing the supply of the many critical ecosystem services associated mainly with federal forests. For example, conserving forests and forested areas with high carbon values can generate numerous co-benefits, such as habitat for wildlife, soil productivity, pollination, and clean water. [26] Improvements in the quality of river water by protecting high biomass watersheds, for instance, can increase the value of water flowing from federal lands to communities downstream. Reforesting areas that were at one time naturally covered with trees but can

be proven to not be naturally regenerating on their own can prevent erosion and reduce the risk of floods that affect ecosystems and communities downstream.

B. Promote Carbon-Conservation and Restoration Jobs Consistent with Climate and Ecological Goals.

The FFCC recommends that rural economic and community development policies and programs be amended or adopted to expand and capitalize on opportunities to generate jobs and other economic benefits associated with conserving and restoring the carbon stored by federal forests. Most of these opportunities stem from the need to restore the ability of federal forests to generate the ecological, social, and economic co-benefits associated with carbon stores. These opportunities include, but are not limited to jobs associated with outdoor recreation, wildlife-viewing, fishing, tourism, stream restoration, and fisheries restoration on federal forests. The FFCC suggests that the Small Business Administration, the Economic Development Administration, and other rural development agencies investigate the possibility of using programs like the Business and Industry Guaranteed Loan Program and the Rural Economic Development Loan and Grant Program, and others to achieve these ends.

In some cases activities that maintain existing pools of carbon, increase stored carbon, and build the resilience of federal forests to climate and other disturbances might reduce timber harvest jobs. If this occurs, rather than continuing to support activities that increase the risk of uncontrollable climate change, programs should be established to temporarily support timber workers and their families financially (e.g. retraining assistance) and in other ways help them make the transition to industries and jobs that are consistent with the goals of the President's Executive Order, the recommendations in this document, and the need to reduce the risks of uncontrollable climate change.

C. Realign Forest-Related Payments to Local Governments to Reflect the Direct Value of Storing Carbon and the Value of the Co-Benefits of Other Ecosystem Services Provided by Forests.

Local governments containing or adjacent to federal forests have, in recent years, received payments of about $400-600 million through three programs. One entails the sharing of revenue derived from the sale of timber and other resources. The Secure Rural Schools and Community Self-Determination Act (SRS) provides money to rural counties and schools affected by declines in timber-sale revenues. Payments in Lieu of Taxes (PILT) help offset losses in property taxes due to non-taxable Federal lands within their boundaries. These payments provide a significant portion of the budget resources for many local governments, but high variability in the levels of payment, and uncertainty about whether or not they will materialize at all, can disrupt the provision of local services. The structure of the payments to counties also creates incentives for local governments and residents to call for a commodity-based approach for managing federal forests, even if the overall costs to Americans as a whole outweigh the benefits.

The FFCC therefore recommends that, if forest-related payments to counties continue, they

should reflect the new emphasis on storing carbon on federal forests as well as the provision of other ecological services generated by forests. Specifically, the FFCC recommends that the Executive Branch draft and work diligently to secure the passage of legislation that would modify forest-related payments to local governments so they reflect the value of the services federal forests provide all Americans by storing carbon that if released into the atmosphere would cause harm locally, nationally (and globally) for centuries to come, and by generating the numerous other ecological co-benefits that accompany carbon storage such as habitat improvements for fisheries and other forms of biodiversity, enhanced water quality and quantity for downstream users, reduced risks of landslides and siltation, and more.

This value is large. For example, the mid-level estimate by the Interagency Working Group on the Social Cost of Carbon of the monetizable damage from the emission of carbon dioxide is about $50 (in current dollars) per metric tonne over the next few years. This amount suggests that, if the 10 billion metric tonnes of carbon currently stored on national forests were emitted to the atmosphere, the monetizable damage would total about $2 trillion. If even one percent of the carbon stored on federal forests were released into the atmosphere each year the annual monetizable damage would be around $20 billion. Managing federal forests to hold onto the stored carbon helps prevent this damage. Further advantages would materialize from managing them to store additional amounts of carbon. Moreover, this number does not reflect many types of damage from carbon dioxide emissions, such as those associated with acidification of freshwater and seawater, nor does it incorporate the value of co-benefits, such as improvements in water quality, habitat, and recreational opportunities in mature and old-growth forests.

Basing forest-related payments to counties on the value of the services all Americans receive from stored carbon and its co-benefits would have several advantages over the current system. It would better reflect the true value of the federal forests and the importance of managing them to optimize their value. It also would provide more stable payments, insofar as the value of stored carbon and its co-benefits likely will not experience the fluctuations associated with the commodities underlying current payments.

<u>Goal VI</u>: Fully Account for the Benefits and Costs of Any Decreases or Increases in Atmospheric Carbon and Other Greenhouse Gasses in All Forest-Related Policies, Programs, Regulations and Development Proposals.

A. Publicly and Consistently Highlight the Need to Alter Federal Forest Policies and Management to Reduce The Risks of Climate Change.

The President's Executive Order 13653 states that the federal government must focus on program and policy adjustments that promote the interlinked goals of greater climate resilience and reductions to the sources of climate change. At present, achieving these goals will be difficult because few members of the general public, community leaders, forest users, or elected officials understand the critical role that forests in general, and U.S. federal forest in particular, can and must play in regulating the climate. Even many federal forest management agencies today believe they are responsible for developing alternatives that

address goals for timber, listed species, water supplies, and recreation, while only "analyzing" the effects on climate change. Many agencies do not believe they have a responsibility to reduce the sources of climate change by protecting existing stocks of carbon, or manage for other goals described in this document.

To meet the twin goals to reduce the sources of climate change and improve the nation's resilience to climate change described in President Obama's Executive Order, the FFCC therefore recommends that CEQ and all federal forest management agencies make it a top priority to continually apprise forest users, communities, elected officials, and all federal forest management agency personnel about the need to fully account for the social costs of carbon in all practices, programs, regulations and policies. In addition, a relentless education program should be instituted to let the public, commercial, and recreational interests know that many long-standing federal forest policies, programs, regulations, policies and uses must be altered to address the recommendations described in this report and respond to the climate crisis by leaving as much carbon as possible in the ground and in the foliage.

B. Invest in and Build the Capacity of Federal Forest Management Agencies to Understand the Science and Manage for Carbon Storage and Climate Resilience.

For over a century scientists have known that additional atmospheric greenhouse gasses would alter the Earth's climate. However, definitive evidence of serious human-induced climate change has emerged in just the past few decades. Consequently, the Departments of Interior and Agriculture and other federal forest management agencies are in steep learning curves about how to manage for carbon and climate disturbances. The agencies have a few scientists that truly understand carbon management. However, most agency scientists as well as management and field personnel do not have the training or expertise in this field. As a result, many federal forest management agencies are applying knowledge and practices applicable for timber production to carbon management, as if they were the same thing. They are not, and the failure to grasp this and do what is needed to change the situation is likely to produce very serious ecological, social, and economic consequences.

The FFCC recommends that the White House make a concerted effort to build the capacity of all federal forest management agencies to thoroughly understand the issues and develop tools to conserve existing carbon stocks while increasing carbon storage and achieve the other goals described in this document.

An immediate step the Obama Administration can take is to organize scientific symposiums where federal agency scientists join with scientists from academic and non-profit organizations with expertise in forest carbon to present and debate research with the goal of ensuring that the best and most recent science drives federal forest management. This action is urgently needed because major discrepancies exist between the science used by many federal forest agencies—as well as much of the science described in the forest chapter of the National Climate Assessment—and the scientific research on forest carbon management emerging from academic and non-profit researchers. In addition, in response

to the risks of wildfire, some federal agencies are proposing large-scale forest thinning projects, even though emerging scientific research indicates they are likely to be counterproductive. The Obama Administration can demonstrate its commitment to using sound science to respond to the climate crisis by rapidly convening symposiums to close the gap between the best-available science and ongoing forest management.

In the middle and longer term, in addition to new policies, programs, and regulations, building capacity will require significant investments in new tools, substantial education and retraining to help existing agency personnel become carbon literate, and the hiring of many new employees with expertise in forest carbon conservation and management.

C. Require Scientific, Comprehensive, Transparent Analysis of the Carbon Costs of Management Activities Before Approval.

Many of the recommendations described in this document include a call for comprehensive, transparent assessments of the full carbon costs and benefits of policies, programs, regulations and practices. Too often, commercial timber harvest, road building, and other development proposals as well as ill-informed restoration projects are approved because they are assumed to have little to no effect on forest carbon.

The FFCC therefore recommends that the White House, Departments of Interior and Agriculture, and other agencies adopt a precautionary policy and require, as part of NEPA and other policies, that comprehensive, transparent analysis of the full carbon costs and benefits of forest-related policies, programs, regulations, and development proposals be completed before they are approved. This analysis should compare the proposed action against others, including another without it, comprehensively account for the action's annual net effects on atmospheric carbon dioxide (or other greenhouse gases), and describe the social costs (benefits) associated with any annual increase (decrease) in atmospheric carbon dioxide. This description should estimate the present value of the monetizable social costs and benefits of each scenario using the estimates of the Interagency Working Group on Social Cost of Carbon,[27] provide detailed, qualitative descriptions of costs and benefits that cannot be monetized, and clearly assess the risks if costs turn out to be higher than expected.

Each analysis should reflect the best available science regarding the ecological, social, and economic effects of carbon emitted from or sequestered by federal forests, select proper baseline and systems boundaries, include the social costs of carbon as determined by the Office of Management and Budget or other sources, and compare the effects "with and without" management activities such as timber harvest rather than "before or after" they are implemented (i.e. quantify not only how much carbon currently exists, but also include how much additional carbon could be added in the absence of timber harvest and other management activities).

The economic values at stake are large. For example, the mid-level estimate of the monetizable damage from the emission of carbon dioxide is about $50 per metric tonne over the next few years. This amount suggests that, if the 10 billion metric tonnes of

carbon currently stored on national forests were emitted to the atmosphere, the monetizable damage would total about $2 trillion. If even one tenth of the carbon held on federal forests is released into the atmosphere that damage would be in the range of $200 billion. Managing federal forests to hold onto the stored carbon helps prevent this damage. Further advantages would materialize from managing them to store additional amounts of carbon. Moreover, this number does not reflect many types of damage from carbon dioxide emissions, such as those associated with acidification of freshwater and seawater, nor does it incorporate the value of co-benefits, such as improvements in water quality, habitat, and recreational opportunities in mature and old-growth forests.

Estimates of the monetizable social costs of carbon are available from the Interagency Working Group on Social Cost of Carbon, United States Government. 2013. *Technical Support Document: -Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis - Under Executive Order 12866*.[28] Assessments should also acknowledge the importance of social costs of carbon dioxide emissions that have not yet been monetized, such as the costs associated with acidification of freshwater and seawater.

Federal Forest Carbon Coalition

Checklist for Managing Federal Forest Carbon

Issues Federal Agencies Should Address to Comply with Presidential Executive Orders and Optimize Each Forest's Capacity to Mitigate and Prepare for Climate Change

The U.S. National Academies of Sciences, Intergovernmental Panel on Climate Change and many other national and international scientific organizations have warned that, without rapid dramatic reductions in atmospheric carbon, uncontrollable climate change is now a real possibility. Federal forests must play a key role in preventing this because they hold millions of tons of carbon and have the potential to sequester much more. Forest managers must act quickly and decisively to maintain and increase forest carbon. Doing so will also strengthen ecosystem services, conserve biodiversity, protect water quality and quantity, and provide jobs and other economic benefits for communities. Federal agencies are required to take appropriate actions to manage federal forests in a manner that optimizes their ability to maintain and increase forest carbon, while producing other ecosystem services, such as providing clean water and habitat in forest streams.[1]

This document offers a checklist of the issues federal forest management agencies should address to manage forest carbon in a scientifically credible manner. Forest managers, conservationists, and others can use it to identify shortcomings in Environmental Assessments, Environmental Impact Statements, Forest Plan Amendments, Scoping Documents, and other policy and management procedures. It can also be used as tool to educate forest management personnel, forest users, elected officials, and others about the need and means of managing forest carbon in a scientifically credible way.

The checklist is organized around a set of goals for conserving and adding to existing stocks of carbon on federal lands. For more information about these goals, the underlying science, and the relevant policies, procedures, and practices, please visit http://www.forestcc.org.

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1 See for example, Executive Orders 13514 *Federal Leadership in Environmental Energy, and, Economic Performance*, 13653 *Preparing the United States for the Impacts of Climate Change*, and 13563 *Improving Regulation and Regulatory Review*; and the *Updated Principles, Requirements and Guidelines for Water and Land Related Resources Implementation Studies* from the Council on Environmental Quality.

Checklist for Managing Federal Forest Carbon

How to Use This Checklist

- Complete the checklist for any forest-management policy, planning process, regulation, or project that you are concerned might affect the maintenance of carbon currently stored in federal forests or the rate of carbon sequestered from or emitted to the atmosphere.
- "Agency" refers to a federal forest management agency as a whole—e.g. U.S. Forest Service, Bureau of Land Management, Fish and Wildlife—or to a subunit, such as a forest region, national forest, BLM state office, or local forest.
- Check the category that best represents the status of the agency's actions regarding each question.
- "Yes" means there exists appropriate documentation showing that the agency has competed the action, or is fully implementing it on an on-going basis.
- "In Process" means that documentation is available showing when it began, the percent already completed, and an expected completion date. If this information is available it should be included in "Clarifying Comments."
- "No" means that available documentation does not demonstrate that the agency has initiated or completed implementation of the action.
- "Clarifying Comments" should be as thorough as possible, to substantiate your findings regarding each question.
- Please use the checklist primarily to accomplish your own objectives, e.g., to clarify the extent to which your local forest is taking all the steps existing science indicates are necessary to optimize its contributions to combating climate change. We would appreciate it if you also would send us a copy of your completed checklist, to assist our efforts to document the performance of federal forest managers within different regions and across the U.S.

Goal I: Recognize Carbon as a Significant Public Resource and Establish Carbon and Climate Change-Centered Goals for All Decisions Affecting Federal Forest Management.	Yes	In Process	No	Unsure
A. Has the agency developed formal policies that recognize forest carbon is a natural resource that is as important as timber, water, biodiversity, recreation, and other multiple uses, consistent with the carbon emphasis in the Forest Service's 2012 planning rule, President Obama's 2013 Climate Action Plan[2], and other relevant requirements and guidance? Clarifying Comments:				
B. Has the agency defined carbon stocks as including carbon existing in live and dead materials, as well as above and below ground in soils and roots? Clarifying Comments:				

2 Available here: http://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf

Checklist for Managing Federal Forest Carbon

Yes	In Process	No	Unsure

C. Has the agency measured the existing stocks of carbon in live and dead materials as well as above and below ground for the all the lands in its jurisdiction and for the subunits used in forest planning and management decisions?
Clarifying Comments:

D. Has the agency evaluated the ways in which past forest management activities have affected the current stocks of carbon?
Clarifying Comments:

E. Has the agency evaluated the likely increases or decreases in forest carbon stocks that would result from each proposed policy, plan, or management activity?

→ If yes, does the evaluation use a full life-cycle analysis that includes project-related carbon emissions associated from management activities all the way through the carbon emissions associated with wood processing, manufacturing and delivery to end users?

Clarifying Comments:

F. Has the agency defined, identified, & mapped the location of high-biomass (i.e. high carbon) forested areas (e.g., stands or entire forests where carbon is highly concentrated)?[3]

→ If yes, indicate in "Clarifying Comments" the criteria the agency used to delineate high-biomass areas and describe the extent to which the criteria are based on peer-reviewed science.

Clarifying Comments:

Goal II: Maintain the Existing Stocks of Carbon in Forests, Including Carbon in Live and Dead Materials, Above and Below Ground.

A. Has the agency adopted policies, rules, regulations, or other guidance to protect high-biomass (i.e. high carbon) forested areas from activities that would reduce carbon stores or limit the potential for future carbon sequestration?

→ If yes, has the agency described the level of protection and the level of future sequestration, i.e., the percentage of carbon stocks protected and the amount of future sequestration relative to the maximum possible?

Clarifying Comments:

3 For a discussion of high-biomass forested areas, *see* Krankina, O., D.A. DellaSala, J. Leonard, and M. Yatskov. 2014. "High biomass forests of the Pacific Northwest: who manages them and how much is protected?" *Environmental Management*. 54(1): 112-21.

Checklist for Managing Federal Forest Carbon

	Yes	In Process	No	Unsure
B. Has the agency developed a formal policy that places a moratorium on development activities, such as logging, road building, and oil and gas development in areas having the ability to establish high-biomass forests in the future? → If yes, has a plan been established to reduce the risks of these forests to climate-related and other natural disturbances? Clarifying Comments:				
C. Has the agency prohibited the burning and salvage logging of dead or live trees in high-biomass forests regenerating from disturbance except when a transparent scientific analysis determines that the practices would yield net carbon benefits? Clarifying Comments:				
Goal III: Increase the Amount of Carbon Stored in the Forest. A. Has the agency adopted a specific goal to increase the stores of carbon on the forest in the mid- (20-30 years) and long- (100 years) term? Clarifying Comments:				
B. Has the agency explicitly identified and adopted the type of policies, regulations, and practices that would increase the stores of forest carbon, consistent with the Forest Service's 2012 planning rule, President Obama's 2013 Climate Action Plan, and other relevant requirements or guidance? Clarifying Comments:				
C. Has the agency explicitly identified the type of analysis required to determine if management activities, such as timber harvest, road building, forest thinning, oil and gas drilling, and others would increase or decrease carbon stocks in the forest over time? Clarifying Comments:				
Goal IV: Consistent with Goals I, II, and III, Enhance the Resilience of the Forest to Human-Induced Climate Disruption and Other Natural Disturbances. A. Has the agency adopted an explicit policy to complete a thorough and transparent scientific analysis of the full life-cycle effects on carbon of forest thinning activities before approving this activity? → If yes, does it use the results of the analyses to select among thinning options (including the no-action alternative) the one that would yield the smallest increase (or largest reduction) in atmospheric carbon? Clarifying Comments:				

Checklist for Managing Federal Forest Carbon

	Yes	In Process	No	Unsure
B. Has the agency adopted an explicit policy that prohibits landscape level forest thinning proposals and instead require that any forest thinning proposal that is approved be strategically designed to function within the context of the local landscape with the purpose of directing fire in specific directions? Clarifying Comments:				
C. Has the agency completed a thorough transparent scientific assessment of the ecological pros and cons of hydraulic fracturing, including the social costs of carbon from fracking-related increases in atmospheric carbon? Clarifying Comments:				
D. Has the agency completed a comprehensive transparent life-cycle analysis of carbon emissions resulting from proposals to extract woody biomass for energy production or to harvest timber for wood products before approving these activities? Clarifying Comments:				
E. Has the agency integrated forest-carbon-management strategies with climate-change-resilience strategies—e.g. minimizing land-management stressors, providing connectivity important for wildlife dispersal, and maintaining ecological integrity? Clarifying Comments:				

Goal V: Generate Social, Economic, and Ecological Co-Benefits Consistent with Goals I, II, III, and IV.

A. Has the agency adopted an explicit goal of and policies to increase the quantity and quality of the supply of ecosystem services on the forest in ways that maintain and increase forest carbon? (e.g. soil enhancement, water quality and flows, habitat, and other services that help maintain and increase the carbon stored on the forest.) Clarifying Comments:				
B. Has the agency investigated opportunities for stimulating the creation of jobs consistent with goals for optimizing forest carbon and related benefits? → If yes, has it incorporated those opportunities in its forest-management plans and policies? Clarifying Comments:				

Checklist for Managing Federal Forest Carbon

Yes	In Process	No	Unsure

<u>Goal VI</u>: Fully Account for the Social Costs and Benefits of Any Decreases or Increases in Atmospheric Carbon and Other Greenhouse Gases in All Forest-Related Policies, Programs, Regulations, and Practices.

A. Has the agency adopted a policy requiring a comprehensive, transparent analysis of the social costs and benefits of changes in carbon stores using the values developed by the Office of Management and Budget or other credible source resulting from management activities before any plan or project is approved?

<u>Clarifying Comments:</u>

B. Has the agency estimated the economic value of carbon stores, especially within high-biomass forested areas, using estimates of the social value of carbon developed by the Office of Management and Budget or other credible sources?

<u>Clarifying Comments:</u>

C. Has the agency explicitly described the economic costs of the carbon that would be released into the atmosphere, or the economic benefits of the carbon that would be removed from the atmosphere, as a result of its forest-management actions using comprehensive carbon life-cycle analyses?

→ If yes, has it integrated these economic costs and benefits into its evaluation of forest-management alternatives and its selection of preferred alternatives?

<u>Clarifying Comments:</u>

D. Has the agency measured the carbon dioxide emissions generated by the use of fossil fuels in forest-related management activities?

<u>Clarifying Comments:</u>

E. Has the agency adopted an explicit plan to significantly reduce carbon emissions generated by the use of fossil fuels in forest-related management and recreational activities (e.g. vehicles, heavy equipment, office buildings, machine shops)?

<u>Clarifying Comments:</u>

V. Conclusion

If the policies, regulations, and practices recommended is this report are adopted by the Obama Administration, federal forest management will be modernized to address the urgent need to reduce the release of carbon into the atmosphere while enhancing ecological resilience to climate-related and other disturbances. Managing federal forests to hold onto the stored carbon helps prevent this damage. The FFCC urges prompt action by the Administration to modernize federal forest management.

Endnotes

1 U.S. Forest Service, Forest Inventory and Analysis National Program. 2013. "Total Carbon Storage in U.S. Forests by State and Ownership Group." http://www.fia.fs.fed.us/Forest%20Carbon/methods/docs/Total%20forest%20carbon20130717.xlsx; Environmental Protection Agency. 2014. "National Greenhouse Gas Emissions Data." EPA. Found at:http://www.epa.gov/climatechange/ghgemissions/usinventoryreport.html

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3 Walters, B.F., C.W. Woodall, R.J. Piva, M.A. Hatfield, G.M. Domke, and D.E. Haugen. 2013. "Forests of the Black Hills National Forest 2011." U.S. Forest Service. Found at: http://www.nrs.fs.fed.us/pubs/rb/rb_nrs83.pdf?

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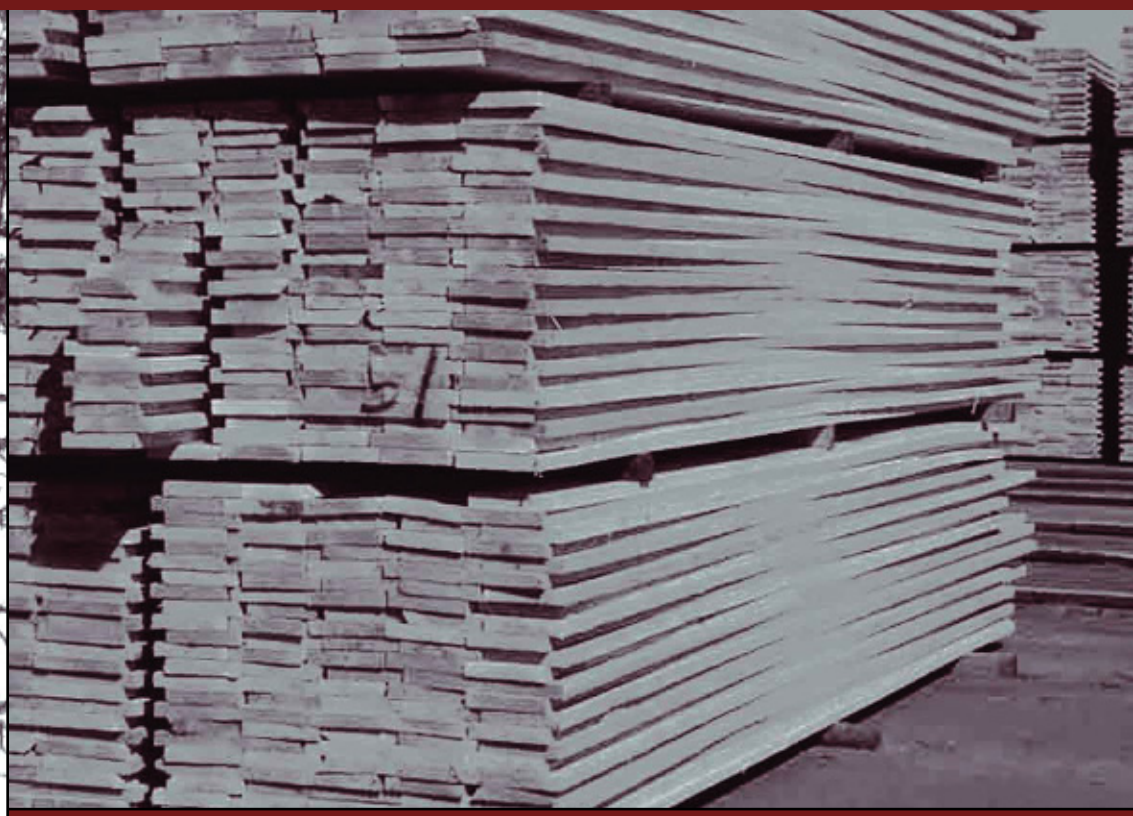

Wood Products and Carbon Storage:

Can Increased Production Help Solve the Climate Crisis?

Economic Analysis

SCIENCE FROM

THE WILDERNESS SOCIETY

About the Wilderness Society

The Wilderness Society's mission is to protect wilderness and inspire Americans to care for wild places. Founded by prominent naturalists and biologists, including Robert Marshall and Aldo Leopold, the organization played an important role in helping pioneer science-based conservation advocacy and policy making. The Society remains dedicated to the concept that careful, credible science, combined with bold advocacy, and unswerving vision is the key to conservation success.

Headquartered in Washington, D.C., The Wilderness Society maintains twelve regional offices where our staff address on-the-ground conservation issues linked to local communities. Since spearheading passage of the seminal Wilderness Act in 1964, we have been a leading advocate for every major piece of Wilderness legislation enacted by Congress. Our effectiveness stems not only from our passion for protecting America's most special places, but also from the sound scientific research that underpins every aspect of our work.

About the Ecology and Economics Research Department

The Wilderness Society's Ecology and Economics Research Department (EERD) consists of experts in economics, ecology, and landscape analysis, including 12 Ph.D.-level scientists. This outstanding team provides the science to answer pressing questions about mineral exploration and development, forest and fire management, climate change, and many other issues affecting public lands. This information is key to understanding often complicated environmental issues, and ultimately making the right choices toward achieving lasting protection for the resources and places that sustain us and our ways of life. EERD provides science to inform not only The Wilderness Society's own conservation campaigns, but also the decisions being made by communities, land managers, legislators, and others about the future of America's wild places.

The Wilderness Society is a national non-profit organization and was founded in 1935.

Wood Products and Carbon Storage:

Can Increased Production Help Solve the Climate Crisis?

by
Ann Ingerson

April 2009

THE WILDERNESS SOCIETY

Acknowledgments

Many thanks to several reviewers who helped clarify (some repeatedly) the purpose of this report and the presentation of information: Tom DeLuca and Pete Morton of The Wilderness Society, Ken Skog of the USDA Forest Service, ecological economist Paula Swedeen of the Pacific Forest Trust, Christopher Galik of the Nicholas Institute at Duke University, Jerry Jenkins of the Wildlife Conservation Society Adirondack Program, and Adam Sherman of the Biomass Energy Resource Center. These reviewers do not necessarily endorse any conclusions in this report, and any remaining errors are solely the responsibility of the author. Sarah DeWeerdt and Mitchelle Stephenson worked their usual magic with editing and graphic design and I thank them for their clear vision and long hours. Many thanks to Christine Soliva for shepherding this report through to completion. Thanks also to the Merck Family Fund for their generous financial support.

Citation

Ingerson, A. 2009 Wood Products and Carbon Storage: Can Increased Production Help Solve the Climate Crisis? Washington, D.C.: The Wilderness Society.

This science report is one of a series that stems from conservation research studies conducted by The Wilderness Society's Ecology and Economics Research Department. Other reports in the series that focus on similar issues include:

U.S. Forest Carbon and Climate Change: Controversies and Win-Win Policy Approaches; Economic Analysis, July 2007, Ingerson.

Measuring Forest Carbon: Strengths and Weaknesses of Available Tools; Science and Policy Brief, April 2008, Ingerson and Loya.

Environmental Benefits and Consequences of Biofuel Development in the United States; Science and Policy Brief, May 2007, DeLuca.

To get copies of these reports, visit wilderness.org or contact the Ecology and Economics Research Department at 202-833-2300.

Editor: Sarah DeWeerdt

Design/format:
Mitchelle Stephenson

© The Wilderness Society
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Foreword

Global discussions around climate change recognize the critical importance of maintaining land-based carbon sinks as part of a comprehensive policy to address this burgeoning crisis. Internationally, the first priority is to protect the tropical rainforests that are the true champions of carbon sequestration. Within the United States, the temperate rainforests of the Pacific Northwest and southeast Alaska serve as our own carbon storage champions. But other forests found across the country also play a significant role in the climate equation.

Experts predict, however, that without further protection, up to one million acres of U.S. forestland per year—along with much of their carbon—may be lost to development over the next fifty years. Yet rather than prioritize forest protection, much attention has been focused on the potential for wood products and wood fuels to store carbon or reduce fossil emissions. At its most extreme, this approach suggests that cutting down forests is the best preemptive move to prevent carbon losses due to fires or insect infestations. The tactic might work if 1) carbon was transferred, intact, and without any energy use, from the forest to its final resting place, 2) the carbon remained indefinitely locked away, and 3) a new forest immediately sprung up to replace the old one. The reality is, of course, a much more complex and very different scenario.

In The Wilderness Society's report, *Wood Products and Carbon Storage: Can Increased Production Help Solve the Climate Crisis?* author Ann Ingerson draws on a variety of sources to illuminate the greenhouse gas impacts of wood products and wood biomass fuels throughout their life-cycles. While detailed analyses are rare, the picture is complete enough to show the variability of the processing path followed by different types of trees in various parts of the country. Taking the entire life-cycle of these products into account, it becomes clear that an increased use of wood fuels and lumber will have very little net effect on climate change. To the contrary, the impact is as likely to be negative as positive.

Our report also takes a closer look at one particular policy mechanism, which could reward wood products carbon storage: the use of forest-carbon offsets in voluntary (market-based) or regulatory programs. Because such offsets are expected to balance emissions from other sources, it is important that the additional carbon sequestration be real. This document outlines several criteria for carbon offset standards to account for the full effects of harvested wood carbon.

Regardless of whether the greenhouse gas impacts of wood products and wood fuels are positive or negative, continuing to focus on these minor effects only distracts us from the larger task at hand. Our nation must transform an economy based on centuries of inexpensive fossil energy into one that will operate on a truly sustainable, renewable basis. The wood products industry can contribute to this goal by increasing processing efficiency, reducing energy use, extending product life, reusing and recycling wood materials, and promoting wood energy that is clean, efficient, and based on sound forest practices.

By implementing such transformative strategies and keeping America's forests as forests, the U.S. forestry community will make an invaluable contribution to mitigating climate change.

William H. Meadows
President

Spencer Phillips, Ph.D.
Vice President
Ecology & Economics Research Department

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"What's the use of a fine house if you haven't got
a tolerable planet to put it on?"

— Henry David Thoreau, 1860

Key Points

1. When wood is removed from the forest, most of it is lost during processing. The amount lost varies tremendously by region, tree species and size, and local infrastructure.
2. The majority of long-term off-site wood carbon storage occurs in landfills, where decomposing wood gives off significant amounts of methane, a gas with high global warming potential.
3. In addition to wood processing losses, fossil fuels are required to turn raw logs into finished products and ship them from forest to mill to construction site to landfill.
4. Once wood losses and fossil emissions are accounted for, the process of harvesting wood and turning it into products may release more greenhouse gases than the emissions saved by storing carbon in products and landfills.
5. Biomass is often considered a "carbon-neutral" fuel, but its true climate impact depends upon management of the source forest and efficiency of use.
6. Under cap-and-trade programs designed to reduce greenhouse gas emissions, forest offsets are often proposed as a low-cost option for reducing atmospheric carbon dioxide, while providing abundant collateral benefits.
7. Wood products in use and especially in landfills do keep carbon out of the atmosphere, but proposals to assign credit for that carbon through offset projects require first solving a whole host of conundrums.
8. If wood products are credited in offset projects, project carbon accounting must reflect the characteristics of the unique processing chain followed by that project's logs.
9. Properly managed, wood can be a renewable source of building materials and fuels, but solving the climate crisis will require reducing the use of all materials and energy.

PHOTO BY EBBETS PASS FOREST WATCH

Removal of trees for processing into wood products affects carbon storage at every step — from the forest through processing to final disposal.

The Role of Forests in Addressing the Climate Crisis

Forest protection is a critical component of climate policy, both globally and within the United States. Forested ecosystems, including soils, store more carbon than is currently present in the atmosphere. In many places, these important reserves of carbon are threatened by forestland conversion or degradation. Globally, about 20% of recent anthropogenic greenhouse gas emissions can be traced to deforestation, a larger percentage of emissions than originates from the transportation sector. Continuing conversion of forests to other uses represents a significant climate threat that is well recognized by the public, the scientific community, and policy makers.

PHOTO BY BOB KEEFER PHOTOGRAPHY/WWW.BKPIX.COM

Forested ecosystems, including soils, store more carbon than is currently present in the atmosphere. Old growth forests, like Willamette National Forest's Delta Grove shown above, are especially rich in carbon reserves.

Beyond the broad consensus in favor of keeping forests as forests, however, when it comes to considering the best way to manage those forests, opinions diverge. The treatment of harvested wood as a carbon reservoir is particularly controversial. This report outlines the major issues surrounding carbon storage in harvested wood products, summarizing data from multiple sources. It also discusses the climate impacts of woody biomass fuels as an additional use for harvested wood. Because of intense interest in these topics, new research is constantly emerging that could modify the tentative conclusions reached here, but our hope is that the general framework will contribute to understanding of these complex issues.

Forest and wood product carbon accounting might be used to answer two related but distinct questions. First, what are the overall greenhouse gas (GHG) impacts of harvesting trees and converting them to wood products or burning them for fuel? Second, should climate policies encourage *increasing* timber harvest and wood products production to help *reduce* GHG emissions? Much controversy over the role of wood product carbon storage arises when these two distinct questions are tangled together, so we present them sequentially here.

The first question can be answered through life-cycle analysis, which is the subject of the first section of this report. This type of analysis seeks to understand the impacts of an activity "from cradle to grave," or in this case "from stump to dump." Life-cycle analysis raises inevitable questions about appropriate system boundaries and what effects are significant enough to measure. In addition, while tracking wood losses at each step is fairly simple, tracking fossil energy use and other GHG emissions associated with those steps is more complex. Moreover, tracking the indirect effects of wood use on the

source forest and on markets for end-use products and alternative materials can twist the analyst in knots. Despite this complexity, however, the questions are essentially factual—what are the GHG flows associated with decisions to harvest timber for conversion to wood products or for burning to produce energy?

The second major question asked by this paper is more about policy choices than facts alone. Would increased wood products manufacturing be an effective and otherwise desirable approach to help mitigate global warming? Here the facts about whether GHG reductions *could* be achieved provide only a partial answer. Would changes have occurred anyway, without special incentives? What alternative actions might also achieve reductions? What secondary effects make each option more or less desirable? Choices about how to treat wood products and biomass as part of a GHG reduction strategy will ultimately affect land owners, loggers, nonhuman forest species from salamanders to redwoods, backcountry recreationists, wood product manufacturers and their employees, makers of wood substitutes, wood product consumers, etc. Policy choices require a complex balancing of interests to set public priorities.

Currently, a great deal of attention centers on carbon offsets as one policy mechanism that could influence carbon storage in forests and harvested wood. Under a cap-and-trade system, society chooses which sectors must comply with an emissions cap. In climate change mitigation policy, uncapped sectors often include agriculture and forestry, since their emissions are difficult to monitor and their lands often sequester more greenhouse gases than they release. Entities in these sectors may market GHG reductions or sequestration that are beyond "business as usual" to capped sectors as substitutes for required emissions reductions, or offsets. Since offsets under a cap-and-trade system derive their value from public policy, questions about the definition of "business as usual" and what counts as a saleable offset go beyond the technical and touch on public values, property rights, and equity. These complex issues associated with accounting for wood products carbon stores as part of forestry offset projects under a cap-and-trade climate policy are discussed in the second section of this report.

Carbon Losses and Energy Emissions Associated with Wood Products

Before following carbon through a wood products life cycle, it is important to understand the distinction between a greenhouse gas *inventory* and a *life-cycle analysis*. Inventories, like the U.S. Environmental Protection Agency (EPA) annual Inventory of U.S. Greenhouse Gas Emissions and Sinks, provide comprehensive measures of net greenhouse gas emissions across the economy as a whole, and may be useful to gauge the overall success of national or regional GHG-reduction efforts. Inventories are not particularly useful, however, in determining the GHG impacts of distinct parts of the economic system, because inventory information is divided into sectors with no indication of how one sector affects another. For example, carbon stored in wooden houses and landfilled wood is reported in the Land Use, Land Use Change, and Forestry sector of the EPA Inventory, while emissions from fossil fuels used to make, move, and dispose of those products are reported in the Energy sector, and emissions from decomposition at the landfill are reported in the Waste sector. For the same reasons, an inventory cannot assess the potential for one product to reduce overall emissions by substituting for a higher-emissions alternative. (One example of this type of question, the potential for wood products to lower GHG emissions by replacing concrete or steel, is treated later in this paper.) A life-cycle analysis, on the other hand, can illuminate the critical connections between sectors to predict the overall GHG impacts of a particular activity or policy.

A life-cycle analysis for wood products begins with the decision to harvest trees and ends with the disposal of wood products made from those trees. Two parallel and related streams of GHG impacts result *directly* from the harvesting, processing, use, and disposal of wood products. First, carbon is lost at each step of the processing chain due to the physical breakdown of wood, releasing carbon dioxide, methane, and other byproducts.[1] Second, the transportation of wood to mills, transformation into a variety of products, and delivery to customers and eventually to landfills requires energy, a large proportion of which is derived from fossil fuels. Gower (2003) clearly describes the importance of including these GHG fluxes in a wood products analysis:

> It is extremely important to note that almost all the forest product sequestration estimates are based on gross C accumulation. That is to say, GHG emissions from harvest, transportation of the roundwood or chips to processing plants (i.e., pulp and paper mills, sawmills), mill emissions, and transportation of the forest products to regional distributors and

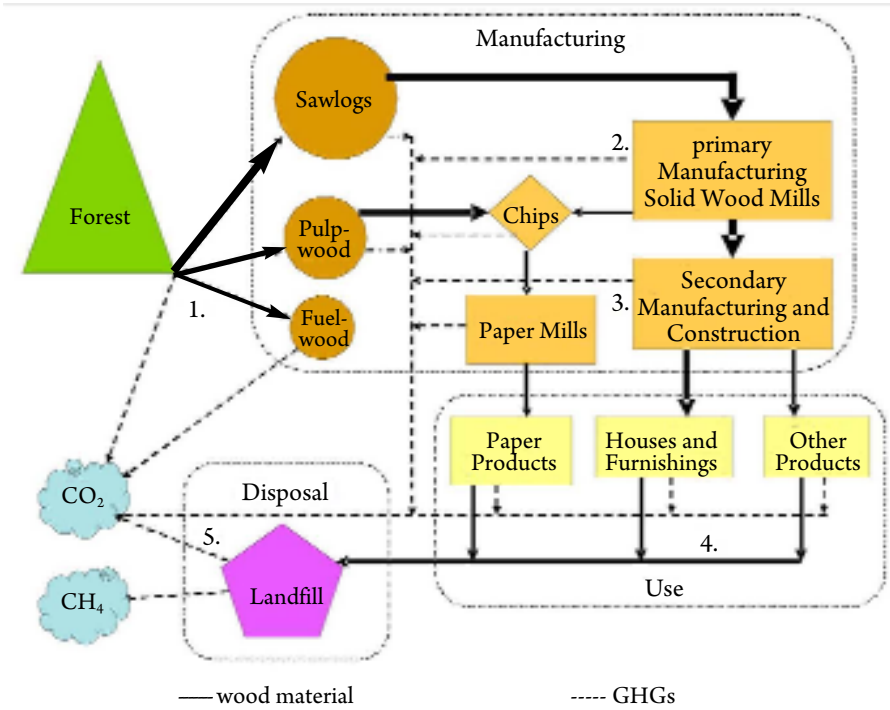
[1] In the life-cycle analysis context, the wood products stream results in the release of a variety of different greenhouse gases in addition to carbon dioxide (CO_2) and they have varying effects on the climate. Methane, for instance, is produced from the anaerobic decomposition of landfilled wood. According to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (Forster et al. 2007), methane (CH_4) is 25 times more potent than CO_2 as a greenhouse gas. (Many applications still use a global warming potential of 21, as suggested in the Second Assessment Report.) Climate policy makers have settled on "carbon dioxide-equivalents" (CO_2e) as a uniform unit for measuring the global warming potential of emissions—so, for example, 1 ton of methane would be measured as 25 tons of CO_2e.

consumers are ignored... Life cycle analysis (LCA)... can be used to quantify total GHG emissions for a forest product from cradle (i.e., forest establishment) to grave (i.e., final fate). Scientists have yet to demonstrate that there is a net C storage in forest products if a complete LCA, from cradle to grave, is completed.

Figure 1 illustrates the flows of materials and energy through the wood products processing chain. Table 1 summarizes the activities at each step that result in GHG emissions from either wood loss or fossil energy use. In addition to the direct effects of wood products production on greenhouse gas emissions, there are less well-defined, indirect effects on both the forest ecosystem and on economic activity that influence the overall GHG benefits of wood products. These are sketched out under the section on Broader System Effects below. Biomass fuel is a special type of wood product, the climate benefits of which depend upon replacing fossil fuels rather than increasing carbon storage. Because of this fundamental difference, the greenhouse gas implications of increasing biomass fuel use are also treated in a separate section.

FIGURE 1.

The Wood Products Processing Chain



Wood Carbon Losses Through the Processing Chain

This section outlines how carbon stored in wood is lost through decomposition or combustion during five stages of processing

TABLE 1.

Wood Harvesting and Processing Steps

Step	Activities
1. Harvest	Road construction; felling, limbing, cutting trees to length; transport to landing and mill
2. Primary processing	Sorting out material used for fuelwood and paper; sawing into lumber, planing; manufacture of plywood and other panels
3. Secondary processing and construction	Manufacture of primary products into end products (furniture, cabinets, flooring, windows and doors); building construction
4. Use	Maintenance and repairs
5. Disposal	Landfilling, dumping, burning; recovery for re-use

as illustrated by the dotted lines in Figure 1: (1) harvest site losses, (2) primary processing mill residues, (3) secondary processing and construction waste, (4) product use and maintenance, and (5) ultimate disposal.[2]

Studies present wood losses and GHG emissions in varying units, and percentages use different bases. Since the alternative to harvesting trees would be to leave them standing, in this report we express losses at each step in the processing chain as a percentage of carbon in the standing tree. We assume that carbon density in wood products is similar to that in the live tree, so that losses in wood volume provide rough estimates of carbon losses at each step.

Timber harvests usually produce a mix of roundwood types (logs, pulp, fuelwood, etc.), and a GHG accounting of the effects of harvest decisions should reflect the impacts of the entire bundle of products. However, since carbon storage benefits rest with long-lived wood products, and paper is widely acknowledged to be a net emitter of greenhouse gases,[3] we focus here primarily on solid wood products.

Due to the complexity of wood markets, with multiple end products and variable recapture of byproducts and raw materials, generalizations about carbon losses are risky. Nonetheless, broad guidelines for estimating the loss of wood carbon during timber processing are provided by the U.S. Forest Service, in a reference (Smith et al. 2006) used for the U.S. Department of Energy's voluntary GHG registry known as the 1605(b) program. This reference uses available data from mill surveys, forest inventories, forest products research, and data on landfills and housing stock, among other sources, to estimate wood product carbon and predict losses over time as products are disposed of and decomposed. Due to data limitations, these estimates are necessarily based on broad regional averages and extrapolation from knowns to unknowns.

To supplement this general information, some additional research results are summarized below. Our analysis finds losses of similar magnitude to the estimates in Smith et al. (2006). The data that we synthesized from multiple studies indicate that as little as 1% of the carbon present in the standing tree may remain in solid wood products in use after 100 years. Interestingly, landfills make a much larger contribution to long-term carbon storage, sequestering perhaps 13% of the carbon originally present in the standing tree. Table 2 and Figure 2 illustrate the range of wood losses through the processing chain and after 100 years in use, with detailed explanations to follow.

As little as 1% of the carbon present in the standing tree may remain in solid wood products in use after 100 years. Interestingly, landfills make a much larger contribution to long-term carbon storage.

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[2] This system boundary excludes several less direct effects of wood harvesting activities, including the longer-term impacts of wood harvest on forest carbon, the impacts of wood fuels on fossil fuel consumption, and possible substitution of wood for materials that have different manufacturing emissions. These effects are treated, albeit briefly, in the Broader System Effects and Biomass sections below. Our approach also assumes that impacts will be similar for wood products utilized within the U.S. and those that are exported, so that the location of the impacts is irrelevant to GHG assessments.

[3] High-lignin papers may remain in landfills for considerable time, but the methane released from the breakdown of landfilled paper and the energy required for paper production outweigh any carbon storage benefit. The assumption that paper production contributes little on balance to mitigating GHG emissions could change if a greater percentage of paper were recycled or if more of the methane generated by landfilled paper were captured for energy generation.

TABLE 2.

Reductions in Wood Available for Long-Lived Wood Products

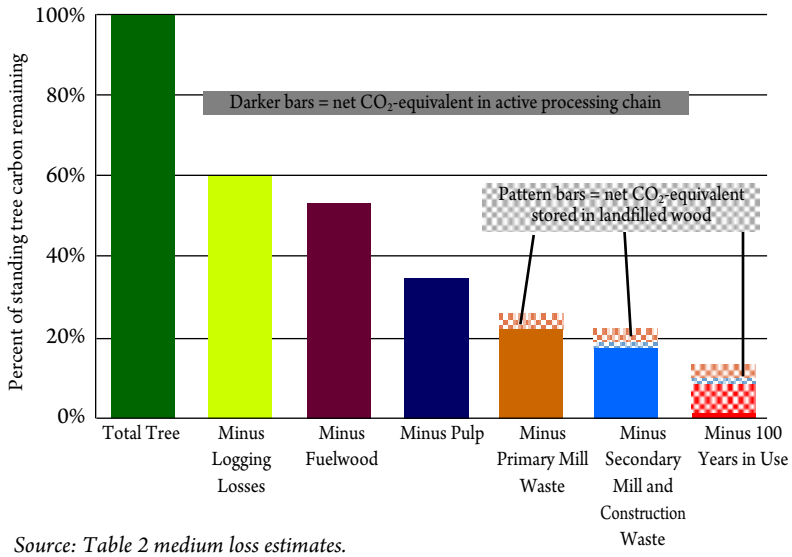
(% of Live-Tree Volume)

Processing Step	Low	Medium	High
1. Harvest	22%	40%	59%
2. Primary processing – fuelwood portion	2%	5%	33%
2. Primary processing – pulp portion	3%	19%	30%
2. Primary processing – mill	4%	13%	22%
3. Secondary processing	6%	5%[4]	18%
3. Construction	1%		5%
4. 100 years in use	14%	17%	19%
Cumulative losses		99%	

Sources: See text.[5]

FIGURE 2.

Carbon Storage Through the Wood Products Chain



Source: Table 2 medium loss estimates.

It is important to recognize that the wood from a single tree may experience high losses at one stage and very low losses at another. The variety of processing paths a log may follow, as well as the variation in losses at each processing step, illustrates why direct sampling of wood flows would be important to understand GHG emissions from wood losses. Still, the fact remains that even the most efficient processing chain will result in the loss and emission of a significant portion of the carbon present in the standing tree.

1. Harvest

Significant amounts of carbon are lost during timber harvest when the un-merchantable portion of the tree is piled and burned, left in the woods or at a landing to decompose, or collected and burned as biomass energy. Both the amount and the rate of this loss affect accounting for carbon emissions. Zhang et al. (2008) surveyed data from 110 research sites and found median litter decomposition half-lives between 2 and 3 years.[6]* Given such rapid decomposition rates, many studies make a simplifying assumption that logging residue is lost immediately, whether burned or left to decompose.

The U.S. Forest Service (2008) estimates logging residue at 30% of roundwood volume for the United States as a whole. State-level percentages range from 3% to 84% (U.S. Forest Service 2007).[7] These percentages fail to capture the total carbon losses during

[4] Secondary processing and construction losses are not cumulative—the highest secondary processing losses occur in industries like furniture, where construction losses are zero. The estimate for medium losses from secondary processing and construction combined assumes 76% of solid wood is used in construction and 24% in finished products, based on data from Smith et al. 2006, Table D2 (see Data Appendix for further details).

[5] Low and high estimates are from different analyses or regions. Medium estimate is national average (for harvest losses, fuelwood, and pulp), simple average of low and high estimates (for primary processing – mill and in-use), or weighted average (for secondary processing and construction, based on national proportion of wood used for construction and other long-lived uses).

[6] *Many of the factors reported here required combining multiple sources of data, using different units or a different base for percentages. To avoid cluttering the text with computational details, we have explained all these computations in a Data Appendix. Items explained in the Data Appendix are marked * in text.

logging, as reported logging residue volumes exclude roots, stumps, and small limbs.[8] Including stumps and small limbs would increase logging residue volumes by an average of 14% for softwoods and 24% for hardwoods (McKeever and Falk 2004), which would increase overall national average residue to about 36%* of roundwood volume. Large roots range from 5% to 51% of total tree biomass, with a mean of 19%, in cold temperate and boreal forests in the United States (Li et al. 2003). Taking all these factors together, approximately 40%* of the original tree volume, with a range from 22%* to 59%* for individual states, might be left behind at harvest, and its stored carbon lost.

Actual losses would vary significantly depending on the type of harvest (whole-tree or bole-only, commercial thinning or diameter-limit or clearcut) and the type and quality of timber (hardwoods generally produce more residue than softwoods, and higher-quality trees produce proportionally less residue). A portion of in-forest decomposition losses due to logging might occur even without harvest activity, due to natural tree mortality. An increase in the commercially used portion of the tree would lower logging residue losses, but might also ultimately reduce site productivity.

2. Primary Processing

As we have seen in the discussion above, logs removed from a harvest site represent approximately 60% of the volume—and hence, stored carbon—of the trees from which they came. Harvested logs may be destined for pulp, fuelwood, sawlogs, or other specialized uses, but long-term carbon storage benefits come mainly from the sawlog portion. The portion of wood going to each use varies widely by region, and will also differ among harvest operations within a region, but the following calculations provide a general indication of processing losses:

- According to figures in a recent Resources Planning Act assessment (U.S. Forest Service 2008), fuelwood removals in 2007 ranged from 3% (in the South Central region) to 51% (Rocky Mountain region) of total roundwood removals by volume, with a national average of 9%.[9] This national average amounts to about 5%* of the original standing

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[7] Roundwood is the volume of material loaded onto a truck for processing into lumber, pulp, fuelwood, or other uses. Timber Product Output data are from mill surveys and field sampling at logging sites. Data are imputed for years between surveys and could fail to reflect recent changes in technology.

[8] Logging residue also excludes wood lost during pre-commercial thinning or land clearing, about 8% of total material removed from forests nationwide, but since these losses are not directly related to a harvest decision we consider them outside the boundary of our life-cycle analysis.

[9] Most of the Forest Service data cited in this report groups U.S. states into nine regions as follows: Northeast (Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and West Virginia); North Central (Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin); Southeast (Florida, Georgia, North Carolina, South Carolina, and Virginia); South Central (Alabama, Arkansas, Kentucky, Louisiana, Mississippi, Oklahoma, Tennessee, and Texas); Great Plains (Kansas, Nebraska, North Dakota, and South Dakota); Intermountain (Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming); Alaska; Pacific Northwest (Oregon and Washington, further split into Westside and Eastside in some reports); and Pacific Southwest (California and Hawaii).

tree volume burned as fuelwood, leaving 55% (60% minus 5%) available for other uses.[10]

- The portion of total roundwood volume used for pulp ranges from 6% for hardwood sawlogs in the North Central region to 50% for softwood pulp in the Pacific Northwest Westside, with a national average of about 31%* (Smith et al. 2006, Table D6).[11] These pulp diversions amount to another 3%* to 30%* by region of original standing tree volume lost from the long-lived products stream, with a national average of 19%*. This leaves about 36% (55% minus 19%) of the original tree volume available for processing into long-lived products.
- Bark accounts for about 15% to 18% of roundwood volume (Smith et al. 2006, Table 5). Most is burned for fuel, with small amounts used for mulch, other short-term uses, or discarded. The bark portion of the 36% of original tree volume remaining after fuelwood and pulp are sorted out would amount to another 6%* of original tree volume. However, making a conservative assumption that sawmill waste percentages, as well as fuelwood and pulp diverted, include this bark waste, we will not consider bark as an additional loss in the volume of wood available for processing into long-lived products.

Once wood destined for short-lived uses (fuel and pulp) has been removed from the solid wood stream, further losses during primary processing will vary considerably depending on the product and the equipment used. Standard circular sawmills may convert only 50% of a log into lumber, while thin-kerf bandsaw mills may approach 70% conversion efficiency. Oriented strandboard (OSB), medium-density fiberboard (MDF), and particleboard may approach 90% conversion of non-bark wood to panels (at the cost of increased use of energy and resins—see the section on fossil energy emissions below). Northeastern sawmills producing hardwood lumber averaged 56% loss of wood from log to planed lumber (Bergman and Bowe 2008). The Consortium for Research on Renewable Industrial Materials (CORRIM) estimated wood waste losses during primary solid wood

PHOTO COURTESY OF THE MANNING AND AREA ECONOMIC DEVELOPMENT SOCIETY, ALBERTA, CANADA

Either at the harvest site landing or at the mill, logs are sorted by quality and diameter into smaller material used for fuelwood or pulp (relatively short-lived uses) and large material suitable for sawing into lumber.

[10] Wood fuels are often considered "carbon-neutral," but when evaluating the potential for long-term carbon storage in harvested wood, burning must be treated like any other wood loss because it definitely accelerates the release of carbon. However, see the Biomass section below for a discussion of possible carbon benefits of fuel substitution. Processing byproducts used for fuel are not included in these fuelwood percentages, however, since carbon losses from this source would be included as part of processing waste.

[11] Additional waste material from solid wood processing may also be recovered to make paper, but because of paper's emissions profile this recovery would not make a significant contribution to carbon storage.

processing ranging from 26%* (for Southeast OSB) to 58%* (for Southeast softwood lumber) of the raw log (Kline 2005; Milota et al. 2005; Wilson and Sakimoto 2005). A study from Finland estimated 56% losses for softwood lumber and 62% for plywood (Liski et al. 2001).[12] With about 36% of original standing tree volume available for processing into long-lived products, primary mill losses amount to about 4%* to 22%* (average of 13%) of the standing tree volume, leaving about 23% of the original volume to be incorporated into long-lived wood products such as lumber or panels.

3. Secondary Processing and Construction

Once primary products leave the mill, many undergo further processing into finished products, sometimes in multiple stages. For instance, lumber might be shaped for molding or flooring, then further trimmed at the construction site. Systematic studies of wood waste during secondary processing are hard to come by, but a few examples indicate the general magnitude of waste at this step.

Losses in furniture and cabinetry are particularly high due to trimming of knots and other defects. A North Carolina study (Wood Waste and Furniture Emissions Task Force 1998) assumed wood waste in furniture manufacturing at 55% to 65% of lumber. A Georgia furniture manufacturer scrapped approximately 40% of all hardwood lumber purchased due to cracks and other defects (Crumpler 1996). A British study (BFM, Ltd. 2003) found secondary manufacturing waste at 20% of raw material purchased for "board" products (MDF, OSB, plywood), 27% for softwood lumber, 37% for hardwood lumber, and 50% to 80% for veneer. This range of secondary processing losses (expressed above as percentages of lumber or panel volume) translates to losses of 6%* to 18%* of original standing tree volume lost at the secondary manufacturing stage.

Wood destined for furniture, cabinetry, windows, and doors experiences most losses at the secondary manufacturing plant. By contrast, framing lumber, flooring, paneling, and siding undergo further trimming at the construction site. Using wood waste amounts reported by the National Association of Home Builders (NAHB) Research Center (1995) and total wood materials required for construction of a 2,082-square-foot single-family house (NAHB, cited in Wilson and Boehland 2005) we estimate that construction-site waste in home building ranges from 4% for solid wood to 10% for engineered wood components. The general magnitude of construction wastes according to NAHB data is similar to the 10%-12% range found in several other studies (Cornell University Cooperative Extension 1996; James et al. 2007; McKeever and Falk 2004). Particular construction applications will naturally diverge from these overall national averages. A Cornell University study of the construction of seven homes (Cornell University Cooperative Extension 1996) found wood waste per square foot of home varied from one-half to twice the NAHB estimates cited above. A Texas study found that construction wood waste from large, custom-built homes was approximately three times the NAHB amounts recorded for

[12] Mill residues from primary mills may be burned on-site for energy, used to make pelleted wood fuel, converted to structural panels or paper, or dumped or landfilled. Other than structural panels and discards in an anaerobic landfill, the other possible uses for mill residues would store carbon for very short time periods so they are considered direct losses here.

smaller homes (Houston Advanced Research Center 2005). This range of construction site losses (expressed above as percentages of lumber volume) translates to losses of 1%* to 5%* of original standing tree volume.

Generally the same wood material will not be subject to secondary processing losses and construction site losses, as most construction materials undergo primary processing only. Assuming that 76%* of wood volume in long-lived products is construction lumber, with the remaining 24% in furniture, cabinetry, and other products, total secondary processing and construction losses might be about 5%* of original standing tree volume. If 23% of the tree remains after primary processing, this leaves about 18% of original live tree volume actually incorporated into long-lived products.

4. Use

Even when mills turn out a product like lumber that is capable of storing carbon for long periods, actual long-term carbon storage will depend upon its final use and expected lifetime in that use.

Once products are placed in service, carbon losses begin to occur as products, or portions of them, are disposed of. Even when mills turn out a product like lumber that is capable of storing carbon for long periods, actual long-term carbon storage will depend upon its final use and expected lifetime in that use, as well as whether it is discarded prematurely due to renovations and repairs. Lifetimes in use vary widely among solid wood products. The longest-lived uses are for buildings or furniture, and about 60%* of all primary solid wood products (lumber and paneling) find their way into these uses (Smith et al. 2006). Shorter-lived uses include pallets and other shipping containers and miscellaneous manufacturing (e.g., matches, popsicle sticks, toothpicks).

Half-lives are generally used to indicate the rate at which wood products will be discarded over time.[13] The latest WoodCarbII model, used for the 2007 Inventory of U.S. Greenhouse Gas Emissions and Sinks, assumes half-lives of 86 years for single-family and 52 years for multi-family homes built recently (these half-lives are shorter for earlier construction years), 26 years for residential repairs, 38 years for "other" solid wood uses, and 2.5 years for paper (Skog 2008). These half-lives were calibrated so that the WoodCarbII model estimates of discards to landfills match EPA solid waste estimates for 1990 to 2001, and estimates of wood carbon in housing in 2001 fit with Census of Housing data.

Beyond half-lives, estimates of wood carbon remaining in use also depend upon the equation used to describe the disposal path. Researchers make various assumptions about whether the disposal path is linear, logarithmic, or follows some other pattern. Miner (2006) provides examples from Europe (European Forest Institute - EFI), Japan (National Institute of Environmental Studies - NIES), Canada (Kurtz), and alternative U.S. approaches, that can be compared to the first-order functions used in tables developed for Smith et al. (2006) and the 1605(b) program. Figure 3 compares different curves describing the percentage of original tree carbon that remains stored in wood products over time (initial stores begin at 18% since that is the approximate amount of the carbon in the standing tree that would be incorporated in solid wood products). This figure shows that, depending on the underlying assumptions about curve

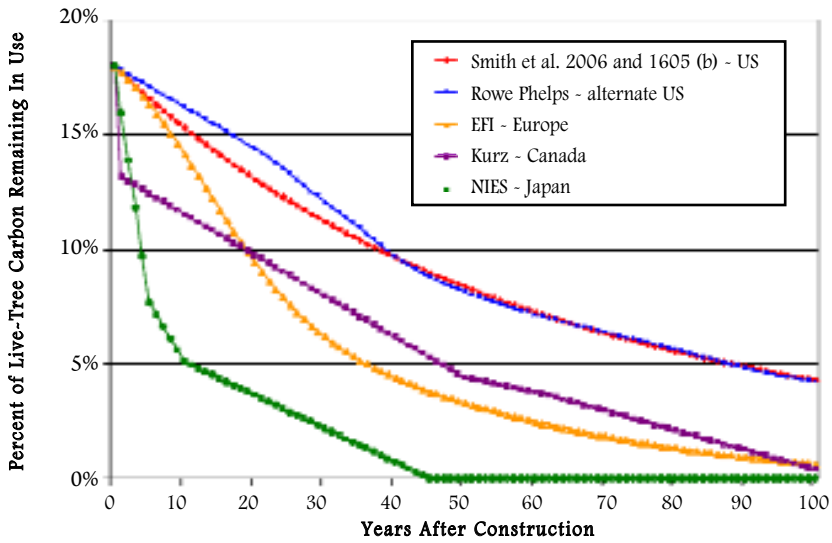
[13] For 1,000 tons of lumber used to construct homes in the year 2000, a 100-year half-life implies that 500 tons will remain in use in the year 2100.

formulas and use lives, estimates of carbon still in use in year 100 range from 0% to 4.6% of the carbon originally present in the standing tree. Based on this comparison, the assumptions behind U.S. use curves appear to be less conservative (i.e., result in a higher estimate of 100-year carbon) than those of some other countries.

FIGURE 3.

Estimates of Carbon Stored in Wood Products Over Time

(% of Total Carbon in Standing Tree)



Sources: McKeever 2002; Miner 2006; Smith et al. 2006; Skog 2008.

***Renovations*:** Even before long-lived products reach the end of their expected lifetime, users will discard portions as they repair and renovate homes and furniture. Systematic data are lacking on the percentage of wood products that are discarded before the end of their useful lives, but a few statistics indicate that this is likely to be a significant source of wood carbon losses. Residential repairs and renovations utilized 61% as much lumber, 42% as many square feet of structural panels, and 60% as many square feet of nonstructural panels, as new construction in the United States in 1998 (McKeever 2002). Renovations generate about 20% of all wood waste, more than the percentage of wood waste from new construction (McKeever and Falk 2004).

In the WoodCarbII model, half-lives for houses and wood used for repairs are calibrated so that model estimates of wood discarded to landfills match EPA data on discards from 1990 to 2001. Hence, in a general sense the calibrated half-lives for houses incorporate the effects of wood discarded during renovations, but additional analysis would be needed to sort out the separate effects of renovation waste and expected house lifetimes.

5. Disposal

The percentage of harvested wood in use as long-lived products does not tell the whole story of wood products carbon sequestration. In fact, discarded wood in landfills actually stores much more carbon than the wood in long-lived products in use. In addition to discarded products, some of the wood waste from mills and construction sites will also be disposed of in landfills (checkered bars in Figure 2). Wood carbon in landfills can persist for some time, as anaerobic conditions inhibit the fungi that specialize in breaking down lignin (the substance that makes wood "woody"), but landfill decomposition rates vary considerably with environmental and management factors. Predicted decomposition rates are often extrapolated from laboratory experiments (Barlaz 1997) that were designed to calculate maximum methane emissions under anaerobic conditions. These studies may overstate total decomposition under

PHOTO BY PHILIP ARAMAN, USDA FOREST SERVICE

Wood discarded in landfills continues to store carbon for some time once it is buried and cut off from an oxygen supply. The portion that does decompose releases significant quantities of methane, however, which has a much higher global warming effect than carbon dioxide.

field conditions, but they are also short in duration which makes extrapolation to 100 years quite speculative.

Field tests near Sydney, Australia, confirm that solid wood may last for a significant time in landfills (Ximenes et al. 2008). Researchers estimated carbon losses based on the proportion of lignin in excavated wood that was buried for 19, 29, and 46 years (assuming lignin totally resists decomposition under anaerobic conditions). Wood buried for shorter periods appeared to decompose very little, while an estimated 17%-18% of initial wood carbon had been released from the 46-year sample. Results from these three sample sites raise as many questions as they answer. After year 46, would decomposition continue at an accelerated rate due to removal of some initial deterrent to bacterial activity? Or would decomposition slow as lignin constitutes a larger proportion of the residual material? Similar to the case discussed above regarding wood products in use, the form of the equation that is chosen to describe landfill decay also has significant implications for stored carbon estimates at any given time (Pingoud and Wagner 2006). Various studies have assumed that anywhere between 20% and 80% of landfilled wood is subject to decay (Borjesson and Gustavsson 2000). Only further research can answer these questions, and variable landfill conditions mean that estimates will always remain uncertain.

The WoodCarbII model assumes that only 56% of paper and 23% of solid wood are subject to decay in landfills, with decay half-lives of 14.5 years for paper and 29 years for wood (Skog 2008). These numbers were calibrated to match solid waste estimates from the EPA and to meet IPCC guidelines. WoodCarbII also makes assumptions about how much of the waste at each stage will be landfilled, burned, dumped, or recycled and how quickly its carbon will be released as a greenhouse gas (Skog 2008). Based on this model, the 1605(b) tables (Smith et al. 2006, Table 6) indicate that about 9% of North Central region softwood pulp volume (or about 5%* of standing tree volume) would remain in use or in landfills at 100 years, with over 91% of that in landfills. At the other end of the scale, the tables estimate that 41% of Pacific Northwest Westside softwood sawlog volume (or about 25%* of standing tree volume) would remain in use or in landfills at 100 years, with two-thirds of that in landfills. Clearly, what happens in landfills is an important part of wood carbon accounting.

***Methane*:** Many carbon accounting schemes address only the *rate* at which carbon is released from decomposing products, without accounting for the *form* in which it is released, but the global warming potential of methane (CH_4) is 25 times that of CO_2. Due to the anaerobic conditions, over half the carbon released from decomposing wood in landfills will be in the form of methane, or about 20% once flaring or burning for energy use (which converts CH_4 to CO_2) is accounted for (U.S. EPA 2006). A Swedish study (Borjesson and Gustavson 2000) found that if all wood from the demolition of a four-story wood-frame

apartment building is landfilled at the end of useful life, rather than being burned or re-used, the consequent methane emissions are large enough to make the overall structure a strong net emitter of greenhouse gases over its complete life cycle.

If 23% of the mass of landfilled solid wood products eventually decomposes, and 20% of the carbon thus emitted is released as methane, the global warming potential of these emissions would be about 60%* of the CO_2e originally stored in the discarded wood. The 1605(b) tables, based on carbon alone, do not reflect this methane effect. Because of methane's climate impacts, landfilled wood waste from mills, construction sites, and house demolition stores only about 13% of the CO_2e present in the standing-tree (checkered bars in Figure 2). Including the carbon remaining in wood products in use (solid bars in Figure 2), total harvested wood CO_2e at 100 years is about 14% of that present in the standing tree.

Fossil Fuel and Other GHG Emissions Associated with Wood Products

In addition to the carbon lost through decomposition or combustion of wood waste, the processing and transport of wood products also requires energy, much of it provided by fossil fuels that emit greenhouse gases when burned. Returning to Figure 1 (page 4), energy emissions are associated with transformations that occur within the solid shapes in the diagram, as well as with the transportation represented by solid lines. Few full life-cycle assessments have been made of energy use and carbon emissions associated with wood products from harvest to disposal. Nonetheless, several sources indicate that energy use and other emissions associated with these stages can be substantial, perhaps even greater than the CO_2-equivalent stored in the finished wood products.

Since paper is known to be an energy-intensive net emitter of greenhouses gases, we concentrate here, as above, on the solid wood products chain. Carbon losses from combustion of wood as fuel (both wood sorted as fuelwood and processing byproducts burned for energy) have already been included as losses to the long-lived products stream in the previous section, so this section considers only fossil fuel energy emissions. Again, we use wood carbon remaining in use or in landfills at 100 years after harvest as the metric to represent the carbon storage benefits of wood products. The emissions associated with producing those benefits are the GHG cost of that activity. Therefore, this section expresses GHG emissions from energy use during processing, transport, use, and disposal of wood products as a ratio to 1 metric ton CO_2e of 100-year wood carbon.[14]

1. Harvest

Harvest-related activities at the source forest emit a relatively small amount of greenhouse gases. A CORRIM study (Johnson et al. 2005) found emissions from

[14] This section assumes that 100-year wood carbon (including landfilled wood) would be approximately 14% of standing tree carbon. See Data Appendix for computations marked by * in text.

fossil fuels used in harvest, replanting, and fertilization—plus methane and nitrous oxide (N_2O, a greenhouse gas more than 300 times more potent then CO_2)—of about 0.9%* to 1.3%* of CO_2e in the raw log. In a life-cycle analysis for Chetwynd Forest in British Columbia, Gower et al. (2006) estimated that harvest-related emissions (including road-building, reforestation, and transport to the sawmill) were about 2%* of the CO_2e stored in the roundwood removed. When compared to long-term carbon storage rather than raw logs, the ratio of harvest-related emissions to 100-year carbon ranges from about 0.04* to 0.07*.

2. Primary Processing

CORRIM studies found fossil fuel-related emissions for processing of four primary wood products ranging from 2%* (softwood lumber, including only on-site emissions) to 18%* (oriented strandboard, including off-site emissions) of the CO_2e in the raw log (Kline 2005; Milota et al. 2005; Wilson and Sakimoto 2005). Data from Finland indicate primary processing emissions range from 3% to 7% of log CO_2e content (Liski et al. 2001). Gower et al. (2006) found sawmill emissions from nonrenewable energy to be 2%* of the CO_2e in the raw log for softwood lumber. Bergman and Bowe (2008) found that processing of hardwood logs resulted in fossil fuel-based GHG emissions equivalent to 2%* of the initial log carbon (for on-site emissions only) or 7%* (including off-site). Skog et al. (2008) estimate that GHG emissions associated with resins and other non-wood components of panels are as high as 20%* of the CO_2e stored in the panel (a factor that likely accounts for some of the high off-site emissions for oriented strandboard above).

Beyond on-site process energy and transport of raw materials to the manufacturing facility, transport from mill to retail outlet can contribute significant emissions.

Beyond on-site process energy and transport of raw materials to the manufacturing facility, transport from mill to retail outlet can contribute significant emissions. The U.S. EPA (2006) provides life-cycle data that combine manufacturing and transport emissions for selected wood-based products. Emissions from burning of biomass to produce process energy are not included. The EPA's transport emissions include only the shipping of raw materials to the place of manufacture (assumed to be 20 miles) and from there to the retailer; they exclude transport to the final consumer and do not account for any CH_4 or N_2O emissions from transport. Raw material acquisition and manufacturing and transport emissions (in metric tons of carbon equivalent per wet ton of material arriving at the landfill) amount to 0.05 for lumber and 0.10 for medium-density fiberboard (U.S. EPA 2006). This translates to emissions of 12%* to 24%* of the CO_2e content of these raw materials.

Gower et al. (2006) tracked transport emissions as wood products moved from sawmill to retail store, and found that this stage by far dominated the overall emissions picture at about 70% of the CO_2e stored in the lumber. The market chain for this lumber included transport to Home Depot wholesale warehouses, with redistribution across the continent; the significance of transport emissions for this processing chain illustrates the importance of sampling emissions flows for each individual offset project. At the other end of the transport spectrum, analysis by CORRIM of two sample wood-framed houses, a 2,062-square-foot house in Minneapolis and a 2,153-square-foot house in Atlanta, found transport

from manufacturing facility to construction site to be an insignificant source of emissions (Meil et al. 2004).

Based on the studies above, the ratio of primary processing emissions to 100-year carbon stores varies from about 0.02* to 0.77* for processing and related raw material transport. If transportation of the finished product to outlets is included, the ratio varies from 0.16* (EPA 2006) to 1.19* (Gower et al. 2006; 1.12 for transport and 0.07 for primary processing). Since finished product transport emissions are so variable (from 0 for products that are used very close to the manufacturing site, to the dominant element of the emissions picture for those with continent-wide transport networks), we have reported this emissions source separately in Table 3 and Figure 4 below.

PHOTO BY DAVID BRIGGS, PROVIDED BY RURAL TECHNOLOGY INSTITUTE

Construction emissions are typically calculated for the building frame only, without factoring in the GHG costs of turning raw wood material into paneling, cabinets, finished flooring, and other components.

3. Secondary Processing and Construction

Manufacturing of lumber or panels into secondary products (windows, doors, cabinets, furniture) and/or construction into buildings requires additional energy. The studies cited above provide emissions data only through primary processing. With very little comprehensive data available, our accounting for wood products emissions includes a potentially large gap for energy emissions from secondary processing.

CORRIM studies calculated construction emissions for the two sample wood-framed houses described above. These homes stored a total of 22.4 and 17.1 metric tons of CO_2e, respectively, in their wood components (Perez-Garcia et al. 2005) over an expected lifetime of 75 years. These studies included only basic framing, and therefore did not account for secondary processing or construction emissions associated with components such as finished flooring, cabinets, wood paneling, wooden doors, and so on. Thus, total emissions from actual home construction would be much higher than those reported here. In the CORRIM studies, fossil fuel GHG emissions from construction were 1.3 and 1.1 metric tons CO_2e, respectively (Meil et al. 2004), but only a portion of those emissions were directly associated with wood components. With wood at 15% of materials for the Minneapolis house and 10% for the Atlanta house, the ratios of construction emissions to 100-year carbon stores associated with wood products might be about 0.011* and 0.008*.

It is important to recognize that total manufacturing and construction emissions for these sample homes far exceed the CO_2e stored in the wood, even without considering secondary processing of the wood components. For the Minneapolis house, emissions are 1.65 times the CO_2e content of the wood components, and for the Atlanta house 1.25 times. The entire home must be built in order to store the wood long-term, but it is not clear what portion of total emissions should be considered a direct cost of wood carbon storage.

4. Use (Maintenance)

Since wood products would not be long-lived without maintenance and heating of the homes and furniture that store the wood, some accounting for maintenance energy is appropriate. Heating and cooling for the two CORRIM model houses emitted 5,174 kg of CO_2e (Minneapolis) and 3,032 kg of CO_2e (Atlanta) per year (Winistorfer et al. 2005), but only a small portion of these emissions might be required to slow the decay of wood components so that they remain an effective carbon sink. In addition to heating and cooling, some house components need to be repaired or replaced periodically, and these activities are more directly attributable to wood carbon storage. The greenhouse gas emissions associated with maintenance of the wooden portions of CORRIM's model houses over a 75-year lifespan were 1,066 and 890 kg CO_2e respectively (Winistorfer et al. 2005)—a ratio to 100-year wood carbon of about 0.06*.

TABLE 3.

Greenhouse Gas Emissions from Solid Wood Products Processing

Processing Step	Ratio of non-wood energy GHG emissions to wood storage in year 100 (CO_2e basis) *Low*	*Medium*	*High*
1. Harvest and transport to mill	0.04	0.05	0.07
2. Primary processing	0.02	0.10	0.77
3. Secondary processing			
Construction	0.008	0.009	0.011
Transport to end use	0.00	0.56	1.12
4. Use/maintenance	0.06	0.06	0.06
5. Demolition and disposal	0.003	0.003	0.003
Total	**0.13**	**0.78**	**2.03**

Sources: See text.

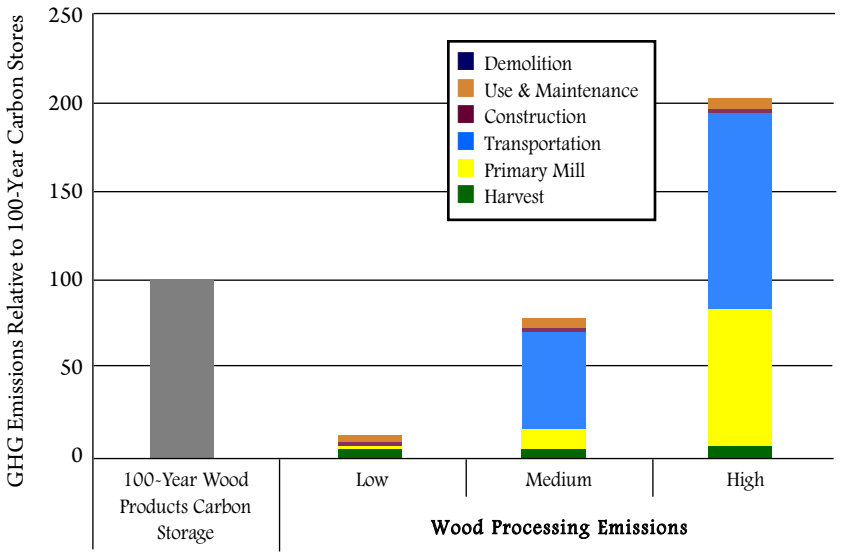
5. Disposal

Again in the CORRIM model homes study, demolition and transport to the landfill of the wood materials in the two houses released another 65* kg CO_2e (Minneapolis) and 49* kg CO_2e (Atlanta) (Winistorfer et al. 2005), for a ratio to 100-year wood carbon of less than 0.01. Additional expenditures of fossil fuel energy would occur at the landfill itself to move and bury wastes, but these were not included.

Thus, as indicated in Table 3 and Figure 4, the entire process of transforming wood into a form suitable for carbon storage causes substantial GHG emissions, and in some cases long-distance transport may cause emissions to exceed the CO_2e storage value.

FIGURE 4.

Energy and Other Process-Related Greenhouse Gas Emissions Associated with Wood Products



Source: Table 3.
Note – excludes secondary processing emissions.

Broader System Effects

The stump-to-dump analyses outlined above track wood carbon losses and fossil fuel energy use throughout the life cycle of a wood product, but timber harvest also has broader system effects, on forest ecosystems as a whole as well as on markets and the larger economy.

The effect of timber harvest for wood products on the broader forest ecosystem depends on the assumptions of a particular study. At one extreme, some studies assume that without a wood products market, no forests would exist; hence wood products should be credited for all carbon sequestered by the source forest. At the other extreme are studies assuming that without a wood products market, natural forests would remain undisturbed and would continue to fix carbon at a slowing but still significant rate for centuries; hence any harvest activity reduces carbon stores, at least temporarily. The typical situation lies somewhere in the middle.

PHOTO BY JOHN ZAPEL, HOLLY MOUNTAIN RESOURCES, LTD., PROVIDED BY RURAL TECHNOLOGY INSTITUTE

The effect of a particular forest management regime on greenhouse gases depends upon the volume of standing trees maintained over time, as well as on soil and forest floor impacts, including road building.

A key determinant of the broader ecosystem effect of wood products is the particular management system that is applied to the source forest. Multiple studies have compared the carbon storage implications of different forest management systems, accounting for carbon stored in the forest, in wood products in use, and in landfills. Some sources assume that sustained yield guarantees the carbon-neutrality of wood, but sustainability of harvest volumes is actually a poor indicator of overall GHG benefits of the management regime. For example, a management regime that involves periodic light harvests and maintains high forest stand volumes, and a regime using clearcuts with short rotations and low average stand volumes, will both produce "sustainable" harvest flows, but they have very different carbon implications.

The volume of live and dead wood maintained on the site over time is a better indicator than the sustainability of harvest flow to assess the carbon sequestration contributions of a particular forest management system. Management regimes that reduce the standing stock of timber, even if they produce a sustainable flow of timber over time, will have smaller GHG benefits than regimes that maintain high stand volumes (Liski et al. 2001; Hoover and Stout 2007; Ray et al. 2007; Depro et al. 2008;). Even very old stands continue to build carbon reserves, particularly in the soil (Luyssaert et al. 2008). For young secondary managed forests, the carbon balance depends upon multiple factors, including the effect of harvest on stand regeneration, the proportion of wood converted to long-lived versus short-lived products, the rate of decomposition and amount of methane emitted by discarded products and the extent of reuse, and the growth dynamics of the particular forest type. For older forests with a low risk of major disturbances, conversion to young, fast-growing forest will cause large amounts of GHG emissions as the old stand is removed (Harmon et al. 1990), and it may take decades or even centuries for a sustainable harvest regime to work off this initial carbon debt.

In addition to readily observable effects on standing timber and carbon volumes, harvest operations can affect soil and forest floor carbon stores through physical disturbance. Surprisingly little is known about these effects, but in general, logging can be expected to reduce forest floor carbon. Early research by Covington (1981) indicated that forest floor biomass decreased by half during the 15 years following clear-cutting of northern hardwood stands, presumably due to faster decomposition and reduced deposition of litter. Harmon et al. (1990)

estimated that fine woody debris and forest floor carbon would decrease from 26 to 7 metric tons per hectare if an old-growth Douglas fir stand were converted to a 60-year rotation. Removal of whole trees appears to decrease forest floor carbon as compared to removal of sawlogs only (Johnson et al. 2002). A recent review of studies relating forest management practices to soil carbon stores indicated that thinning generally leads to lower forest floor carbon due to faster decomposition and less litterfall, despite the pulse of carbon from harvest residues (Jandl et al. 2007). Effects on mineral soil are less pronounced, and depend on the degree of disturbance, but clearcutting can lead to overall carbon deficits for up to 20 years as immediate losses of carbon from the soil and forest floor outweigh new growth and litterfall. Yanai et al. (2003) paint a more complex picture, citing studies that show *slower* litter decomposition after clearcuts (due to a less favorable environment for decomposer organisms), combined with possible accelerated losses of carbon within the soil organic horizon, and mixing of some litter into mineral soil by logging disturbance. Forestland managed for timber may also lose soil and forest floor carbon due to clearing for logging roads. And finally, loss of cover in wet boreal forests with deep peat soils could trigger release of the vast amounts of carbon stored in those soils.

Even the best forest growth models cannot predict future conditions, disturbance events, or forest responses with much certainty. Forest climate strategies will need to adapt to a shifting reality.

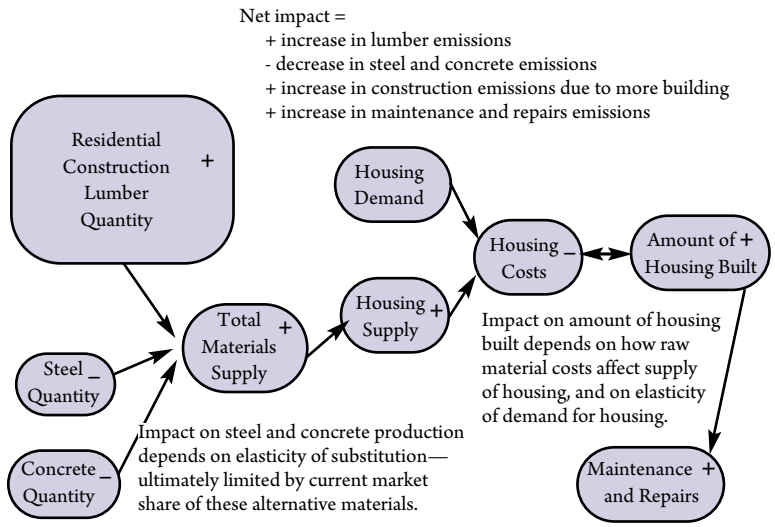
Beyond the relatively short-term effects on standing trees and the longer-term effects on the forest floor and soils, timber harvest can also affect the resilience of forests to disturbances over time. In fire-prone forests, thinnings that reduce excess fuel loads may reduce the frequency or severity of fire, protecting forest carbon reservoirs into the future (Oneil et al. 2007). However, thinning in moist forests may make forests more vulnerable to ice damage or wind throw. Timber operations that remove invasive exotic species can produce more diverse stands that better resist stresses from droughts to pest outbreaks; by the same token, disturbance from harvest activities can also help spread invasives that inhibit regeneration of tree species with high carbon storage potential. Single-age, single-species plantations may grow rapidly during intermediate stand ages, but can be more vulnerable to future disturbances and consequent carbon losses. Even the best forest growth models cannot predict future conditions, disturbance events, or forest responses with much certainty. Forest climate strategies will need to adapt to a shifting reality, with the state of scientific knowledge continuously scrambling to keep up as forests and management methods change and develop.

In addition to ecosystem effects, changes in wood products volume may also reduce GHG emissions as markets substitute wood for more GHG-intensive materials. However, the actual degree of substitution is extremely difficult to document. Simply producing more wood products will not do the trick. The ultimate impact of expanded lumber production on GHG emissions depends on a) the elasticity of substitution of wood for alternative materials, b) the impact of materials availability on housing supplies, and c) the elasticity of demand for housing (Figure 5). The first factor, the elasticity of substitution for alternative building materials, is likely to be low, because wood is already the "business as usual" technology for home construction and residential furniture in the U.S. (used for 90% to 94% of one- and two-family homes, Gustavson et al. 2006) and it is difficult to build wooden high-rises (usually framed with steel) or foundations (usually concrete). Considering the other two factors, if abundant lumber drives down housing costs (b),[15] and if people respond by building more or larger houses or renovating existing ones (c), expanding the lumber supply

could well result in *more* overall GHG emissions as fossil fuels are burned to construct and maintain those homes. Overall, then, it would seem that the possible GHG benefits of substitution are relatively low for long-lived wood products.

FIGURE 5.

Greenhouse Gas Emissions Impact of Expanded Lumber Production



Biomass

The discussion above traces the greenhouse gas emissions associated with wood products flows. An analysis of the greenhouse gas emissions associated with wood fuels is closely related, because woody biomass that is burned to generate heat or electricity is often a byproduct of both timber cutting operations and the processing of wood products. Unlike wood products, wood fuels lack any carbon storage benefit, so substitution effects comprise the entire climate benefit of these fuels. Fossil fuels are currently the dominant source of energy, so there is much greater substitution opportunity for biomass than there is for wood in construction. As for wood products, however, the benefits depend upon wood fuels actually reducing fossil fuel use, and not simply on expanded woody biomass use.

As a fuel, wood unquestionably has a smaller atmospheric carbon impact than coal, oil, or natural gas. Yet wood fuels are definitely not, literally speaking, "carbon neutral." First, an analysis of the GHG benefits of wood fuels must reflect the fact that they, like wood products, require fossil fuel energy to produce and transport. In the case of wood-chip fuel, the fossil fuels used to harvest, chip, and transport wood release about 5% of the CO_2e contained in the fuelwood portion of the tree (Mann and Spath 1997).[16] This figure may underestimate actual transport energy, as it assumes haul distances of only 17 miles and does not account for truck idling time while loading and unloading, which one source estimated could be as high as 60% of total truck run time (Hakkila and Aarniala 2002). Small-scale biomass projects with a localized "woodshed" can minimize the fossil fuels used to transport bulky solid wood fuels.

Wood pellets require more processing than wood chips. One Wisconsin study found that wood pellets used 6% to 9% as much fossil fuel energy in processing as the energy contained the pellets, compared to wood chips at 2% to 3% (Katers and Kaurich 2006).[17] Fossil energy used to transport and process heating oil, by comparison, was 16% to 25% of the energy contained in the

[15] This effect of abundant lumber is likely small, since wood is typically only about 10% of overall building costs.

[16] When comparing fossil fuel consumption associated with various energy sources, it is important to consider how each study treats the energy embedded in equipment as well as upstream and downstream energy use—fossil fuels themselves also require energy for extraction, processing, and transport.

[17] Because wood fuels contain more water (and otherwise burn less efficiently) than heating oil (see below), fossil fuel energy as a percentage of useful heat will be slightly higher than these percentages.

fuel (Katers and Kaurich 2006). Wood fuels clearly have much lower GHG emissions from processing and transport than fossil fuels, but their fossil-based emissions are not zero.

Liquid biofuels require even more energy to produce than solid fuels. Pimentel and Patzek (2005) estimate that harvest, transport, and processing of wood for cellulosic ethanol uses 57% *more* energy from fossil fuels than the energy contained in the ethanol itself. Even if cellulosic ethanol is produced using steam heat generated by wood, this study estimated that its production still requires 73% as much fossil fuel energy as the ethanol itself contains. A study by Argonne National Laboratory for the U.S. Department of Energy (Wu et al. 2006), in contrast, estimates that cellulosic ethanol will use only 16% as much fossil fuel energy as the energy contained in the ethanol and could reduce GHG emissions by 85% compared to burning gasoline.[18]

In addition to fossil fuels used to process wood fuels, combustion and conversion are generally less efficient for wood than for fossil fuels, so more units of heat (BTUs) must be generated to produce a given amount of useful energy. Solid biomass fuels like wood are used primarily for heat (in traditional wood stoves and furnaces that burn cordwood, wood gasification plants that use chips, and stoves or boilers that burn wood pellets) or to generate electricity (over 80 wood-fueled power plants nationwide have a combined output of nearly 1,700 megawatts). The most efficient wood use is for heat alone (about 65% of the potential BTUs in wood burned in a typical home wood stove are converted to useful heat, and up to 75% in gasification systems according to Biomass Energy Resource Center 2009), or for combined-cycle heat and power, also known as co-generation (60% to 80% efficient at converting wood energy to useful energy). Wood-fueled electric utility plants, on the other hand, may be only 18% to 24% efficient (U.S. Forest Service Forest Products Lab 2004). In comparison, modern oil or gas furnaces may be up to 97% efficient, electricity generated from oil or coal is about 30% to 35% efficient, and coal for space heat has about the same conversion efficiency as wood.[19]

When evaluating the potential GHG benefits of substituting wood fuels for fossil fuels, the relative carbon content of alternative fuels must also be considered. Wood has a lower hydrogen content than fossil fuels, which causes it to release more carbon per unit of heat. Wood releases 21% more CO_2 per BTU than fuel oil, and 67% more than natural gas, but 14% less than anthracite coal (U.S. Energy Information Administration 2008a).[20] So replacing oil or natural gas with wood actually increases greenhouse gases released per BTU, even if the boiler burns with equal efficiency. Replacing coal with wood, on the other hand, potentially reduces emissions per BTU if the wood is burned efficiently. In sum, because of efficiency and chemistry differences, wood fuel may generate up to twice the CO_2 per unit of useful heat or electricity as fossil fuels, with the substitution most favorable for coal.

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[18] Differences are due to contrasting assumptions. Wu et al. use much lower values for energy embodied in equipment, assume no fertilization for woody biomass, incorporate the energy content of byproducts, and assume increasing yields over time as technology improves.

[19] Wood stoves and furnaces may be close to oil and gas in efficiency at peak output, but wood equipment is more difficult to start and stop on demand, and hence often runs with incomplete combustion (producing charcoal and ash and increased emissions rather than heat) for part of the season as it operates at lower temperatures and with limited oxygen supply.

Since wood actually releases more greenhouse gases per unit of useful energy than fossil fuels, the climate benefits of a switch to wood depend heavily on the assumption that the source forest continues to take up carbon as rapidly as it is released by burning, and even then there will inevitably be some delay between emissions and reabsorption. Hence, an assessment of the GHG impacts of biomass use on the source forest must also account for the full ecosystem effects of intensified management needed to increase biomass supplies. It is true that burning fossil fuels releases carbon that had been removed from the atmosphere hundreds of millions of years ago, while growing trees and burning their wood cycles carbon in and out of the atmosphere over a scale of a few decades. But timing still matters. If the source forest regenerated instantly, biomass would earn its "carbon-neutral" label, but the longer it takes to regenerate forest carbon after a biomass harvest, the longer that carbon dioxide remains in the atmosphere exerting its heating effect.

Waste wood burned for energy comes closest to true carbon neutrality, as it has already been removed from the forest and would otherwise decompose without energy benefits. New wood fuel plants are often promoted as running on wood waste, but unfortunately there is very little true waste remaining in the wood processing system. Perlack et al. (2005) calculated the amount of additional biomass fuel that could feasibly be used in the United States each year, and estimated that there are only 8 million tons of unused mill waste and 28 million tons of urban and consumer wood waste that could be captured for this purpose. The remainder of the woody biomass documented in the report, a total of 190 million tons, would come from the forest—41 million tons of logging residues, 60 million tons from forest fuels reduction treatments, and 89 million tons from all sources generated as byproducts of potential *increased* harvest and wood products consumption.

Removing 190 million more tons of woody biomass from U.S. forests annually (plus harvesting sufficient additional roundwood to generate enough new logging residue and wood waste) would reduce forest carbon stores in the short term, and could also affect carbon sequestration capacity in the longer term through its effects on site productivity and soil carbon. Increased use of whole-tree harvest technology and collection of widely scattered and bulky residues could create unintended impacts on soils and the forest floor as well as increasing fossil fuel consumption associated with harvest. In special cases, removal of excess woody material can increase forest carbon stores by reducing losses from catastrophic wildfire. But in general, there is a trade-off between burning wood and storing its carbon on the stump. As economists, the "dismal scientists," like to say, "There is no such thing as a free lunch."

Because of fossil fuel energy required to produce wood fuels, differences in combustion efficiency and fuel chemistry, and possible impacts on source forests, woody biomass cannot be considered a truly carbon-neutral energy source. Harvested judiciously, however, with care for long-term forest health, and with an emphasis on small-scale space heating applications, it can help reduce greenhouse gas emissions and help us through the transition to truly renewable energy sources. Incentives and regulations designed to boost use of wood fuels need to minimize the negative effects and promote uses with the greatest net benefit.

Because of fossil fuels required to produce wood fuels, differences in combustion efficiency and fuel chemistry, and possible impacts on source forests, woody biomass cannot be considered a truly carbon-neutral energy source.

[20] These comparisons assume kiln-dried wood with complete energy capture, so typical fuelwood in a typical home stove would burn much less efficiently.

Policy Implications

The analyses above revealed that wood losses along the production chain, release of methane from landfills, and GHG emissions from fossil fuel energy used to produce and transport wood products are significant. As a result, long-lived wood products ultimately store only a small portion of the carbon removed from the forest by logging. Moreover, the most significant of these stores are in landfills, rather than in wood products in use. When process energy emissions are included, the U.S. forest products industry as a whole, including paper, releases nearly twice the greenhouse gases (measured in CO_2e) that it stores in products and landfills, even excluding the effects of harvest on forest carbon (Skog et al. 2008).

Despite these broad patterns, the emissions associated with different wood products streams are extremely variable and complex, making it difficult to recommend any uniform policy to enhance greenhouse gas reduction through increased wood products flow. Only life-cycle analysis of specific products and regions can determine whether a particular wood product stream has GHG benefits. For any region or product mix, however, shifting use toward longer-lived products, reducing wood waste at all stages, recovering used wood for new products or energy, reducing processing and transport energy, and capturing more landfill methane could all lower the carbon footprint of wood products.

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Processing recovered materials into new long-lived products can extend the storage life of wood carbon already removed from the forest. For instance, discarded pallets may be remanufactured into hardwood paneling.

The clearest climate benefits of wood use, for either products or fuel, come from substitution effects—that is, consequent reduced use of alternative fossil-fuel-intensive materials. This is obvious in the case of biomass fuel, but it is true of wood products as well. In the case of wood products, the opportunities for substitution may be limited, but when substitution does occur it reduces fossil fuel emissions "forever." Unfortunately, simply expanding production will not guarantee that substitution actually occurs. Several policy options could tie wood use directly to reduced dependence on fossil fuels: 1) impose full environmental costs on fossil fuel-based and wood-based products alike, hence giving wood a competitive advantage (a carbon tax or cap-and-trade program would do this by increasing the cost of fossil-fuel-intensive alternatives, as long as similar policies applied for trading partners); 2) encourage voluntary choices that favor wood (provided the advantages are thoroughly documented), through approaches like green building standards or renewable energy certificates; 3) offer temporary subsidies or tax breaks to switch fossil-fuel furnaces to clean-burning wood furnaces where sustainable supplies are available; 4) encourage community-scale wood heat projects that use locally sourced wood and are likely to have fewer environmental and fossil energy impacts than larger-scale projects.

Increased demand for wood products resulting from such policies will ultimately reward wood producers through higher prices, with no need to subsidize wood production directly. Climate policies should not directly reward "second-best"

strategies (like building with or burning wood) without reliable proof that they replace a "third-best" alternative. The "first-best" strategy remains a reduction in the overall use of resources, and direct subsidies for wood use could lead to excess capacity, excessive energy use, and unintended harm to forest health. Since the climate benefits of wood fuels and wood products alike depend upon maintenance of high carbon stores in source forests over time, any temporary subsidies must be accompanied by rigorous forest sustainability standards.

A clear and accurate picture of the climate effects of wood use is critical to the development of effective greenhouse gas reduction strategies. With tightening international and national commitments to reduce GHG emissions, accounting for forest and harvested wood carbon has received increasing attention. The treatment of these carbon pools in national GHG inventories and under cap-and-trade systems will ultimately influence the success of climate change mitigation efforts. The last section of this report provides a brief overview of how wood products have been treated under climate policy to date. A topic of current interest and controversy is whether and how wood products carbon should be credited as part of offset projects, so we also discuss some key issues that must be resolved if this is to be done effectively—that is, if wood products carbon is to help reduce greenhouse gas emissions.

The Role of Harvested Wood Products in Climate Policy: A Short History

Nations that signed the United Nations Framework Convention on Climate Change (Kyoto Agreement) in 1992 agreed to report emissions and sequestration of greenhouse gases. The guidelines developed for these inventories initially omitted wood products carbon, under the assumption that new wood products would simply replace discarded ones with no net change in this carbon pool (IPCC 1996, Chapter 5, Box 5, p. 5.17). Countries could include harvested wood products in their reporting, however, if they could clearly demonstrate that stocks of products in use and in landfills were increasing over time.

As countries gained experience with GHG reporting and as the start of the first 2008-2012 Kyoto commitment period approached, interest grew in crediting carbon stored in wood products and in landfills as part of national inventories to help balance emissions from other sectors. In 2003, the Intergovernmental Panel on Climate Change (IPCC) issued Good Practice Guidance for Land Use, Land Use Change, and Forestry, which included methodologies for measuring carbon in wood products in use and in landfills (IPCC 2003, Appendix 3.a.1), and the most recent Guidelines for National Greenhouse Gas Inventories (IPCC 2006) now incorporate these recommendations.

Beyond simply measuring greenhouse gases, Kyoto Agreement signatories made commitments to meet emissions reduction targets and it took several follow-up meetings to agree on how to treat the forest sector for these targets. The final rules for the 2008-2012 commitment period require countries to report the GHG impacts of land use changes (deforestation and afforestation), and allow countries to choose whether or not to include emissions from and sequestration by managed forestlands that remain forested (with individual-country limits on use of sequestration by managed forests to balance their

industrial emissions).[21] At this time, increased carbon in wood product pools cannot be credited toward emissions reduction commitments, though negotiations are ongoing about the inclusion of forest products carbon in future commitment periods.

In both international and U.S. contexts, cap-and-trade mechanisms are gaining acceptance as an approach to reducing GHG emissions. Theoretically, market-based trading may be used within a nation or between nations to allocate emissions reduction efforts to least-cost options under a defined emissions cap. Through allowance trading, parties with surplus emissions reductions can market them to those with higher compliance costs. Allowance trading systems have gained acceptance through programs like the U.S. EPA's cap-and-trade program for sulfur dioxide.

Initial cap-and-trade proposals treat forests and agriculture as uncapped sectors. One way to encourage emissions reductions or GHG removals by uncapped sectors is to allow them to sell documented GHG reductions—that is, increased sequestration or emissions reductions beyond "business as usual"—as "offsets" to entities in capped sectors. These offsets can serve as a substitute for direct emissions reductions by those entities. When forestry projects are used to offset emissions from regulated sources, questions about what counts as a GHG reduction can become complex. In general, the U.S. has taken a more favorable attitude toward forest offsets than many other countries. The European Union Emission Trading Scheme, for instance, currently excludes forestry offset projects.

U.S. forests currently capture about 10% of national GHG emissions, thanks to regrowth of forests on abandoned agricultural land and intensively cut timberland. Receiving credit for this sink, at the national accounting level or through individual offset projects, would reduce compliance costs for other sectors. Crediting wood products carbon storage would further expand the range of forest-based offsets. Of course, only changes in practice that supplement "business as usual" sequestration in these sinks will actually contribute to GHG reductions. Emerging regulatory schemes in California, the Northeast (Regional Greenhouse Gas Initiative), and the West (Western Climate Initiative) include forest offset options, and each of these arenas is considering inclusion of wood products pools. Crediting wood products carbon storage would further expand the range of forest-based offsets. Emerging regulatory schemes in California, the Northeast (Regional Greenhouse Gas Initiative), and the West (Western Climate Initiative) include forest offset options, and each of these arenas is considering inclusion of wood products pools. The U.S. Department of Energy's voluntary 1605(b) greenhouse gas registry and the Chicago Climate Exchange also credit wood products carbon for projects registered or offsets traded.

[21] Canada, for instance, chose to exclude managed forests from its 2008-2012 Kyoto Agreement-mandated reporting, as scientists estimated that there would be a high chance of managed forests acting as a source rather than a sink during this period, due to increasing fire and insect outbreaks.

Accounting for Wood Products in Forest Offsets

Harvesting timber as part of an offset project introduces a complex series of greenhouse gas impacts that spread back to the source forest and outward through the economy. Though many of the issues can be addressed by the life-cycle assessment approach outlined in the first sections of this report, the offsets context introduces new questions about what impacts should be credited or debited to the offset project provider. Incomplete accounting could fail to properly reward significant emissions reductions, whereas crediting activities of questionable climate benefit could inadvertently encourage GHG-emitting activities.

Because the U.S. is somewhat unique in its emphasis on offsets from forest carbon sinks, particularly in proposing to credit wood product pools, it is critical to get the accounting right in order to maintain credibility as our nation begins to play a role in global GHG reduction efforts. A good project accounting system will: 1) define a system boundary that captures major effects; 2) include significant GHG pools and fluxes; 3) set additionality criteria that ensure that "business as usual" activities are not credited (including defining accurate baselines); 4) account for significant leakage (emissions outside the project boundary that are affected by the project); 5) ensure that carbon is stored "permanently;" and 6) address uncertainties and risks by discounting credits and/or pooling risk across multiple projects. The discussion below indicates how each of these criteria applies to wood product pools as part of forest offsets.

Because the U.S. is somewhat unique in its emphasis on offsets from forest carbon sinks, particularly in proposing to credit wood product pools, it is critical to get the accounting right.

1. Project Boundary

One boundary question arises for wood products projects operating in isolation from source forests. It is forests that actually remove carbon from the atmosphere, and production of wood products merely slows the rate of release back into the atmosphere when some of that carbon is removed from the forest site. Because sequestration on the source forest and in harvested wood are so intertwined, stand-alone wood products offset projects would exclude many significant project impacts. Wood products should only be considered as a possible carbon pool within the context of forest management projects, and then only if full accounting of GHG impacts is required.

The second critical boundary question is the treatment of emissions beyond the geographic boundary of the forested property. The following principles for project accounting from the IPCC Good Practice Guidance for Land Use, Land Use Change, and Forestry (2003) provide guidance for defining system boundaries in offset projects:

> In a general sense, project boundaries can be thought of in terms of geographical area, temporal limits (project duration), and in terms of the project activities and practices responsible for greenhouse gas emissions and removals that are significant and reasonably attributable to the project activities (Section 4.3.2, p. 4.90).
>
> Project operators need to determine and report the greenhouse gas emissions from direct fossil fuel and electricity use in mobile and stationary equipment (Section 4.3.3.7, p. 4.109).

PHOTO BY DAVID COHEN, UBC

Long-distance shipping is an important source of fossil fuel emissions that should be reflected in harvested wood carbon offset accounting. Exports of logs and lumber to China have grown in recent years, and emissions from this source would fall outside of Kyoto commitments (Zhang Jiagang, China, 2001).

Emissions associated with processing, transport, use, and disposal of wood products are certainly "reasonably attributable" to the wood carbon storage function, as without these steps a tree removed from the forest would decompose much more rapidly. However, projects that claim offset credits for wood stored off-site depend on capped sector entities to perform these services. It is not at all clear how to handle this anomaly since capped sectors themselves are not eligible to sell offsets.

In an offsets context, accounting for energy emissions matters because forest project developers will choose between strategies that accumulate more carbon in the forest ecosystem and strategies that remove more carbon for storage in products and landfills. Projects that include timber harvest will have a competitive advantage because timber revenues help cover project costs. Crediting these projects for the full amount of carbon stored in wood products, without accounting for associated emissions, would skew the offsets mix toward timber harvest projects, and would increase pressure on limited fossil fuels and raise costs elsewhere in the economy. Considering only the sequestration aspect would be like a cost/benefit analysis that considers only benefits. Some wood products clearly result in more processing emissions than the carbon they store, and these activities should not be subsidized by valuing the carbon stored in final products and landfills without accounting for GHG emissions along the production path.

Some claim that under an economy-wide program offset projects should not be responsible for fossil fuel-related emissions outside the forest, since those emissions are already capped. By this line of argument, allowance costs associated with processing and transport will affect offset providers through a lower value for raw harvested wood. But allowance costs will also raise prices for finished wood products and lower profits for wood businesses, among other effects, so raw wood values will not reflect the entire cost. Lower timber prices will also apply equally to all forest landowners, not just offset providers. Hence the burden is on regulators to ensure equal treatment for forest offset strategies through project accounting that reflects net carbon storage, rather than gross storage. A requirement that offset projects maintain pre-project forest carbon stores throughout the project period would also help guard against unintended intensification of harvest.

2. Carbon Pools

Most carbon accounting protocols call for periodic sampling of all significant carbon pools, with offset providers credited or debited based on stock changes.

This system would adequately reflect forest carbon reductions directly caused by timber harvest, as well as losses occurring from natural processes in the absence of harvest activity. The volume of standing live and dead trees would decrease after harvest; forest floor and down dead wood pools would briefly increase and then decrease as material rots over several years. Carbon losses from the stumps and roots of harvested trees would also be accounted for if below-ground carbon is estimated from above-ground tree biomass, as a missing tree would lower the post-harvest below-ground estimate. Long-term losses of soil and litter carbon due to harvest disturbance are less likely to be captured through periodic inventories due to the difficulty of sampling soils adequately. Because soils commonly hold one-third to one-half of forest carbon, a small percentage change in soil carbon can significantly affect total forest carbon. When soil-carbon impacts are underestimated, this can make short-rotation, intensive-production forestry look more favorable from a carbon perspective than it really is.

Measurement of wood product carbon stocks and flows is a bit trickier. Documentation of carbon storage in wood products for offset projects would probably concentrate on the portion converted to solid lumber, plywood, or panels, and perhaps the portion remaining intact in landfills. Because of the complexities of tracking these pools over time, the U.S. Department of Energy introduced the 100-year method into its voluntary 1605(b) program. This approach allows project developers to report carbon stocks expected to remain in wood products and landfills 100 years after harvest. Projects relinquish claims to shorter-term carbon stores, in exchange for receiving permanent credit for stores present in year 100. Registry participants are provided with a set of tables developed by the USDA Forest Service (based on Smith et al. 2006), which are sufficiently accurate for a voluntary registry.

In an offset context, however, this simple approach is inadequate. Regional data in the 1605(b) tables blend results from very diverse operations—with different management styles and land use histories; harvesting logs of various species, sizes, and qualities; and shipping to mills with different product mixes and equipment—all of which creates extremely variable patterns of carbon storage over time. Without direct sampling of a particular wood products stream, adequate discounting of offset credits to reflect the substantial uncertainty of model estimates would likely eliminate creditable wood products carbon altogether. Tracking the wood processing path of an individual project would encourage efficiency, recycling, and channeling of wood to long-lived products to improve retention of wood carbon over time. Some 1605(b) parameters, such as the carbon density of various finished products, apply across all projects and can be combined with project-specific data to develop estimates of carbon stored in wood products. Changes in wood product technology and consumer behavior also demand periodic adjustments in estimation parameters.

3. Additionality

After establishing appropriate project boundaries and defining carbon pools, an offset project claiming wood product credits would compare the flow of wood products under planned project management to the flow under a "business as usual" scenario. The *difference* in GHG emissions would comprise the wood

products component of project carbon credits. Developers of offset standards are just beginning to consider how to define a wood products baseline, against which an offset must measure its carbon storing activities. Should the baseline be the historical flow from this property, the projected future flow, or the average from similar properties? Additionality questions are an important but unresolved issue that all offset protocol developers are still wrestling with.

4. Leakage

Additionality is further complicated by market leakage and substitution effects, both outside the direct control of the offset developer. At its most extreme, leakage seems to confound any attempt to change "business as usual" practices, as project actions may be undone by non-project *re*actions. If a project lowers historic levels of timber harvest in order to accumulate forest carbon, but nearby properties respond with increased cutting that depletes their carbon stocks, leakage adjustments would reduce creditable project carbon. If a project increases harvest to store more carbon in wood products, and nearby properties respond with reduced cutting, this would likewise undercut wood carbon gains. Work to estimate and compensate for leakage in forest offset projects is ongoing (see Willey and Chameides 2007 for one suggested method).

Substitution is really a type of leakage with effects extending to substitute products. For the harvest-reducing project example, inclusion of substitution effects might penalize the project if the harvest reduction indirectly causes increased use of concrete, steel, or plastics. Conversely, a project that increases timber harvest might claim greenhouse gas reductions from reduced use of concrete or steel framing. As explained in the Broader System Effects section above, data are lacking to actually demonstrate substitution effects in the economy, and crediting such an uncertain outcome would be out of place in an offset project.

An analogy might help provide context for interpreting substitution claims. The owner of a hybrid vehicle might claim that every mile driven in that vehicle reduces GHG emissions, and is worthy of a climate subsidy, because the owner *could* have chosen to drive a conventional sport utility vehicle instead. For the individual driver faced with a choice of vehicles, the hybrid is undoubtedly a more climate-friendly choice, just as for a builder use of wood might be more climate-friendly than concrete. Yet a superior GHG-reducing strategy would be to stop driving altogether or to reduce building size, extend building life, and reuse waste wood. If this driver never owned a sport utility vehicle nor had plans to purchase one, or if the hybrid was driven more miles due to lower driving costs, then the benefits would be entirely fictional. Moreover, if hybrid vehicles or wood construction are already the "business as usual" technologies, no credit may be claimed for their use. Even where they are not dominant, actual substitution must still be demonstrated.

Because these indirect market effects are beyond the control of an offset provider and are mind-bendingly complex, some protocols exclude them from project carbon accounting. Climate policies that directly support efficiency, conservation, and GHG-reducing technologies (e.g., by subsidizing research or

setting appliance standards) are better suited than offset projects to address these economy-wide factors.

5. Permanence

Wood products do not store carbon permanently, though landfills apparently can store it for decades or even centuries (our experience with landfills is too short to know this for certain). Since offsets enable continued GHG emissions above the cap set by public policy, and since those emissions permanently shift carbon from the lithosphere to the biosphere, it is important to use conservative assumptions about the longevity of carbon storage through terrestrial offset projects, particularly for wood products and landfills that do not sequester additional carbon over time as forests do. IPCC's Good Practice Guidance for Land Use, Land Use Change, and Forestry (2003) uses very conservative default half-lives in use of 30 years for all solid wood products and 2 years for paper. Use lives change over time as new technologies extend product life or introduce more disposable products or as consumer habits change, so parameters would need to be updated frequently.

Since it would be impossible to track wood flows from an offset project to particular landfills, regional or national average decomposition rates would be the only option for tracking the fate of landfilled wood carbon. Ongoing monitoring will be critical to improve data on landfill releases, and to update GHG emissions estimates as waste management practices change over time. If the longevity of products and waste are tracked as part of wood pools in offset projects, practices that increase product life or boost waste recovery would be rewarded.

6. Uncertainty and Risk

The wood products life-cycle summary in the first section of this report illustrated the variability of wood processing pathways in terms of their carbon losses and energy requirements. Due to diverse sources and processing methods, it is impossible to develop a single reliable error estimate for wood products carbon measurements. In the face of substantial uncertainty, wood carbon estimates should use conservative estimation methods and should be discounted for uncertainty if credited to an offset project.

Conclusions

The limited role of forests and wood products in sequestering and storing carbon can be understood through information about basic biology and technology, but choices about how forests and wood products and wastes are treated under climate policy are ultimately a matter of public values. Forest and agricultural operations will likely be excluded from a regulatory cap on greenhouse gases, because their land base often sequesters more carbon than it releases and because their carbon flows are so difficult to measure. Nonetheless, management practices of these operations can reduce as well as increase carbon stores, and the distinction between these entities and regulated ones is a matter of degree rather than kind. The ability to market offsets, should it be incorporated in U.S. cap-and-trade legislation, must be understood as a public policy choice and not a right. Offset standards should be designed to support broad public policy outcomes.

Setting public goals for forests will require weighing the advantages of accumulating more carbon in forests versus the advantages of accumulating it in furniture, homes, and landfills or burning to generate energy. In most cases, boosting forest carbon stores will create stable, self-sustaining carbon reserves at no fossil-fuel emissions cost. Protecting and enhancing forest carbon reserves can also help maintain undisturbed, late-successional forests that are currently rare across the landscape. These forests could provide a refuge for species stressed by a changing climate and provide valuable lessons about how natural systems adapt to new conditions. In contrast, carbon storage in wood products and landfills depends upon continuing fossil fuel use and requires space for housing and landfills that displace carbon-fixing vegetation. At the same time, however, wood products and fuels generate revenue for landowners (an incentive to keep forests as forests), provide material comforts for consumers, and may indirectly reduce GHG emissions by substituting for more fossil-fuel-intensive alternatives.

Wood products and wood fuels have a role to play in a carbon-friendly future. An emphasis on increased wood production, however, can distract from the ultimate goal of reducing use of energy and materials. The U.S. economy currently uses over 2.3 times more energy and 1.5 times more materials per capita than Europe (Rogich et al. 2008; U.S. Energy Information Administration 2008b), yet quality of life indicators are lower in the U.S. than in many European countries. There is clearly room for reducing consumption without harming basic human welfare, and the best climate change strategies will keep that goal clearly in sight.

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Data Appendix – Conversions and Calculations

Item	Original Data and Source	Assumptions	Computed Estimate
Wood Losses			
Rate of decomposition of forest floor litter	Zhang et al. (2008). Decomposition rate (k value) for first-order decay = 0.3.	k = ln(2) / HL, where HL = half-life.	Convert rate of decomposition by first-order decay to half-lives. 0.3 = In (2) / HL; HL = 2.3.
Above-ground logging waste including logging residue plus stumps and small limbs	Logging residue and roundwood volume nationwide (30%) and by region: South Central (28%), Rocky Mountain (22%), North Central (40%), Pacific Northwest (28%), Northeast (47%) (U.S. Forest Service 2008, Table 40). Logging residue and roundwood volume at state level: NV (3%), NH (84%) (Timber Product Output data online at http://ncrs2.fs.fed.us/4801/fiadb/rpa_tpo/wc_rpa_tpo.ASP). Stumps and branches add 14% to softwood logging residue and 24% to hardwood logging residue (McKeever and Falk 2004).	Stumps and branches add ~19% to logging residue on average (mean value between 14% for softwoods and 24% for hardwoods).	Above-ground logging waste as % of roundwood is 19% more than logging residue. National = 0.3 * 1.19 = 36%. Nevada 0.03 * 1.19 = 4%. New Hampshire = 0.84 * 1.19 = 100%. South Central 0.28 * 1.19 = 33%. Rocky Mountain 0.22 * 1.19 = 26%. North Central 0.40 * 1.19 = 48%. Pacific Northwest 0.28 * 1.19 = 33%. Northeast 0.47 * 1.19 = 56%.
Total logging waste including logging residue plus stumps and small limbs and roots	Large roots are 5% to 51%, mean 19%, of total tree biomass in cold temperate and boreal forests (Li et al. 2003).	Apply mean root value of 19% of total tree biomass across United States (omits small roots). Assume all tree parts have same density so that biomass proportions and volume proportions are similar.	If roots are 19% of total tree volume, then 81% of total tree volume is above-ground. A tree with total tree volume = 1 would have above-ground volume of 0.81. If roundwood volume = x and above-ground logging waste including stumps and branches is 0.36x (national), then x + 0.36x = 0.81 and x = 0.81 / 1.36 = 60%. Total tree losses including above-ground logging residue and large roots = 1 - 0.60 = 0.40, or 40% of total tree volume. Computations for states and regions use same stumps/branches/roots percentages but substitute logging residue percentages by state or region. Total logging losses including above-ground logging residue and large roots are 22% for NV, 59% for NH, 39% for South Central, 36% for Rocky Mountain, 45% for North Central, 39% for Pacific Northwest.
Fuelwood as percent of standing tree volume	Fuel as percent of roundwood nationwide (9%) and by region: South Central (3%), Rocky Mountain (51%) (U.S. Forest Service 2008, Table 39).	Multiply fuelwood as percent of roundwood times roundwood as percent of standing tree volume to estimate fuelwood as percent of total standing tree volume.	See above for calculation of roundwood as percent of standing tree volume. Fuelwood as percent of standing tree volume: Nationally, 0.09 * 0.60 = 5%. For South Central, 0.03 * 0.61= 2%. For Rocky Mountains, 0.51 * 0.64 = 33%.
Pulpwood as percent of standing tree volume	Pulp as percent of roundwood for hardwood sawlogs in the North Central region (6%) and softwood pulp in the Pacific Northwest Westside (50%) (Smith et al. 2006, GTR-NE-343, Table D6). 2002 roundwood volumes from Adams et al. (2006, PNW-GTR-659, Table 13).	This source is used because it includes pulp sourced from sawlogs. Multiply pulpwood as percent of roundwood times roundwood as percent of standing tree volume to estimate pulpwood as percent of total standing tree volume.	Estimate national pulp as percent of roundwood (31%) from weighted average based on regional pulp percent of roundwood for hardwood/softwood and sawlog/pulp, weighted by 2002 roundwood volumes from Adams et al. (2006). See above for calculation of roundwood as percent of standing tree volume. Pulpwood as percent of standing tree volume: Nationally, 0.31 * 0.60 = 19%. North Central, 0.06 * 0.55 = 3%. Pacific Northwest, 0.50 * 0.61 = 30%.

Data Appendix – Conversions and Calculations (continued)

Item	Original Data and Source	Assumptions	Computed Estimate
Bark as percent of standing tree volume	15% to 18% of roundwood volume (Smith et al. 2006, Table 5).	Portion of roundwood volume remaining after fuelwood and pulp sorted out = 1 - 0.40 - 0.05 - 0.19 = 0.36. Assume that bark is included in primary processing losses as calculated below, so not deducted separately.	Portion of roundwood volume available for long-lived products that is bark is 0.36 * 0.165 = 6%.
Primary processing losses	General primary processing conversion efficiencies: http://www.borealforest.org/world/innova/processing.htm for circular vs. bandsaw conversion efficiency; Structural Board Association http://osbguide.tecotested.com/faqs/faq_singlepage.html for OSB efficiency.		
Primary processing losses	Log and product masses: PNW lumber: log 1,538 kg, lumber 774 kg (Milota et al. 2005, Table 5); South lumber: log 2,093 kg, lumber 883 kg (Milota et al 2005, Table 5); PNW softwood plywood: log 504 kg, plywood 241 kg (Wilson and Sakimoto 2005, Table 13); South softwood plywood: log 625 kg, plywood 290 kg (Wilson and Sakimoto, 2005, Table 13); South oriented strandboard: log 772 kg, OSB 574 kg (Kline 2005, Tables 1 & 2).		PNW lumber: (1,538 - 774) / 1538 = 50%. South lumber: (2,093 - 883) / 2093 = 58%. PNW plywood: (504 - 241) / 241 = 52%. South plywood: (625 - 290) / 625 = 54%. South OSB: (772 - 574) / 772 = 26%. Primary mill losses range from 26% (OSB) to 58% (South lumber) of log mass.
Primary processing losses	Percentage losses from various studies: 10% (theoretical OSB) to 62% (plywood in Finland).	To get percent of standing tree, multiply mill losses by percent of standing tree volume remaining after logging losses, fuelwood and pulp are removed (36%).	Convert to percent of standing tree by multiplying by 0.36. Range from 0.10 * 0.36 = 4% to 0.62 * 0.36 = 22%. Average loss = 13%, so remaining portion of standing tree in primary products is 36% - 13% = 23%.
Secondary processing losses	Secondary processing losses as percent of lumber or panel volume (Crumpler 1996; Wood Waste and Furniture Emissions Task Force 1998; BFM, Ltd. 2003).	Multiply mill losses by percent of standing tree remaining after primary processing (23%—see above).	Secondary losses range from 27% to 80% of lumber/panels. Secondary processing losses as percent of standing tree volume: 0.27 * 0.23 = 6% and 0.80 * 0.23 = 18%.
Construction losses	Construction losses as percent of lumber or panel volume, (National Association of Home Builders Research Center 1995; Cornell University Cooperative Extension 1996; Houston Advanced Research Center 2005; NAHB, cited in Wilson and Boehland 2005; James et al. 2007; McKeever and Falk 2004;). Conversion factors for lumber and panels: 33 lbs./cubic foot for softwood lumber and 40 lbs./cubic foot (1.25 lbs./square foot 3/8 inch thick) for sheathing (Smith et al. 2006, GTR NE-343, Table D1).	Calculate weight of wood in standard home from volumes using conversion factors. Then apply construction losses to percent of standing tree remaining after primary processing (23%—see above).	Construction losses range from 4% to 21% of lumber/panels. Construction losses as percent of standing tree volume: 0.04 * 0.23 = 1% and 0.21 * 0.23 = 5%.

Data Appendix – Conversions and Calculations (continued)

Item	Original Data and Source	Assumptions	Computed Estimate
Secondary and construction losses combined	Percentages in long-lived uses by primary product; total volume of each primary product produced in United States (Smith et al. 2006, GTR-NE-343, Table D2; and McKeever 2002, PNW-GTR-524, Tables 18, 20, 22).	Secondary processing losses 6% to 18% and construction losses 1% to 5% (see above). Use average losses for construction (3%) and secondary processing (12%). Assume primary products represented in GTR-343 and GTR-524 tables are representative of all primary solid wood products for U.S.	Multiply percent of softwood lumber used in construction and for furniture (Smith et al. 2006, Table D2) times volume of softwood lumber produced in 1998 (McKeever 2002, Table 18) to estimate total volume of softwood lumber used for construction and for furniture. Repeat for hardwood lumber, softwood plywood, OSB, and nonstructural panels. Sum estimated amounts of all primary products used for construction. Repeat for furniture. Estimated proportions as weighted average for all primary products in long-lived uses are 76% used in construction and 24% in furniture. To get weighted average combine secondary processing and construction losses, multiply proportion in use times wood loss as percent of standing tree for construction and for furniture and sum. 0.76 * 0.03 + 0.24 * 0.12 = 5%. Volume remaining in end uses 23% - 5% = 18%.
Long-lived uses	Percentages in long-lived uses by primary product; total volume of each primary product produced in U.S. (McKeever 2002, PNW-GTR-524, Tables 18, 20, 22; Smith et al. 2006, GTR-NE-343, Table D2).	Primary products represented in GTR-343 and GTR-524 tables are representative of all primary solid wood products for United States, and same percentages in long-lived uses apply for exports/imports.	Multiply percent of softwood lumber used in construction or furniture (Smith et al. 2006, Table D2) times volume of softwood lumber produced in 1998 (McKeever 2002, Table 18). Repeat for hardwood lumber, softwood plywood, OSB, and nonstructural panels to derive amount in long-lived uses. Sum and divide by sum of total production to get weighted average percent in long-lived uses, 60%.
Use losses	Amount of U.S. production for each primary product for 1998 (McKeever 2002); percent of each primary product in each end use: single-family, multi-family, residential upkeep, and all other (Skog 2008); alternative in-use formulas (first-order for Smith et al. 2006, GTR-NE-343, and other examples from Miner 2006).		Alternative formulas were applied for a period of 100 years. Amount remaining is weighted average based on solid wood products in each end use in the United States from McKeever 2002, proportions of residential wood use in single-family and multi-family construction by primary product from Skog 2008, and unit conversions from Smith et al. 2006, Table D1. Table 2 reports lowest and highest losses over 100 years from alternative formulas. Medium loss listed in Table 2 is weighted average loss.
Comparison with 1605(b) loss estimates	North Central fraction of softwood pulp roundwood in use 0.008, in landfills 0.084. Pacific Northwest Westside fraction of softwood sawlog roundwood in use 0.130, in landfills 0.279 (Smith et al. 2006, Table 6).	See above for regional roundwood as percent of standing tree volume.	North Central softwood pulp fraction in use or landfills = 0.008 + 0.084 = 0.092. 0.084 / 0.092 = 91% in landfills. Percent of standing tree volume = 0.092 * 0.55 = 5%. Pacific Northwest Westside softwood sawlog fraction in use or landfills = 0.130 + 0.279 = 0.409. 0.279 / 0.409 = 68% in landfills. Percent of standing tree volume = 0.409 * 0.61 = 25%.
Methane emissions	23% of solid wood and 56% of paper decomposes in landfills (Skog et al. 2008). About 80% of carbon released from U.S. landfills is in the form of CO_2 — about 50% of C is released as methane but about 40% of methane is flared or burned for energy, which converts it to CO_2 (U.S. EPA 2006). GWP of methane is 25 (Forster et al. 2007).	Assume that portion of wood waste from mills and construction that is subject to decay (23%) completely decomposes by year 100.	Calculate net CO_2e emissions per ton of solid wood CO_2e deposited in landfills: 0.8 * 0.23 = 0.184 tons CO_2 and 0.2 * 0.23 * 12 / 44 * 16 / 12 = 0.0167 tons CH_4. CH_4 measured as CO_2e is 0.0167 * 25 GWP = 0.418. Total CO_2e released per ton solid wood landfilled is 0.184 tons CO_2 plus 0.418 tons CH_4 measured as CO_2e = 0.60 tons, so net long-term CO_2e storage is 40% of CO_2e deposited in landfill.

Data Appendix – Conversions and Calculations (continued)

Item	Original Data and Source	Assumptions	Computed Estimate
CO_2e from solid wood wastes remaining in use and in landfills at 100 years	Use medium range of wood losses from previous sections of this report. 67% of solid wood waste is disposed of in landfills and 77% of solid wood waste remains in landfills at 100 years (Skog et al. 2008). Net GHG emissions avoided are 40% of CO_2e in wood waste, due to methane effects (see methane calculations above).	Primary and secondary mill and construction waste is landfilled at typical rates (67%) and 23% of it decomposes by 100 years after tree is cut. House demolition waste is landfilled at a similar rate, but only 11.5% decomposes by year 100 since disposal occurs gradually over time.	Primary mill waste is about 13% of standing tree volume. Net CO_2e in landfilled mill waste at year 100 would be 0.13 * 0.67 * 0.40 = 3% of CO_2e in standing tree. Secondary mill/construction waste is about 4% of standing tree volume. Net CO_2e in landfilled secondary mill/construction waste would be 0.04 * 0.67 * 0.40 = 1%. House demolition waste is about 17% of standing tree volume. Net CO_2e in house demolition waste (assuming 1/2 of decay-prone portion decomposes by year 100) would be 0.17 * 0.67 * 0.70 = 8%.
Fossil Energy and Other Process Emissions			

Ratios of logs:100-year C, lumber:100-year C, house wood: 100-year C	Wood remaining as percent of standing tree from previous section of this report using medium range estimates. Logs = 60%, Lumber = 23%, End products = 18%. 100-year wood (in use and landfilled) = 14%.	These ratios are used to convert emissions per mass of raw material to emissions per CO_2e of wood remaining in Year 100 (see rows below).	Ratios:
			logs:100-year wood = 60 / 14 = 4.3;
			lumber:100-year wood = 23 / 14 = 1.6;
			end products:100-year wood = 18 / 14 = 1.3.
			For CORRIM houses with 75-year life, all materials to landfill in year 75, 25 years decomposition in landfill leaves 81.75% of wood material remaining in year 100. So ratio is 18 / (18 * 0.8175) = 1.22.

Harvest	Fossil fuel emissions for site preparation and harvest operations for Southeast and PNW low- and high-intensity management range from 8.02 to 9.71 kg of CO_2 plus 0.00171 to 0.0127 kg CH_4 plus 0.00019 to 0.00554 kg N_2O per m^3 of log (Johnson et al. 2005).	1 m^3 of logs weighs about 525 kg. Multiply by 0.5 to estimate carbon content, multiply by 3.6667 to estimate CO_2 content. Hence logs contain 962 kg CO_2e per m^3.	Convert CH_4 to CO_2e by multiplying by 25, and N_2O to CO_2e by multiplying by 310 and total all GHGs per m^3 of log. Convert CO_2e per m^3 to CO_2e per kg by dividing by 962 kg/m^3. Totals range from 0.0085 to 0.0132 kg CO_2e of emissions per kg of CO_2e in log. Calculate ratios to 100-year carbon by multiplying by 4.3. Range from 0.04 to 0.06.
Harvest	Harvest emissions 11,411 CO_2e for 193,170 metric tons of C in logs (Gower et al. 2006).		Convert log C content to CO_2e content by multiplying by 3.6667 = 708,296 metric tons. Divide harvest emissions by log CO_2e = 0.02. Calculate ratio to 100-year carbon by multiplying by 4.3. Result is 0.07.
Primary manufacturing	Carbon content in raw logs and CO_2 and CH_4 emissions by product (Kline 2005, Tables 2 and 7; Milota et al. 2005, Tables 5 and 8; Wilson and Sakimoto 2005, Tables 12 and 13; Bergman and Bowe 2008, Tables 2 and 5).	Assume logs are 50% carbon.	Convert methane (minor emissions) to CO_2 equivalent by multiplying by 25. Sum fossil CO_2 and CH_4 as CO_2e. Estimate C in log by multiplying mass by 0.5, then multiply by 3.6667 to derive CO_2e in log. Divide emissions by raw log CO_2e to get ratios of 0.02 (softwood lumber South or Northeast hardwood), 0.04 (softwood lumber West), 0.03 (OSB), 0.005 (plywood). Including off-site emissions, 0.07 Northeast lumber, 0.18 OSB, 0.11 plywood. Calculate ratio to 100-year carbon by multiplying by 4.3. Range 0.02 to 0.77.
Primary manufacturing	Source reports fossil C emissions as percent of C in primary product (Liski et al. 2001).		0.032 sawmill, 0.069 plywood mill. Calculate ratio to 100-year carbon by multiplying by 1.6. Results 0.05 and 0.11.
Primary manufacturing	Sawmill nonrenewable emissions (lumber portion only) 4,708 metric tons. C stored in lumber = 31,705 (Home Depot) plus 50,477 (other) total tons (Gower et al. 2006).		Convert lumber C to CO_2e by multiplying by 3.6667 = 301,366. Divide sawmill emissions by log CO_2e = 0.02. Calculate ratio to 100-year carbon by multiplying by 4.3. Result is 0.07.

Data Appendix – Conversions and Calculations (continued)

Item	Original Data and Source	Assumptions	Computed Estimate
Primary manufacturing	200 kg CO_2e emissions per metric ton of panels (Skog 2008, p. 16).	1 metric ton panels contains 0.48 metric tons C (Smith et al. 2006, GTR-NE-343, Table D1 panel average).	1 * 0.48 * 3.6667 = 0.88 metric tons CO_2e in 1 metric ton of panels. 200kg = 0.2 metric tons CO_2e of emissions/metric ton panels. 0.2 / 0.88 = 0.23. Calculate ratio to 100-year carbon by multiplying by 1.6. Result is 0.36.
Primary manufacturing, construction, transportation	4-story wood-framed apartment building—wood content has 1,400 GJ embedded energy and primary manufacturing emissions are 117 tons CO_2e. Wood contains 15.8 MJ/kg energy content (Borjesson and Gustavson 2000).	Lumber is 50% carbon. Assume all wood embodied in house remains at 100 years.	1,400 GJ = 1,400,000 MJ. 1,400,000 / 15.8 = 88,608 kg of wood in building. 88,608 * 0.5 = 44,304 kg C in wood in building. 44,304 * 3.6667 = 162,449 kg CO_2e or 162 metric tons CO_2e in building wood. Fossil fuels used to produce and transport building materials emit 117 metric tons CO_2e. 117 / 162 = 0.72.
Primary manufacturing and transport	Average combined process and transportation energy and process non-energy emissions, virgin inputs (U.S. EPA 2006, Exhibit 2-2). Conversion factors by product for wet to dry tons (Exhibit 6-4) and carbon content as percent of dry matter (Exhibit 6-2).	Original units are metric tons carbon equivalent per wet (as delivered) short ton of product.	Convert wet tons of product to dry tons. Convert short dry tons to metric dry tons. Calculate carbon content. Calculate ratio of C in emissions to C in discarded material, 0.12 for lumber, 0.24 for fiberboard. Calculate ratio to 100-year carbon by multiplying by 1.3. Results 0.16 to 0.31.
Construction	Construction emissions for Minneapolis and Atlanta model houses converted to CO_2e 1,271 and 1,121 kg (Meil et al. 2004, Table 3-4). Wood as percent of materials 15% and 10% (Miel et al. 2004, Table 10). CO_2e content of homes at 22.4 and 17.1 metric tons (Perez-Garcia et al. 2005).	Estimate construction emissions for wood based on wood as portion of total materials. House life is assumed to be 75 years, so CO_2e remaining at 100 years reflects 25 years decomposition in landfill (82% remains in year 100).	Convert total construction emissions to GWP. Minneapolis house = 1.27 metric tons, Atlanta house = 1.12 metric tons. Proportionally, construction emissions would be 0.15 * 1.3 = 0.19 for Minneapolis and 0.1 * 1.1 = 0.11 for Atlanta. 82% of CO_2e remains at 100 years: 18 metric tons CO_2e for Minneapolis house and 14 for Atlanta house. Calculate ratio of construction emissions to 100-year CO_2e. 0.19 / 18 = 0.011 for the Minneapolis house and 0.11 / 14 = 0.008 for the Atlanta house.
Transport to construction site	Construction transport emissions converted to CO_2e 37 and 21 kg (Meil et al. 2004, Table 3-4). See above for other data.	Estimate transport emissions for wood based on wood as portion of total materials. House life is assumed to be 75 years, so CO_2e remaining at 100 years reflects 25 years decomposition in landfill (82% remains in year 100).	Convert total transport emissions from manufacturing to construction site to GWP. Minneapolis house = 0.037 metric tons CO_2e; Atlanta house = 0.021 metric tons CO_2e. Estimated wood transport for Minneapolis = 0.15 * 0.037 = 0.006; Atlanta = 0.10 * 0.021 = 0.002. Construction wood transport emissions as percent of 100-year wood carbon storage is insignificant.
Transport to end use	128,199 (Home Depot) + 83,396 (other) total tons CO_2e transport emissions (Gower et al. 2006).	Logs are 50% carbon.	Total carbon stored in lumber 31,705 + 50,477 = 82,182. 82,182 * 3.6667 = 301,337 tons CO_2e in lumber . Total transport emissions = 128,199 + 83,396 = 211,595. Divide transport emissions by lumber CO_2e 211,595 / 301,337 = 0.70. Calculate ratio to 100-year carbon by multiplying by 1.6. Result is 1.12.
House maintenance	Emissions associated with maintenance of wood components 1,066 and 890 kg CO_2e (Winistorfer et al. 2005, Tables 8 and 9). For total wood CO_2e in house see above.		Divide maintenance CO_2e by 100-year CO_2e (see above). 1.066 / 18 = 0.06 and 0.890 / 14 = 0.06.
Demolition	435 and 491 kg CO_2e demolition energy emissions (Winistorfer et al. 2005, Table 11). For total wood CO_2e in house see above.		Multiply total demolition CO_2e by fraction of landfilled material that is wood. 435 * 0.15 = 65 kg. 491 * 0.10 = 49 kg. Divide estimated wood demolition CO_2e by house content CO_2e. 65 / 22,400 = 0.003 and 49 / 17,400 = 0.003.

COVER PHOTOS:
Top: Photo courtesy of Terry Brown, Oregon State University

Left: Photo by Ann Ingerson

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ISBN 978-1-935371-16-6
90000
9 781935 371165

Forest Thinning in Pacific Northwest Riparian Areas: Rationale, Risks, and Policy Calibration

Chris Frissell
Mary Scurlock
Kelly Crispen
Pacific Rivers Council

American Fisheries Society Symposium, Seattle, WA, Sept. 2011

Riparian Reserves in the NW Forest Plan

- The Northwest Forest Plan:
  - Established wide, function-based Riparian Reserves
  - Established a new burden of proof such that *timber harvest is prohibited* in Riparian Reserves unless demonstrably *necessary to attain Aquatic Conservation Strategy Objectives*
  - Actions that could potentially meet this criterion:
    - *Control tree stocking, reestablish and manage stands, acquire desired vegetation characteristics, fuels treatment and fire suppression activities*

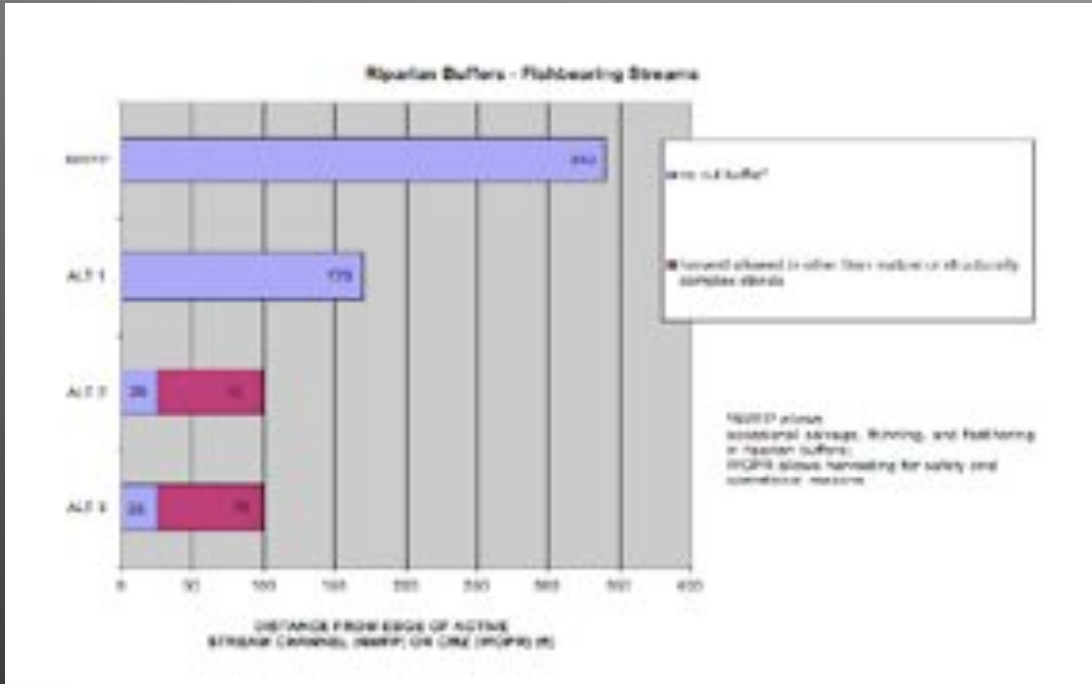
- BLM's Western Oregon Plan Revisions, and
- Timber sale projects of the BLM and the Forest Service

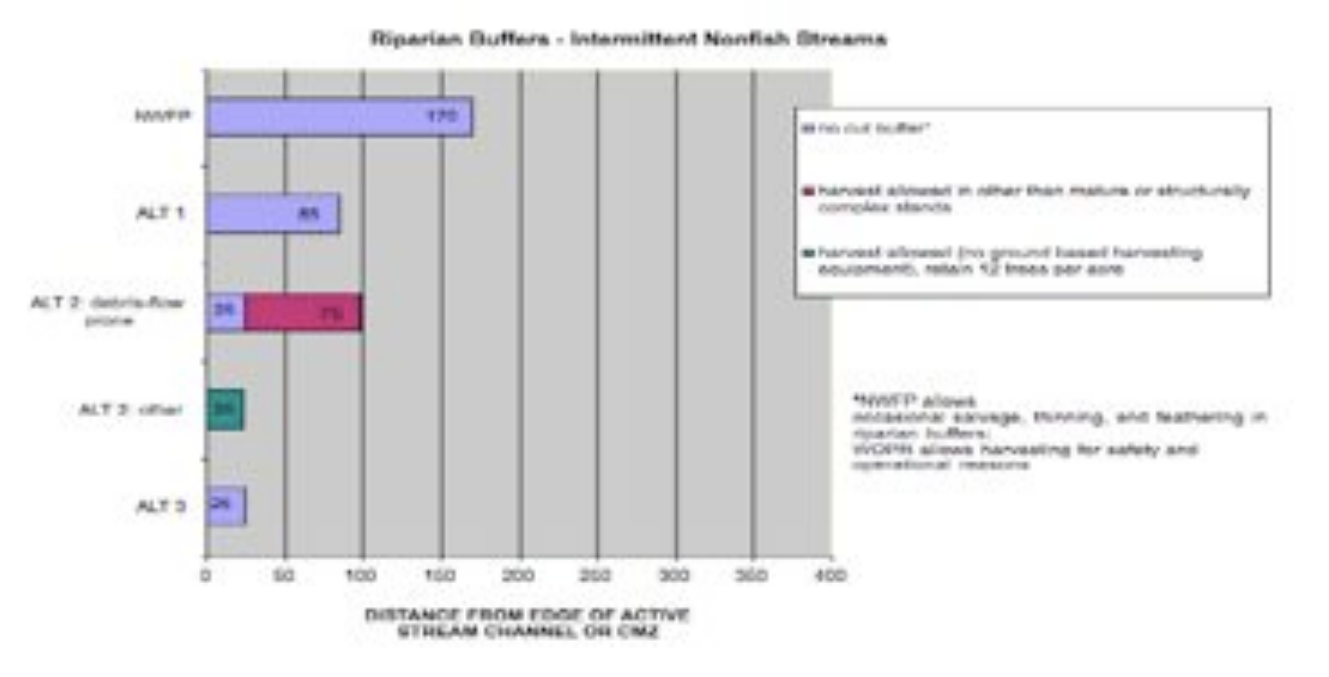
…have proposed or implemented stepped-up programmatic logging within NWFP RRs, contending that thinning is useful or necessary under a wide variety of prevailing forest conditions to hasten growth of some trees or meet fuels objectives

- NMFS/USFS/BLM Aquatic Restoration Biological Opinion 2008; reinitiated consultations on RR thinning in 2008 (kicked upstairs by Streamlining Team)
- PRC letter to USFS R6 + OR BLM 14 Sep. 2010) nudging.
- The Elevation: Interagency science panel

Besides influencing water quality and habitat for freshwater species including fish and amphibians, riparian forests provide late-successional habitat for a variety of bird, mammal and other species

Riparian Protection: NW Forest Plan v. BLM WOPR





The BLM WOPR eliminates NWFP riparian guidance.

Outside of 25ft no cut zone, harvest allowed "if the stands are not mature or structurally complex."

Common Rationales for Thinning in Riparian Reserves

- *Density reduction*
  - Hasten or rejuvenate growth of selected "leave" trees
  - "Prepare" forests for future, presumed drier climates
    - Reduce moisture competition around large trees
    - Propagate residual dry-site species
- *Fuels management*
  - Remove ladder fuels around residual large trees
  - Break up "fuels continuity" (inhibit "wicking")

Riparian thinning trades off postulated long-term benefits against likely adverse effects

Evidence for net ecological benefit of riparian thinning is sparse and speculative, while evidence of known adverse effects is ample and growing.

Cascades Frog, Umpqua NF, OR

- Near-stream soil disturbance and sediment delivery
- Depletion of near- and medium-term recruitment of woody debris
- Risk of thermal and microclimate stress from canopy removal
- Intensified fire effects in some circumstances
- Impact of road networks
- Risk of pathogen dispersal (e.g., Port-Orford-cedar root disease).
- Depletion of green tree diversity

Dwire et al. 2010. **Potential Effects of Fuel Management Activities on Riparian Areas.** USDA Forest Service RMRS-GTR-231.

Near-stream erosion and sediment delivery

Post-thin burned pilesMalheur NF, OR

Metolius R, Deschutes NF, OR

Short-term disturbance from felling and yarding, sustained erosion from altered soils and roads

• Rhodes JJ (2007) The watershed impacts of forest treatments to reduce fuels and modify fire behavior. Pacific Rivers Council, Eugene, 103 pp

• Rashin, E. B.et al. 2006. Effectiveness of timber harvest practices for controlling sediment related water quality impacts. J.Am.Water Resour. Ass. 42:1309-1327.

Riparian Area Disturbance Processes

Blowdown
Umpqua
NF, OR

Herbivory
Porcupine, BC
(K. Colburn)

Landslide and
fluvial erosion
Cape Cr, OR

Riparian Disturbances and Successional Pathways are Diverse and Abundant

- *Diversity of species and natural disturbance processes, coupled with good growing conditions, commonly leads to complex, robust riparian forests without thinning.*

- Natural <u>Disturbances:</u>
  - Fire
  - Floods
  - Fluvial channel migration
  - Root throw/ blowdown
  - Slope erosion and landslide deposition
  - Herbivory
  - Disease

Yes, even in plantations
Toketee RD, Umpqua NF

Wildfire in Riparian Areas: *Variable Effects*

Malheur NF, OR

North Umpqua R, OR

Most Often: Low-Impact Thinning

Biscuit Fire, Rogue R-Siskiyou F, OR

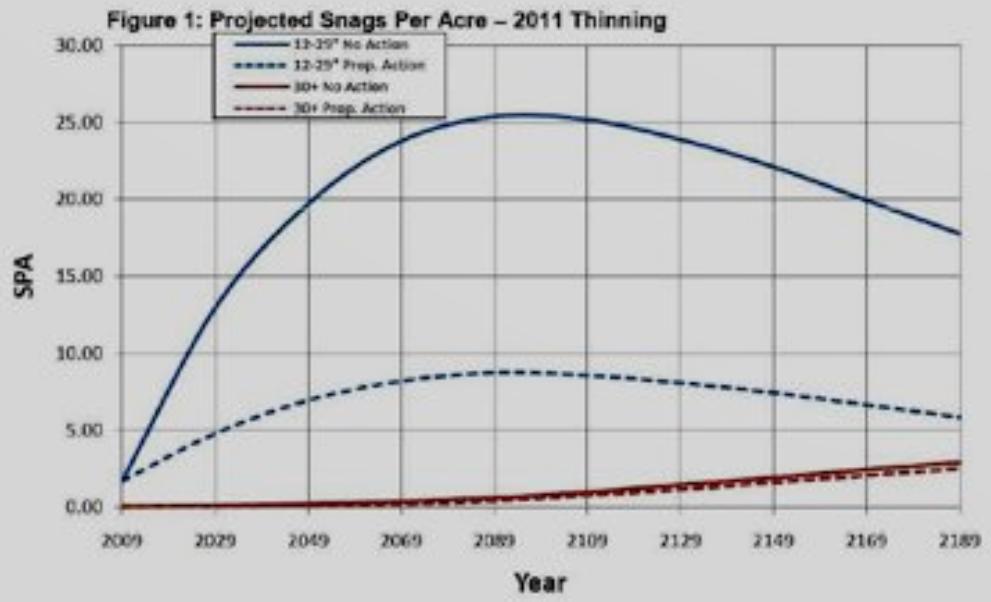
B. K. Jackson and S. M. P. Sullivan. 2009. Influence of wildfire severity on riparian plant community heterogeneity in an Idaho, USA wilderness. Forest Ecology and Management 259: 24–32.

Heiken (2010) compiled dead wood recruitment data and model projections from FS, BLM EIS & EA records

DEAD WOOD RESPONSE TO THINNING:
SOME EXAMPLES FROM MODELING WORK

2011 Thinning EA, Eugene BLM, Oregon

- Stands 30-70 years old
- Thinned to 60 to 120 trees per acre, and
- 120 to 160 square feet of basal area per acre
- 400 acres located in riparian reserves

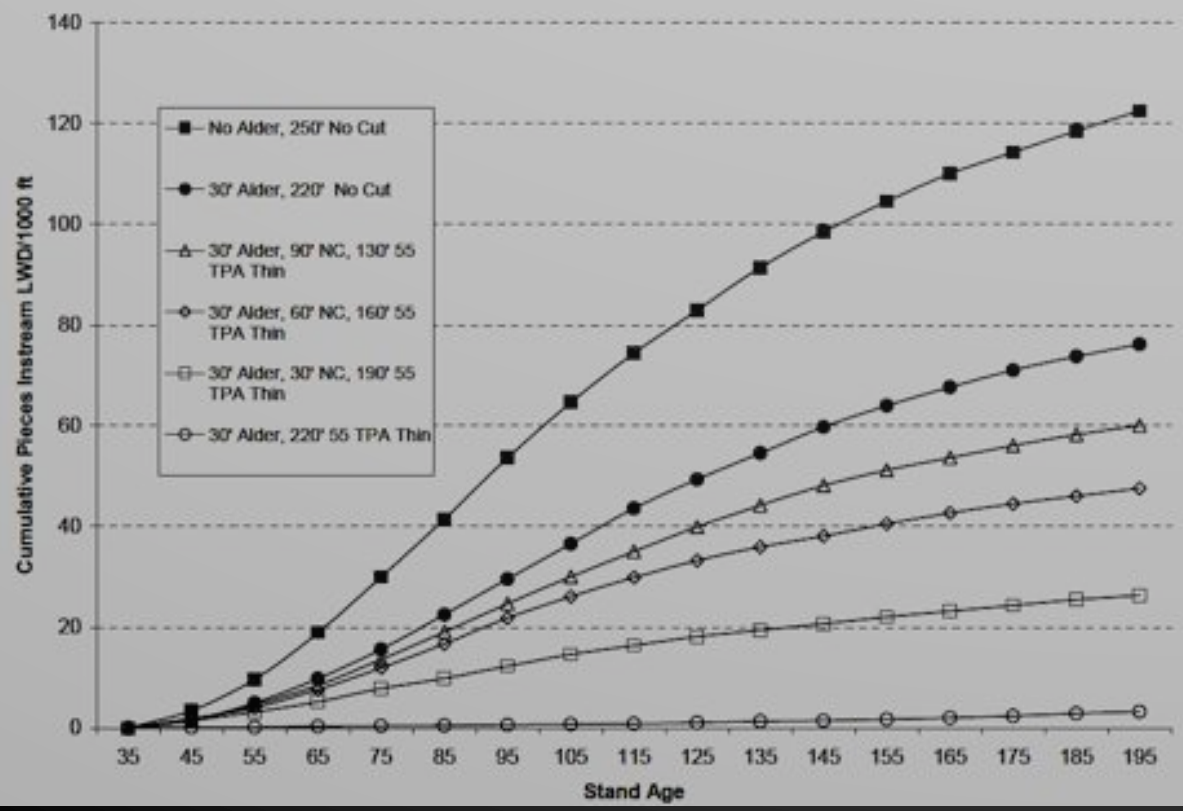


- *"In this study, treatments providing rapid development of live, late-successional attributes generally produced relatively lower densities of shade-tolerant stems, lower amounts of Douglas-fir basal area, and fewer snags and logs over a rotation compared to other treatments."*
- Garman, Steven L.; Cissel, John H.; Mayo, James H. 2003. Accelerating development of late successional conditions in young managed Douglas-fir stands: a simulation study. PNW-GTR-557.

Pollock (2010, 2011) NWFSC study:

Modeled Riparian Thinning and Projected LWD Recruitment to streams

Figure 4. Cumulative pieces instream lwd/1000 ft delivered to a stream under different thinning scenarios, assuming 30 foot wide alder forest at edge of stream, then a df riparian forest from 30-250 ft.



NMFS to Interagency Coordinating Subgroup (ICS):
On February 23 (2010), the Northwest Oregon Level 2 consultation streamlining team elevated two issues pertaining to implementation of the Northwest Forest Plan to the Regional Executive Team for resolution. The first issue concerns the effects of thinning in riparian reserves with respect to wood recruitment, shade and water temperature…

Stand Dynamics: Thinning Sacrifices Tree Diversity to favor Density

Survival
+
Growth

=

f (Microhabitat
+ Genetics
+ Density)

1) *Microhabitat* and *Genetic Diversity* are **directly** proportional to Abundance

2) *Density* effects are **inversely** proportional to Abundance

Conditions Under Which Riparian Reserve Thinning can be Justified?

Minimum Risk:

- Moderate and gentle slopes, outside of inner gorge slope breaks and erosion-prone soils
- Outside of 100-foot zone where most shade and woody debris recruitment is generated
- "Lop and drop" (boles remain on site)
- Near-stream or permanent roads not required

AND

Specific Benefit:

- Where thinning is necessary to remove planted, off-site or exotic trees.
- Where thinning is needed to preserve hardwoods or dry-site species under rapidly closing canopy
- Ladder fuel reduction to increase fire resistance of largest trees
- (treatments to alter large-scale fuels continuity and fire behavior are dubious and unproven)

Policy Recommendations for Riparian Reserve Thinning:

- 1) Field inventory and analysis of forest and aquatic conditions justifies a site-specific objective & treatment
- 2) Canopy reduction will not cause warming of streams or wetlands
- 3) All larger woody material is retained on site
- 4) Treatment can be accomplished from existing roads
- 5) Cumulative area of Riparian Reserves impacted by silvicultural treatment, yarding & transportation does not exceed 10% within any 10-yr period in any sixth-field subwatershed
- 6) Firm agency commitment exists to monitor & report silvicultural and environmental outcomes

Well-designed monitoring… .is needed to provide a scientifically-defensible basis for the continued and growing implementation of these treatments.
Stone et al. (2010) Env. Mgmt. 46:91

From: fpaulete@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Saturday, August 22, 2015 11:28 AM
To: RMP-Comments@heg-inc.com
Subject: Fwd: WOPR jr. comments
Attachments: WOPR2comments.odt

---------- Forwarded message ----------
From: **RMPs_WesternOregon, BLM_OR** <blm_or_rmps_westernoregon@blm.gov>
Date: Fri, Aug 21, 2015 at 9:10 AM
Subject: Fwd: WOPR jr. comments
To: BLM_OR RMPWO_Comments <blm_or_rmpwo_comments@blm.gov>

****
Resource Management Plans for Western Oregon
Bureau of Land Management
web: www.blm.gov/or/plans/rmpswesternoregon

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---------- Forwarded message ----------
From: **Reed Wilson** <unclereedy@hotmail.com>
Date: Fri, Aug 21, 2015 at 9:07 AM
Subject: WOPR jr. comments
To: "BLM_OR_RMPs_WesternOregon@blm.gov" <blm_or_rmps_westernoregon@blm.gov>

Reed Wilson
Benton Forest Coalition
203 SW 2nd St.
Corvallis OR 97333

8/21/15

Following are comments on the draft RMP's for western Oregon:

1) The new RMP's should include board feet from logging in reserves in compiling the ASQ. Previously the BLM neglected to include millions of board feet from logging in reserves in compiling the ASQ and claimed that timber targets were not being met. This is misleading to the public.
2) Logging in reserves should be prohibited, except for stands that are overstocked and uniformly under 50 years of age. Fuels reduction projects should be limited to non-commercial hand removal only. Stands with legacies and multi-aged stands should be reserved from harvest and allowed to progress naturally.
3) Streamside buffers should be increased rather than decreased. The BLM claims to utilise the best available scientific information in devising new RMP's, but all indications are that reducing buffers will elevate stream temperatures and harm aquatic species. Widening buffer zones will create travel corridors for all forest dwelling species and dispersal corridors for threatened and endangered species like northern spotted owls, red tree voles and marbled murrelets.
4) The new RMP's should more thoroughly analyze the impact of soil degradation and displacement from commercial logging. The current analysis published in the draft is limited to twenty years of extraction and 1% of the land mass. A reasonably accurate estimate of the extent of area altered by logging could be generated through satellite imagery and aerial photography. The new RMP's should more thoroughly analyze the long-term, cumulative effects of logging across the landscape on nutrient depletion and soil productivity.
5) The new RMP's should require surveys for northern spotted owls. By clearcutting outside reserves and allowing commercial extraction inside reserves (fuels reduction, hazard logging, etc.) the BLM is failing to ensure the recovery of the owl unless monitoring of populations continues indefinitely, and management can be tailored accordingly. For years, the public has been informed that controversial timber sale projects are designed to benefit spotted owl habitat,and the implication was that long term monitoring of populations would reveal the results of these experimental treatments. Now the BLM wants to depart on a new track of experimental management practices without the benefit of monitoring the results of previous logging practices.
6) The new RMP's should require surveys for red tree voles and flying squirrels. Basing northern spotted owl habitat management on stand conditions only while ignoring populations of their prey species will lead to the elimination of the owl and violate the Endangered Species Act.
7) At a recent forum in Salem, the spotted owl presenter stated that the only true threat to spotted owl population was the barred owl, and “habitat was not a factor”. This directly contradicts the BLM's intention of creating large block reserves for the owl, and also contradicts Dr. Eric Forsman:
The fact that Barred Owls are increasing and becoming an escalating threat to the persistence of Spotted Owls does not diminish the importance of habitat conservation for Spotted Owls and their prey. In fact, the existence of a new and potential competitor like the Barred Owl makes the protection of habitat even more important, since any loss of habitat will likely increase competitive pressure and result in further reductions in Spotted Owl populations (Horn and MacArthur 1972, Olson et al. 2004, Carrete et al. 2005). (Population Demography of Northern Spotted Owls, Forsman et al, pg. 98)
8) When clearcutting is utilised, the phrase “principle of sustained yield” is an oxymoron. In the first place, the O&C Act does not mandate clearcutting. Secondly, there is no proof that repeated clearcutting will not sterilize soils and eliminate forests altogether, in fact globally there is historical evidence to the contrary. Greece and parts of Northern Africa were once heavily forested.
9) In July 2015 Oregon Wild issued a preliminary critique of habitat management and other issues

in the Draft RMP's, that articulates many of my concerns. With their permission, I include that critique here:

<u>WOPR 2015 Notes on Wildlife Impacts and Bureau Sensitive Species Impacts:</u>

Spotted Owls:
<u>WOPR Proposed Actions Common to All Action Alternatives:</u>
"Protect stands of older, structurally complex conifer forest" and "maintain habitat for NSO" In LSR.
*Maintain means keep Nesting Roosting and Foraging Habitat (NRF) and dispersal. (Cites III-15 of recovery plan for management allowed in NRF)
*Maintain NRF, Nesting Roosting and Foraging Habitat defined as multi-layered, multi-species canopy, diameter over 30 inches dbh and canopy cover over 60% and decadence components
*Harvest generally prohibited, but road construction allowed, hazard logging allowed unless it downgrades habitat (NRF to dispersal).
*Fire suppression, fuels reduction, insect and disease logging, or any other logging to promote overall health of stand allowed even if it downgrades or removes habitat.
*No requirement for surveys.
*Alternatives A and C: No protections for spotted owl known or historic sites, no requirement for spotted owl surveys. Entirely based on land allocations.
*Alternative B: Is the same as A, except that the Sub-Alternative will protect known and historic sites within the Harvest Land Base, treating these areas as Reserves.
*Alternative D: Maintains all known and historic sites, like Sub B.
<u>NRF and Recovery Action 32 Habitat:</u> It is unclear from the DEIS, but is NRF habitat now being defined as only multi-layered, multi-species canopy, diameter over 30 inches dbh and canopy cover over 60% and decadence components? Spotted owls can and do nest in forests over 80 years old, even if they have not yet developed full decadence components present in unique old-growth forests like RA 32 habitat. In this new plan and DEIS, is the BLM equating RA 32 habitat to NRF habitat?
<u>Better Comparison with NFP:</u>
Generally, spotted owl management under the Northwest Forest Plan consisted of a land allocation approach (Late-Successional Reserves, Riparian Reserves, etc.) and site specific management. In LSRs, timber harvest was not allowed in stands over 80, and in stands under 80 only thinning was permitted to accelerate growth of the stand. In the Matrix, the agency was required to retain 100 acres of best NSO habitat as close as possible to the nest site or owl activity center as a core. Cores are managed as LSR, even if later unoccupied. Additionally within an owl home range (historic, modeled, or documented), the agency is required to maintain certain percentages of the owl's home range (appx. 1.5 mile radius) and certain percentage of the owl's nest core (appx. .6 miles radius). This maintenance of owl habitat generally required the agency to maintain over 60% canopy cover in the area post-treatment. Also across the Matrix were Connectivity Blocks, where individual tree retention was higher, and the agency was required to maintain 25% of the best habitat within these blocks. Also within each fifth field watershed, 15% of all Matrix lands had to be late-successional forest to help meet spotted owl needs.
The agency is also required to survey for the species in potential habitat, and abide by recommendations made by USFWS to mitigate or eliminate adverse impacts to the species and critical habitat. The agency is also required to comply with the owl's recovery plan.
Under WOPR, almost every alternative shifts these various layers of protection to one land allocation based approach. But the WOPR analysis is unclear and not specific on the impact of the removal of these various protections. For example, if the BLM retained that 15% standard what would still be protected vs. what would be lost? This side by side comparison specific to former individual protective standards is needed to fully grasp the impact of the proposed changes, and to better analyze which

changes would be most beneficial or harmful to the species. Please elaborate on a protective standard by standard basis in the FEIS.

Importance of BLM Lands: As an initial point, it is unclear from the NEPA documents produced by the BLM how important BLM lands are to the northern spotted owl. From the logging numbers and conclusions from the modeling in Appendix S, it appears that the differences in harvest land base allocations and volume to be logged will not make any significant impact on owl habitat or recovery objectives. Accordingly, BLM concludes that the primary role of its lands for the northern spotted owl is connectivity in the "central Klamath," coast province.

But this contradicts the DEIS (p 746), that states that BLM are “indispensable” for the northern spotted owl, and critical for both east-west and north-south dispersion. Given the critical nature of BLM reserves, and the critical dispersal element these lands play, the BLM should choose an alternative or modification of an alternative that maximizes reserve size and maximizes dispersal corridors.

In the agency description of riparian reserve objectives, the contribution of conservation and recovery of species is limited to “special status riparian associated species”. Formerly the reserves contributed to dispersal and connectivity corridors for terrestrial species as well.

Riparian reserves were originally designed in part to facilitate spotted owl movement between reserves. Given the BLM’s lands indispensable need towards owl connectivity, these riparian dispersal corridors should be increased, but it appears that almost every alternative is moving to shrink these riparian corridors. In fact, in the purpose and need for riparian corridors, benefit to terrestrial species like the northern spotted owl was completely ignored, even though this was one of the primary reasons for this allocation’s original creation. The BLM should consider an alternative that increased riparian reserve size and protections in order to benefit dispersal capabilities for the northern spotted owl and other terrestrial species. Also it appears the BLM failed to take a hard look at the terrestrial species benefits that are provided by the riparian reserves, or the potential for these benefits to continue.

Scale of Analysis: We are concerned that the spotted owl’s scale of analysis was too broad, and may have eliminated many conservation potential benefits by operating on such a large scale. We understand that this scope of analysis is needed for overall harvest projections and a bigger picture, but more local and detailed analysis is needed to more fully capture impacts to individual owl sites, areas of threatened connectivity, and how to rehab or connect isolated patches of owl habitat.

It is clear from the conservation needs of the spotted owl, spelled out on page 747-48, that all high quality habitat is needed for owl recovery, and all sites need to be protected. We are concerned that the definitions of what is considered high-quality habitat has changed, and may have led to much potential habitat falling through the cracks.

Generally under the Northwest Forest Plan, forests over 80 years in age were considered to have developed some older forest characteristics that benefited spotted owls, and was considered nesting, roosting, and foraging habitat (NRF). NRF habitat was considered high-quality owl habitat. It appears that the BLM has not adapted this definition of owl habitat, but has used a more complex metric by factoring in tree height, diameter, canopy cover and a range of other variables that are captured in a rating based on owl selection, i.e. “strongly selected for” or “strongly selected against.”

The WOPR NEPA description of the models used for spotted owl habitat are not elaborated upon well. Spotted owl habitat suitability is rated on a 0 to 100 scale (higher numbers indicating better habitat) and the scale is based upon canopy cover, mean tree diameter, and slope. This new metric raises a lot of questions. Exactly what variables were included, and how are they weighted? Were legacy trees accounted for or secondary older cohorts accounted for and how? Additionally, the BLM divided owl habitat into four categories “strongly selected for”, “selected for”, “selected against”, and “strongly selected against.” I believe this means that a “strongly selected for” area had a high proportion of northern spotted owl nest locations based on the relative habitat suitability value.

It would be beneficial to the public and our organization to see how this new metric rates against the more simple analysis of stand age. In other words, we would like to know and see maps of how much

of the BLM land is over 80 years in age, and how much of this land falls within the different new allocations. We need to see these maps and tables side by side with the new interpretations of owl habitat. How many forests over 80 were lost with this new metric and in what areas, or how many forests were gained based on this new habitat value interpretation?

It was make sense based on the owl's crashing demography that the BLM would err on the side of caution, and use the definition of habitat that would capture the most possible acreage to conserve based on the owl's needs and the indispensable nature of BLM lands to these needs. Additionally, it appears that the BLM excluded habitat that was not in large chunks of certain sizes from its modeling or consideration for conservation. Again it would be nice to see on a map and in tables, how much habitat was lost through these consolidations, and in what areas were they lost. It is a hard reality that much of BLM land in western Oregon is in the checkerboard and highly fragmented, but it would be nice to know that the habitat restoration efforts over the past 20 years were not in vain. Perhaps many of these isolated areas are close to being connected by recovering riparian corridors, or recently thinned forests nearing 80 years in age and attaining mature forests characteristics.

We are worried, that this block defining may have incidentally excluded a good deal of habitat that was formerly the focus of numerous recovery efforts. It would also be beneficial to see maps of where thinning had formerly taken place, so that the BLM could take full advantage and consideration of past restoration efforts. It could be that forests poised to more quickly attain habitat characteristics that would benefit the owl because of restoration efforts, will be lost in the definition shuffle and large scale approach taken by the BLM here.

Please include this analysis, these tables and maps, and comparisons in the FEIS.

<u>Appendix S Modeling:</u> The BLM states that it modeled in all potential timber harvest when calculating and modeling effects from the alternatives to the species. They specifically did not include any patches under 10 acres, any forests over 500 meters from a road, any early-seral forest, and any forest logged within 50 years. Page 1484.

We are concerned that BLM also did not account for in the model logging defined as "fire-suppression, fuels reduction, insect and disease control, and other activities needed to protect health of the stand or adjacent stands." This type of logging is permitted in LSRs even if it downgrades or removes spotted owl habitat. Page 938.

We have seen numerous timber sales under the Northwest Forest Plan that have logged extensively, downgrading and removing spotted owl habitat that has been classified as "fire-suppression, fuels reduction, insect and disease control" and almost every timber sale planned is justified as a promotion of stand health.

Based on historic rates of this logging, the BLM needs to anticipate and account for a similar degree of this type of forest activity into the future, and needs to model its impact to the Northern Spotted Owl. BLM's failure to do so fails to satisfy the "hard look" required under NEPA.

Additionally, the modelling for the northern spotted owl appears to have an improper baseline. The No Action Alternative is defined as the existing 1995 RMPs for the various BLM districts. Page 27. However, the models for impacts to Northern Spotted Owl habitat uses a baseline of no timber harvest. Appendix S, Page 1464. This is misleading to the public. Under the existing 1995 RMPs, the BLM was largely focused on restorative thinning projects to expedite the creation of Northern Spotted Owl habitat. By in essence changing the baseline to no timber harvest when analyzing impacts to the owl, the BLM masks the beneficial effect of the thinning regiment because under a no timber harvest baseline, these plantations are going to take much longer to development into taller, larger trees and other metrics the BLM is using to define good spotted owl habitat, or "strongly selected for" spotted owl habitat.

The analysis needs to be consistent with its baseline approach, and the modeling for the Northern Spotted Owl needs to be based upon the current management regime under the 1995 RMPs.

<u>Protection of existing sites:</u>

Generally, Northern Spotted Owl management under the 1995 RMPs consisted of a land allocation approach (Late-Successional Reserves, Riparian Reserves, etc.) and site specific management. In LSRs, timber harvest was not allowed in stands over 80, and in stands under 80 only thinning was permitted to accelerate growth of the stand. In the Matrix, the agency was required to retain 100 acres of best NSO habitat as close as possible to the nest site or owl activity center as a core. Cores are managed as LSR, even if later unoccupied. Additionally within an owl home range (historic, modeled, or documented), the agency is required to maintain certain percentages of the owl's home range (appx. 1.5 mile radius) and certain percentage of the owl's nest core (appx. .6 miles radius). This maintenance of owl habitat generally required the agency to maintain over 60% canopy cover in the area post-treatment. To facilitate this management surveys were required for Northern Spotted Owls, and the BLM was also required to comply with the spotted owl's recovery plan.

It appears in every action alternative that surveys for Northern Spotted Owls are not required. Are spotted owl surveys required for management actions in reserves under the various alternatives? The purpose of creating and protecting these reserves is to protect and recover the Northern Spotted Owl. Thinning efforts that have been occurring for decades in Late-Successional Reserves were done to accelerate the development of spotted owl habitat. Riparian Reserves and dispersal habitat have been maintained to allow spotted owls to recolonize this new habitat, which the BLM models to be extensive in the future in Appendix S.

However, as touched on above, management activities and logging is permitted in the reserves even if it downgrades or removes spotted owl habitat. Surveys should be required for the Northern Spotted Owl for projects in the reserves because the BLM is not modeling for future owl sites, and we want to protect owls that are recolonizing thinned/restored habitat. This would also be an essential monitoring tool for the species, to determine if indeed the species is recolonizing commercially thinned forests.

In order to satisfy Recovery Action 10 and the mandate to conserve spotted owl sites, the BLM needs to conduct surveys for spotted owls and protect sites that it finds. The BLM states that it will, "[i]n areas of significant population decline, sustain the full range of survival and recovery options for the species in light of significant uncertainty." Page 747. The entire planning area is defined as an area of significant population decline.

Marbled Murrelet:

In the NFP and original BLM RMPs, the agency would survey prior to logging in any potential Marbled Murrelet habitat. If there is any indication of occupancy, the agency would protect a 0.5 mile radius of all contiguous existing and recruitment habitat (stands capable of becoming habitat in 25 years). These areas would be managed as LSR. Recruitment habitat was required to "protected and enhanced" by any silvicultural treatment. (Eugene RMP at 62).

WOPR alters this regiment in all alternatives as laid out below. In the preferred alternative, murrelet surveys are restricted to the first 35 miles from the coast, and marbled murrelet habitat generally can extend up to 55 miles inland. Additionally, survey habitat is much more strictly defined as detailed out below. Timber harvest is allowed without surveys if large legacy trees are withheld from harvest and habitat is "maintained."

*Alternative A: No surveys, protect existing sites, seasonal disruption restrictions

*Alternative B: Surveys 35 miles from Coast in "mature or structurally-complex coniferous forest" and "conifer forests under 80 years old with platform trees (must be within 35 miles of coast, conifer, dbh greater than 19.1, over 33 meters tall, potential structure over 10 meters from ground, and contains platform over 4 inches in diameter. If stand occupied protect all occupied habitat plus 300 foot buffer around occupied stand. In stands under 80 with platforms, no surveys needed if platform trees aren't removed; maintain habitat (need to define); seasonal restrictions during breeding season.

*Alternative C: surveys in conifer stands over 120 years old, protect sites same as above for 10 years, and existing site protection lasts 10 years

*Alternative D: surveys same as B (but no 35 mile limitation), buffer all contiguous habitat within .5

mile radius of occupied stand (no gaps wider than 100 meters in forest)
Existing Sites: Marbled Murrelets have high nest-site fidelity, and as such, the PSG protocol recommends treating all occupied Marbled Murrelet sites as occupied sites indefinitely. A murrelet site, due to the inability to locate an exact nest location, occupies the entire area of contiguous forest. Given that the BLM is under direction from the FWS to protect occupied habitat, a majority of BLM alternatives say that the BLM will protect existing sites, but it is unclear what this means. Page 722. Pursuant to the PSG Protocol and available murrelet studies, occupied habitat means all the trees in a contiguous stand, including platform and non-platform trees. Any logging within this occupied habitat opens up the stand to predators and fragments the bird's habitat, resulting in take.
The BLM states that under three of the four action alternatives, all existing murrelet sites would be "retained." Page 733. The BLM needs to elaborate on what this means. We assume it means that the entire survey area, i.e. contiguous forest stand, for each murrelet nest site is to be protected, off limits from any kind of logging. Marbled Murrelet nest sites are compromised by forest and canopy openings that can be created by thinning or adjacent clearcutting. The BLM if indeed it is committed to protecting existing occupied sites, needs to ensure that all these sites are off limits from commercial harvest of any kind, because logging will create forest edges and openings that will expose these nest sites to an increased risk of predation. Additionally, even if these sites are in reserves this does not guarantee their protection because of the logging permitted in reserves that can downgrade or remove older forest.
300 Feet: In two of the BLM Alternatives the BLM proposes to protect Marbled Murrelet nest sites with a buffer of 300 feet as opposed to a half mile. This results in marbled murrelet occupied sites are approximately 6.5 acres in size as opposed to approximately 500 acres in size. The BLM provides no analysis or scientific justification that these 300 feet buffers will ensure protection of the nest site. Almost assuredly, a 6 acre nest site for the murrelet will result in the failure or predation of that nest site. We have attached numerous studies on the murrelet to that regard. Therefore, the BLM's assumption in the DEIS, that these sites will not be "taken" because of this 300 foot buffer is false and has zero scientific justification or rationale. This prescription will result in violations of the ESA, the MAMU Recovery Plan, the 5 Year Review Recommendations, and the NWFP Recommendations.
Potential or Suitable Habitat: We are concerned that the BLM is defining potential or suitable survey habitat for these alternatives too narrowly, and will accordingly miss certain types of Marbled Murrelet nest sites from this survey regiment. Murrelets will nest in younger stands if a single legacy tree is present, but the BLM is taking a stand level approach. When averaged, stands that provide nesting trees and habitat for murrelets could have average DBH, tree height, and various measurements that will not satisfy the BLM survey standards laid out above. Please provide scientific justification for the assertions that a large cohort of legacy trees within a forest stand is necessary for marbled murrelet habitat.
The BLM either needs to delete the DBH and height limitations or any limitations based on the number of platform trees present, or the BLM needs to factor in the percentage of nest sites that will occur outside of survey habitat and account for their loss and destruction in the modeling of the impacts. As an illustration, the BLM admits that over 10% of the existing occupied sites exist outside of what the agency has modeled or considered "nesting habitat." Page 733. The agency needs to take a hard look at this issue.
35 Mile Delineation: Please explain or provide ecological or scientific justification for the 35 mile mark in Alternative B. It seems entirely arbitrary and will result in the take of murrelets nesting outside this area.
Habitat "Maintenance": Under the alternatives where surveys are required in the future, we are concerned that the BLM's habitat maintenance program will not result in adequate protection of the newly discovered nest site, not make it safe to assume that new sites will be retained, or that Marbled Murrelets will continue to reproduce at these locations. The BLM is permitting logging, as long as the

large legacy trees with platforms are not removed. Again, it is inadequate to just protect potential Marbled Murrelet nest trees in a stand. Logging trees that provide canopy closure around these legacy trees opens the stand up to corvids and will result in dramatic risk of nest predation and failure. The entire contiguous stand with large buffers needs to be protected in perpetuity to protect murrelets.
Large Block Habitat: The BLM should have considered blocking up large areas of habitat known to contain legacy and platform trees to provide refuges for the marbled murrelet. Aside from the no action alternative, it appears every alternative is reducing protections for the Marbled Murrelet. Given the species flat lining or declining population levels, coupled with an alarming drop in juvenile numbers which signal problems with reproduction, should implicate an alternative that strengthens protections for the species and creates special reserves for the species to guarantee viability of the species.
False Assumptions: In numerous places throughout the DEIS, the BLM assumes that murrelet populations are increasing. This is false, and we have attached numerous recent studies to this regard. Alternatives that all reduce protections for the species because they are based upon this false assumption flaws the NEPA process.
Studies: We have attached numerous studies that provide scientific support for the points made above. Please contact us for further scientific information or any questions regarding the studies and science provided.

Red Tree Voles:

Under the former management mandate (2001 ROD), vole surveys were required pursuant to the species Survey Protocol (now 3.0) and any sites discovered were required to be managed pursuant to the species Management Recommendations (2.0). There was a frequently used exception for pre-disturbance surveys in thinning projects in stands under 80 years old (Pechmann Exemption). WOPR greatly reduces these protections in all alternatives, completely eliminating the vast majority of the species range (all habitat south of Highway 20) from any survey or management regime.
*Alternatives A and C: No surveys or protections, arguably violates BSS policies to prevent listing.
*Alternatives B and D: Just north of highway 20 surveys required (habitat same as in Survey Protocol), all projects (not just thinning exempt from surveys); vole sites south of highway 20 can/will be designated as non-high priority and logged, sites above highway 20 will be protected under current MR (10 acres buffer plus one acre for every additional nest found)
Sites in Reserves: In the WOPR analysis of effects to red tree voles, the BLM forecasted effects to the species by "applying observed detection rates and mean size of occupied stands against acreage of habitat in the Harvest Land Base" and "assumed all sites would be protected in reserves." However, there is no requirement it appears from the management objectives and actions that surveys be conducted in reserves for red tree voles when activities are planned that could remove red tree vole habitat.
Any timber harvest activities in reserves will remove and displace voles. "Continuing timber harvest in younger forest areas adjacent to remaining patches of older forest diminishes the habitat quality of these stands by maintaining them in an isolated and fragmented condition that may not allow for persistent populations of red tree voles." Federal Register /Vol. 76, No. 198 /Thursday, October 13, 2011 / Proposed Rules 63735. Thinning younger stands occupied by tree voles can reduce or eliminate voles from these stands (Biswell 2010, pers. comm.; Swingle 2010, pers. comm.), and Carey (1991, p. 8) suggests activities that result in rapidly developing (changing, unstable) younger forests are a limiting factor for red tree voles. *Id.* at 637-38.
If the BLM wants to make the assumption that all vole sites are reserved in its analysis, all timber removal activities in the reserves should require full and complete red tree voles surveys, and the adequate protection of these red tree vole sites. *Id.* at 637-38. This should include protections of large blocks of habitat not just isolated patches of older forests created by the current Management Recommendations because the FWS's "evaluation of the remaining older forest patches within the DPS indicate they are likely insufficient to sustain red tree voles over the long term due to their relatively

small size and isolated nature." *Id.* at 637-38.

Non-high priority sites: Although the baseline No Action Alternative takes into account the 2001 ROD, it does not mention or consider the "Non-High Priority" process that has designated many acres of existing red tree vole sites as non-high priority and cleared them for logging. Not factoring in this option would allow the BLM to selectively log certain new red tree vole sites and it over looks an option existing land managers had under the NFP. Its availability could influence the BLM's decision to eliminate Survey and Manage for red tree voles in most of the alternatives. Please disclose the amount of acres that have been designated or are proposed to be designated non-high priority. The BLM should develop an alternative that uses the survey and non-high priority approach to managing sites in the Harvest Land Base. Further surveys would contribute to a greater understanding of this imperiled species and inform future management and recovery decisions, not to mention the listing status of the species.

Additionally, will it be possible for the BLM to use the non-high priority process north of highway 20? This is not clear.

Need to List the Species: Based upon the findings of the FWS's Warranted but Precluded Findings for the North Coast Oregon DPS of the red tree vole, any reduction in federal vole protections will result in threats to the persistence of the species, and a potential need to list the species. The North Oregon Coast DPS extends north of the Siuslaw River to the Columbia, and the FWS concluded "that the ongoing effects of the destruction, modification, and curtailment of its habitat, in conjunction with other factors described in this finding, pose a significant threat to the persistence of the North Oregon Coast DPS of the red tree vole." FR 63740.

"Clearly, existing and projected amounts of older conifer forest habitat conducive to red tree vole persistence are less than the amounts projected to have occurred historically and with which tree voles have evolved. High-quality older forest habitat remains in isolated fragments, most of which are too small to support tree voles, and are so widely separated as to be likely well beyond the dispersal capability of the species. Unlike historical conditions, which were highly stochastic, these changes are likely to be permanent. Based on our analysis of best available information, we conclude the remaining high-quality habitat within the DPS is likely insufficient to support red tree voles over the long term, and persists in a fragmented and isolated condition that renders local populations of red tree voles vulnerable to extirpation or extinction through a variety of processes, including genetic stochasticity, demographic stochasticity, environmental stochasticity, and natural catastrophes." FR 63754.

Based on these conclusions by FWS, any reductions to protections to the species will contribute to the need to list the species. This is particularly true because "red tree voles are afforded more protection on Federal lands than on State Forest and private lands within the DPS, primarily as a result of the Survey and Manage protections" *id*, and every BLM DEIS Alternative aside from the no-action alternative removes Survey and Manage protections, or reduces these protections dramatically. Based on the WPB findings by the FWS, the BLM should have developed an alternative that set aside specifically large blocks of habitat in areas critical for red tree vole persistence, dispersal, and genetic connectivity. The BLM did not develop any alternative to this regard and did not analyze these issues at all.

Further, the BLM DEIS assumes a large number of sites will be treated as non-high priority, this was not the understanding of the FWS that concluded "all sites on Federal land within the DPS are considered high-priority sites with the exception of 198,000 ac (80,130 ha) of the southernmost portion of the DPS (primarily located within the Siuslaw River drainage)." Undermining survey and manage protections and the high-priority treatment of vole sites will lead to threats to the species persistence within the North Oregon Coast DPS, not just the area north of Highway 20.

Survey and Manage:

All action alternatives remove the Survey and Manage measures that require the agency to survey for and protect sites of Bureau Sensitive Species when planning a site-specific logging project. The BLM is required pursuant to agency policy to "conduct[] evaluations of the distribution, abundance,

population trends, current threats, or habitat for those species using available information." Page 692. As an initial point, the BLM is eliminating the survey and manage program which satisfied the agency's conservation duties towards these Bureau Sensitive Species. The BLM is eliminating these protections, but does not elaborate on the measures the BLM will take to satisfy their conservation duties. The BLM suggests that the reserve system being set up in WOPR will protect these species; however, this reserve system was not set up to benefit these species or takes into account these species whatsoever, because BLM plainly eliminates the goal of supporting viable populations of old-growth associated species from the WOPR revision. Page 22. This is inadequate treatment of Bureau Sensitive Species.

Not all of these species react to forestry activities the same way the spotted owl does. For example, while thinning in reserves may benefit the spotted owl in the long run, thinning could extirpate many sensitive species from an area. The BLM needs to put a program in place to conserve and analyze impacts to Bureau Sensitive Species.

Also, the BLM's analysis of the vast impact of the removal of this program is woefully inadequate. First, the BLM claims that with complete and species specific surveys, the BLM could analyze the impacts to these species under the various alternatives, but says that the cost of conducting that analysis is too high to conduct all at once during this broad planning stage. However, this is why Survey and Manage existed in the first place. The BLM has conservation and evaluation responsibilities towards these species, and the most effective way to meet this obligation was a project by project system of surveys, where project receipts would pay for the surveys. It is completely irrational for the BLM to assert that it cannot pay for surveys across the landscape, while also eliminating the only measure designed to mitigate that knowledge gap.

Secondly, the BLM should take into consideration the known sites of various species. The BLM states that for these sensitive species, the BLM will conduct evaluations of impacts to the species based on known information. Over the past two decades the BLM has surveyed for and discovered many known sites of various Bureau Sensitive Species. Those site locations and concentrations should be disclosed to the public in this NEPA process. The BLM could draw conclusions from the surveys conducted for these species concerning range, habitat, and distribution, because little is known about the range and distribution of these species. None of this analysis exists for any species with the exception perhaps of the red tree vole. Failure of the BLM to even attempt this analysis with the existing information it has from decades of survey efforts is a failure to take a hard look at the impact of removing these protections in the future.

Third, the BLM claims that the true analysis of the impact of removing protections for these species was conducted in 2004, the 2004 Final SEIS to Remove or Modify the Survey & Manage Mitigation Measure Standards and Guidelines. Page 692. It incorporates that analysis here. There are several problems with this approach. First, the 2004 ROD and FEIS does not contemplate the various changes in the current alternatives with altering riparian reserve widths, altering the reserve system, altered protections for other late-successional species, like owls and murrelets. All of these changes render the analysis useless because all the underlying protection and buffer standards have changed. Further, there has likely been a lot of new information and significant changes that would render the baseline information in 2004 useless as well. Additionally, it is likely that the data concerning habitat and known sites that are over a decade old is now stale. It is plainly not accounting for the decade plus of surveys that have been conducted for all these species.

Additionally, the BLM cannot rely on a non-NEPA document to cure a lack of analysis in the present document. The 2004 ROD and FEIS, while it went through a NEPA process in 2004, the document was invalidated, Page 692. Therefore, without a new decision on that NEPA document that analysis cannot be relied upon by connected later decisions.

As a final point, the BLM makes a massive faulty assumption regarding Bureau Sensitive Species in the DEIS. The BLM assumes that the habitat and sites of species that fall within the reserve system

would receive protection. However, the BLM is permitting in the reserves various types of commercial timber harvest activities that downgrade or removal late-successional habitat. Without maintain the Survey and Manage program on reserve lands, the BLM cannot make this assumption. The BLM would also have to map out the location of every known sensitive species site in order to assure the protection of these sites on the reserves.

Bald Eagle:

The BLM analyzes impacts to the Bald Eagle at the entire planning level scale, and concludes that there will be "indistinguishable" differences between the action alternatives at this scale. Given that there are only approximately 250 thousand acres of nesting habitat on BLM lands, the BLM should be looking specifically at the impacts to these various habitat patches (older forest in close proximity to large water bodies). Merely concluding that there will be minimal differences at a scale of analysis taking into account millions of acres is inadequate under NEPA. Which sites will be logged, which sites will be retained? Does commercial thinning impact the species even if these sites are located in reserves? Please address these questions in the FEIS.

Black-tailed Deer and Roosevelt Elk:

BLM analyzes impacts of the plan revision process to deer and elk using early-seral habitat as a proxy for impacts to the species. BLM assumes that there is a need to increase early-seral habitat because ODFW has documented declines in deer populations across the state. Page 676. To establish a proper baseline for analysis, the BLM instead needs to focus on deer population changes in the project area as opposed to state-wide. We are concerned that deer populations in the project area are stable, perhaps eliminating a need to create early-seral forests on BLM lands in the project area. Additionally, even though population numbers have declined since the 1980's we are concerned that this is an improper baseline for population analysis given the prevalence of clearcut logging in the years proceeding and programs to eliminate predators. In other words, deer numbers in 1979, might have been the highest in Oregon's recorded history, and do not necessary reflect an accurate or ecologically appropriate number of deer for the state and project area. Please develop a more accurate baseline for modeling and interpretation.

Wolves:

Wolves are wide-ranging predators that can exist in a wide variety of habitat types. They are habitat generalists in terms of terrain and vegetation (Boyd 1999, Oakleaf et al. 2006). They are not wilderness dependent, but their survival depends on the availability of cover and relatively secure areas that allow them to avoid humans and escape persecution (Carroll et al. 2003). To successfully inhabit an area they require a year-round prey base of wild ungulates (Boyd et al. 1994, Fritts and Carbyn 1995). Deer, elk, beavers, wild turkeys, marmots, and other small mammals are probably preyed on also.

Because wolves are wide-ranging, disturbance and effects to the species will occur across BLM lands as the species continues to move west and south. Effects could occur during project activities from noise, road building, timber felling, yarding, hauling, smoke (prescribed fire), and increased human activity and presence. Additionally, effects will also be seen by grazing allotments.

Gray wolves are sensitive to road associated factors. (de Vos 1948, Mech et al. 1988, Thurber et al. 1994, Paquet and Callahan 1996, Boyd and Pletscher 1999). For gray wolves, both Mech et al. (1988) and Thiel (1985) found that when road densities exceed about 1 mi/mi^2, wolves avoided or were displaced from areas. Mladenoff el al. (1995) found that road density was the major predictor of wolf pack location. Jensen et al. (1986) reported that road densities >0.6 km/km^2 were apparent barriers to wolf dispersal. Wolves have also been documented to be killed by collisions with vehicles (Gibeau and Heuer 1996, Paquet and Callahan 1996).

The BLM needs to develop standards to ensure that road densities in the forests it manages remain below road densities over 1 mi/mi^2 or manage areas over this road density to prevent any new road construction temporary or permanent. The BLM in its DEIS failed to consider this issue at all, and a failure to do so is a failure to take a hard look at the issue under NEPA.

Specifically, to conserve complete arrays of species and associated ecological interactions, management schemes must consider the density of roads. Road densities greater than 1 mi/mil are considered detrimental to wolf and elk populations Qensen et al. 1986). Wolf pup survival rates indicate that wolves may tolerate road densities higher than 1 mi/mi2 if extensive roadless regions exist adjacent to wolf territories (Mech 1989). But road densities within much of eastside forests exceed 2.5 mi/mi2 (e.g., Colville and Winema National Forests), and remaining roadless regions are quickly disappearing. Protection of terrestrial vertebrates, as well as fisheries resources, requires a moratorium on road building plus efforts to remove existing roads. Henjum, M.G., J.R. Karr, D.L. Bottom, D.A. Perry, J.C. Bednarz, S.G. Wright, S.A.Beckwitt and E. Beckwitt. 1994. Interim Protection for Late-Successional Forests, Fisheries, and Watersheds: National Forests East of the Cascade Crest, Oregon and Washington. A Report to the Congress and President of the United States by the Eastside Forests Scientific Society Panel.

Pups are born at a natal den in spring (generally mid-to late April) and remain there with their mother for about 2 months (Mech 1970, Boyd 1999). During this time any disturbance that results in the female leaving the den may expose the pups to predation or inclement weather. The sensitivity of females to human disturbances at den sites varies greatly among individuals (Boyd 1999). Due to the potential disruption of breeding as a result of human activity associated with any timber harvest, hauling, or road construction activity, these activities and any other activities that could cause disruption should be restricted from April through June. BLM failed to take a hard look at this issue in violation of NEPA.

Wolves are also impacted by grazing activities and grazing allotments. There are 3 potential effects of the proposed grazing activities on gray wolf:

1) Cattle presence on the allotment could displace deer, the primary prey of gray wolves in this area, and thus cause wolves to move to other areas to hunt. Studies have found that deer either moved or changed their use patterns when cattle were turned into allotments (Mackie 1981). Wolves are wide-ranging predators that have been known to travel more than 20 miles away from a den or rendezvous site while hunting (Mech and Boitani 2003). Cattle use of the allotment may result in wolves having to travel further to hunt deer.

2) Human management of the grazing allotment; eg. maintaining fences and water developments, placing salt, moving cattle, looking for cattle, may disturb gray wolves that may be in the allotments. Human disturbance at natal den or rendezvous sites may result in abandonment of the sites (Fritts et al. 2003, Frame et al. 2005).

3) The possibility of livestock/wolf interactions that would result in wolf control actions. Although wolves normally prey on wild ungulates or other wild animals, they sometimes attack and kill livestock or other domesticated animals. Livestock depredation by wolves is difficult to predict and seems to be influenced by many factors. Newborn livestock in remote places are more vulnerable than larger, older stock that are kept closer to humans, and leaving livestock carcasses out and available for scavenging may increase the risk of wolf depredation (Fritts et al. 2003). The proximity of livestock to wolf homesites can also be a factor in determining the potential for wolf to depredate on livestock (Stone et al. 2008).

The BLM needs to develop conservation measures for its grazing allotments that will deter, wolf-livestock conflict and reduce the need for lethal control actions. This should include, livestock carcass and bone pile removal from allotments, retirement of allotments near rendezvous or den sites, elimination of attractants for livestock near any den sites or rendezvous site, and active implementation of non-lethal techniques to deter conflict when necessary. Please take a hard look at these issues in the FEIS.

Proposed to be Listed Species:
Original RMPs under the NFP required the protection and conservation of proposed to be listed species. The new purpose and need for BLM WOPR eliminates this category of species for conservation mandates (likely overlooked in No Action Alternative). There is no analysis in the DEIS of these particular limbo species. These species would be considered Bureau Sensitive Species, but the BLM states that it will only be providing conservation measures for these species to the extent that they are compatible with O&C Act purposes. Proposed to be listed species, deserve ESA protections, but the FWS is unable to address these protections given other higher priorities. These species should deserve special treatment under the plans, as they did under the NFP. Merely conserving to extant compatible with the O&C Act will lead to conflicts with the ESA, and potential future listings of these species.
OHV issues:
In the Roseburg BLM District, the White Rock OHV area is listed in Table N-287 (Appendix N, page 1284) as "managed as Extensive Recreation Management Areas (ERMA)" under alternatives C and D. However, this is the only place in the entire DEIS where the White Rock OHV area is mentioned. There is no NEPA analysis of the environmental impacts of creating this new OHV area. In fact, the DEIS makes it seem as if it is an existing OHV emphasis area. It is not. Local OHV enthusiasts have asked the BLM to create the White Rock Emphasis Area, but the Roseburg BLM has not acted on this request. The BLM cannot now choose alternative C or D and create it without any NEPA analysis. OHV recreationists have severely degraded this area by riding off trails, riding through wetlands, and by creating play mud-bogs in areas like Yellow-Jacket Springs. They have violated closed and barricaded roads to do this. The Roseburg BLM has admitted they are powerless to enforce current regulations that forbid resource damages. Making a new White Rock OHV area, without NEPA analysis would only exasperate this problem.

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Johns Peak / Timber Mountain Citizens Alliance
P.O. Box 783, Jacksonville, OR 97530

August 20, 2015

Mr. Jerome E. Perez, State Director
OR/WA Bureau of Land Management
P.O. Box 2965
Portland, OR 97208

Subject: Public Comment & Opinion - BLM Draft Resource Mgmt. Plan/EIS for Western Oregon

Dear Mr. Perez,

This is an official request to the Bureau of Land Management to eliminate the OHV Designations and Motorized use for the Johns Peak / Timber Mountain area in the 2015 Draft Resource Management Plan (RMP/EIS). This area is not appropriate for an OHV area designation because it is surrounded and intermingled with private properties and sensitive watersheds. Additionally we request the BLM immediately cease in the promoting of Johns Peak / Timber Mountain as an OHV area. There has been no Record of Decision for such a designation, and the current OHV activity is creating conflicts in residential areas and with private property owners.

The impacts from this OHV Emphasis Area include but are not limited to:

- ✓ Increased threat to communities and timber interests from catastrophic fire. This is an Extreme Fire Area per the Oregon Department of Forestry (ODF).
- ✓ Increased noise pollution impacting quality of life for numerous quiet residences defined as "Noise Sensitive Property" under OAR 340-35-005(38).
- ✓ Promotion of ongoing conflicts with private property owners: destruction of gates and fences, trespassing, vandalism, trash dumping and illegal trail development.
- ✓ Negative impacts to area wildlife habitat including Endangered Species in the area.
- ✓ Damage to sensitive watersheds and fish habitat including Steelhead Redds and Coho Salmon.
- ✓ Eliminates all other "historic" forms of non-motorized recreation that have existed here since Statehood and that are appropriate for populated areas – they cannot coexist in the same area.
- ✓ Negative economic impact to private property owners from reduced property value due to fewer potential buyers willing to buy a home in an OHV area. Negative economic impacts from reduced economic activity resulting from OHV area limiting income options for landowners.

Over and above the numerous impacts, OHV activity would be virtually impossible to control. The area has many points of access on both public and private right of ways. The Johns Peak / Timber Mountain area include nearly 36,000 acres, only 38% of which is BLM land, the remaining 62% are intermingled private lands, much of it contiguous to BLM's checkerboard holdings. The BLM has never had the manpower or financial resources to manage such an area.

We respectfully recommend finding alternative areas that would be appropriate for an OHV Emphasis Area.

The residents and private property owners in the Johns Peak / Timber Mountain area object to the designation of an OHV area in their neighborhoods. The attached petition is signed by residents and private property owners in and around the Johns Peak / Timber Mountain area.

The attached map highlights in red the properties of the people who signed the petition. The red cross-hatched properties are those owned by the Timber Companies who have gave us permission to include them on our maps as "in opposition". Also included are the public comments of my wife Shayne Maxwell speaking directly to the Draft RMP.

Note: this petition and map represents those who actually know about BLM's plans & oppose them, many are still in the dark. The Medford BLM office has refused to do anything more than publish info in one newspaper when the area is served by 5 different newspapers in two counties. Direct mail to potentially impacted residents has been rejected as an option when it is the only option if you truly want to inform the public.

We appreciate your attention to this important matter.

Best Regards,

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(541) 582-2020
PTSMaxwell@gmail.com

Cc:

Secretary of the Interior Sally Jewell
Senator Jeff Merkley
Senator Ron Wyden
Rep. Peter DeFazio
Rep. Greg Walden

August 20, 2015

Jerome E. Perez, State Director
Washington/Oregon
RMPs for Western Oregon
Bureau of Land Management
P.O. Box 2965
Portland, Oregon 97208

(also delivered electronically to: blm_or_rmpwo_comments@blm.gov)

RE: Draft RMP/Environmental Impact Statement – Western Oregon (hereinafter DRAFT PLAN)

Summary

My comments are directed to "Recreation Management" included in this BLM Draft Plan specifically the area known as Johns Peak/Timber Mt. in Southern Oregon between Grants Pass and Medford area.

While I understand the importance of having a "Management Plan" for recreation it is equally important that any plan give weight to the thousands of residents and communities, environment and wildlife it impacts. Once that data is known then steps should be taken to adjust the plan to avoid those conflicts. The opposite seems to be happening here.

Since 2003 (12 years) we have been attending meetings, submitting petitions, attending mediation, writing letters and submitting volumes of data as to why this area is not suitable for a BLM Managed Off Highway Vehicle (OHV) Emphasis Area. Every couple of years the BLM brings this ill-conceived idea back and behaves as if the prior letters, meetings, data etc. never existed. This new Draft Resource Management Plan is no different other than it is more confusing and vague than any of its previous versions.

Many in my Foots Creek Community of over 1,000 residents, including myself, have requested to be notified by BLM on any and all matters and meetings related to this subject yet we recently heard there was a recreation planning meeting held in Grants Pass a couple of months ago about this and none of us were notified. The Medford BLM publicizes its "community outreach" on their web site but makes sure not to include any of those that might oppose their agenda. Sadly this has been repeated on numerous occasions. I find it disturbing and not how I would hope my government would operate.

Introduction:

For the last 12 years the amount of prescriptive OHV trails has increased substantially in the Johns Peak/Timber Mt. area in large part due to the Medford BLM directing traffic to this area by listing it as an OHV area when there has been NO record of decision or an OHV Designation. It is listed on the BLM Web site, on their maps and in the hand out booklets at the BLM Medford Office and no doubt in others. At one point the Medford BLM was directing all OHVer's to use Foots Creek Road, Gold Hill to access this area when they knew full well there is No legal access to BLM from Foots Creek Road. This created a host of OHV – Resident conflicts, promoted trespassing over private property, property damage and created numerous illegal OHV trails that had not previously existed.

In the DRAFT Plan Introduction it states "Guidance for Development of All Action Alternatives" contains a bullet point which says, "Designate areas as open, limited, or closed to off-highway vehicle use in accordance with 43 CFR 8342.1. Develop a range of travel management area scenarios in relationship to various land use allocations and management objectives among the alternatives. Defer implementation level travel and transportation management planning until after completion of the RMP revision process. For those areas designated as limited in the RMP, define interim management objectives and clearly identify the process leading from the interim area designation of 'limited to existing roads, primitive roads and trails' to the development of a designated network of roads, primitive roads and trails, consistent with BLM Handbook 8342 – Travel and Transportation Handbook (USDI BLM 2012c)."

So now the BLM wants to connect all these new trails as a network? Does anyone at BLM see a pattern here? Additionally I have yet to get a clear definition from the BLM on what limited to existing roads, primitive roads and trails' actually means.

In the DRAFT BLM refers to significant public interest in Off Highway Vehicles (OHVs) and there are thousands of comments to BLM over the past twelve years documenting increasing conflicts between area residents and OHVs. BLM has done nothing to resolve these conflicts and has promoted OHV activity at the expense of local residents.

Rare Plants and Fungi

Under Off-highway Vehicle Use BLM again admits limits to their ability to analyze impacts from OHV use and again uses the term limited to "existing or designated roads and trails," while failing to provide information for the public as to how that term is defined.

Recreation and Visitor Services

The BLM conducted a recreation demand analysis throughout the planning area in 2013-2014." Neither I nor anyone within my community was aware of this analysis until this DRAFT. Seems odd as we are supposedly on the "BLM Notification List". Table 3-127 shows a significantly higher response rate for "Riding OHVs" than any other form of recreation, seconded by "Mountain Biking." These results differ considerably from the data in both Table 3-126 and both the actual and projected use in Table 3-136. It can be concluded from this conflicting information that BLM's public outreach efforts were targeted toward the OHV community.

BLM lands being "intermingled" with private lands, only access is mentioned, while conflict issues (trespass, noise, etc.) are notably missing. In our community sound testing we average 25-40 decibels and that is only because we could not get the birds to shut up during testing. At the core of minimizing conflicts in recreational areas, greater attention must be paid to the impacts to private, residential land intermingled with BLM lands. Many of these lands have been used for residences since the late 1800's, thus having established precedence regarding neighboring public lands.

BLM's "extrapolating from available trail miles per acre under current conditions allows an approximation for each alternative" puts the entire analysis on shaky ground. Under current conditions there are miles of user-created trails that are not appropriate in their current locations.

The statement that "there are approximately 395 miles of trails on BLM administered lands in western Oregon" indicates that BLM does not recognize these trails. Does that mean the BLM is ignorant of these user-created trails? Unlikely as we have seen BLM maps to the contrary. It also indicates that increasing trail miles in alternatives will incorporate these non-recognized user-created trails. Table 3-138 shows Medford District as having 278 miles of trails though there is no Record of Decision designating any of those that might be user-created.

Table 3-110 shows high to extremely high introduction of invasive species by OHVs in the Medford District. Since invasive species often reduce the overall viability of the landscape, introduction of OHV use fails to fulfill BLM's directive to manage public lands.

Cultural Resources

The DRAFT fails to give any analysis of local culture. In the Medford District the local culture is extremely diverse and value-based. Our community is rich with cultural treasures, one need only read the diaries of the Dragoons based out of Fort Lane to begin to understand. This document fails to take into account local cultural conditions and local residents.

Fire & Fuels

BLM lands comprise more than fifty percent of the lands in both Jackson and Josephine Counties. For the Medford District, this statement is false.

The Foots Creek Basin has one of the most comprehensive and organized fire plans of any community in Jackson County which can be verified by both Jackson and Josephine Emergency Managers and the Medford ODF. We have work diligently for over a decade to educate our residents how to be fire safe and smart, to reduce fuels and to work as a team because what affects one can affect us all. The ODF has worked with us every step of the way as have a bevy of first responder agencies. The Foots Creek and Birdseye Creek areas are designated as "Extreme Fire Hazard Areas" by the ODF and we know only too well how true that is. Opening this area to Motorized use is completely irresponsible and undermines all the hard work and efforts of not only the Foots Creek and Birdseye Communities but all the communities surrounding Johns Peak/Timber Mt.

All the signs in the world don't mean a thing and we know this first hand. Forest Capital Partners (Timber Owners) have had over 200 gates ripped out, the ODF posts no fire signs only to have them torn out and thrown into the fires. Fencing, signs and gates have no impact on these OHVers that BLM has directed to our community. Any motorized use in this area puts numerous communities and thousands of residents at serious risk. It only takes one mistake to start a catastrophic fire and this area is in more risk than most others.

Additionally it should be noted that at each location the BLM has proposed to have an OHV Access point coincidentally coincides with an area they target for fuels reduction. That is actually how we first found out about this proposed OHV agenda over 12 years ago. As pointed out to me by a Timber Harvest Manager, "when you reduce the brush (fuels) you can open yourself up to a lot of OHV users so be mindful".

Fisheries

Foots Creek, Galls Creek and Kane Creek are all listed as sensitive streams. Foots Creek is documented as having Coho Salmon and producing the largest number of Steelhead Redds annually in Jackson County by the ODFW. We are currently in the process of a water and creek improvement project in coordination with Seven Basins Watershed Council. The many feeder streams throughout our hills are vital to the health and vitality of Foots Creek and would be adversely impacted by Motorized OHV use by increasing silt that would damage the main arteries of the creek.

BLM bases analysis on current conditions without objectively analyzing whether or not current conditions are optimum to meet natural resource requirements.

The Riparian Reserve Width is primarily focused on woody debris and temperatures without accounting for wildlife, climate change or other factors. As a future-looking document, this document fails to present a rationale for maintaining current standards in the face of increasing drought cycles in the analysis area.

Hydrology

The outlined Source Water Protection relies singularly on BLM lands and fails to take a complete view that would include consideration of private lands with Source Water.

BLM's analysis and proposed Alternatives presents fixed-width figures for riparian retention, eliminating the more site-specific site tree distances now used. The use of fixed-width figures eliminates the possibility of considering unique characteristics in any harvest unit and restricts the ability to best manage streams.

Given the increasing values of water resources, BLM should also plan to identify and protect independent springs on their lands. Even small springs promise to become valuable sources of water in the future. The DRAFT discusses hydrology and riparian management based on streams and does not mention independent spring resources.

Soil Sources

"Until the BLM completes route designations through implementation level planning, the BLM cannot identify which routes would be designated in any alternative." "In this analysis, the BLM assumed that OHV users would operate vehicles consistent with BLM decisions about OHV use." This analysis fails by referencing future action and making an assumption not supported by current realities. Since the impacts to soil from OHV use are well-documented, this DRAFT fails to incorporate appropriate analysis for this topic.

Trails & Travel Management

"The BLM currently has designated a network of trails and travel management areas within the planning area to address particular concerns..." This is not true in the Medford District. Medford Resource Area Manager John Gerritsma, publicly stated that there are "no designated OHV trails" in the Medford District, despite a two-decade history of conflict concerning OHV use.

All of the alternatives state lands "would be limited to existing OHV use until the BLM completed implementation level travel planning." Thus the entire analysis of Trails and Travel Management with regard to OHV use is a de facto No Action Alternative. This is unacceptable to the public who continue to face conflicts with OHVs and is a failure of the document to present analysis required by NEPA that "a range of alternatives" should be presented.

"...recreational OHV use occurs within the existing Timber Mountain OHV area." This is a false statement. No "Timber Mountain OHV" area exists because analysis of the area has not been completed nor a Record of Decision issued. Medford District BLM continues to promote the area illegally and uses Categorical Exclusions to formalize many trails and staging areas within the proposed area. The only "designation" of a "Timber Mountain OHV area" is 41 characters in the 1995 RMP describing areas "to be managed" for OHV use. No written description was provided in that RMP nor were there any maps showing the 16,880 acres thus "designated." The public never saw a map of the area until 2006 and that map has since changed numerous times. Saying this is an "existing" area is a false statement and renders all discussion therefrom as inaccurate.

Wildlife

The Foots Creek Basin is host to a documented vast array of wildlife some being "endangered species". I found it interesting that the locations of "active nesting sites" for spotted owls as defined by BLM differed greatly in location and in number from data provided to us through a third party wildlife analysis of this area within the last 12 months. I can only conclude that the BLM data is outdated or incomplete.

Motorized recreation (OHVs) will have a direct impact on numerous forms of wildlife in our area and could also substantially increase the number of wildlife/human interaction that would put both at risk for injury or death. Residents here work closely with the Federal Wildlife Service Manager for our area to avoid conflicts and to live peacefully with wildlife whenever possible.

Additionally it will impact nesting sites for certain birds and drive game into more populated areas and ergo the predators that rely on them for food, this is just to name a few.

The 4 Options

The 4 options (A-D) are not only vague but somewhat deceptive. Example: Option A states no "new" trails will be established however it does nothing to remove the illegal trails that have been created in the last 12 years via the BLM's directing of OHV traffic to the area. It also goes a step further limiting or removing Non-motorized recreation which has been done in this basin for generations ie. Equestrian, hiking, hunting, bird watching etc.. It appears like the BLM is saying - if we can't use it for OHVs then nobody can use it.

The BLM needs to specifically show each area and what uses they specifically propose for that area and then address the impacts from that use on the surrounding residents, the creeks and feeder streams, the impacts to the environment overall, the impact to existing wildlife for that area and what sustainable funding is in place to pay for this plan as well as for any litigation costs and detailed "meaningful" enforcement of the plan. You are playing with our hard earned tax dollars and you are required to be accountable and responsible for their highest and best use.

Summary

Off-road motorized recreation areas across the checkerboard pattern of O&C lands directly impact the communities and neighbors of public lands. These impacts must be studied in any BLM planning effort. This DRAFT addresses "conflicts" primarily from the standpoint of other recreational activities. Executive Order 11644 and 43 CFR require "**Areas and trails shall be located to minimize conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors.**" No analysis of noise and impacts on residential (i.e., populated) lands is included in this DRAFT. The deferral of a TMP for five years and the lack of a definition for "existing roads and trails" means that the documented impact of OHV noise and other issues impacting residential lands will continue unaddressed for half the life of this RMP.

BLM listed 13 areas within the Medford District for off-road machine recreation emphasis, more than twice as many areas as any other district. Can someone please explain to me why this is so disproportionate?

BLM's change from a resource management agency to a multiple-use agency has failed to accommodate societal changes in both information quantity and information delivery systems. This DRAFT fails to analyze public information systems, relying on a formulated list of cooperating agencies. Public workshops held for this DRAFT were the same as past efforts, with small table open Q&A, but no opportunity to publicly address the whole of the issue. If the public does not know the questions being asked, the agendas being pursued, the level of information delivered to the public is so isolated and fragmented as to make any chance of consensus impossible.

BLM constantly creates very segmented information internally and presents it to the public with a strictly defined process for action. BLM fails to set up the big tent that includes and involves their full audience, the citizen-owners of the land BLM is charged with maintaining. BLM's public information record fails to be pro-active and fails to provide useful information, yet this was not addressed in the DRAFT.

For 12 years I have asked for the BLM to direct mail all the residents around the Johns Peak/Timber Mt. area that may be impacted and each time they have refused. They post meeting dates in the Medford Tribune but fail to acknowledge (ever after numerous requests) that they needed to post information in 5 different papers to reach the communities that surround this area. Being included in "Medford BLM's List of people to be informed" has proved equally ineffective. It is abundantly clear to those who live here that the Medford BLM has an agenda and neither facts nor large community opposition makes no difference at all.

I sincerely hope that this will change but that would require "cleaning house" and a new attitude that demonstrates and sincere willingness to be transparent, to listen and to work with those of us who call this area home.

Final Conclusion

We cannot choose any of your options for reasons already stated so instead we make this formal request: Please protect the Foots Creek & Birdseye Creek Basin by designating it as Non-Motorized and removing any and all use from Motorized recreational users both now and for the future and from ridge line to ridge line. We stand to lose everything we hold dear and so we have no choice but to fight to protect our homes, our quality of life and our historic and beautiful watershed. The strong opposition to BLM's OHV Motorized recreation for Johns Peak/Timber Mt. is evidenced by the binder of approx. 1,300 signatures on petitions also being submitted. Sadly, a great many that will be impacted have no idea this is happening.

Please note: we will also be submitting separately a binder that will include the petition from area residents and a map showing all those properties in opposition.

Contact Information

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Gold Hill, OR 97525
(541) 582-2020
4shayne@charter.net

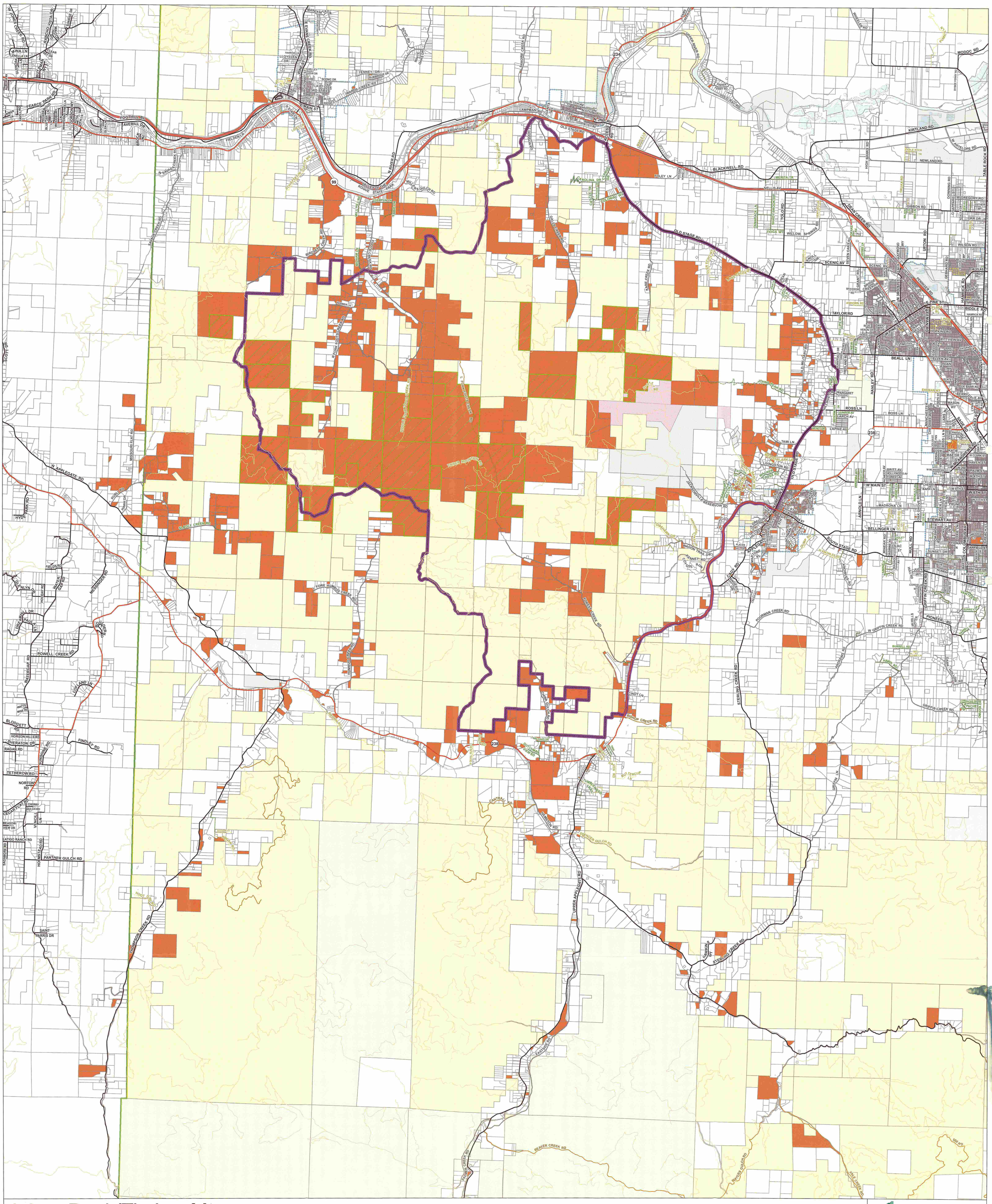
Sincerely,

Shayne Maxwell

Cc:

Secretary of the Interior Sally Jewell
Senator Jeff Merkley
Senator Ron Wyden
Rep. Peter DeFazio
Rep. Greg Walden

Additional copies were circulated to my community.


Johns Peak/Timber Mt.
BLM Proposed OHV
Emphasis Area 2014
OHV = Off Highway Vehicles
John's Peak/Timber Mt. OHV Consideration Area
Petitioner Property Owners Against BLM's JPTM OHV Area (see petition)
Industrial/Timber Lands Against the BLM's OHV Area (see letters)
Motorcycle Riders Assn. Land
Taxlots
Lakes
Rivers
County Line
BLM
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JACKSON COUNTY
GIS
JACKSON COUNTY Oregon
This map is based on a digital database compiled by Jackson County from a variety of sources. Jackson County cannot accept responsibility for errors, omissions, or positional accuracy. There are no warranties, expressed or implied.
Date: 11/05/2014; Johns_Peak_OHV_Updated.mxd; NagulbKN

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1057 FOOTS CREEK RD.
GOLD HILL, OR. 97525

RECEIVED
AUG 21 2015
MEDFORD
BUREAU OF LAND MANAGEMENT

JEROME E. PEREZ
WASHINGTON / OREGON
RMPs FOR WESTERN OREGON
BUREAU OF LAND MANAGEMENT
P.O. BOX 2965
PORTLAND, OR. 97208

To:

Jerome E. Perez
State Director
Washington/Oregon
Bureau of Land Management
P.O. Box 2965
Portland, Oregon 97208

Public Comments

DRAFT Resource Mgmt. Plan/EIS

Western Oregon

Recreation Planning

August 20, 2015

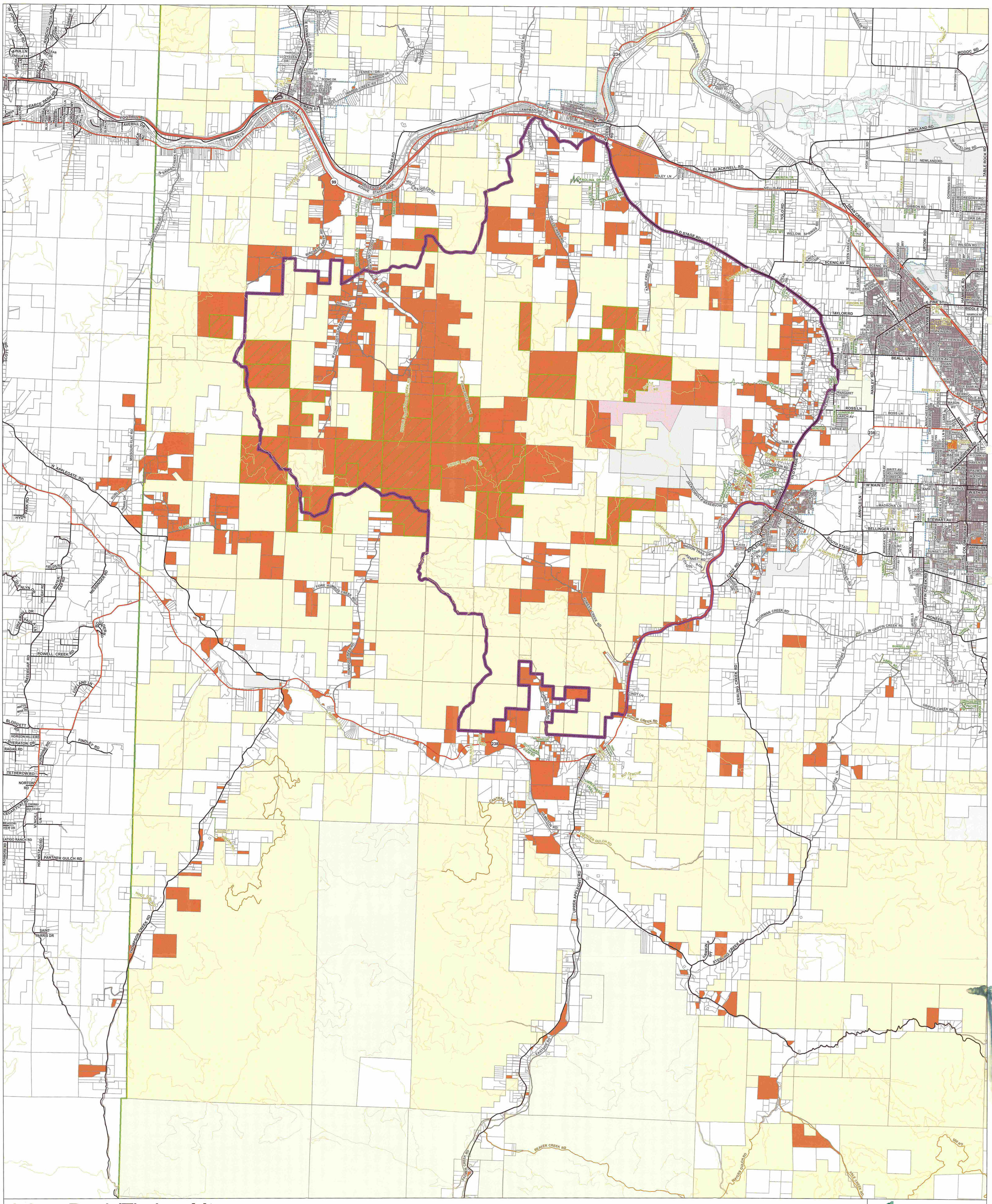
Included in Binder:

Cover Letter,

RMP Public Comments – S. Maxwell,

Petition,

Map.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Johns Peak / Timber Mountain Citizens Alliance
P.O. Box 783, Jacksonville, OR 97530

August 20, 2015

Mr. Jerome E. Perez, State Director
OR/WA Bureau of Land Management
P.O. Box 2965
Portland, OR 97208

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- ✓ Eliminates all other "historic" forms of non-motorized recreation that have existed here since Statehood and that are appropriate for populated areas – they cannot coexist in the same area.
- ✓ Negative economic impact to private property owners from reduced property value due to fewer potential buyers willing to buy a home in an OHV area. Negative economic impacts from reduced economic activity resulting from OHV area limiting income options for landowners.

Over and above the numerous impacts, OHV activity would be virtually impossible to control. The area has many points of access on both public and private right of ways. The Johns Peak / Timber Mountain area include nearly 36,000 acres, only 38% of which is BLM land, the remaining 62% are intermingled private lands, much of it contiguous to BLM's checkerboard holdings. The BLM has never had the manpower or financial resources to manage such an area.

We respectfully recommend finding alternative areas that would be appropriate for an OHV Emphasis Area.

The residents and private property owners in the Johns Peak / Timber Mountain area object to the designation of an OHV area in their neighborhoods. The attached petition is signed by residents and private property owners in and around the Johns Peak / Timber Mountain area.

The attached map highlights in red the properties of the people who signed the petition. The red cross-hatched properties are those owned by the Timber Companies who have gave us permission to include them on our maps as "in opposition". Also included are the public comments of my wife Shayne Maxwell speaking directly to the Draft RMP.

Note: this petition and map represents those who actually know about BLM's plans & oppose them, many are still in the dark. The Medford BLM office has refused to do anything more than publish info in one newspaper when the area is served by 5 different newspapers in two counties. Direct mail to potentially impacted residents has been rejected as an option when it is the only option if you truly want to inform the public.

We appreciate your attention to this important matter.

Best Regards,

David Maxwell
1057 Foots Creek Road
Gold Hill, OR 97525
(541) 582-2020
PTSMaxwell@gmail.com

Cc:

Secretary of the Interior Sally Jewell
Senator Jeff Merkley
Senator Ron Wyden
Rep. Peter DeFazio
Rep. Greg Walden

August 20, 2015

Jerome E. Perez, State Director
Washington/Oregon
RMPs for Western Oregon
Bureau of Land Management
P.O. Box 2965
Portland, Oregon 97208

(also delivered electronically to: blm_or_rmpwo_comments@blm.gov)

RE: Draft RMP/Environmental Impact Statement – Western Oregon (hereinafter DRAFT PLAN)

Summary

My comments are directed to "Recreation Management" included in this BLM Draft Plan specifically the area known as Johns Peak/Timber Mt. in Southern Oregon between Grants Pass and Medford area.

While I understand the importance of having a "Management Plan" for recreation it is equally important that any plan give weight to the thousands of residents and communities, environment and wildlife it impacts. Once that data is known then steps should be taken to adjust the plan to avoid those conflicts. The opposite seems to be happening here.

Since 2003 (12 years) we have been attending meetings, submitting petitions, attending mediation, writing letters and submitting volumes of data as to why this area is not suitable for a BLM Managed Off Highway Vehicle (OHV) Emphasis Area. Every couple of years the BLM brings this ill-conceived idea back and behaves as if the prior letters, meetings, data etc. never existed. This new Draft Resource Management Plan is no different other than it is more confusing and vague than any of its previous versions.

Many in my Foots Creek Community of over 1,000 residents, including myself, have requested to be notified by BLM on any and all matters and meetings related to this subject yet we recently heard there was a recreation planning meeting held in Grants Pass a couple of months ago about this and none of us were notified. The Medford BLM publicizes its "community outreach" on their web site but makes sure not to include any of those that might oppose their agenda. Sadly this has been repeated on numerous occasions. I find it disturbing and not how I would hope my government would operate.

Introduction:

For the last 12 years the amount of prescriptive OHV trails has increased substantially in the Johns Peak/Timber Mt. area in large part due to the Medford BLM directing traffic to this area by listing it as an OHV area when there has been NO record of decision or an OHV Designation. It is listed on the BLM Web site, on their maps and in the hand out booklets at the BLM Medford Office and no doubt in others. At one point the Medford BLM was directing all OHVer's to use Foots Creek Road, Gold Hill to access this area when they knew full well there is No legal access to BLM from Foots Creek Road. This created a host of OHV – Resident conflicts, promoted trespassing over private property, property damage and created numerous illegal OHV trails that had not previously existed.

In the DRAFT Plan Introduction it states "Guidance for Development of All Action Alternatives" contains a bullet point which says, "Designate areas as open, limited, or closed to off-highway vehicle use in accordance with 43 CFR 8342.1. Develop a range of travel management area scenarios in relationship to various land use allocations and management objectives among the alternatives. Defer implementation level travel and transportation management planning until after completion of the RMP revision process. For those areas designated as limited in the RMP, define interim management objectives and clearly identify the process leading from the interim area designation of 'limited to existing roads, primitive roads and trails' to the development of a designated network of roads, primitive roads and trails, consistent with BLM Handbook 8342 – Travel and Transportation Handbook (USDI BLM 2012c)."

So now the BLM wants to connect all these new trails as a network? Does anyone at BLM see a pattern here? Additionally I have yet to get a clear definition from the BLM on what limited to existing roads, primitive roads and trails' actually means.

In the DRAFT BLM refers to significant public interest in Off Highway Vehicles (OHVs) and there are thousands of comments to BLM over the past twelve years documenting increasing conflicts between area residents and OHVs. BLM has done nothing to resolve these conflicts and has promoted OHV activity at the expense of local residents.

Rare Plants and Fungi

Under Off-highway Vehicle Use BLM again admits limits to their ability to analyze impacts from OHV use and again uses the term limited to "existing or designated roads and trails," while failing to provide information for the public as to how that term is defined.

Recreation and Visitor Services

The BLM conducted a recreation demand analysis throughout the planning area in 2013-2014." Neither I nor anyone within my community was aware of this analysis until this DRAFT. Seems odd as we are supposedly on the "BLM Notification List". Table 3-127 shows a significantly higher response rate for "Riding OHVs" than any other form of recreation, seconded by "Mountain Biking." These results differ considerably from the data in both Table 3-126 and both the actual and projected use in Table 3-136. It can be concluded from this conflicting information that BLM's public outreach efforts were targeted toward the OHV community.

BLM lands being "intermingled" with private lands, only access is mentioned, while conflict issues (trespass, noise, etc.) are notably missing. In our community sound testing we average 25-40 decibels and that is only because we could not get the birds to shut up during testing. At the core of minimizing conflicts in recreational areas, greater attention must be paid to the impacts to private, residential land intermingled with BLM lands. Many of these lands have been used for residences since the late 1800's, thus having established precedence regarding neighboring public lands.

BLM's "extrapolating from available trail miles per acre under current conditions allows an approximation for each alternative" puts the entire analysis on shaky ground. Under current conditions there are miles of user-created trails that are not appropriate in their current locations.

The statement that "there are approximately 395 miles of trails on BLM administered lands in western Oregon" indicates that BLM does not recognize these trails. Does that mean the BLM is ignorant of these user-created trails? Unlikely as we have seen BLM maps to the contrary. It also indicates that increasing trail miles in alternatives will incorporate these non-recognized user-created trails. Table 3-138 shows Medford District as having 278 miles of trails though there is no Record of Decision designating any of those that might be user-created.

Table 3-110 shows high to extremely high introduction of invasive species by OHVs in the Medford District. Since invasive species often reduce the overall viability of the landscape, introduction of OHV use fails to fulfill BLM's directive to manage public lands.

Cultural Resources

The DRAFT fails to give any analysis of local culture. In the Medford District the local culture is extremely diverse and value-based. Our community is rich with cultural treasures, one need only read the diaries of the Dragoons based out of Fort Lane to begin to understand. This document fails to take into account local cultural conditions and local residents.

Fire & Fuels

BLM lands comprise more than fifty percent of the lands in both Jackson and Josephine Counties. For the Medford District, this statement is false.

The Foots Creek Basin has one of the most comprehensive and organized fire plans of any community in Jackson County which can be verified by both Jackson and Josephine Emergency Managers and the Medford ODF. We have work diligently for over a decade to educate our residents how to be fire safe and smart, to reduce fuels and to work as a team because what affects one can affect us all. The ODF has worked with us every step of the way as have a bevy of first responder agencies. The Foots Creek and Birdseye Creek areas are designated as "Extreme Fire Hazard Areas" by the ODF and we know only too well how true that is. Opening this area to Motorized use is completely irresponsible and undermines all the hard work and efforts of not only the Foots Creek and Birdseye Communities but all the communities surrounding Johns Peak/Timber Mt.

All the signs in the world don't mean a thing and we know this first hand. Forest Capital Partners (Timber Owners) have had over 200 gates ripped out, the ODF posts no fire signs only to have them torn out and thrown into the fires. Fencing, signs and gates have no impact on these OHVers that BLM has directed to our community. Any motorized use in this area puts numerous communities and thousands of residents at serious risk. It only takes one mistake to start a catastrophic fire and this area is in more risk than most others.

Additionally it should be noted that at each location the BLM has proposed to have an OHV Access point coincidentally coincides with an area they target for fuels reduction. That is actually how we first found out about this proposed OHV agenda over 12 years ago. As pointed out to me by a Timber Harvest Manager, "when you reduce the brush (fuels) you can open yourself up to a lot of OHV users so be mindful".

Fisheries

Foots Creek, Galls Creek and Kane Creek are all listed as sensitive streams. Foots Creek is documented as having Coho Salmon and producing the largest number of Steelhead Redds annually in Jackson County by the ODFW. We are currently in the process of a water and creek improvement project in coordination with Seven Basins Watershed Council. The many feeder streams throughout our hills are vital to the health and vitality of Foots Creek and would be adversely impacted by Motorized OHV use by increasing silt that would damage the main arteries of the creek.

BLM bases analysis on current conditions without objectively analyzing whether or not current conditions are optimum to meet natural resource requirements.

The Riparian Reserve Width is primarily focused on woody debris and temperatures without accounting for wildlife, climate change or other factors. As a future-looking document, this document fails to present a rationale for maintaining current standards in the face of increasing drought cycles in the analysis area.

Hydrology

The outlined Source Water Protection relies singularly on BLM lands and fails to take a complete view that would include consideration of private lands with Source Water.

BLM's analysis and proposed Alternatives presents fixed-width figures for riparian retention, eliminating the more site-specific site tree distances now used. The use of fixed-width figures eliminates the possibility of considering unique characteristics in any harvest unit and restricts the ability to best manage streams.

Given the increasing values of water resources, BLM should also plan to identify and protect independent springs on their lands. Even small springs promise to become valuable sources of water in the future. The DRAFT discusses hydrology and riparian management based on streams and does not mention independent spring resources.

Soil Sources

"Until the BLM completes route designations through implementation level planning, the BLM cannot identify which routes would be designated in any alternative." "In this analysis, the BLM assumed that OHV users would operate vehicles consistent with BLM decisions about OHV use." This analysis fails by referencing future action and making an assumption not supported by current realities. Since the impacts to soil from OHV use are well-documented, this DRAFT fails to incorporate appropriate analysis for this topic.

Trails & Travel Management

"The BLM currently has designated a network of trails and travel management areas within the planning area to address particular concerns..." This is not true in the Medford District. Medford Resource Area Manager John Gerritsma, publicly stated that there are "no designated OHV trails" in the Medford District, despite a two-decade history of conflict concerning OHV use.

All of the alternatives state lands "would be limited to existing OHV use until the BLM completed implementation level travel planning." Thus the entire analysis of Trails and Travel Management with regard to OHV use is a de facto No Action Alternative. This is unacceptable to the public who continue to face conflicts with OHVs and is a failure of the document to present analysis required by NEPA that "a range of alternatives" should be presented.

"...recreational OHV use occurs within the existing Timber Mountain OHV area." This is a false statement. No "Timber Mountain OHV" area exists because analysis of the area has not been completed nor a Record of Decision issued. Medford District BLM continues to promote the area illegally and uses Categorical Exclusions to formalize many trails and staging areas within the proposed area. The only "designation" of a "Timber Mountain OHV area" is 41 characters in the 1995 RMP describing areas "to be managed" for OHV use. No written description was provided in that RMP nor were there any maps showing the 16,880 acres thus "designated." The public never saw a map of the area until 2006 and that map has since changed numerous times. Saying this is an "existing" area is a false statement and renders all discussion therefrom as inaccurate.

Wildlife

The Foots Creek Basin is host to a documented vast array of wildlife some being "endangered species". I found it interesting that the locations of "active nesting sites" for spotted owls as defined by BLM differed greatly in location and in number from data provided to us through a third party wildlife analysis of this area within the last 12 months. I can only conclude that the BLM data is outdated or incomplete.

Motorized recreation (OHVs) will have a direct impact on numerous forms of wildlife in our area and could also substantially increase the number of wildlife/human interaction that would put both at risk for injury or death. Residents here work closely with the Federal Wildlife Service Manager for our area to avoid conflicts and to live peacefully with wildlife whenever possible.

Additionally it will impact nesting sites for certain birds and drive game into more populated areas and ergo the predators that rely on them for food, this is just to name a few.

The 4 Options

The 4 options (A-D) are not only vague but somewhat deceptive. Example: Option A states no "new" trails will be established however it does nothing to remove the illegal trails that have been created in the last 12 years via the BLM's directing of OHV traffic to the area. It also goes a step further limiting or removing Non-motorized recreation which has been done in this basin for generations ie. Equestrian, hiking, hunting, bird watching etc.. It appears like the BLM is saying - if we can't use it for OHVs then nobody can use it.

The BLM needs to specifically show each area and what uses they specifically propose for that area and then address the impacts from that use on the surrounding residents, the creeks and feeder streams, the impacts to the environment overall, the impact to existing wildlife for that area and what sustainable funding is in place to pay for this plan as well as for any litigation costs and detailed "meaningful" enforcement of the plan. You are playing with our hard earned tax dollars and you are required to be accountable and responsible for their highest and best use.

Summary

Off-road motorized recreation areas across the checkerboard pattern of O&C lands directly impact the communities and neighbors of public lands. These impacts must be studied in any BLM planning effort. This DRAFT addresses "conflicts" primarily from the standpoint of other recreational activities. Executive Order 11644 and 43 CFR require "**Areas and trails shall be located to minimize conflicts between off-road vehicle use and other existing or proposed recreational uses of the same or neighboring public lands, and to ensure the compatibility of such uses with existing conditions in populated areas, taking into account noise and other factors.**" No analysis of noise and impacts on residential (i.e., populated) lands is included in this DRAFT. The deferral of a TMP for five years and the lack of a definition for "existing roads and trails" means that the documented impact of OHV noise and other issues impacting residential lands will continue unaddressed for half the life of this RMP.

BLM listed 13 areas within the Medford District for off-road machine recreation emphasis, more than twice as many areas as any other district. Can someone please explain to me why this is so disproportionate?

BLM's change from a resource management agency to a multiple-use agency has failed to accommodate societal changes in both information quantity and information delivery systems. This DRAFT fails to analyze public information systems, relying on a formulated list of cooperating agencies. Public workshops held for this DRAFT were the same as past efforts, with small table open Q&A, but no opportunity to publicly address the whole of the issue. If the public does not know the questions being asked, the agendas being pursued, the level of information delivered to the public is so isolated and fragmented as to make any chance of consensus impossible.

BLM constantly creates very segmented information internally and presents it to the public with a strictly defined process for action. BLM fails to set up the big tent that includes and involves their full audience, the citizen-owners of the land BLM is charged with maintaining. BLM's public information record fails to be pro-active and fails to provide useful information, yet this was not addressed in the DRAFT.

For 12 years I have asked for the BLM to direct mail all the residents around the Johns Peak/Timber Mt. area that may be impacted and each time they have refused. They post meeting dates in the Medford Tribune but fail to acknowledge (ever after numerous requests) that they needed to post information in 5 different papers to reach the communities that surround this area. Being included in "Medford BLM's List of people to be informed" has proved equally ineffective. It is abundantly clear to those who live here that the Medford BLM has an agenda and neither facts nor large community opposition makes no difference at all.

I sincerely hope that this will change but that would require "cleaning house" and a new attitude that demonstrates and sincere willingness to be transparent, to listen and to work with those of us who call this area home.

Final Conclusion

We cannot choose any of your options for reasons already stated so instead we make this formal request: Please protect the Foots Creek & Birdseye Creek Basin by designating it as Non-Motorized and removing any and all use from Motorized recreational users both now and for the future and from ridge line to ridge line. We stand to lose everything we hold dear and so we have no choice but to fight to protect our homes, our quality of life and our historic and beautiful watershed. The strong opposition to BLM's OHV Motorized recreation for Johns Peak/Timber Mt. is evidenced by the binder of approx. 1,300 signatures on petitions also being submitted. Sadly, a great many that will be impacted have no idea this is happening.

Please note: we will also be submitting separately a binder that will include the petition from area residents and a map showing all those properties in opposition.

Contact Information

Shayne Maxwell
1057 Foots Creek Road
Gold Hill, OR 97525
(541) 582-2020
4shayne@charter.net

Sincerely,

Shayne Maxwell

Cc:

Secretary of the Interior Sally Jewell
Senator Jeff Merkley
Senator Ron Wyden
Rep. Peter DeFazio
Rep. Greg Walden

Additional copies were circulated to my community.

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

THIS IS A JACKSON AND JOSEPHINE COUNTY PETITION. SIGNERS OF THIS PETITION SHOULD BE REGISTERED VOTERS IN ONE OF THESE COUNTIES.

TO THE BUREAU OF LAND MANAGEMENT:

We, the undersigned residents of Jackson and Josephine Counties, hereby petition the Bureau of Land Management (BLM) to stop work on their Timber Mountain/John's Peak Off Highway Vehicle (OHV) Management Plan and Environmental Impact Statement and remove the arbitrary 1995 designation of 16,250 acres forOHV use, encompassing and negatively impacting those public lands, private landowners and the communities of Jacksonville, Rogue River, Gold Hill, Ruch, Applegate, Provolt, Murphy, and Grants Pass.

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. [illegible]	4-12-14	Roland [illegible]	89 Champlin		Gold Hill OR 97525
2. [illegible]	4-25-14	Tom E. Hayes	885 Breezy Lane, Grants Pass	"Indian Hills"	Grants Pass, OR 97527
3. R.C. Oldham	4-25-14	Richard C. Oldham	949 Foots Creek Rd		Gold Hill, OR
4. Nancy Oldham	4-25-14	Nancy Oldham	949 Foots Creek Rd		Gold Hill OR
5. Sandy Whitcomb	4-26-14	Sandy Whitcomb	4220 Footsck Rd		Gold Hill OR 97525
6. Sandy Jungwirth	4-26-14	Sandy Jungwirth	4220 Foots Rd.		Gold Hill 97525
7. Richard S. Hart	4/29/14	Richard D. Hart	135 Foots Creek Rd		Gold Hill 97525
8. Judy Beaumont	7-11-14	Judy Beaumont	1520 Birdseye Cr		Gold Hill 97525
9. Lynne Doyle	7-12/14	Lynne Doyle	1696 Foots Cr Rd		Gold Hill 97525
10.					

I hereby certify that every person who signed this sheet did so in my presence and I believe that each person is a qualified voter in Jackson or Josephine County, Oregon. I also certify that I have received no compensation for these signatures.

CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR Shayne Maxwell

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1057 Foots Creek Rd. Gold Hill, OR 97527

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Ted Birdseye	Ap 21, 14	Ted Birdseye	3791 Rogue River Hwy	—	Gold Hill 97525
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

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CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR Roland V. Prefontaine

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) P.O. Box 1615 Rogue River Or 97537

89 Champlin Rd Gold Hill 97525

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Kirk McElney	4/07/14	KIRK McELNEY	3590 HOSMER LANE	1630 WILLIAMS HWY #183 GRANTS PASS OR 97527	GOLD Hill 97525
2. Denise McElney	4/7/14	Denise McElney	3590 Hosmer Lane	1630 Williams Hwy, 183 Grants Pass, OR 97527	Gold Hill 97525
3. Wendy Harrop	4.21.14	Wendy Harrop	8680 RR Hwy		Grants Pass 97527
4. Russ Harrop	4/21/14	RUSS HARROP	8680 RR Hwy		GRANTS PASS 97527
5. Martha Holst	4/22/14	martha Holstrom	13100 N Applegate Rd		Grants Pass 97527
6. Tiffany Baida	4/22/14	Tiffany Baida	1465 Kubli Rd	"	GP 97527
7. Kenneth Edmon	4/22/14	KENNETH Edmon	3582 HOSMER LANE		Gold Hill 97525
8. Michele Edmon	4/22/14	Michele Edmon	3582 Hosmer Lane		Gold Hill 97525
9. Barbara Anderson	4/25/14	Barbara Anderson	3674 Hosmer Ln		Gold Hill 97525
10. Joe Anderson	4/25/14	Joe Anderson	3674 Hosmer Ln		Gold Hill 97525

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CIRCULATOR SIGNATURE Kirk McElney

PRINTED NAME OF CIRCULATOR KIRK McELNEY

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 3590 HOSMER LANE Gold Hill, OR 97525

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. [illegible]		RICHARD G. GERHARDT	3773 HOSMER LN. GOLDHILL		97525
2. [illegible]	4/24/14	Thomas Powers	3600 Hosmer Ln G.H.		97525
3. Carol Powers	4/24/14	Carol Powers	3600 Hosmer Ln Gtill		97525
4.					
5.					
6.					
7.					
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9.					
10.					

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CIRCULATOR SIGNATURE Kirk McEldery [illegible]

PRINTED NAME OF CIRCULATOR Kirk McEldery

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 3590 Hosmer Lane Gold Hill, OR 97525

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Margaret Arvin	4-16-2014	MARGARET ARVIN	3332 FOOTS CREEK RD		GOLD HILL, OR 97525
2. Phil Arvin	4-16-2014	PHILIP ARVIN	3332 FOOTS CK RD		GOLD HILL, OR 97525
3. M Karnazes	4-17-14	Margaret Karnazes	1485 Foots Creek Rd		Gold Hill, OR 97525
4. George Karnazes	4-17-14	GEORGE KARNAZES	1485 FOOTS CREEK RD		GOLD HILL, OR 97525
5. Janice Bettenburg	4-17-14	Janice Bettenburg	3532 Foots Creek		Gold Hill, OR 97525
6. G. Stapleton	4-18-14	G. Stapleton	93 Champlin Ln		Gold Hill, OR 97525
7. R. Falcon	4-18-14	R. Falcon	93 Champlin Ln		Gold Hill OR 97525
8. Alice B. Hatch	4,19,14	Alice B. Hatch	5806 Foots Cr Rd.	P.O. Box 418	Rogue River OR 97535
9.					
10.					

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CIRCULATOR SIGNATURE Roland L. Precontaine

PRINTED NAME OF CIRCULATOR Roland L. Precontaine

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) P.O. Box 1675 Rogue River, 97537
89 Champlin Ln Gold Hill 97525

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Barry Cole	4-16-14	Barry Cole	5895 ABBIE LN	GOLD	97525
2. Susan Harryman	4-16-14	Susan Harryman	5809 Abbie Ln	Gold Hill	97525
3. Ilene Anderson-Razey	4/20/14	Ilene Anderson-Razey	2597 RR Hwy	Gold Hill	97525
4. C L Shelton	4/20/14	Clarence L. Shelton	2705 RR Hwy	Gold Hill	97525
5. [illegible]	4/20/14	KAREN LAMOTHE	5760 ABBIE LN	GOLD HILL	97525
6. [illegible] Scott	4/20/14	Brian Scott	5680 Abbie Ln	Gold Hill	97525
7. [illegible] Gammick	4/20/14	John J. Gammick	5700 Abbie Lane	Gold Hill, Or	97525
8.					
9.					
10.					

I hereby certify that every person who signed this sheet did so in my presence and I believe that each person is a qualified voter in Jackson or Josephine County, Oregon. I also certify that I have received no compensation for these signatures.

CIRCULATOR SIGNATURE Melinda A Fluck

PRINTED NAME OF CIRCULATOR MELINDA A. FLUCK

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 6155 ABBIE LN.
GOLD HILL, OR 97525

SHEET NUMBER:

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

THIS IS A JACKSON AND JOSEPHINE COUNTY PETITION.

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Patricia L. Gehres	5/7/14	Patricia L. Gehres	776 Left Fork Humbug Crk Rd.		Applegate, 97530
2. Sima McCormack	5/8/14	Sima McCormack	318 Left Fork Humbug Crk Rd		Applegate, 97530
3. Marc Cobson	5/8/14	Marc Cobson	318 Left Fork Humbug Rd		Applegate 97530
4. Phyllis A. Zenn	5/9/14	Phyllis A. Zenn	18033 N. Applegate Rd.		Grants Pass 97527
5. Kristi Cowles	5/9/14	KRISTI COWLES	3269 Humbug Creek Rd		Applegate OR 97530
6. Arthur Coulton	5/9/14	ARTHUR COULTON	3269 Humbug Creek Rd (2)		"
7. Erika Fey	5/9/14	ERIKA FEY	311 L. FORK HUMBUG CR RD		Applegate, OR 97530
8. Barb Yates	5/9/14	BARB YATES (SUMMERHAWK)	4490 Humbug Creek Rd	PO Box 3157	"
9. Thalia Truesdell	5/10/14	Thalia Truesdell	10036 Hwy 238		Jacksonville OR 97530
10.					

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CIRCULATOR SIGNATURE Michelle LaFave

PRINTED NAME OF CIRCULATOR Michelle LaFave

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1030 Left Fork Humbug Creek Rd. Applegate, OR 97530

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Sherman W Parker	Oct 29, 06	Sherman W Parker	1665 UPPER APPLEGATE	—	97530
2. Royce A Valk	DEC 31, 06	ROYCE A. VALK	10042 HWY 238	P.O. BOX 336	97530
3. Helen P Valk	12/31/06	Helen P. VALK	10042. Hwy 238	P.O. BOX 336	97530
4. Debra Osborne	12/31/06	Debra Osborne	10196 Hwy 238	Same	97530
5. Charles Osborne	12/31/06	Charles Osborne	10196 Hwy 238	Same	97530
6. Thalia Truesdell	12/31/06	Thalia Truesdell	10036 Hwy 238		97530
7. Joseph Powell	12-31-06	Joseph Powell	10056 Hwy 238		97530
8. Anne M Goff	1-1-07	Anne M. Goff	560 upper Applegate		Jville 97530
9. Gail Battaglia	1-1-07	Gail Battaglia	1999 Little Applegate Rd.		Jville 97530
10. Cary Voorhees	1-1-07	Cary Voorhees	540 Lomas Rd		Jville 97530

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CIRCULATOR SIGNATURE David P. Calahan

PRINTED NAME OF CIRCULATOR DAVID P. CALAHAN

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 11,000 HWY 238, APPLEGATE, OR 97530

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	Dec/06	Jill Butler	240 Logan Rd	—	97530
2.	12-1-06	Lynn Towns	1010 Hogan Rd.		97530
3.	12-1-06	ARTHUR COULTON	3269 HUMBUG CR. RD	P.O. BOX 1830	97530
4.	12/02/06	Shirley Usher	761 Missouri Flat Rd		97527
5.	12/02/06	RONALD L. USHER	761 MISSOURI FLAT RD	—	97527
6.	12/02/06	James Grauer	18488 Williams Hwy		97544
7.	12/02/06	Carrie Linnemeyer	10195 W Central Ave G.P	—	97526
8.	12/02/06	Charlotte McKeown	7690 Sorrel Rd Williams		97544
9.	12/02/06	Kori Forney	7610 Cloverlawn Dr G.P.	PO Box 82 G.P	97528
10.	12/2/06	Michael Forney	4610 Cloverlawn Dr	P.O. Box 882 G.P.	97528

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CIRCULATOR SIGNATURE Theresa Miker Becker

PRINTED NAME OF CIRCULATOR THERESA MIKER BECKER

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 4399 Humbug Cr Rd Applegate, OR 97530

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Steve Rouse	12/4/06	Steve Rouse	16000 N. Applegate Rd GP	P.O. Box 3260 Applegate	97530
2. Tom Van Sauen	12/4/06	TOM VAN SAUN	177 SLAGLE CRK	POB 1449 J'VILLE	97530
3. Patty Buren	12/4/06	Patty Buren	16623 N. Applegate Rd	POB 3376 97530	97530
4. Vicky Van Sauen	12/4/06	VICKY VAN SAUN	177 SLAGLE CK. RD.	Grants Pass	97527
5. Dan Buren	12/4/06	DANIEL BUREN	16623 N. APPLEGATE RD	APPLEGATE OR	97530
6. Rich Holstrom	12/4/06	Rich Holstrom	13100 N Applegate Rd		97527
7. Jim Clouser	12-4-06	JIM CLOUSER	1831 Slagle Creek		97527
8. Liz Henderson	12/4/06	LIZ HENDERSON	1410 KUBLI		97527
9. Butch Martin	12/4/06	BUTCH MARTIN	" "		"
10. Elaine Trump	12/4/06	Elaine Trump	1277 Kubli Rd.	"	97527

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CIRCULATOR SIGNATURE Theresa Bauer Becker

PRINTED NAME OF CIRCULATOR THERESA BAUER BECKER

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 4000 HUMBUG CR RD APPLEGATE, OR 97530

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	12/30/06	Geoffrey J. Baker	4099 Humbug Crk Rd		Applegate 97530
2.	12/30/06	GARY CUSTANCE	2200 Bishop Cr Rd	PO Box 1076	Jacksonville 97530
3.	12/30/06	Larry Richie	4313 S. Stage Rd	—	Medford 97501
4.	12/30/06	THERESA AUXERBERKER	4099 Humbug,	Applegate, OR	97530
5.	12-30-06	ARTHUR COULTON	3269 HUMBUG CR. RD	APPLEGATE, OR	97530
6.	12-30-06	SUSAN BRATT	1110 Slagle Cr. Rd.	P.O. Box 3248	Applegate, Or 97530
7.	12-30-06	Wanda M. Custance	2200 Bishop Cr. Rd.	P.O. Box 1076	Jacksonville OR 97530
8.	12-30-06	Gregore Bratt	1110 Slagle Cr. Rd.	P.O. Box 3248	Applegate, Or 97530
9.	12/31/06	[illegible]	PO Box 3396	13587 Hwy 238	Applegate 97530
10.	12/31/06	Paula Rissler	13585 Hwy 238		Applegate

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CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR Geoffrey J. Baker

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 4099 Humbug Crk Rd Applegate, Or 97530

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	12/2/06	David Laananen	7901 Humbug Crk Rd	P.O. Box 3327	Applegate 97530
2.	4/Dec/06	David S. Trump	1277 Kubli Rd		97527
3.	12-4-06	Barbara Finley	1455 Kubli Rd		G.P. 97527
4. Bob Finley	"	Bob Finley	"		"
5.	12/4/06	JOHN McKelligoH	1617 SLAGLE CK RD		97527 G.P.
6.	12/4/06	Kara Olmo	818 Slagle Ck Rd	—	97527 G.P
7.	12-4-06	David McClarron	16600 N. Applegate Rd		97527 G.P.
8.	12-4-06	Judy Schmidt	242 Missouri Flat Rd		97527 G.P.
9.	12-4-06	Calvin Schmidt	242 Missouri Flat Rd		97527 G.P
10. Barbara Mendelsohn	12/4/06	Barbara Mendelsohn	1399 Kubli Rd		97527 G.P.

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CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR THERESA AUKER BECKER

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 4099 Humbug Cr Rd, Applegate, OR 97530

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	PROPRTY ADDRESS or TAX LOT	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Catherine M. Frutchey	1-2-07	Catherine M. Frutchey	1821 Old Military 372W20AA01200	1821 Old Military Central Pt. OR	Central Pt. Oregon
2. Thomas D. Frutchey	1-3-07	Tom Frutchey	AND 1767 OLD Military 372W20AA01100	"	"
3. E. Frutchey	1-3-07	Ed Frutchey	220 Nunan ST. PO. 1680 Jacksonville, OR 97530	P.O. BOX 1680	Jacksonville OR 97530
4. M. Frutchey	1-3-07	Mary Frutchey	"	" Jacksonville OR	"
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CIRCULATOR SIGNATURE Catherine M. Frutchey

PRINTED NAME OF CIRCULATOR Catherine M. Frutchey

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1821 Old Military Rd. Central Pt. OR 97502

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	PROPRTY ADDRESS or TAX LOT	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Colleen Cox	12-22-06	Colleen Cox	2375 Johns Peak Rd		Central Point, Or 97
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CIRCULATOR SIGNATURE R Kingsnorth

PRINTED NAME OF CIRCULATOR ROBERT KINGSNORTH

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 Old Mistletoe Rd Central Point OR 97502

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	PROPRTY ADDRESS or TAX LOT	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. [signature]	12-26-06	Kathy Salyer	372W18 TL401	3348 Old Military Rd Central Point	Central Point 97502
2. Joe Salyer	12-26-06	Joe Salyer	372W18 TL 401	3348 old military Rd Central Point	Central Point Or. 97502
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CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR Kathy Salyer

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 3348 Old Military Rd Central Point Or 97502

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	PROPRTY ADDRESS or TAX LOT	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Denise J. Poisson	12/23/06	Denise J Poisson	5795 Old Stage, Central Pt.	230 Jackson Creek Dr.	Jacksonville 97530
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CIRCULATOR SIGNATURE R Kingsworth

PRINTED NAME OF CIRCULATOR ROBERT KINGSWORTH

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 Old Military Central Point OR 97502

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	PROPRTY ADDRESS or TAX LOT	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Steve J Hunt	12-28-06	Steve J Hunt	3773 old Military Rd	P.O. Box 3880	C.P. 97502
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CIRCULATOR SIGNATURE R Kingsnorth

PRINTED NAME OF CIRCULATOR ROBERT KINGSNORTH

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 Old Military Central Point OR 97502

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	PROPRTY ADDRESS or TAX LOT	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
Elaine Ledbetter	12-22-06	Elaine Ledbetter	4611 Old Stage Rd	Central point	OR 97502
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CIRCULATOR SIGNATURE RC Kingsnorth

PRINTED NAME OF CIRCULATOR RC KINGSNORTH

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 Old Military Central Point OR 97502

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	PROPRTY ADDRESS or TAX LOT	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	12-28-06	Dennis Ellis	2339 J Peak Rd 4908	PO BOX 1451	Shady Cove OR 97539
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I hereby certify that every person who signed this sheet did so in my presence and I believe that each person is a qualified voter or property owner in Jackson or Josephine County, Oregon. I also certify that I have received no compensation for these signatures.

CIRCULATOR SIGNATURE R C Kingsnorth

PRINTED NAME OF CIRCULATOR R.C. KINGSNORTH

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 Old Military Central Point OR 97502

SHEET NUMBER:

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

THIS IS A JACKSON AND JOSEPHINE COUNTY PETITION. SIGNERS OF THIS PETITION SHOULD BE REGISTERED VOTERS or PROPERTY OWNERS IN THESE COUNTIES.

TO THE BUREAU OF LAND MANAGEMENT:

Concentrated off-highway vehicle (OHV) usage is not compatible with the checkerboard of public and private land ownership in the Timber Mountain/John's Peak area. We, the undersigned property owners, petition the Bureau of Land Management (BLM) to stop work on the Timber Mountain/John's Peak OHV Management Plan and Environmental Impact Statement, and remove the 1995 "OHV Area" designation from 16,250 acres of public land between Jacksonville, Murphy, and Grants Pass.

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	PROPRTY ADDRESS or TAX LOT	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Andy Parsons	Dec 30/06	Andy Parsons	2270 Johns Pk Rd	PO Box 1920	Jacksonville OR.
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CIRCULATOR SIGNATURE R C Kingsnorth

PRINTED NAME OF CIRCULATOR R C KINGSNORTH

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 Old Military Central Point OR 97502

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	PROPRTY ADDRESS or TAX LOT	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	12-24-06	DAVID H. WILSON	5401 OLD STAGE RD.		CENTRAL PT., OR
2.	1-2-07	Michell Conte	5576 Lane Cr Rd		Central Point 97502
3.	1-2-07	MARIE CONTE	5576 LANE CREEK RD		Central Pt 97502
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CIRCULATOR SIGNATURE R Kingsnorth

PRINTED NAME OF CIRCULATOR ROBERT KINGSNORTH

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 Old Military Central Point OR 97502

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	PROPRTY ADDRESS or TAX LOT	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Michelle Hill	12/21/06	MICHELLE HILL	372W174911	(2300 JOHNS PEAK)	
2. Daniel Hill	12/23/06	Gary Hill	372W174911	4327 S. STAGE	97501
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CIRCULATOR SIGNATURE R Kingsnorth

PRINTED NAME OF CIRCULATOR ROBERT KINGSNORTH

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 Old Military Rd
Central Point OR 97502

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	PROPRTY ADDRESS or TAX LOT	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Rosemary Parrish	12-22-06	ROSEMARY PARRISH	2411 JOHN'S PK. RD. CENT. PT.		CENT. PT. OR 97502
2. Earl Parrish	12/22/06	EARL PARRISH	2411 JOHNS PK RD, CENT. PT		CENTRAL PT OR 97502
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CIRCULATOR SIGNATURE R Kingsnorth

PRINTED NAME OF CIRCULATOR ROBERT KINGSNORTH

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 old Military Rd Central Point OR 97502

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	PROPRTY ADDRESS or TAX LOT	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Peter S Jack	12/21/06	PETER S. JACK	2037 Old Military Rd	C	Central Pt 97502
2. June A Jack	"	June A. Jack	"		"
3. [illegible]	"	Berdiot Jr Garner	2075 " "		" "
4. Patricia Narus	12/22/06	PATRICIA NARUS	1971 OLD MILITARY RD		CENTRAL POINT 97
5. MS Narus	12/22/06	Michael S Narus	1971 old Military Rd		Central Point 975
6. Pat Barry	12/22/06	PATRICK J. BARRY	1959 OLD MILITARY RD		CENTRAL POINT 97
7. [illegible]	12/22/06	Anne G. Barry	1959 Old Military Rd		Central Point 97502
8. Felicia Hanovk	12/22/06	Felicia Hanovk	2135 old Military Rd		CP 97502
9. Yale Sacks	12/22/06	YALE SACKS	2160 Old Military Rd		CP "
10. Dolores Ribal	12/22/06	DOLORES RIBAL	3575 Ross LN C.P. OR		CP 97502

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CIRCULATOR SIGNATURE Peter S Jack

PRINTED NAME OF CIRCULATOR PETER S. JACK

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2037 Old Military Rd Central Point OR 97502

SHEET NUMBER:

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

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TO THE BUREAU OF LAND MANAGEMENT:

Concentrated off-highway vehicle (OHV) usage is not compatible with the checkerboard of public and private land ownership in the Timber Mountain/John's Peak area. We, the undersigned electors, petition the Bureau of Land Management (BLM) to stop work on the Timber Mountain/John's Peak OHV Management Plan and Environmental Impact Statement, and remove the 1995 "OHV Area" designation from 16,250 acres of public land between Jacksonville, Murphy, and Grants Pass.

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Evelyn H. Mayersky	11.10.06	EVELYN H. MAYERSKY	4386 TAMI LANE	same	97502
2. C.L. Steigerwald	11.18.06	CATHERINE STEIGERWALD	1469 GOLDSTONE DRIVE, CP	"	97502
3. H. Steigerwald	11.18.06	HERMANN STEIGERWALD	1469 GOLDSTONE DRIVE, CP	"	97502
4. Georgine W. Burns	11-25-06	Georgine W. Burns	2542 Old Military Rd	"	97502
5. Colin J. Nichols	11/25/06	COLIN J. NICHOLS	1272 GOLDSTONE	"	97502
6. Anne Nichols	11/25/06	ANNE NICHOLS	"	"	"
7. Ray Pierce	11/26/06	RAYMOND C PIERCE	1200 GOLDSTONE CP OR 97502	"	97502
8. James R. Holder	11-27-06	JAMES R. HOLDER	9830 OLD STAGE RD, CP, OR 97502	"	97502
9. Linda L. Holder	11-27-06	Linda L. Holder	9830 Old Stage Rd CP 97502	"	97502
10. Bonnie Mills	11-27-06	BONNIE MILLS	973 OLD Stage RD CP	"	97502

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CIRCULATOR SIGNATURE Evelyn H. Mayersky

PRINTED NAME OF CIRCULATOR EVELYN H. MAYERSKY

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 4386 TAMI LANE Central Pt. OR 97502

SHEET NUMBER:

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Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

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THIS IS A JACKSON AND JOSEPHINE COUNTY PETITION. SIGNERS OF THIS PETITION SHOULD BE REGISTERED VOTERS IN ONE OF THESE COUNTIES.

TO THE BUREAU OF LAND MANAGEMENT:

We, the undersigned residents of Jackson and Josephine Counties, hereby petition the Bureau of Land Management (BLM) to stop work on their Timber Mountain/John's Peak Off Highway Vehicle (OHV) Management Plan and Environmental Impact Statement and remove the arbitrary 1995 designation of 16,250 acres forOHV use, encompassing and negatively impacting those public lands, rural private landowners and the communities of Jacksonville, Rogue River, Gold Hill, Ruch, Applegate, Provolt, Murphy, and Grants Pass.

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Jessie L. McNabb	8/7/06	Jessie L. McNabb	3755 Hosmer Ln		Gold Hill 97525
2. Bob North	8-7-06	Bob North	9450 Old Stage Rd C.P. 97502	P.O. Box 445 Gold Hill, OR 97525	Gold Hill 97525
3. Raymond J Barnwell	8-7-06	Raymond J Barnwell	415 W Oak St Jacksonville Ore	P.O. Box 551	Jacksonville 97530
4. Larry E. Griffin	8/9/06	LARRY E. GRIFFIN	924 Upper River Rd	Gold Hill, OR	97525
5. Sofia R. Griffin	8/9/06	SOFIA R. GRIFFIN	924 UPPER RIVER ROAD	GOLD HILL OR	97525
6. Michael S. Hall	8/9/06	MICHAEL S. HALL	10941 OLD STAGE RD	Gold	97525
7. Robert Oxford	8/9/06	ROBERT OXFORD	4401 Kane Creek Rd	Central Point	97502
8. Ernest Arthur	8/10/06	Ernest Arthur	2580 Foots Cr. Rd Gold Hill		Gold Hill 97525
9. Lorraine Parks	8-10-06	Lorraine Parks	535 1st Ave Gold Hill	P.O. Box 75 Gold Hill, OR	97525
10. Bonnie E Carlson	8/10/06	BONNIE E CARLSON	519 Galt Crk	Gold Hill, OR	97525

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CIRCULATOR SIGNATURE Jeanie Moore

PRINTED NAME OF CIRCULATOR JEANIE MOORE

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1534 FOOTS CRK. RD. GOLD HILL OR 97525

SHEET NUMBER: J

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
Wanda M. Custance	4/26/06	Wanda M. Custance	2200 Bishop Creek Rd.	PO Box 1076	Jacksonville OR 97530
2.	4/26/06	Tim Ream	3000 Yale Creek	—	J'Ville 97530
3.	4/26/06	Ryan Gimm	3000 Yale Creek	—	" "
4.	4/26/06	Eden Luz	3000 Yale Creek Rd	—	J'Ville 97530
5.	4/26/06	Daniel Boyajian	2634 Little Applegate Rd	—	J'ville 97530
6.	4-26-06	Robert M Tuy	6265 Little Applegate	P.O. Box 4175	Medford 97501
7.	4-29-06	Susan M. Schmidt	10792 Hwy 238		Jacksonville 97530
8.	4-29-06	Shelly McMillin	540 Lomas rd		Applegate 97530
9.	4/29/06	Cary Voorhees	540 Lomas Rd		Jacksonville 97530
10.	4/29/06	Greta Mikkelsen	740 G Street		Jacksonville 97530

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CIRCULATOR SIGNATURE D P Calahan

PRINTED NAME OF CIRCULATOR DAVID P. CALAHAN

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 11,000 HWY 238
APPLEGATE, OR 97530

J

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. [illegible]	4 20 06	Robert D Posluzzo	640 California St	—	97530
2. Luke Rueeger	4/26/06	LUKE RUEDIGER	17607 ELLIOT CR. ROAD		97530
3. Lesley Adams	4/26/06	LESLEY ADAMS	10252 STERLING CR RD		JACKSONVILLE, 97530
Barbara Kostal Calahan	4/28/06	BARBARA KOSTAL CALAHAN	11000 Hwy 238 APPLEGATE OR		97530
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CIRCULATOR SIGNATURE D P Calahan

PRINTED NAME OF CIRCULATOR DAVID P. CALAHAN

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 11,000 HWY 238 APPLEGATE, OR 97530

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Carol DeKorte	12-31-06	Carol DeKORTE	1657 Old Stage Rd	Same	Central Pt OR 97502
2. James D. DeKorte	12-31-06	JAMES DEKORTE	"	"	"
3. Sharon Baldoni	12-31-06	Sharon BALDONI	4211 Tami Lane.	Same	Central Pt. 97502
4. ~~[illegible]~~	~~12-31-06~~	~~[illegible]~~			
5. Thomas E Glover	12-31-06	Thomas E Glover	969 Old Stage Rd,	PO Box 1838 Jacksonville 97530	C.P. 97502
6. Ulla Feeley	12/31/06	Ulla Feeley	4251 Tami Lane	Same	Cent Pt 97502
7. Carol F Glover	12/31/06	CAROL F GLOVER	969 OLD STAGE	P.O. BOX 1838	JACKSONVILLE 97
8. Gary Pellett	12/31/06	Gary Pellett	972 Old Stage, OR		Central Point 97502
9. [illegible]	12/31/06	Melvin Ashland	4400 Livingston Rd		Central Pt. OR
10. Christine Pellett	12/31/06	Christine Pellett	972 Old Stage Road		Central Point 97502

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CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR ROBERT KINGSNORTH

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2560 OLD MILITARY CENTRAL POINT OR 97502

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Bernard Shirtcliff	12/31/06	Bernard Shirtcliff	4380 Tami Lane		Central Point OR 97502
2. Roberta K. Heinz	12/31/06	Roberta K. Heinz	3939 Tami Lane		Central Point OR 97502
3. John Heinz	12/31/06	John Heinz	3939 Tami Lane		Central Point Oregon 97502
4. Patricia A. Wells	12/31/06	Patricia A. Wells	4365 Tami Lane		C.P. Oregon 97502
5. Edward A. Daneky	12/31/06	Edward A. Daneky	4370 Tami Lane		C.P. OR 97502
6. Donald J. Cady	12/31/06	Donald J. Cady	4004 Jonathan Way		C.P. OR 97502
7. Eloise Cady	12/31/06	Eloise Cady	4004 " "		C.P. OR 97502
8. Toni Anderberg	12/31/06	Toni Anderberg	4000 Jonathan Way		C.P. OR 97502
9. Kerry & Linda Larsen	12/31/06	Kerry Larsen	4149 Tami Ln		CP OR 97502
10. Terry Anderberg	12/31/06	Terry Anderberg	4000 Jonathan Way		CP OR 97502

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CIRCULATOR SIGNATURE _____

PRINTED NAME OF CIRCULATOR ROBERT KINGSNORTH

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 OLD MILITARY RD

CENTRAL POINT OR 97502

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
Palmira K. Gelardi	7-11-06	PALMIRA K. GELARDI	315 JACKSON CRK. DR.		JACKSONVILLE
2. John Kroson	7-11-06	John Kroson	335 Jacksonville Dr.		Jacksonville
3. Mary Lou Lee	7-12-06	MARYLOU LEE	640 S. 5th ST NV.		"
4. Elizabeth Merriman	7/12/06	Elizabeth Merriman	275 Cottage St		Jacksonville 97530
5. Mary Lou Brophy	7/12/06	MARY LOU BROPHY	648 HUENERS LN. #H	P.O. BOX 14616	JACKSONVILLE 97530
6. Jan Voogd	7/12/06	JAN VOOGD	1655 Pair a Dice		Jville 97530
7. David L. Henderson	7/12/06	Henderson, David L	210 Jackson Creek Dr	PO Box 1476	Jacksonville 97530
8. Ileane F Davis	7/13/06	Ileane F Davis	2606 Detta Waters Rd	Medford Oregon NV	Medford
9. Joan C. Avery	7/13/06	JOAN C. AVERY	410 CONESTOGA CIR.		JVILLE 97530
10. Richard O Avery	7/13/06	RICHARD O. AVERY	410 CONESTOGA CIRCLE		J-VILLE 97530

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CIRCULATOR SIGNATURE Shirley W. Blaul

PRINTED NAME OF CIRCULATOR SHIRLEY W. BLAUL

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 235 JACKSON CREEK JACKSONVILLE, OR 97530

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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BLM

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Margaret Blakely	7/2/06	Margaret Blakely	556 N. St. apt. 20		J-Ville OR
2. Carl Miller	7/13/06	Carl Miller	225 Cottage St	P.O. Box 1749	J-ville
3. Yvonne Miller	7/13/06	Yvonne Miller	225 Cottage St	P.O. Box 1749	J-ville
4. Loretta Meeds	7-13-06	Loretta Meeds	2510 Forest Creek Rd		J-ville 97530
5. Linda Berger	7-13-06	Linda Berger	925 S. 3rd St.		J-Ville 97530
6. Charlie Kayfman	7-13-06	CHARLIE KAYFMAN	163 Rowlandberg L		E.P. 97524
7. Barbara A. Lowe	7/14/06	Barbara A. Lowe	2234 Cady Rd		Jacksonville 97530
8. Barbara Giudici	7/14/06	Barbara Giudici	3724 Walker Ck Rd	same 97502	CP 97502
9. JOAN BEYER		Joan Beyer	475 Mary Ann	PO Box 345	97530
10. Anna Hinkle	7/15/06	ANNA HINKLE	765 Valley Oak	C.P., OR	97502

6

I hereby certify that every person who signed this sheet did so in my presence and I believe that each person is a qualified voter in Jackson or Josephine County, Oregon. I also certify that I have received no compensation for these signatures.

CIRCULATOR SIGNATURE Viola M. Davis

PRINTED NAME OF CIRCULATOR Viola M. Davis

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1055 N 5th St #147 Jacksonville Or 97530

J

SHEET NUMBER:

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

THIS IS A JACKSON AND JOSEPHINE COUNTY PETITION. SIGNERS OF THIS PETITION SHOULD BE REGISTERED VOTERS IN ONE OF THESE COUNTIES.

TO THE BUREAU OF LAND MANAGEMENT:

Concentrated off-highway vehicle (OHV) usage is not compatible with the checkerboard of public and private land ownership in the Timber Mountain/John's Peak area. We, the undersigned electors, petition the Bureau of Land Management (BLM) to stop work on the Timber Mountain/John's Peak OHV Management Plan and Environmental Impact Statement, and remove the 1995 "OHV Area" designation from 16,250 acres of public land between Jacksonville, Murphy, and Grants Pass.

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Don Gundrey	11-16-06	Don Gundrey	445 Corestga DR J'ville		J'ville 97530
2. Joe Hudgins	11-16-06	JOSEPH HUDGINS	150 RANCH FLATS J'VILLE	PO BX 634	ASHLAND 97520
3. Chris Kamman					
4. Ann Z. Doelman	11-16-06	ANN Z. DOELMAN	630 E. D ST., J'VILLE	P.O. BOX 213	Jacksonville 97530
5. Judy MARSHALL	11-16-06	Judy MARSHALL	855 Hueners LN - J'ville	PO Box 1588	Jacksonville 97530
6. David Kinney	11-16-06	DAVID KINNEY	204 KANAKA FLATS RD, J-VILLE		J-VILLE 97530
7. Christian Hamilton	11-16-06	Christian Hamilton	741 WIDEAN LN. / J-VILLE	"	"
8. D. Elaine Frenett	11/16/06	D. ELAINE FRENETT	6160 S. 3RD ST, J-VILLE		J-VILLE 97530
9. Willard Fike	11/16/06	WILLARD FIKE	415 Richard WAY	-	J'ville 97530
10. Charleen N. Fike	11/16/06	Charleen N. Fike	415 Richard Way		J-Ville 97530

8

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CIRCULATOR SIGNATURE _____

PRINTED NAME OF CIRCULATOR Carolyn Kingsnorth

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 Old Military Rd. Central Point OR 97502

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. [illegible]	7/12/06	ELIZABETH E BRAISLIN	105 PLACER HILL DR	PO Box 956	JVILLE 97530
2. [illegible]	7/12/06	Carolyn H. Kingsmith	2550 Old Military Rd		Centre Point 97502
3. Mary Ann Ramsden	7/12/06	MARY ANN RAMSDEN	100 VINTAGE CIRCLE JVille	P.O. Box 1017	JVille 97530
4. Patricia R. Dahl	7-12-06	PATRICIA R. DAHL	3989 Livingston Rd		CP 97502
5. Marjorie A. Edens	7-12-06	MARJORIE A. EDENS	335 EAST "F"	BOX 54	J'VILLE 97530
6. Marcia S. McQuillan	7-12-06	Marcia S. McQuillan	2465 Gold Terrace		Jacksonville
7. [illegible]	7-12-06	Dick J Siedlecki	453 Sky Hawk Dr.		Rogue River
8. Marie A Hunt	7/12/06	Marie A Hunt	585 Carriage Lane	Jville	Jville OR
9. Bobbette DeBellis	7/12/06	Theresa B. DeBellis	316 Myers Ct.	Medford	Medford 97504
10. Jill Hayden	7/12/06	JILL M HAYDEN	3542 Blackberry Dr.	Medford	Medford 97504

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CIRCULATOR SIGNATURE Shirley W. Blaul

PRINTED NAME OF CIRCULATOR SHIRLEY W. BLAUL

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 235 JACKSON CREEK Jacksonville, OR 97530

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	7/8/06	Brian Whitelier	101 Daisy Creek Road		97530
2. Sachiko K. Miller	7/8/06	SACHIKO MILLER	110 TAYLOR ST.		97530
3.	7/9/06	Lara Kracksbeat	6660 Powderhorn Dr.		97530
4. Ada K McCain	7/9/06	Ada McCain	1638 Jasmine		97501
5.	7/9/06	Kathryn Williams	6070 applegate st.		97530
6.	7-9-06	Miles Burks	2236 Meals Dr		97501
7.	7-9-6	Kelly Nutters	860 Ashland, Ashland OR		97520
8. Janet King	7-10-6	Janet King	3261 Winterbrook Ln	C.P.	97502
9.	7-10-06	Linda Graham	195 N. 3rd St.	Jville PO Box 626	97530
10. Bertha Smith	7/10/06	Bertha Smith	953 Rebecca Dr	Same	97535

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CIRCULATOR SIGNATURE David Isseler

PRINTED NAME OF CIRCULATOR DAVID M. ISSELER

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 884 Hill

Jville, 97530

SHEET NUMBER: J

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Constance T. Borntraeger	7/15/06	Constance T BORNTRAEGER	325 Gold Terrace Dr.		Jacksonville 97530
2. Lois Sullivan	7/16/06	Lois SULLIVAN	745 No. Oak St.	PO BOX 362	J'ville 97530
3. June Martin	7/16/06	JUNE MARTIN	3322 EDGEWATER DR		Medford, OR 97504
4. Cleora Akins	7/16/06	Cleora Akins	885 Mindy Sue		Md OR 97504
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CIRCULATOR SIGNATURE Viola M Davis

PRINTED NAME OF CIRCULATOR Viola M DAVIS

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1055 N 5th St #141 Jacksonville OR 97530

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
Barbara Heppermen	7-10-06	Barbara Heppermen	555 Carol St. Ashland Or		97520
2. Michael Wenovsky	7-10-06	Michael WENOVSKY	709 Wideau Lane		97530
3. Conny Lindley	7-11-06	CONNY LINDLEY	1000 Rock Creek Rd. Williams OR		97544
Frances Lichtenwalner	7-11-06	FRANCES LICHTENWALNER	330 Laurelwood Dr. Jacksonville OR		97530
5. Pamela Farquhar	7-11-06	PAMELA FARQUHAR	6565 E Antelope Eagle Point OR		97524
6. Valentine Q. Gass	7-11-06	Valentine Q. Gass	32602 Mtn Lakes Dr		97601
7. Martha J. Kieffer	7/12/06	Martha Kieffer	334 Laurelwood Dr.		97530
8. P. Steigerwald	7/12/06	P. STEIGERWALD	1469 Gonzstone Dr.	P.O. Box 1708 J'ville	97530
9. Catherine A. Swift	7/12/06	Catherine A. Swift	134 Rossica Ln		G.P. 97527
10. Helen Ellison	7/13/06	Helen R Ellison	92 8th St Ashland Or	PO Bx 847	97520

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CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR DAVID JESSEN

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 884 Hill

J'Ville 97530

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. [illegible]	8-28-06	Lee M. Lewis	105 W. Main St	P.O. 1437	Jacksonville OR 97530
2. [illegible]	8-28-06	John R. Ellis	935 Beverly Wy	P.O Box 1328	Jacksonville OR 97530
3. [illegible]	8-28-06	Gerald L. Ferronato	565 Grave St	P.O. Box 277	97530
4. Georgina W Burns	8-29-06	Georgina W. Burns	2542 Old Military Rd		97502
5. Beverly Fadling	8-29-06	Beverly Fadling	2546 old Military Rd		97502
6. Dennis Fadling	8-29-06	Dennis Fadling	2546 old Military Rd		97502
7. Patricia B Parks	8-29-06	Patricia B Parks	2542 Old Military Rd		97502
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CIRCULATOR SIGNATURE [illegible]

PRINTED NAME OF CIRCULATOR ROBERT C KINGSNORTH

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 OLD MILITARY RD CENTRAL POINT OR 97502

J

SHEET NUMBER:

4

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	7-14-06	Jan van Lienden	10414 Hwy 238		Jacksonville OR 97530
2.	7-14-06	Lois M. Schaffel	105 E. D St.	P.O. Box 1736	
3.	7-14-06	Laura Reavis	36 N. 4th St.	P.O. Box 149	Jacksonville OR 97530
4.	7-14-06	Gail Ellis	419 N. 6th St	P.O. Box 1173	J'ville OR 97530
5.	7/15/06	John McQuillan	265 Gold Terrace		Jacksonville OR 97530
6.	6/26/06	Robert C Kingsnorth	2550 Old Military Rd		C.P. OR 97502
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CIRCULATOR SIGNATURE Marcia S. McQuillan

PRINTED NAME OF CIRCULATOR Marcia S. McQuillan

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 265 Gold Terrace Jacksonville OR 97530

J

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
[illegible]	7/16/06	Dennis M. Ramsdell	100 Y. Stager Circle	PO Box 1017	Jacksonville 97530
[illegible]	7/16/06	Dorathy Anderson-Thickett	1362 Kings Hwy	"	97501
Stephanie Schopf	7/16/06	S. Schopf	410 S. Oregon	"	Jacksonville 97530
0.					

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CIRCULATOR SIGNATURE Wm Peffley

PRINTED NAME OF CIRCULATOR Wm Peffley

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 873 Singler Lane
Jacksonville OR 97530

SHEET NUMBER:

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1. G M Leinfelder	07-13-06	Geraldine M. Leinfelder	2989 Thompson Creek	P.O. Box 911	Jacksonville 97530
2. Karen Geise	7-13-06	Karen Geise	2267 Forest Cr Rd	Same	Jacksonville 97530
3. Katie Haugse	7-13-06	Katie Haugse	635 E. D St	Same	Jacksonville 97530
4. Art Lumley	7-13-06	Art Lumley	8727 Bison Place Gold Hill CA	PO Box 799	Gold Hill 97525
5. Christine M Grubb	7/13/06	Christine M. Grubb	615 Hueners Ln	PO. Box 1748	Jville 97530
6. [illegible]	7/13/06	Steven Y. Grubb	615 Hueners Ln	PO Box 1748	Jacksonville 97530
7. Marcia Ahlquist	7-13-06	Marcia Ahlquist	1027 Newcastle St	~~Po Box 1357~~	Medford 97527
8. [illegible]	7-13-06	Glen Ahlquist	1027 Newcastle St		Medford 97527
9. Theresa M Gieg	7-13-06	Theresa M. Gieg	387 Tumbleweed Tr.		Jacksonville 97530
10.					

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CIRCULATOR SIGNATURE R C Kings North

PRINTED NAME OF CIRCULATOR R C Kings North

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 Old Military Central Point OR 97502

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Cheryl Behnke	9-9-06	CHERYL BEHNKE	PO BOX 1319 245 N FIFTH ST.	PO BOX 1319	97530
2. Marsha Louitt	9-9-06	Marsha LOUITT	1052 Oak Grove Rd	Med Ford-01	97501
3. Robert Zellman	9-9-06	Robert Zellman	10254 Sterling Cr Rd	J'ville OR	97530
4. Marcia Zellman	9-9-06	Marcia Zellman	10254 Sterling Cr. Rd	J'ville, OR.	97530
5. Colleen P Call	9-9-06	Colleen Callan	3373 Perrydale Ct.	Medford OR	97501
6. Michelle Villasenor	9-9-06	MICHELLE VILLASENOR	3373 PERRYDALE CT	MEDFORD OR	97501
7. Janet Siedlecki	9/10/06	JANET SIEDLECKI	131 SKY HAWK DR	Eagle Pt. / OR	97524
8. John E Braisln	9/10/06	JOHN E. BRAISLIN	105 PLACER HILL DR	JACKSONVILLE	97530
9.					
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CIRCULATOR SIGNATURE C

PRINTED NAME OF CIRCULATOR Carolyn Kingsnorth

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 Old Military Rd. Central Point OR 97502

J

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. [illegible]	8-30-06	Alice LaMoree	685 S. Oregon St. PO Box 1556	same	JV 97530
2. [illegible]	8/30/06	Suzanne Chase	11 Hill Hwy 238 Jville		97530
3. [illegible]	8/30/06	Maria Largaespada	8565 Hwy 238 J'ville	Same	97530
4. Sandra King	8/30/06	SANDRA KING	367 Hamilton Rd Jville	181 Upper Applegate Rd #MB 132	97530
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CIRCULATOR SIGNATURE Susan Maesen

PRINTED NAME OF CIRCULATOR Susan Maesen

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 670 Tumbleweed Trail Jacksonville, OR 97530

SHEET NUMBER: J

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Barbara Johnson	7/17/06	BARBARA JOHNSON	3650 Ross Lane. C.P.		C.P. 97502
2. Eloise Cady	7/17/06	ELOISE CADY	4004 Jonathan Way		CP 97502
3. Sheila Soderland	7-17-06	Sheila Soderland	225 W. P. STREET		J'ville 97530
4. Leatha L. Evans	7-17-06	Leatha Evans	255 Thorn Oak Dr #103		Medford 97501
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I hereby certify that every person who signed this sheet did so in my presence and I believe that each person is a qualified voter in Jackson or Josephine County, Oregon. I also certify that I have received no compensation for these signatures.

CIRCULATOR SIGNATURE _____

PRINTED NAME OF CIRCULATOR Carolyn Kingsworth

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 Old Military Rd. Central Point, OR 97502

SHEET NUMBER: J

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

THIS IS A JACKSON AND JOSEPHINE COUNTY PETITION. SIGNERS OF THIS PETITION SHOULD BE REGISTERED VOTERS IN ONE OF THESE COUNTIES.

TO THE BUREAU OF LAND MANAGEMENT:

We, the undersigned residents of Jackson and Josephine Counties, hereby petition the Bureau of Land Management (BLM) to stop work on their Timber Mountain/John's Peak Off Highway Vehicle (OHV) Management Plan and Environmental Impact Statement and remove the arbitrary 1995 designation of 16,250 acres forOHV use, encompassing and negatively impacting those public lands, rural private landowners and the communities of Jacksonville, Rogue River, Gold Hill, Ruch, Applegate, Provolt, Murphy, and Grants Pass.

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	6/6/06	Fayegu Mandell Bisaccia	302 Cambridge St	PO Box 579	Ashland 97520
2.	6/6/06	Diane M. Schaffer	1016 Timberline Terrace		Ashland, 97520
3.	6/6/06	Dolores H. Scheelen	123 Sunrise		Medford 97504
4.	6/6/06	Katherine J. Olsen	1101 Nuenners Lane		Jacksonville 97530
5. Sharon Schaefer	6-6-06	Sharon Schaefer	4288 E. Barnett Rd		Medford, OR 97504
6. Ellen D Levine	6-6-06	Ellen D Levine	470 Slagle Crk Rd	POB 3320 Applegate 97530	G.P. 97527
7. Richard Levine	6-7-06	Richard L. Levine	470 Slagle Crk Rd	POB 3320 Applegate 97530	G.P. 97527
8. Nancy Fleischman	8/9/06	Nancy Fleischman	15985 N. Applegate Rd.	P.O. Box 3274 Applegate 97530	Applegate OR 97530
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CIRCULATOR SIGNATURE Ellen D Levine

PRINTED NAME OF CIRCULATOR Ellen D Levine

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 470 Slagle Crk Rd GP OR 97527

J

SHEET NUMBER: 1

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

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TO THE BUREAU OF LAND MANAGEMENT:

Concentrated off-highway vehicle (OHV) usage is not compatible with the checkerboard of public and private land ownership in the Timber Mountain/Johns Peak area. We, the undersigned electors, petition the Bureau of Land Management (BLM) to stop work on the Timber Mountain/Johns Peak OHV Management Plan and Environmental Impact Statement, and remove the 1995 "OHV Area" designation from 16,250 acres of public land between Jacksonville, Murphy, and Grants Pass.

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Mary E Brennan	7-13-06	MARY E. BRENNAN	648 HUGHES LN UNIT B		Jacksonville 97530
2. Isabel B. Goode	7-13-06	ISABEL B. GOODE	530 D St.		" "
3. Richard R Hein	7-13-06	Richard R Hein	895 N 5th 309		Jacksonville
4. Shirley L White	7-13-06	Shirley L. White	895 N. 5th # 223		"
5. Helen J Hein	7-13-06	HELEN J HEIN	895 N. 5th # 309 B		"
6. Eileen Patterson	7-13-06	Eileen Patterson	895 N 5th # 117 B		"
7. Ellen Clark	7-13-06	Ellen Clark	895 N 5th # 321		Jacksonville
8. Dorothy Wisdom	7-13-06	DOROTHY WISDOM	895 N 5th # 212		"
9. Marcella Lange	7-13-06	MARCELLA LANGE	895 N 5th # 312		"
10. Susie Anne Casto	7-13-06	Susie Anne Casto	840 Sophia Ln.	Same	Jacksonville OR 97530

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CIRCULATOR SIGNATURE Mary J. Jones

PRINTED NAME OF CIRCULATOR MARY T JONES

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 895 N 5th ST #210
Jacksonville, OR 97530

J

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Crystal Zinzer	7/16/06	Crystal Zinzer	240 N. 3rd St	PO 725	Jacksonville OR 97530
2. [illegible]	7/16/06	Janis Shade	415 Jackson Cr Dr.		Jacksonville OR 97530
3. Sheila Strauss	7/16/06	Sheila Strauss	735 G St.		J'ville 97530
4. J. Warren Strauss	7/16/06	J. WARREN STRAUS	735 G. St		J-Ville 97530
5. Jay Halverson	7/16/06	JAY HALVERSON	745 G. St	POB 180	J'ville 97530
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CIRCULATOR SIGNATURE Shirley W. Blaul

PRINTED NAME OF CIRCULATOR SHIRLEY W. BLAUL

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 235 JACKSON CREEK JACKSONVILLE OR 97530

J

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Kathryn Grobey	7/15/06	Kathyn Grobey	330 Mary Ann Dr		JACKSONVILLE 97530
2. John Grobey	7/15/06	John Grobey	330 Mary Ann Drive		JACKSONVILLE 97530
3. John W. Kay	7/15/06	JOHN W. KAY	270 MARY ANN DR.		JACKSONVILLE 97530
4. Mary Jo Kay	7-15-06	Mary Jo Kay	270 Mary Ann Dr.		JACKSONVILLE 97530
5. Truman Scott	7/15/06	TRUMAN SCOTT	413 MARY ANN DR		JACKSONVILLE 97530
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CIRCULATOR SIGNATURE Spencer B. Child

PRINTED NAME OF CIRCULATOR SPENCER B. CHILD

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 420 MARY ANN DR JACKSONVILLE, OR 97530

J

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Hans W. Doelman	7/11/06	HANS W. DOELMAN	630 D Str.	Box 213	JACKSONVILLE 97530
2. Russell J Scott	7/15/06	Russell J Scott	745 D STR.		"
3. [illegible]	7/15/06	D W. EVANS	715 East D St		"
4. Kelle W Evans	7/15/06	Kelle Evans	715 E. D St.		97530
5. Betty Guglietta	7/15/06	Betty Guglietta	640 E D ST	BOX 1948	97530
6. [illegible]	7/15/06	Lod Guglietta	640 E. D ST	BOX 1948	97530
7.	"	C F. Cox	705 E C	1586	
8. Delfino Arellano	7.15.06	Delfino Arellano	125 N. 8th St.	P.O. Box 1624	Jacksonville OR 97530
9. Trish Murdoch	7-15-06	Trish Murdoch	265 N. 8th		Jacksonville OR 97530
10. [illegible]	7-15-06	Rick Murdoch	265 N 8TH		JACKSONVILLE

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CIRCULATOR SIGNATURE Ann Z. Doelman

PRINTED NAME OF CIRCULATOR ANN Z. DOELMAN

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 630 E. D ST. JACKSONVILLE OR 97530

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1 David Hollenback	7/15/06	David Hollenback	340. S Oregon	P.O Box 385	97530
2 Michelle Hollenback	7/15/06	michelle Hollenback	340 S. Oregon	PO Box 385	J Ville 97530
3 Robert L. Lewis	7/15/06	Robert L. Lewis	320 S. Oregon	P.O. Box 1950	J'ville, Or. 97530
4 Robert E. Higgins	7/15/06	Robert E. Higgins	320 S. Oregon	PO Box 1950	Jville 97530
5 Betty Lee Balder	7/15/06	Betty Lee BALDES	260 S Oregon # 2	PO Box 1604	Jville 97530
6 Susan E Bennett	7/15/06	Susan E Bennett	240 S. Oregon 1	PO Box 240	J'Ville 97530
7 Steven L Bennett	7/15/06	Steven L. Bennett	240 S. Oregon	P.O Box 240	Jacksonville OR 97530
8 Shirley M Boucher	7-15-06	Shirley M. Boucher	880 S. Oregon	P.O. Box 83	Jacksonville OR 97530
9 Diane Offenbacher	7/16/06	Diane Offenbacher	326 Laurelwood	po box 1478	jville OR 97530
10.					

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CIRCULATOR SIGNATURE Bill Stanton 7/15/06

PRINTED NAME OF CIRCULATOR Bill Stanton

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 365 Laurelwood Dr. J'Ville OR 97530

J

SHEET NUMBER:

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PETITION I.D. - TMJP

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	7/15/06	Wesley Hartman	470 N. 5th Jacksonville	PO Box 239	97530
2.	7/15/06	Mona Hartman	470 N 5th	Box 239	Jacksonville 97530
3.	7/16/06	Charles Jean	110 Jackson Crk Dr.		97530 Jacksonville
4.	7/16/06	Phil Gustafson	355 N. 3rd	Box 424	97530 Jacksonville
5.	7/16/06	Shirlee Gustafson	355 N. 3rd	PO Box 424	97530 Jacksonville, OR
6.	7/16/06	Marshall Lango	240 N. 3rd	P.O. Box 725	97530 Jacksonville OR
7.	7/16/06	Dinna Lango	240 N. 3rd	P.O. Box 725	Jacksonville OR 97530
8.	7/16/06	Greta Mikkelsen	740 G Street		Jville 97530
9.					
10.					

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CIRCULATOR SIGNATURE Iris L. Sperry

PRINTED NAME OF CIRCULATOR ~~BS~~ IRISH. SPERRY

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) JACKSON Creek DR JACKSONVILLE OR 97530

J

SHEET NUMBER:

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PETITION I.D. - TMJP

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. [signature]	7/15/06	Valerie Turner	70 Beekman Sq.		Jacksonville 97530
2.					
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CIRCULATOR SIGNATURE Joan Yates

PRINTED NAME OF CIRCULATOR JOAN YATES

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 430 E. CALIF. ST. (PO BOX 182)
JACKSONVILLE, OR 97530

J

SHEET NUMBER:

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Gwen Schively	7-17-06	GWEN SCHIVELY	345 COACHMAN DRIVE		J'ville 97530
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CIRCULATOR SIGNATURE George E. Thomas Jr. 7/16/06

PRINTED NAME OF CIRCULATOR GEORGE E. THOMAS Jill Cobb

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 295 COACHMAN DR. JACKSONVILLE, OR 97530

SHEET NUMBER:

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PETITION I.D. - TMJP

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Anne B. Hawkins	7-12-06	ANNE B. HAWKINS	500 W. Oak St.	P.O. Box 185	J'Ville 97530
2. Jacqueline Reavis	7/12/06	JACQUELINE REAVIS	390 E. California St		Jacksonville 97530
3. Glenda Cossette	7-11-06	Glenda J. Cossette	3905 Livingston Rd.		Central Point 97502
4. Iris L. Sperry	7-12-06	IRIS L. SPERRY	135 Jackson Creek DR		Jacksonville 97530
5. Marilyn J. Henderson	7-12-06	Marilyn J. Henderson	210 Jackson Creek Dr.	P.O. Box 1476	J'ville 97530
6. Judith McCornack	7/12/06	JUDITH McCORNACK	250 JACKSON CK. DR.		J'ville 97530
7. Cathy Ames	7/12/06	CATHY Ames	280 Jackson Crk DR.		J'ville, OR 97530
8. Jana Frazeur	7-12-06	JANA FRAZEUR	225 JACKSON CK. DR	PO Box 429	J'ville OR 97530
9. Don Boucher	7-11-06	DON BOUCHER	305 JACKSON CRK DR		J'VILLE OR 97530
10. Sandra Boucher	7-11-06	SANDRA BOUCHER	305 JACKSON CR. DR.	—	J'ville OR 97530

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CIRCULATOR SIGNATURE Shirley W. Blaul

PRINTED NAME OF CIRCULATOR SHIRLEY W. BLAUL

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 235 JACKSON CREEK Jacksonville, OR 97530

SHEET NUMBER: J

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	7/13/06	G Conway	705 G St. J.ville	JACKSONVILLE	97530
2.	7/13/06	T. C. Clark	725 G. St.	"	97530
3. Mae E. Wygant	7/14/06	Mae E. Wygant	685 E. California St	Jacksonville, OR	97530
4. Gene M. Greggley	7/14/06	Gene M. Greggley	685 E. California St	Jacksonville, OR	97530
5. James W Oakes	7/14/06	JAMES W OAKES	205 F. St	"	97530
6. Barbara S. Oakes	7/14/06	BARBARA S. OAKES	205 F STREET	BOX 119	JACKSONVILLE OR 97530
7. Evelyn Mironack	7-14-06	EVELYN MIRONACK	215 W "F" ST	"	J'ville 97530
8. Donita Robertson	7/14/06	DONITA ROBERTSON	150 W 'E' ST	PO 278	JACKSONVILLE
9. Sally Kirkwood	7/14/06	SALLY KIRKWOOD	100 NUNAN ST	JACKSONVILLE	97530
10. Paul R Hayes	7/16/06	PAUL R HAYES	115 JACKSON CR DR.	JACKSONVILLE	97530

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CIRCULATOR SIGNATURE Shirley W. Blaul

PRINTED NAME OF CIRCULATOR SHIRLEY W. BLAUL

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 235 JACKSON CREEK JACKSONVILLE, OR 97538

J

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Marjory McClure	7/11/06	Marjory McClure	1005 N. 5th St. #22		Jacksonville, 97530
2. Claudine H. Huleva	7/14/06	Claudine H. Huleva	420 Shafer LN		Jacksonville 97530
3. James G. Huleva	7-14-06	James G. Huleva	420 Shafer LN.		Jacksonville, 97530
4. Evelyn M. Leep	7-14-06	Evelyn M. Leep	450 Shafer Lane		Jacksonville 97530
5. William E Johns	"	WILLIAM E JOHNS	" " "		" "
6. L.T. Schultz	7/15/06	L.T. SCHULTZ	460 SHAFER LANE		JACKSONVILLE 97530
7. [illegible]	7/15/06	RENE WEEKS	455 Shafer Lane		Jacksonville 97530
8. [illegible]	7/15/06	MYRON WEEKS	455 Shafer LN		JVILLE 97530
9. Mira B. Wingfield	"	MIRA B. WINGFIELD	410 SHAFER LN		" "
10. Sally Osborne	7-15-06	SALLY OSBORNE	3860 Hwy 238		J'VILLE

Also
Viola M. Davis
Viola M. Davis

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CIRCULATOR SIGNATURE Mira B. Wingfield

PRINTED NAME OF CIRCULATOR MIRA B. WINGFIELD

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 410 Shafer Ln

J'Ville

SHEET NUMBER: 1005 N 5th St #49

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

THIS IS A JACKSON AND JOSEPHINE COUNTY PETITION. SIGNERS OF THIS PETITION SHOULD BE REGISTERED VOTERS IN ONE OF THESE COUNTIES.

TO THE BUREAU OF LAND MANAGEMENT:

Concentrated off-highway vehicle (OHV) usage is not compatible with the checkerboard of public and private land ownership in the Timber Mountain/Johns Peak area. We, the undersigned electors, petition the Bureau of Land Management (BLM) to stop work on the Timber Mountain/Johns Peak OHV Management Plan and Environmental Impact Statement, and remove the 1995 "OHV Area" designation from 16,250 acres of public land between Jacksonville, Murphy, and Grants Pass.

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Catherine M. Frutchey	7-11-06	Catherine M. Frutchey	220 Nunan St.	P.O. Box 1680	Jacksonville, OR
2. ~~Linda Berger~~	~~7-11-06~~	~~Linda Berger~~	~~925 So. 3rd St~~		" " "
3. Lois Bateham	7/11/06	Lois Bateham	1055 N 5th #3		Jacksonville OR
4. Sharon Green	7/11/06	Sharon Green	230 Coachman Dr		"
5. Mary P. Nelson	7/11/06	MARY P. NELSON	380 Pair a Dice Ranch Rd		Jacksonville Oregon 97530
6. [illegible]	7/11/06	Linda Winkelhum	245 Laurelwood		Jacksonville 97530
7. Betty Hagedorn	7/12/06	Betty Hagedorn	655 So. Oregon St.	P.O. Box 1199	Jacksonville
8. Gail Gonsalves	7-12-06	Gail Gonsalves	256 Twin Oaks Rd		Jville 97530
9. Sharon L. Clarke	7-12-06	SHARON CLARKE	725 S. ST. JACKSONVILLE		Jville 97530
10. Betty Kurtz	7-12-06	BETTY KURTZ	1055 N. 5th St # 116		Jacksonville

I hereby certify that every person who signed this sheet did so in my presence and I believe that each person is a qualified voter in Jackson or Josephine County, Oregon. I also certify that I have received no compensation for these signatures.

CIRCULATOR SIGNATURE Viola M Davis

PRINTED NAME OF CIRCULATOR Viola M Davis

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1055 N. 5th #147 Jacksonville Or 97530

SHEET NUMBER:

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Ilana Stephenson	7/12/06	Ilana Stephenson	125 S/M	PO BOX 383	JV. 97530
2. Robert Sorrell	7-12-06	Robert Sorrell	645 Sterling St		
3. [illegible]	7-12-06	JOHN E. LANDERS	730 STERLING ST	—	JV 97530
4. [illegible]	7-12-06	DAVID KISER	670 Sterling ST	PO BOX 1078	JV 97530
5. Steve Carlson	8/28/06	STEVE CARLSON	1141 S. 3rd St		JACKSONVILLE 97530
6. Mary Ann Carlson	8/28/06	Mary Ann Carlson	1141 S. 3rd St.		J'ville 97530
7.					
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CIRCULATOR SIGNATURE Steve Carlson

PRINTED NAME OF CIRCULATOR STEVE CARLSON

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1141 S. 3rd St

JACKSONVILLE OR 97530

J

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. John Horwath	7-14-06	JOHN J. HORWATH	440 E. CALIFORNIA	P.O. Box 1059	97530
2. Catherine Horwath	7-14-06	Catherine Horwath	440 E California	P.O. Box 1059	97530
3. Helene C. Milligan	7-14-06	HeLene C. MILLIGAN	30 Beekman Sq.		97530
4. Paul K. Yates	7-14-06	PAUL K. YATES	430 E. CALIFORNIA	P.O. BOX 1862	97530
5. Laurel Hamilton	7-14-06	LAUREL HAMILTON	50 BEEKMAN SQ		97530
6. Sheryl L. Sandstrom	7/14/06	Sheryl L. Sandstrom	549 Beall Lane	P.O. Box 4403	97501
7. Ronald M. Jamo	7/14/06	Ronald M. Jamo	125 Beekman Sq		97530
8. Joan R. Yates	7/14/06	JOAN R YATES	430 E. CALIFORNIA ST	P.O. Box 1862	97530
9. Tami Brink	7-14-06	TAMI M. BRINK	40 Beekman Sq	—	97530
10. Mike Tyree	7-14-06	MIKE TYREE	60 Beekman Sq	—	97530

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CIRCULATOR SIGNATURE Joan R. Yates

PRINTED NAME OF CIRCULATOR JOAN R. YATES

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 430 E California St (PO Box 1862) Jacksonville, OR 97530

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
John R. Ellis	7-15-06	John R. Ellis	935 Beverly Way	P.O. Box 1328	Jacksonville 97530
Patricia M. Ellis	7-15-06	PATRICIA M. ELLIS	935 BEVERLY WAY	P.O. BOX 1328	"
Betty A. Parks	7-15-06	Betty A Parks	920 Beverly Way		"
David A. Jureen	7-15-06	David A Jureen	925 Beverly Way		"
Barbara J. Batt	07-15-06	Barbara J Batt	805 Beverly Way	Po Box 692	"
James R. Owens	7-16-06	James R Owens	605 Beverly Way		"
[illegible]	7-15-06	Paul Wardwell	743 Wildcat Ln.		"
Margaret Barnes	7/16/06	Margaret Barnes	757 Wildcat Ln		"
Karen Richter	7-16-06	KAREN RICHTER	125 Offord Circle	PO BOX 1574	"
[illegible]	7-16-06	Carolyn Kingsnorth	2550 012 Military Rd		Central Point 97502

9

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CIRCULATOR SIGNATURE W M Pepper 7-15-06

PRINTED NAME OF CIRCULATOR W. M. Pepper

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 875 Singler Lane Jacksonville OR 97530

J

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Barbara Casey	11/16/06	BARBARA CASEY	645 Sterling St		Jacksonville OR 97530
2. Alan Horobin	11/16/06	ALAN HOROBIN	2200 Daisy Creek Rd		Jacksonville 97530
3. Carol J Horobin	11/16/06	Carol J Horobin	2200 Daisy Creek Rd		Jacksonville 97530
4. Marilyn I Madden	11/16/06	MARILYN I MADDEN	526 Blackstone Alley	PO Box 1564	Jacksonville OR 97530
5. Linda S Matthews	11-16-06	Linda Matthews	700 G Street		Jacksonville, OR
6. Debra Ekstrom	11-16-06	Debra Ekstrom	515 Applegate St	P.O. Bx 1030	J'ville, OR 97530
7. Sandra Boucher	11-16-06	SANDRA BOUCHER	305 Jackson Creek Drive		J'ville OR 97530
8. Don L Boucher	11-16-06	DON L. BOUCHER	305 JACKSON CRK DR		JACKSONVILLE 97530
9. Edward H Hawkins	11-16-06	EDWARD H. HAWKINS	546 FAIRMONT	MED. OR.	MEDFORD, OR. 97541
10. Agnes Duffy Wetzel	11/16/06	AGNES DUFFY WETZEL	1055 N 5th St #97	JACKSONVILLE OR	JACKSONVILLE 97530

6

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CIRCULATOR SIGNATURE _____

PRINTED NAME OF CIRCULATOR Carolyn Kingsnorth

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 Old Military Rd. Central Point OR 97502

J

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Susan Maesen	8/29/06	Susan Maesen	670 Tumbleweed Trail		JV 97530
2. Frank Maesen	8-29-06	FRANK MAESEN	670 TUMBLEWEED TR		JV 97530
3. Carolee Rova	8/29/06	Carolee Rova	620 Powderhorn Dr.		JV 97530
4. Edward Rova	8/29/06	EDWARD J. ROVA	620 POWDERHORN DR.		JACKSONVILLE OR
5. Judith Lyon	8/29/06	Judith Lyon	815 Singler Lk		JACKSONVILLE OR
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CIRCULATOR SIGNATURE C

PRINTED NAME OF CIRCULATOR Carolyn Kingsnorth

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 Old Military Rd. Central Point OR 97502

J

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Ann Z. Doelman	7/15/06	ANN Z. DOELMAN	630 E. D ST	P.O. BOX 413	Jacksonville 97530
2. Florence H. Gain	7/15/06	FLORENCE GAIN	440 EAST C ST		Jacksonville 97530
3. William Centers	7/15/06	Bill Centers	350 8th St	POB 1893	Jacksonville 97530
4. Kelly Moore	7/17/06	Kelly Moore	220 N 8th		Jacksonville 97530
5. Jeffrey Howard	7/16/06	JEFFREY HOWARD	415 E C ST		JACKSONVILLE 97530
6. B. Nancy Kaylin	7/17/06	B. NANCY KAYLIN	735 EAST D ST.		JACKSONVILLE 97530
7. Daniel Kaylin	7/17/06	DANIEL KAYLIN	735 E. D STREET		JACKSONVILLE 97530
8. Cynthia LeBaron	7/17/06	CYNTHIA LEBARON	730 E. D ST.		JACKSONVILLE OR 97530
9. Carl LeBaron	7/17/06	CARL LeBARON	730 E. D St 97530		JACKSONVILLE 97530
10.					

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CIRCULATOR SIGNATURE Hans W. Doelman **DATE** 7/16/06

PRINTED NAME OF CIRCULATOR HANS W DOELMAN

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 630 D Str. JACKSONVILLE OR 97530

J

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
[illegible]	7-16-06	HENRY K. JAMES	545 S 4TH ST		97530
2. [illegible]	7-16-06	Andrew Rees	540 S. 4th St	# 1799	97530
3. [illegible]	7 16 06	SUSAN ENFIELD	610 S 4th	1797	97530
4. [illegible]	7-16-06	Susan Nehalsik	642 S 4th ~~Harbor~~	843 -	97530
5. [illegible]	7-16-06	Mary Finley	655 S. 3rd	1603	"
6. [illegible]	7/17/06	Jerry Hayes	715 Applegate St	1675	97530
7. Kathy Eck	7-17-06	KATHY ECK	975 APPLEGATE ST	975 P.O. BOX 1832	97530
8. Wally Eck	7-17-06	Wally Eck	975 APPLEGATE	POB 1832	97530
9. Catherine T. Hayes	7-17-06	Catherine T. Hayes	860 Applegate St.		97530
10. [illegible]	7-17-06	Geoff Brayer	315 S. Third St	PO Box 1301	97530
[illegible]	7-17-06	BERNARD F. BOUCHER	880 S. OREGON ST	PO BOX 83	

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CIRCULATOR SIGNATURE [illegible] 7/17/06

PRINTED NAME OF CIRCULATOR Mollie Davies

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 507 Applegate St
Jacksonville OR 97536

SHEET NUMBER: 6

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Sandra W. Berry	7/11/06	Sandra Berry	260 Coachman Dr.		Jacksonville 97530
2. George E. Thomas	7-11-06	George E. Thomas	295 Coachman Dr.		Jacksonville 97530
3. Jill Cobb	7-13-06	Jill Cobb	295 Coachman Dr		Jacksonville
4. Gabriel McCoy	7-13-06	Gabriel McCoy	265 Coachman Dr.		J'ville 97530
5. James W Ross	7-13-06	James Ross	5648 Foothill		MP Or
6. Thomas J. Green	7-13-06	Thomas J. Green	230 Coachman Dr		Jacksonville 97530
7. Bethel Moran	7-13-2006	Bethel Moran	320 Coachman Dr	P.O. Box 712	Jacksonville, OR 97530
8. Kimberly Hoyt	7/16/2006	Kimberly Hoyt	285 Surrey Dr.		J-ville, OR 97530
9. Elizabeth Knackstedt	7/16/2006	Elizabeth R. Knackstedt	660 Powderhorn Dr		Jville, OR
10. David Thompson	7/16/06	David Thompson	655 Powderhorn		J'ville OR 97530

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CIRCULATOR SIGNATURE George E. Thomas Jill Cobb

PRINTED NAME OF CIRCULATOR GEORGE E. THOMAS Jill Cobb

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 295 COACHMAN DR. JACKSONVILLE, OR 97530

J

SHEET NUMBER: 0

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	7/13/06	BARBARA ALLMAN	120 Taylor St.		Jacksonville 97530
2.	7/13/06	John Allman	120 Taylor St		JACKSONVILLE 97530
3.	7/13/06	JAMES MILLER	110 TAYLOR ST		JACKSONVILLE OR 97530
4.	7/13/06	YOLANDA HAYNES	105 Taylor St		Jacksonville OR 97530
5.	7/13/06	Gerald Haynes	105 Taylor St		Jacksonville 97530
6.	7/13/06	Velda Hauck	845 Valley Lane		J'ville 97530
7.	7/13/06	RENE BEAVERS	965 BEVERLY WY		J'ville 97530
8.	7/13/06	STEPHEN MATHEWS	700 G STREET		J'ville 97530
9.	7/13/06	LINDA MATHEWS	700 G STREET		J'ville 97530
10.	7-13-06	NANCY Cayle	100 JACKSON CREEK DR		J'ville 97530

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CIRCULATOR SIGNATURE C

PRINTED NAME OF CIRCULATOR Carolyn Kingsnorth

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2500 OLD Military Rd.
Central Point OR 97502

SHEET NUMBER: J

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
Marilyn Snowden	7-11-06	Marilyn Snowden	155 Jackson Creek Dr		Jacksonville 97530
2. Patricia A. Shute	7-11-06	Patricia A. Shute	205 Jackson Cr Dr	PO Box 190 Jacksonville	97530
3. Marilyn Conner	7-11-06	MARILYN CONNER	270 JACKSON CR. DR.		J'VILLE 97530
4. Ted Garriott	7-11-06	TED GARRIOTT	75 NUNAN ST.		97530
5. Nancy Garriott	7-11-06	Nancy Garriott	75 Nunan st		97530
6. Shannon McIntyre	7-11-06	SHANNON McINTYRE	200 NUNAN ST		97530
7. Linda Lillard	7-11-06	Linda Lillard	110 Nunan st		Jacksonville 97530
8. Joyce DAmato	7-12-06	Joyce DAMATO	1868 Old Stage Rd	Central Point	Central Point 97502
9. Georgene Van Orsow	7-13-06	Georgene Van Orsow	240 Cottage St	P.O. Box 1918	Jacksonville 97530
10. M Jones Van Orsow	7/13/06	M JONES VAN ORSOW	240 COTTAGE ST	PO BX 1918	J'VILLE 97530

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CIRCULATOR SIGNATURE C

PRINTED NAME OF CIRCULATOR Carolyn Kingsnorth

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 Old Military Rd.
Central Point OR 97502

SHEET NUMBER: J

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Jan S. Martin	7-13-06	Jan S. Martin	230 Stagecoach Dr.		J'ville, OR 97530
2.	7/13/06	ALAN WALKERLEY	230 Stage Coach Dr		✓ ✓
3. Carol Brooks	7/14/06	Carol Brooks	6480 Hwy. 238	PO Box 435	Jacksonville, OR 97530
4.	7/14/06	JEFF Shepherd	1345 PARRY CK.		Jville 97530
5.	7/15/06	Peter Hutchinson	845 Wells Fargo Loop		Jville 97530
6.	7/16/06	Eugenie Gilliam	1115 Wagon Trail	Box 1113	Jville 97530
7. Alice Wolf	7/14/06	Alice Wolf	4996 Coleman Ck		Medford 97501
8. Rosemary Adams	7/16/06	R. Adams	377 Benge St.	#54	ORE 97520
9. Marilyn Goodwell	7/17/06	Marilyn Goodwell	501 Juanita Dr.		Jacksonville 97530
10. Constance Jesser	7/17/06	CONSTANCE JESSER	884 Hill St.	PO Box 1869	97530 Jville

I hereby certify that every person who signed this sheet did so in my presence and I believe that each person is a qualified voter in Jackson or Josephine County, Oregon. I also certify that I have received no compensation for these signatures.

CIRCULATOR SIGNATURE C

PRINTED NAME OF CIRCULATOR Carolyn Kingsnorth

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 Old Military Rd.
Central Point OR 97502

SHEET NUMBER: J

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

THIS IS A JACKSON AND JOSEPHINE COUNTY PETITION. SIGNERS OF THIS PETITION SHOULD BE REGISTERED VOTERS IN ONE OF THESE COUNTIES.

TO THE BUREAU OF LAND MANAGEMENT:

Concentrated off-highway vehicle (OHV) usage is not compatible with the checkerboard of public and private land ownership in the Timber Mountain/John's Peak area. We, the undersigned electors, petition the Bureau of Land Management (BLM) to stop work on the Timber Mountain/John's Peak OHV Management Plan and Environmental Impact Statement, and remove the 1995 "OHV Area" designation from 16,250 acres of public land between Jacksonville, Murphy, and Grants Pass.

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Ray Foster	7·13	RAY FOSTER	326 LAURELWOOD		Jville 97530
2. Mike Sewitsky	7·13	mike Sewitsky	230 LAURELWOOD		Jville 97530
3. Leona Sewitsky	7-13	LEONA SEWITSKY	230 LAURELWOOD		Jville 97530
4. Ronit Giss	7/15	Ronit Giss	370 S. Oregon		Jville 97530
5. [illegible]	7·15	DAVID GIBB	370 S. OREGON ST.	P.O Box 298	97530
6. Molly Davies	7·15	Mollie Davies	507 Applegate St	PO Box 1146	97530
7. [illegible]	7·15	Josie Mwell	490 S. Oregon St.	PO Box 98	Jville 97530
8. [illegible]	7/15	Steven Wall	490 S. Oregon St.	PO Box 98	97530
9. Eugene Bennett	7.15	EUGENE BENNETT	355 So. OREGON ST.	PO BOX 328	97530
10. Carol Knapp	7/15/06	Carol R. Knapp	360 S. Oregon St.	P.O. Box 968	Jacksonville 97530

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CIRCULATOR SIGNATURE Bill Stanton

PRINTED NAME OF CIRCULATOR BILL STANTON

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 265 Laurelwood Dr Jville OR 97530

SHEET NUMBER: J

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PETITION I.D. - TMJP

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Larry B. Smith	7/11/06	Larry B. Smith	315 Laurelwood Dr.		97530 J'V
2. Linda L. Smith	7-11-06	Linda L. Smith	315 Laurelwood Dr.		Jacksonville 97530
3. John A. Giles	7.12.06	JOHN A. Giles	510 SCENIC DR		J'Ville 97530
4. Mark Daucher	7/12/06	MARK DAUCHER	265 LAURELWOOD DR.		J'Ville 97530
5. Dan Winterburn	7/12/06	DAN WINTERBURN	245 LAURELWOOD DR.		J'Ville 97530
6. Louise Hutchinson	7/13/6	LOUISE HUTCHINSON	325 Laurelwood Dr		97530 J'Ville
7. Eva E Hogan	7/13/06	EVA E HOGAN	380 Laurelwood Dr.		J'Ville 97530
8. [illegible]	13 July 06	Susan Lichtenwalner	330 Laurelwood Dr.		97530 J'Ville
9. JH Lichtenwalner	7/13/06	JH LICHTENWALNER	330 LAURELWOOD DR		97530 J'Ville
10. William M. Kelly	7/13/06	William M. Kelly	334 Laurelwood Dr		Jacksonville 97530

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CIRCULATOR SIGNATURE Bill Stanton 7/13/06

PRINTED NAME OF CIRCULATOR BILL STANTON

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 265 Laurelwood Dr J'Ville OR 97530

SHEET NUMBER: J

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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THIS IS A JACKSON AND JOSEPHINE COUNTY PETITION. SIGNERS OF THIS PETITION SHOULD BE REGISTERED VOTERS IN ONE OF THESE COUNTIES.

TO THE BUREAU OF LAND MANAGEMENT:

We, the undersigned residents of Jackson and Josephine Counties, hereby petition the Bureau of Land Management (BLM) to stop work on their Timber Mountain/John's Peak Off Highway Vehicle (OHV) Management Plan and Environmental Impact Statement and remove the arbitrary 1995 designation of 16,250 acres forOHV use, encompassing and negatively impacting those public lands, rural private landowners and the communities of Jacksonville, Rogue River, Gold Hill, Ruch, Applegate, Provolt, Murphy, and Grants Pass.

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Anne P. Tracy	7/14/06	Anne P. Tracy	320 Mary Ann Drive		J'ville 97530
2. David E. Wilson	7/14/06	David E. Wilson	1230 Westmont Drive		Jacksonville 97530
3. Gay R. Wilson	7-14-06	GAY R. WILSON	1230 WESTMONT DR		JACKSONVILLE 97530
4. Elke A. Goddard	7/15/06	Elke A. Goddard	1000 Westmont Dr.		Jacksonville 97530
5. Eric A. Swanson	7-15-06	Eric Swanson	115 Morton Way		Jacksonville 97530
6. J.A. Riddell	7-15-06	J.A. Riddell	550 Pair-A-Dice Ranch Rd.		Jacksonville 97530
7. Joan C. Swanson	7-15-06	Joan Swanson	115 Morton Wy.		J'ville 97530
8. Virginia S. Child	7-15-06	VIRGINIA S. CHILD	420 Mary Ann Dr		Jacksonville 97530
9. Andrew Clegg	7-15-06	ANDREW CLEGG	155 MORTON WAY		Jacksonville, OR 97530
10. Pauline Clegg	7-15-06	Pauline Clegg	155 Morton Way		Jacksonville, OR 97530

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CIRCULATOR SIGNATURE Spencer B. Child

PRINTED NAME OF CIRCULATOR SPENCER B. CHILD

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 420 MARY ANN DR. JACKSONVILLE, OR 97530

SHEET NUMBER:

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PETITION I.D. - TMJP

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Spencer B. Child	7-12-06	SPENCER B. CHILD	420 MARY ANN DR.		JACKSONVILLE 97530
2. Frederick D Schaff	7-12-06	FREDERICK D SCHAFF	405 Mary Ann Dr		Jacksonville OR 97530
3. [illegible]	7-12-06	Teresa Hren	400 Mary Ann Drive		Jacksonville OR 97530
4. Russell Johnson	7-12-06	Russell Johnson	522 Mary Ann Dr		Jackson Village 97530
5. Laurie Campbell	7-12-06	Laurie Campbell	540 Mary Ann Dr		Jville 97530
6. [illegible]	7-12-06	DAVID C. GODDARD	1000 WESTMONT DR.		J-ville 97530
7. [illegible]	7/13/06	Willard FIKE Jr	415 Richardson		JACKSONVILLE, OR 97530
8. [illegible]	7/13/06	RON HIREN	400 MARY ANN DR.		J-ville 97530
9. Christopher L Arnold	7-13-06	CHRISTOPHER L. ARNOLD	340 MARY ANN DR.		JACKSONVILLE 97530
10. Jill Tompkins	7/13/06	Jill Tompkins	480 Mary Ann Dr.		JACKSONVILLE 97530

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CIRCULATOR SIGNATURE Spencer B. Child

PRINTED NAME OF CIRCULATOR SPENCER B. CHILD

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 420 MARY ANN DR. JACKSONVILLE, OR 97530

J

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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TO THE BUREAU OF LAND MANAGEMENT:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
[illegible]	7-15-06	Carol Glasey	820 Singler Ln		Jacksonville 97530
[illegible]	7/15/06	Susan Goldman	970 Beverly	Box 1881	Jacksonville, OR 97530
[illegible]	7/15/06	Bruce W Garrett	910 Beverly way		"
[illegible]	"	Kathy Garrett	"		"
[illegible]	7/15/06	George Campbell	905 Beverly Way		"
[illegible]	7/15/06	Janet Campbell	905 Beverly Way		"
[illegible]	7/15/06	[illegible]	950 Beverly Way		"
[illegible]	7-15-06	Ira Richardson	910 Beverly way		"
[illegible]	7/15/06	Dale McLean	615 Beverly way		"
[illegible]	7/15/06	Tania McLean	900 Beverly way		"

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CIRCULATOR SIGNATURE Peggy Don Peffley 7/15/06

PRINTED NAME OF CIRCULATOR Peggy Don Peffley

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 875 Singler Lane Jacksonville OR 97530

J

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Irene Kartsounis	7/13/06	Irene Kartsounis	895 N 5th St - B 314		Jacksonville 97530
2.					
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CIRCULATOR SIGNATURE Mary J. Jones

PRINTED NAME OF CIRCULATOR MARY T. JONES

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 895 N. 5th St. #210 JACKSONVILLE OR 97530

J

SHEET NUMBER:

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1. Stephanie Horton	7/10/06	Stephanie Horton	870 Juanita, Jacksonville		Jacksonville, 97530
2. Linda Meyers	7-10-06	Linda Meyers	230 Wells Fargo		"
3. Vicki H. Davis	7-10-06	Vicki H. Davis	1055 N 5th St #147		Jacksonville 97530
4. Mary T. Jones	7-10-06	MARY T. JONES	825 N 5th ST	P.O. Box 427	JACKSONVILLE 97530
5. Elizabeth S. Purcell	7-10-06	Elizabeth S. Purcell	195 So 5th	PO Box 94	JACKSONVILLE OR
6. Nicholas Vorona	7-10-06	NICHOLAS VORONA	290 WELLS FARGO DR.		JACKSONVILLE, OR
7. G.L. Ferronato	7-10-06	G.L. FERRONATO	565 GROVE ST	PO Box 277	"
8. Shirley W. Blaul	7-10-06	SHIRLEY W. BLAUL	235 JACKSON CREEK		"
9. H. Joan Schultz	7-2006	H. JOAN SCHULTZ	460 Shafer Lane	'ville	97530
10. Georgia A. Bind	7/12/06	Georgia A. Bind	540 - Blackstone Circle	P.O. Box 58	J'ville 97530

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CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR Robert Kinlsnorth

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 Old Medford Central Point OR 97502

SHEET NUMBER: J

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. John Fenley	7/12/06	John Fenley	575 N. Oregon		Jacksonville
2. Tom Scott	7/12/06	Tom Scott	240 Gold Terrace	PO Box 1140	
3. Theodora Scott	7/12/06	Theodora Scott	240 Gold Terrace	Po Box 1140	
4. Paula S	7/12/06	PAULA STANBRIDGE	430 GOLD TERRACE		JACKSONVILLE 97530
5. Bruce Stanbridge	7/12/06	Bruce Stanbridge	430 Gold Turrace		Jacksonville OR 97530
6. Nevada Helmer	7/12/06	Nevada Helmer	420 Gold Terrace	P.O. Box 672	JACKSONVILLE OR 97530
7. Jack Fischer	7/12/06	JACK FISCHER	420 GOLD TERRACE	P.O. BOX 672	JACKSONVILLE, OR 97530
8. Julianna Fogliano	7/12/06	Julianna Fogliano	425 Gold Terrace		
9. E.T. Fogliano	7/12/06	E.T. Fogliano	425 Gold Terrace		JACKSONVILLE OR 97530
10. Annette Henriksen	7/17/06	Annette Henriksen	650 S. 5th St		

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CIRCULATOR SIGNATURE Marcia S. McQuillan

PRINTED NAME OF CIRCULATOR Marcia S. McQuillan

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 265 Gold Terrace Jacksonville, OR 97530

SHEET NUMBER: J

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Mary Ann Byrne	7-12-06	Mary Ann BYRNE	465 E. California St.	P.O. Box 1358	Jacksonville, OR 97503
2. Janie Stewart	7-12-06	Janie Stewart	5600 Adams Road		Talent, OR 97540
3. Colleen D. Eccleston	7-12-06	Colleen D. Eccleston	3955 S. Stage Rd. #86		MEDFORD OR 97501
4. Charleen N. Fike	7/12/06	Charleen N. Fike	415 Richard Way		Jacksonville, OR 97503
5. Sally Bell	7/13/06	Sally Bell	590 Carriage Ln	PO Box 159	Jacksonville 97530
6. James Mefes	7/12/06	James Mefes	580 Carriage Lane	PO Box 1315	Jacksonville OR 97530
7.					
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CIRCULATOR SIGNATURE C

PRINTED NAME OF CIRCULATOR Carolyn Kingsnorth

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 Old Military Rd.
Central Point OR 97502

J

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	7/13/06	Lynn Reordan	835 S. 3rd	635 N. 5th	Jville OR 97530
2.	7/13/06	Laura Tinghitella	635 S. Oregon	P.O. Box 45	Jville OR 97530
3.	7/13/06	Jessica Haynes	445 Applegate St	n/a	Jville/97530
4.	7/13/06	ROGER ROWERS	675 APPLEGATE		97530
5.	7-13-06	John R Schwab	945 Applegate St	Jacksonville	OR 97530
6.	7-13-06	Juanita G Schwab	945 Applegate St.	Jacksonville	OR 97530
7.	7-13-06	FAYE HAYNES	425 S. OREGON	Jacksonville	97530
8.	7-13-06	DON R HAYNES	425 APPLEGATE WY.	BOX 291	97530
9.	7.13.06	D. Ann Haynes	445 Applegate		97530
10.	7-13-06	BETTY BRANSFORD	630 Applegate St	BOX 674	Jville 97530

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CIRCULATOR SIGNATURE Mollie Davies 7/13/06

PRINTED NAME OF CIRCULATOR MOLLIE DAVIES

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 507 Applegate St Jacksonville OR 97530

SHEET NUMBER: 1

No Circulators for This Petition Are Being Paid

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Cindy Sleight	7-13	Cindy Sleight	860 Applegate St.		J-ville 97530
2. [illegible]	7-13-06	Mollie Davies	507 Applegate St.	P.O. Box 1146	" "
3. Geraldine H. White	7-14-06	Geraldine H. White	655 Applegate St		" "
4. Harold M. White	7-14-06	Harold M. White	655 Applegate St		" "
5. Ladena Romero	7-14-06	Ladena Romero	960 Applegate St	PO 1225	J'ville 97530
6. [illegible]	7-14-06	Terry Spayde	985 Applegate St.	PO Box 778	J'ville 97530
7. Gary Ekstrom	7-14-06	Gary Ekstrom	515 Applegate St.	PO Box 1030	J'ville 97530
8. Debra Ekstrom	7-14-06	Debra Ekstrom	515 Applegate St	PO Box 1030	J'ville 97530
9. Esther Hinger	7-14-06	Esther M. Hinger	325 S. 3rd St.		J'ville 97530
10. [illegible]	7-14-06	Cheryl Severson	365 5th 3rd	Box 491	97530

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CIRCULATOR SIGNATURE Mollie Davies 7/14/06

PRINTED NAME OF CIRCULATOR Mollie Davies

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 507 Applegate St Jacksonville OR 97530

J.

SHEET NUMBER: 2

No Circulators for This Petition Are Being Paid

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

THIS IS A JACKSON AND JOSEPHINE COUNTY PETITION. SIGNERS OF THIS PETITION SHOULD BE REGISTERED VOTERS IN ONE OF THESE COUNTIES.

TO THE BUREAU OF LAND MANAGEMENT:

Concentrated off-highway vehicle (OHV) usage is not compatible with the checkerboard of public and private land ownership in the Timber Mountain/John's Peak area. We, the undersigned electors, petition the Bureau of Land Management (BLM) to stop work on the Timber Mountain/John's Peak OHV Management Plan and Environmental Impact Statement, and remove the 1995 "OHV Area" designation from 16,250 acres of public land between Jacksonville, Murphy, and Grants Pass.

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Mary K. McIver	7-14-06	Mary K. McIver	460 S. 4th St.	—	Jacksonville OR 97530
2. Dorland Offenbacher	7-14-06	DORLAND OFFENBACHER	465 S 3RD.	PO BOX 266	JACKSONVILLE OR 97530
3. Bruce Laird	7-14-06	Bruce Laird	460 S 3rd	P.O. Box 498	" "
4. Julia Hagstrom	7-14-06	Julia Hagstrom	470 S. 3rd		J'ville, OR 97530
5. Elizabeth Kellogg	7-14-06	ELIZABETH KELLOGG	570 S. 3rd	P.O. Box 752	97530
6. Leon Kellogg	7-14-06	LEON KELLOGG	570 S. 3rd	P.O. Bx 752	97530
7. Bill Stanton	7/15/06	Bill Stanton	265 Laurel Wd		97530
8. Shannon Ryan	7/15/06	Shannon Ryan	717 Dawson W	PO Box 205	97530
9. Stephen S Smith	7/15/06	STEPHEN S SMITH	420 S OREGON	244 S GRAPE ST MEDFORD	97501
10. Elizabeth P Smith	7/15/06	ELIZABETH P SMITH	420 S OREGON	244 S Grape St Medford 97501	97501

I hereby certify that every person who signed this sheet did so in my presence and I believe that each person is a qualified voter in Jackson or Josephine County, Oregon. I also certify that I have received no compensation for these signatures.

CIRCULATOR SIGNATURE Mollie Davies 7/15/06

PRINTED NAME OF CIRCULATOR Mollie Davies

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 507 Applegate St Jacksonville OR 97530

J

SHEET NUMBER: 3

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

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TO THE BUREAU OF LAND MANAGEMENT:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Jeanne Sherman	7-16-06	Jeanne Sherman	1020 S. 3rd St.	P.O.B. 549	Jville
2. Corrine Belau	7/16/06	CORRINE BELAU	1050 S 3RD. ST.		JVILLE
3. Christie Van Alton	7/15/06	CHRISTIE VAN ALTON	1045 S. 3rd ST	—	97530
4. [illegible]	7.15.06	Greg Billingsley	1115 S 3rd St.	PO Box 751	Jacksonville 97530
5. Gayle Leslie	7/15/06	Gayle Leslie	1055 S Third	—	Jville
6. Michael Chamberlain	7-15-06	Michael Chamberlain	1015 S 3rd	POB 943	Jvl
7. W D Lester Jr	7-15-06	W D Lester, Jr	980 South 3rd St		Jvl
8. D. Healy	7.15.06	D. HEALY	970 S. 3rd St.		"
9. George Corrigan	7-15-06	George Ann Corrigan	565 3rd	PO Box 530	J'ville
10. Judith Humphrey	7-15-06	Judith Humphrey	745 S. 3rd	—	J'ville

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CIRCULATOR SIGNATURE Mollie Davies 7/15/06

PRINTED NAME OF CIRCULATOR Mollie Davies

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 507 Applegate St Jacksonville OR 97530

SHEET NUMBER: 4

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

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TO THE BUREAU OF LAND MANAGEMENT:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. [illegible]	7-15-06	Dave Gonick	760 S. 3rd		Jville 97530
2. [illegible]	7-15-06	Julie Gonick	760 S 3rd St		Jville 97530
3. [illegible]	7-15-06	Cheri Walker	830 S. 3rd St	PO Box 1270	" "
4. [illegible]	7/15/06	N.L. Ricks	840 S 3rd	P.O. Box 918	" "
5. [illegible]	7/15/06	Havis Harney	865 So. 3rd St.		J'ville 97530
6. [illegible]	7/16/06	Judith A Zerull	410 So. 3rd St.		" "
7. [illegible]	7-16-06	James M Cook	260 S. 4th	Box 1825	Jville 97530
8. [illegible]	7-16-06	Cheryl L. Dykes	425 S. 4th		"
9. [illegible]	7/16/06	Byron Marron	505 S. 4th	Box 1875	J'ville
10. [illegible]	7-16-06	Linda Marron	505 S. 4th St	#1875	97530

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CIRCULATOR SIGNATURE [illegible] 7/16/06

PRINTED NAME OF CIRCULATOR Mollie Davies

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 507 Applegate St
Jacksonville OR 97530

J

SHEET NUMBER: 5

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

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TO THE BUREAU OF LAND MANAGEMENT:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Mark Mikolosovic	7/12/06	Mark Mikolosovic	530 G St.		Jacksonville 97530
2. Lee Ann Peterson	7/12/06	Lee Ann Peterson	860 Singler Ln		"
3. Rod R Peterson	7-12-06	Rod R Peterson	"		"
4. Jean S. Fowler	7-12-06	Jean S. Fowler	870 Singler Lane		"
5. Edmund D. Fowler	7-12-06	Edmund D. Fowler	"		"
6. Melanie Strachan	7/12/06	Melanie Strachan	850 Singler Ln. J-ville		"
7. Ron Strachan	7/12/06	Ron Strachan	850 Singler Ln Jville		"
8. R.C. Rouchon	7/12/06	Richard Rouchon	830 Singler Ln Jville		"
9. John McCulley	7/12/06	John McCulley	840 Singler Lane		"
10. Bylle McCulley	7/12/06	Bylle McCulley	840 Singler Ln		"

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CIRCULATOR SIGNATURE Peggy Lou Peffley 7/12/06

PRINTED NAME OF CIRCULATOR Peggy Lou Peffley

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 875 Singler Lane Jacksonville OR 97530

SHEET NUMBER: J

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Raymond P Dvorak	7-14-06	RAYMOND P DVORAK	1055 N 5th ST #29		Jacksonville 97530
2. Evelyn Daly	7-14-06	EVELYN DALY	1055 N 5th #21		Jacksonville 97530
3. Kathryn Scott	7-15-06	KATHRYN J. SCOTT	" " " #83		"
4. Donna Lee Norvell	7-18-06	DONNA LEE NORVELL	1055 N 5th #39		JACKSONVILLE 97530
5. Jeanine Jenkins	7-17-06	JEANINE JENKINS	1055 N 5th St. #57		JVLL 97530
6. E H Stedman	7/21/06	E. H. STEDMAN	946 S. 3RD ST.		J.VILLE 97530
7. Lillian Stedman	7-21-06	LILLIAN STEDMAN	946 S. 3RD ST		JVILLE 97530
8. Lois Bateham	7/26/06	Lois Bateham	1055 N. 5th #3		Jville, OR 97530
9. Sharon Wesner Becker	7-26-06	Sharon Wesner Becker	1055 N. 5th St., #117		Jacksonville 97530
10.					

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CIRCULATOR SIGNATURE Sharon Wesner Becker

PRINTED NAME OF CIRCULATOR Sharon Wesner Becker

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1055 N. Fifth St., #117
Jacksonville, OR 97530

SHEET NUMBER: J

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Diane M. Moore	8/26/06	Diane M. Moore	645 Cardwell Ct		Jacksonville 97530
2. Cindy Furrow	8-26-06	Cindy Furrow	117 Flower Hill Dr		J'ville 97530
3. Elizabeth Corethers	26 Aug 06	Elizabeth Corethers	447 Merlee Circle		Eagle Point 97524
4. Beverly Helvie	8-26-06	BEVERLY HELVIE	175 VINTAGE CIRCLE		JACKSONVILLE 97530
5. [illegible]	8-26-06	STEPHEN R. CASALEGGIO	805 S. 3rd St.	P.O. 1411	Jacksonville 97530
6. [illegible]	8-26-06	RICHARD H. MEYERS	230 Wau Fazia Drive		Jacksonville 97530
7. [illegible]	8-26-06	Jeanne White Wilson	135 Offord Circle		Jacksonville 97530
8. [illegible]	8/26/06	Lee J Siedlecki	131 Sky Hawk Dr.		Eagle Point 97524
9.					
10.					

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CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR ROBERT C KINGSNORTH

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 OLD MILITARY RD
CENTRAL POINT OR 97502

SHEET NUMBER: J

No Circulators for This Petition Are Being Paid

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Wayne Leinfelder	7/15/06	Wayne Leinfelder	358 Kanaka Flats	P.O. Box 911 Jacksonville OR 97530	
2. Hedy Schoonover	7/15/06	Hedy Schoonover	138 Kanaka Flats	P.O. Box 323	J'Ville 97530
3. Louis A. Sequeira	7/15/06	Louis A. Sequeira	138 Kanaka Flats	PO Box 323	J'Ville 97530
4.					
5.					
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10.					

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CIRCULATOR SIGNATURE C

PRINTED NAME OF CIRCULATOR Carolyn Kingsnorth

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 Old Military Rd. Central Point OR 97502

SHEET NUMBER: 3

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	7-15-06	Steven Pelson	420 D St	Box 1154	J-ville 97530
2. Carrie Phillips	7/16/06	Carrie Phillips	630 N 8th St.	Po Box 1537	J'ville 97530
3.	7/16/06	Charles D. Phillips	630 N 8th St.	Po Box 1537	J'ville 97530
4.	7/16/06	Steve Goodling	640 8th St.	—	J-ville 97530
5.	7/16/06	Carol Goodling	640 Eighth St.		J'ville 97530
6. Martha L. Davis	7/16/06	Martha L. Davis	535 E. C St.	P.O. Box 1386	Jville 97530
7. Phyllis J. Schroeder	7/17/06	Phyllis J. Schroeder	3028 Shelterwood Circle		Medford OR 97504
8. Margie J. Cranston	7-17-06	MARGIE J. CRANSTON	3506 New Ray Rd.		Central Point 97502
9.					
10.					

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CIRCULATOR SIGNATURE Ann Z Doelman

PRINTED NAME OF CIRCULATOR ANN Z DOELMAN

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 630 E. D St Jacksonville 97530

SHEET NUMBER: J

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PETITION I.D. - TMJP

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
[illegible]	7.15.06	Tonya Poitevint	885 Singler Ln.		Jacksonville OR 97530
[illegible]	7.15.06	Mitch Poitevint	885 Singler Ln.		"
[illegible]	7.16.06	Sydney Brown	915 Beverly Way		"
[illegible]	7/17/06	Jessica Diaz	900 Beverly Way		"
[illegible]	7/17/06	Stanley W. Leon	815 Singler Ln		"
[illegible]	7/17/06	Judith L Leon	815 Singler Ln		"

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CIRCULATOR SIGNATURE Peggy Lou Paffley 7/16/06

PRINTED NAME OF CIRCULATOR Peggy Lou Paffley

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 875 Singler Lane Jacksonville OR 97530

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Agnes A. Weitzel	07/11/06	AGNES A WEITZEL	1055 N 5th St #97		JACKSONVILLE 97530
2. Margaret Baird	7/11/06	MARGARET BAIRD	1055 N 5th #91		Jacksonville 97530
3. Dale L Hile	7/11/06	DALE L. HILE	1055 N 5th #124		Jacksonville 97530
4. Donald E. Bo	7-11-06	DONALD E. BOSS	1055 N 5TH #45		JACKSONVILL 97530
5.	7-11-06	Jo A. Smith	645 Powderhorn Dr.		Jacksonville OR 97530
6. Joyce Anderson	7-12-06	Joyce Anderson	1055 N. 5th #53		Jacksonville Or
7. Alice Hile	9-12-06	ALICE Hile	1055 No 5th 85		"
8. Helen Bayne	7-12-06	Helen BAYNE	1055 N. 5th #41		"
9. Jeanie E. Adams	7/13/06	Jeanie E. Adams	1055 N. 5th #144		Jacksonville 97530
10. Patricia V. Garcia	7-14-06	Patricia V. Garcia	1055 N. 5th #14		"

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CIRCULATOR SIGNATURE Sharon Wesner Becker 7-11-06

PRINTED NAME OF CIRCULATOR SHARON WESNER BECKER

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1055 N. Fifth St., #117 Jacksonville, OR 97530

SHEET NUMBER: J

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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TO THE BUREAU OF LAND MANAGEMENT:

We, the undersigned residents of Jackson and Josephine Counties, hereby petition the Bureau of Land Management (BLM) to stop work on their Timber Mountain/John's Peak Off Highway Vehicle (OHV) Management Plan and Environmental Impact Statement and remove the arbitrary 1995 designation of 16,250 acres forOHV use, encompassing and negatively impacting those public lands, rural private landowners and the communities of Jacksonville, Rogue River, Gold Hill, Ruch, Applegate, Provolt, Murphy, and Grants Pass.

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
[illegible]	6/9/06	Elizabeth T. Ayers	670 Garner rd		Cave Junction OR 97523
Diana Coogle	6/12/06	Diana Coogle	6000 East Fork Rd ~~9700 Thompson Cr. Rd~~	9700 Thompson Cr. Rd.	Applegate 97530
Matthew McKinnon	6/12/06	Matthew McKinnon	373 Wightman St		Ashland 97520
Susan Kelley	6-12-06	Susan Kelley	1801 Sykes Creek Rd		Rogue River 97537
Dominick Della Sala	6-12-06	Dominick Della Sala	3072 Andersen Cr Rd		Talent, OR 97540
Elizabeth J. Eggers	6-12-06	Elizabeth J. Eggers	221 Granite St		Ashland OR 97520
~~[illegible]~~	~~6-12-06~~	~~James P. Dice~~			
Cindy Deacon Williams	6/12/06	Cindy Deacon Williams	4393 Pioneer Rd		97501
George J. Badura	6/12/06	George J. Badura	2840 David Lane		Medford 97504
Francis Andrew	6/12	FRANCIS ANDREW	216 Scenic DR.	~~97520 Ashland OR~~	Ashland 97520

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CIRCULATOR SIGNATURE Christopher Brett

PRINTED NAME OF CIRCULATOR CHRISTOPHER BRETT

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 5317 THOMPSON CR. RD APPLEGATE OR 97530

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PETITION I.D. - TMJP

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. [signature]	9/15/06	JONATHAN BARBO	58 THEO DR.		TALENT, 97540
2.					
3.					
4.					
5.					
6.					
7.					
8.					
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10.					

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CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR KAREN HIGGINS

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 9736 HWY 238
JACKSONVILLE OR 97530

SHEET NUMBER:

No Circulators for This Petition Are Being Paid

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Kathleen Thompson	7/16/06	Kathleen Thompson	655 Powderhorn		J'ville 97530
2. Phil Baker	7/16/06	Phil Baker	570 Powderhorn Dr.		" "
3. Marylou Baker	7-16-06	Marylou Baker	570 Powderhorn Dr.		" 97530
4. Sue Isaak	7-16-06	Sue Isaak	560 Powderhorn Dr.	P.O. Box 926	" 97530
5. John Isaak	7-16-06	John Isaak	560 Powderhorn Dr.	P.O. Box 926	" 97530
6. Art Stevens	7/16/06	Art Stevens	610 Powderhorn Dr.		97530
7. Karen Hineman	7/16/06	Karen Hineman	600 Powderhorn Dr.		97530
8. Patricia Stick	7/16/06	Patricia S. Stick	550 Coachman Dr.		97530
9. Julius Penzes	7-16-06	Julius Penzes	330 Coachman Dr.		97530
10. Eva Penzes	7/16/06	EVA PENZES	330 COACHMAN DR		97530

I hereby certify that every person who signed this sheet did so in my presence and I believe that each person is a qualified voter in Jackson or Josephine County, Oregon. I also certify that I have received no compensation for these signatures.

CIRCULATOR SIGNATURE George E. Thomas Jill Cobb 7/16/06

PRINTED NAME OF CIRCULATOR GEORGE E. THOMAS Jill Cobb

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 295 COACHMAN DR JACKSONVILLE, OR 97530

SHEET NUMBER: J

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Willard Peffley	7-12-06	Willard Peffley	875 Singler Lane		Jacksonville, 97530
2. Linnea Fox	7-12-06	Linnea Fox	880 Singler Ln.		Jacksonville OR 97530
3. James R Fox	7-12-06	James R Fox	880 Singler Ln		Jacksonville or 975
4. Michael Schwartz	7/13/06	Michael Schwartz	825 Singler Ln.		Jacksonville OR 975
5. Jill Kaufpech	7/13/06	Jill Kaufpech	960 Beverley Way		"
6. Kristin Schwartz	7/14/06	Kristin Schwartz	825 Singler Ln.		"
7. Eileen Goldwyn	7/14/06	EILEEN GOLDWYN	120 OFFORD CIRCLE	PO BOX 1803	Jacksonville OR 97
8. Eleanor M Celler	7/14/06	Eleanor M Celler	305 N. Sixth	P O Box 303	Jacksonville
9. E. Rudolph	7/14 06	Eleanor Rudolph	150 - Offord Circle		"
10. John Glasor	7/15/06	John Glasor	820 Singler Lane		Jacksonville 975 3

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CIRCULATOR SIGNATURE Peggy Lou Peffley

PRINTED NAME OF CIRCULATOR Peggy Lou Peffley

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 875 Singler Lane Jacksonville 97530

SHEET NUMBER: J

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Barbara Engel	7/13/06	BARBARA ENGEL	975 BEVERLY WAY		Jacksonville 97530
2. Seymour J Engel	7/14/06	Seymour J Engel	975 Beverly Way		"
3. Ruth E Root	7-14-06	Ruth E. Root	115 Offord Circle		"
4. Robert C. Root	7-14-06	Robt. C. Root	115 Offord Circle		"
5. Hubert L. Smith	7-14-06	Hubert L. Smith	155 Offord Circle		"
6. Sharon Moulin	7-14-06	SHARON MOULIN	534 N. OREGON ST		"
7. Wallace Mounts	7-14-06	WALLACE MOUNTS	180 OFFORD CIR		"
8. Ralf Peck	7/14/06	RALF PECK	170 OFFORD CIR		"
9. Kathryn Lyon	7/15/06	KATHRYN LYON	815 SINGLER LN		"
10. Stanley W. Lyon Sr	7/15/06	Stanley W Lyon Sr	815 Singler Ln		"

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CIRCULATOR SIGNATURE W M Peffley 7-15-06

PRINTED NAME OF CIRCULATOR WM PEFFLEY

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 815 Singler Lane Jacksonville OR 97530

SHEET NUMBER: J

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
[illegible]	8/10/06	JOHN E. VAN SYOC SR	18290 HWY 238	—	GRANTS PASS 97527
[illegible]	8-15-06	CAROL D. VAN SYOC	18290 HWY 238	—	GRANTS PASS 97527
[illegible]	8/21/06	JOHN E. VAN SYOC	18290 HWY 238	—	GRANTS PASS 97527
[illegible]	8-30-06	BILL CHRISTENSEN JR	181 UPPER APPLEGATE RD	—	JACKSONVILLE 97535
[illegible]	9-4-06	Peggy Olson	18080 Hwy 238		Grants Pass 97527
[illegible]	9-4-06	JAMES N. OLSON	18080 Hwy 238		Grants Pass 97527
[illegible]	9/16/06	Kelly Quaid	18340 Hwy 238		Grants Pass 97527
[illegible]	9/16/06	Cindy A Quaid	18340 Hwy 238		Grants Pass 97527
[illegible]	9/27/06	Stephen Rapp	17900 Hwy 238		Grants Pass 97527
10.					

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CIRCULATOR SIGNATURE [illegible]

PRINTED NAME OF CIRCULATOR JOHN E. VAN SYOC, SR.

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 18290 HWY. 238
GRANTS PASS, OR 97527

SHEET NUMBER: 1

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Olga O'Neal	6/15/06	Olga O'Neal	1625 SE N St Apt C206		Grants Pass 97526
2. Jennifer O'Neal-King	06/18/06	Jennifer O'Neal-King	2140 Foots Creek Rd.		Gold Hill 97525
3. Thomas King	06/22/06	Thomas King	2140 Foots Creek Road		Gold Hill, 97525
4. Elke Wolfe	06/30/06	Elke Wolfe	1111 Foots Cr. Rd		Gold Hill OR 97525
5. David E Wolfe	6/30/06	David E Wolfe	1111 Foots Cr. Rd		Gold Hill OR 97525
6.					
7.					
8.					
9.					
10.					

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CIRCULATOR SIGNATURE Gary E. O'Neal

PRINTED NAME OF CIRCULATOR GARY E. O'NEAL

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2092 FOOTS CREEK RD. GOLD HILL, OR 97525

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Arild K. Barrett	7/12/06	Arild K. Barrett	865 Singler Ln.		Jacksonville 97530
2. Lora K. Barrett	7-12-06	Lora K. Barrett	865 Singler Ln		Jacksonville 97530
3. Ted Toreson	7-12-06	TED TORESON	855 SINGLER LN.		Jacksonville 97530
4. Bonnie Toreson	7-12-06	BONNIE TORESON	855 SINGLER LN.		Jacksonville 97530
5. Peggy Lou Peffley	7-12-06	Peggy Lou Peffley	875 Singler Ln		Jacksonville 97530
6. Betty J. Treffren	7-13-06	Betty J. Treffren	750 Applegate St	PO Box 952	Jacksonville OR 97530
7. Wayne K Treffren	7-13-06	Wayne K Treffren	750 Applegate St	P.O. Box 952	J'ville OR 97530
8. James L. Ray	7-13-06	JAMES L. RAY	835 SINGLER LN		J'ville OR 97530
9. Linda S. Ray	7/13/06	LINDA S. RAY	835 SINGLER LANE		J'ville 97530
10. Mary Ann Kiel	7.13.06	Mary Ann Kiel	995 Beverly		Jacksonville

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CIRCULATOR SIGNATURE W. M. Peffley 7-13-06

PRINTED NAME OF CIRCULATOR W. M. Peffler

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 875 Singler Lane Jacksonville, OR 97530

SHEET NUMBER: J

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	SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	Arlene Aron	6/9/06	Arlene Aron	1684 Humbug Creek		Jville 97530
2.	Claude Aron	6/9/06	CLAUDE ARON	1684 Humbug Creek		Jville 97530
3.	Tana Domecq-Davis	6/9/06	TANA DOMECQ-DAVIS	4550 Little Applegate Rd		Jville 97530
4.	Julie Traverse	6/9/06	JULIE TRAVERSE	1629 Slagle Creek Rd		G.P. OR 97527
5.	Bob Denman	6/9/06	Bob Denman	1629 Slagle Cr Rd		GP OR 97527
6.	Bonnie McKelligott	6/10/06	Bonnie McKelligott	1617 Slagle Creek Rd		GP 97527
7.	John McKelligott	6/10/06	JOHN McKELLIGOTT	1617 SLAGLE CK RD		GP 97527
8.	Patricia R Kellogg	6/11/06	PATRICIA R KELLOGG	1190 SLAGLE CK RD GRANTS PASS 97527		GRANTS PASS OR 97527
9.	James R Carr	6-11-06	JAMES R CARR	1831 Slagle Creek Rd		Grants Pass 97527
10.	Annette Parsons	6-10-06	Annette Parsons	1831 Slagle Cr Rd		Grants Pass OR 97527

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CIRCULATOR SIGNATURE: R Kingsnorth

PRINTED NAME OF CIRCULATOR: R C KINGSNORTH

CIRCULATOR'S ADDRESS (Street, City, and Zip Code): 2500 OLD MILITARY CP 97502

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
Amy Blossom	06/30/06	Amy Blossom	140 Susan Ln	Ashland OR	Ashland 97520
Colleen Godfrey	7/1/06	Colleen Godfrey	9907 Old Stage Rd	PO Box 390	Gold Hill 97525
Mike Godfrey	7/1/06	MIKE GODFREY	9907 OLD STAGE RD	PO BOX 390	GOLD HILL 97525
[illegible]	7/2/06	JAMES P. MOORE JR	1217 Park St		Ashland 97520
[illegible]	7/1/06	Anne V. Richards	154 SS Jessica LN		Ashland 97520
Cindy Parks	7/1/06	Cindy Parks	829 Reiten DR		Ashland 97520
[illegible]	7/1/06	ANNE PIEROTTI	842 Clay St		Ashland 97520
[illegible]	7/1/06	Craig Grossmann	880 Ashland St		Ashland 97520
[illegible]	7/2/06	Ingrid Johansen	516 Wagner Ck		Talent, OR 97540
[illegible]	7/2/06	Zoë Eddenhart	5329 SW Nebraska	PO Box 80798	PDX 97221

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CIRCULATOR SIGNATURE Chris Brat

PRINTED NAME OF CIRCULATOR CHRISTOPHER BRAT

CIRCULATOR'S ADDRESS (Street, City, and Zip Code)

for Th[illegible]etition
Are Being Paid

PETITION I.D. - TMJP

Only sign this pe[illegible]n once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	NO initials CITY AND ZIP CODE
Joseph Flaherty	10 June 2006	Joseph Flaherty	3681 Lone Mtn. Rd.	PO Box 375	O'Brien 97534
Patricia Rorder	June 10 06	Patricia Rorder	7207 Rockydale Rd	Pn 2562	C.J. 97523
[illegible]	6/10/06	SHIRLEE MITCHELL	317 NE D St #2		G.P. 97526
[illegible]	6/10/06	PETER M CORENTZEN	439 APPALOOSA RD. O'BRIEN OR	POB 185	O'BRIEN 97534
Susan Norman Jones	6/10/06	SUSAN NORMAN JONES	12330 Takilma Cave Junction OR 97523		Cave Junction OR 97523
Holly Shine	6/10/06	Holly Shine	PO. 3304 Kerby	—	—
[illegible]	6/13/06	JOHN H WOODWARD	9351 TAKILMA CJ 97523		
[illegible]	6/13/06	Linda Carey	9351 TAKILMA 97523		
[illegible]	6/14/06	LARRY FRANCIS	2626 THOMPSON CREEK ROAD APPLEGATE 97530		APPLEGATE 97530
Wesley M. Cretney	7/2/06	Wesley M. Cretney	1500 L.FK. HUMBUG CK. APPLEGATE, OR	—	APPLEGATE 97530

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CIRCULATOR SIGNATURE Chris Brett

PRINTED NAME OF CIRCULATOR Molly Ayers and Chris Brett

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 5317 Thompson Cr. Rd Applegate OR 97530

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
[illegible]	May 9	Lance Thorne	9545 Takilma Road		Cave Junction 97523
[illegible]	6/9/06	Liza Kelz	9545 Takilma Rd	same	Cave Junction 97523
[illegible]	6/9/06	Carol McBride	9545 Takilma Rd		Cave Junction OR 97523
[illegible]	6/9/06	Sarah L. Kuhn	9545 Takilma Rd		Cave Junction OR 97523
[illegible]	6/9/06	James. McBride	9545 Takilma Rd		Cave Junction OR 97523
[illegible]	6/9/06	Derek Cline	9545 Takilma Rd	Same	Cave Junction OR 97523
Lee Currier	6-11-06	Lee Currier	3090 Caves hwy	Same	Cave Junction OR 97523
[illegible]	7-2-06	Paul W. Tipton	3090 Humbug Creek Rd. Applegate 97530	same	
[illegible]	7-2-06	Myron Cretney	570 Center way Ashland, OR 97520		Ashland 97520
[illegible]	7/2/06	Alan Sorin	1111 W. Humbug Creek Rd. Applegate Or 97530	same	Applegate, Or 97530

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CIRCULATOR SIGNATURE Chris Brett

PRINTED NAME OF CIRCULATOR MOLLY AYERS AND CHRIS BRETT

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 5317 THOMPSON CR. RD APPLEGATE OR 97530

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
	6/10-06	Roy LEON	103 Taurus Lane		GT 97523
	6/22/06	Nancy Adams	6909 Thompson Creek Rd	Apple	97530
	6/22/06	Tony L Dallas	same		97530
	7/2/06	Tyler Davis	1337 Lt Fk Humbug Cr Rd		Applegate 97530
	7/2/06	Chelsea Rose	1337 Lt FK Humbug Crk R		Applegate 97530
Patricia L. Gehres	7/2/06	Patricia L. Gehres	776 W. Humbug Crk. Rd.		Applegate 97530
Barbara Jones	"	BARBARA JONES	1340 Millpond Rd		Ashland, OR 97520
Donna McChesney	7/2/06	DONNA McCHESNEY	500 WAGNER CREEK RD		TALENT OR 97540
Janis Chapman	7/2/06	JANIS CHAPMAN	1183 Lt FK. Humbug Rd		Applegate 97530
Rosina Crepey	7/2/06	ROSINA CREPEY	1500 W. FORK HUMBUG CR. RD.		APPLEGATE 97530

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CIRCULATOR SIGNATURE Chris Bratt

PRINTED NAME OF CIRCULATOR Mary Ayers & Christopher Bratt

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 5347 Thompson Cr. Rd. Applegate OR 97530

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
Alan H. Miller	6/12/06	Alan H. Miller	1102 Slagle Crk RD		Grants Pass 97527
Simon Miller	6/12/06	Simon Miller	1102 Slagle Crk Rd.		Grants Pass 97527
Susanne Shawhan	6/12/06	Susanne Shawhan	1090 Slagle Crk Rd		Grants Pass 97527
Kevin Shawhan	6/12/06	KEVIN SHAWHAN	1090 Slagle Crk Rd		GRANTS PASS, OR 97527
John Swindle	6 12 06	John Swindle	1179 Slagle Cr Rd.		Grants Pass 97527
Mary Ann Swindle	6/12/06	MARY ANN SWINDLE	1179 Slagle Creek Rd		Grants Pass 97527
Maggie Purves	6-12-06	MAGGIE PURVES	1190 Slagle Crk Rd		GRANTS PASS 97527
Cassie Conner	6-12-06	CASSIE CONNER	1494 Kubli Rd		GP 97527
Gary Conner	6/12/06	GARY CONNER	1494 Kubli Rd		GP 97527
Karen Sinclair	6/13/06	Karen Sinclair	1102 Slagle Cr Rd.		Grants Pass 97527

I hereby certify that every person who signed this sheet did so in my presence and I believe that each person is a qualified voter in Jackson or Josephine County, Oregon. I also certify that I have received no compensation for these signatures.

CIRCULATOR SIGNATURE Patricia R Kellogg

PRINTED NAME OF CIRCULATOR PATRICIA R KELLOGG

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1190 SLAGLE CRK RD (JACKSON CO.)
GRANTS PASS, OR 97527
846-7412

SHEET NUMBER:

#1

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

THIS IS A JACKSON AND JOSEPHINE COUNTY PETITION. SIGNERS OF THIS PETITION SHOULD BE REGISTERED VOTERS IN ONE OF THESE COUNTIES.

TO THE BUREAU OF LAND MANAGEMENT:

We, the undersigned residents of Jackson and Josephine Counties, hereby petition the Bureau of Land Management (BLM) to stop work on their Timber Mountain/John's Peak Off Highway Vehicle (OHV) Management Plan and Environmental Impact Statement and remove the arbitrary 1995 designation of 16,250 acres forOHV use, encompassing and negatively impacting those public lands, rural private landowners and the communities of Jacksonville, Rogue River, Gold Hill, Ruch, Applegate, Provolt, Murphy, and Grants Pass.

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
[illegible]	6/15/06	TORES WICKERSIK	PO Box 3396	2280 Brownell	Applegate OR 97530
[illegible]	6/16/06	RENEE THOMPSON	1085 KUBLI RD		G.P. 97527
[illegible]	6/17/06	Michael Six	1601 Slagle Creek		GP 97527
[illegible]	6/17/06	Theresa Baker Becker	4099 Humbug Cr. Rd	Applegate, OR	97530
[illegible]	6-17-06	Kristine J. Harleen	856 Slagle Crk Rd	Applegate, OR	97530
[illegible]	6/17/06	Rick G. Price	856 Slagle Crk RD	Applegate OR	97530
[illegible]	6/17/06	SUSAN L. BRATT	1110 SLAGLE CK. RD	P.O. Box 3248 APPLEGATE OR.	97530
[illegible]	6/17/06	Gregire Bratt	1110 Slagle Creek Road	P.O. Box 3248 Applegate, OR	97530
[illegible]	6-24-06	Nick E Boorsu	1415 Kubli RD		97527
[illegible]	6-24-06	VICKY VAN SAUN	177 SLAGLE CK RD	GRANTS PASS OR	97527

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CIRCULATOR SIGNATURE Patricia R Kellogg

PRINTED NAME OF CIRCULATOR PATRICIA R. KELLOGG

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1190 SLAGLE CRK RD (JACKSON CO.)
GRANTS PASS, OR 97527
846-7412

SHEET NUMBER: #

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PETITION I.D. - TMJP

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
Judy Crowe	6/24/06	Judy Crowe	15080 N. Applegate Rd.	ø	97527
David Lorenzen	6/24/06	DAVIN LORENZEN	1084 KUBLI RD		97527
David S. Trump	24 Jun 06	David S. Trump	1277 Kubli Rd GP		97527
Elizabeth McRobert	6/24/06	Elizabeth McRobert	151 Kubli Rd		Grants Pass 97527
Elaine O. Trump	6/24/06	Elaine O. Trump	1277 Kubli Rd GP		97527
Carey Chapin	6/24/06	CAREY CHAPIN	1388 Kubli Rd GP		97527
Tom VanSaun	6/24/06	TOM VANSAUN	177 SLAGLE CRK R.		97527
Sandy Mays	6/24/06	Sandy Mays	1020 Kubli Rd GP		97527
Martha Holstrom	6/24/6	Martha Holstrom	13100 N. Applegate Rd		97527
Steve Rouse	6/24/6	Steve Rouse	16000 N. Applegate Rd		97527

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CIRCULATOR SIGNATURE Patricia R Kellogg

PRINTED NAME OF CIRCULATOR PATRICIA R KELLOGG

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1190 SLAGLE CRK RD (JACKSON CO) GRANTS PASS OR 97527

SHEET NUMBER: 2

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
[illegible]	6/24/06	Brent D Cowe	15020 N Applegate Rd		Grantspass 97527
[illegible]	6-24-06	Sten-Erik Shipley	1791 Missouri Flat Rd.		G.P. 97527
[illegible]	6-24-06	Betsy Killian	1420 Kubli Rd		GP 97527
[illegible]	6-24-06	Maggie Youngstrom	12000 N. Applegate Rd		GP 97527
[illegible]	6-24-06	G.R. (Butch) Martin	1410 Kubli Rd		GP 97527
[illegible]	6-24-06	SUZAN SHIPLEY	1340 MISSOURI FLAT G.P. 97527		GP 97527
[illegible]	6-24-06	Sandi Garoutte	184 Missouri Flat Grants Pass, OR 97527		GP 97527
[illegible]	6-24-06	Janet Wolfgang	1505 Slagle Creek Rd Grants Pass Or 97527		GP 97527
[illegible]	6-24-06	FORREST ROSS	1505 SLAGLE CRK RD		GP 97527
[illegible]	6-24-06	Bill Dunlap	18475 N APPLEGATE RD.	P.O. BOX 345 APPLEGATE	APPLEGATE 97530

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CIRCULATOR SIGNATURE

PRINTED NAME OF CIRCULATOR PATRICIA R. KELLOGG

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1190 SLAGLE CRK RD (JACKSON CO) GRANTS PASS, OR 97527

SHEET NUMBER: 4

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
Mary Dunlap	6-24-06	Mary C Dunlap	18475 N Applegate Rd	Applegate OR	97530
Paula Cossler	6-24-06	Paula Cossler	13585 Hwy 238	Applegate OR	97530
Rita Grauer	6-28-06	RITA GRAUER	1004 FINDLEY RD	WILLIAMS OR	97544
Jeanette Stobie	6-29-06	JEANETTE STOBIE	~~PO BOX~~	PO BOX 3163 Applegate	97530
Russell R Smith	6-29-06	Russell R Smith	1050 Humbug Ck Rd.		97530
Maureen A Smith	6-29-06	MAUREEN A. SMITH	1050 HUMBUG CR RD	APPLEGATE, OR	97530
Peter + Wendy Kiehl	7-1-06	Peter + Wendy Kiehl	1400 Kubli Rd.	GRANTS PASS	97527
Pamela Haeckler	7-1-06	Pamela Haeckler	1394 Kubli Rd	Grants Pass	97527
R Borrow	7-1-06	Robyn Borrow	1415 KUBLI RD	G.P.	97527
Sharon M Nardello	7-1-06	SHARON M. NARDELLO	1407 Kubli Rd.	Grants Pass	97527

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CIRCULATOR SIGNATURE Patricia R. Kellogg

PRINTED NAME OF CIRCULATOR PATRICIA R. KELLOGG

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1190 SLAGLE CRK RD (JACKSON CO) GRANTS PASS, OR 97527

SHEET NUMBER: 5

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
[illegible]	7/1/06	JENNIFER LORENZEN	1084 KUBLI RD		GP 97527
[illegible]	7/1/06	Cheryl Shaw	980 Kubli Rd		GP 97527
[illegible]	07/01/06	Shirley C. Usher	761 Missouri Flat Rd		GP 97527
[illegible]	7/1/06	FRANK DUARTE	1335 MISSOURI FLAT Rd.		GP 97527
[illegible]	7/1/06	GEORGIA HENDERSON	1410 KUBLI RD.		GP 97527
[illegible]	7/1/06	Mary Lorell	1601 Slagle Crk Rd		GP 97527
[illegible]	7/1/06	[illegible]	1000 KUBLI Rd		GP 97527
[illegible]	7/1/06	[illegible]	same as above		" "
[illegible]	7/1/06	[illegible]	757 Missouri Flat GP		GP OR 97527
[illegible]	7/2/06	MARY WARRICK	818 SLAGLE CRK RD GP		GP, OR 97527

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CIRCULATOR SIGNATURE Patricia R Kellogg

PRINTED NAME OF CIRCULATOR PATRICIA R. KELLOGG

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1190 SLAGLE CRK RD (JACKSON CO.) GRANTS PASS, OR 97527

SHEET NUMBER: 10

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
[illegible]	7/2/06	THEODORE WARRICK	818 SLAGLE CR RD GRANTS PASS OR		GRANTS PASS 97527
[illegible]	7/2/06	Gregory Pamerita	818 Slagle Cr Rd Grants Pass OR		Grants Pass 97527
Pamela Haeckler	7/15/06	Pamela Haeckler	1394 Kubli Rd		GP 97527
Carey Chapin	7/15/06	CAREY CHAPIN	1388 Kubli Rd		GP 97527
Barbara Finley	7/15/06	Barbara Finley	1455 Kubli Rd		G.P. 97527
Barrie Laynel	7/15/06	BARRIE LAYNEL	1100 Kubli Rd		G.P. 97527
Larry Thompson	07/22/06	LARRY THOMPSON	1085 KUBLI RD		GP 97527
0.					

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CIRCULATOR SIGNATURE Patricia R. Kellogg

PRINTED NAME OF CIRCULATOR PATRICIA R. KELLOGG

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1190 SLAGLE CRK RD (JACKSON CO) GRANTS PASS OR 97527

SHEET NUMBER:

7

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
Mike Uhtoff		Mike Uhtoff	633 Road		Ashland, OR.
Shannon Rio		Shannon Rio	610 Iowa Street	Same	Ashland OR 97520
[illegible]		Mikine Gooding	610 Iowa St	Same	Ashland 97520
Maria Katsantones	6/24/06	Maria Katsantones	1130 Oak St.	Same	Ashland OR 97520
Aubrey Sharp	6/24/06	Aubrey Sharp	1361 Quincy St. 6-J	n/a	Ashland 97520
Cynthia Wicklund	6/24/06	CYNTHIA WICKLUND	2401 STONEBROOK	—	MEDFORD 97504
[illegible]	6/24/06	ROBERT HEILBRONER	2664 Anderson Creek Rd	Talent, OR 97540 Same	Talent, OR 97540
Hillary Tiefer	6/24/06	Hillary Tiefer	85 Wrights Creek Dr	~~Ashland~~	ashland, OR 97520
Pauline Black	6/24/06	Pauline Black	974 Pinecrest Terr, ~~Ashland~~		Ashland OR 97520
[illegible]	6-24-06	FREDRICK BERGER	307 GANGNES DRIVE		TALENT OR 97540
Carol Berger	6-24-06	Carol Berger	307 Gangnes Dr		Talent, OR 97540

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CIRCULATOR SIGNATURE Chris Berry

PRINTED NAME OF CIRCULATOR CHRISTOPHER BARTY

CIRCULATOR'S ADDRESS (Street, City, and Zip Code)

0

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
Helena Sohl	6/13/06	Helena Sohl	555 Liberty St.		Ashland 97520
Katherine Uhlhoff	6/13/06	Katherine Uhlhoff	633 Reese, Ash		Ashland 97520
Mia Driscoll	6/16/06	Mia Driscoll	365 Kent St Ash		Ashland 97520
Bryan Sullivan	6/17/06	Bryan Sullivan	148 Van Ness Ashland		Ashland 97520
Kimberly Freeman	6/17/06	Kimberly Freeman	2000 Soda Mtn Rd Ashland		Ashland 97520
Elizabeth A. Snyder	6/17/06	Elizabeth A. Snyder	1513 Lithia Way Talent		Talent, OR 97540
Anne Langill	6/17/06	ANNE LANGILL	433 HAVANA AVENUE		Medford OR 97504
Noah Treiger	6/17/06	Noah Treiger	955 Tolman Cr. Rd		Ashland, OR 97520
Paul Dayton	6-17-06	Paul Dayton	190 Vista St		Ashland OR 97520
Alison DeLancey	6-17-06	Alison DeLancey	355 1/2 High Str.		Ashland, OR 97520

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CIRCULATOR SIGNATURE Katherine Uhlhoff

PRINTED NAME OF CIRCULATOR _____

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) _____

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
Stephen Lawrence	6-17-06	Stephen Lawrence	1269 Green Park DR		Central point 97502
Lynda S. Cue	6-18-06	Lynda Cue	1155 Fern St.		Ashland, OR 97520
Richard H Rohde	6-18-06	Richard H Rohde	124 Ohio		Ashland OR 97520
Magee Downey	6-18-06	MAGEE DOWNEY	930 Beach St		Ashland 97520
[illegible]	6-18-06	Linda Sanchez	279 Garfield st C		Ashland 97520
[illegible]	6-18-06	Quinn Barker	2025 Tolman Creek Rd		Ashland 97520
Melina Ramsh	6-18-06	Melina Ramsh	2025 Tolman Cr. Rd		Ashland 97520
Nathan Page	6-19-06	Nathan Page	500 YMCA WAY 103	Same	Ashland 97520
Clea Bertrand	6-20-06	Clea Bertrand	2234 Siskiyou	⇐	Ashland, 97520
Lynn Kelley	6-21-06	Lynn Kelley	2132 Sardine		Gold Hill 97525

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CIRCULATOR SIGNATURE Christopher Brett

PRINTED NAME OF CIRCULATOR CHRISTOPHER BRETT

CIRCULATOR'S ADDRESS (Street, City, and Zip Code)

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
[illegible]	6-10-06	Stacy Williams	370 Page Cr Rd	P.O. Box 536	Cave Jct OR 97523
[illegible]	6-10-06	Joaquin Matilde	320 Page Cr Rd		Cave Jct OR 97523
[illegible]	6-10-06	George Shook	14550 Takilma Rd	P.O. Box 1444	Cave Junction 97523
[illegible]	6-10-06	PATRICIA MERSMAN	8833 TAKILMA RD	—	Cave Jct 97523
[illegible]	6/10/06	Tina Brick	4605 Takilma Rd		Cave Jct 97523
[illegible]	6/11/06	Lane Cosner	226 Dogwood Ln.	P.O. Box 2005	Cave Jct 97523
[illegible]	6/10/06	Saundra Whitten	226 Dogwood Ln	P.O. Box 2005	Cave Jct 97523
[illegible]	6/10/06	Jeffrey Falkenstein	9420 Takilma Rd, CJ	PO Box 1182	CJ, 97523
[illegible]	6/10/06	Charlene Shelton	2745 Caves Hwy	POB 22	CJ 97523
[illegible]	6/10/06	Romain Cooper	10398 Takilma	—	CJ 97523

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CIRCULATOR SIGNATURE Christopher Bratt

PRINTED NAME OF CIRCULATOR Molly Ayers & Christopher Bratt

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 670 Gerber Rd. Cave Junction 97523

No Circulators for This Petition Are Being Paid

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
[illegible]	6-23-06	Ronald K Cue	1155 Fern St		Ashland 97520
[illegible]	6/23/06	Christine Sinclair	890 N Wickard	A	Ashland 97520
[illegible]	6/23/06	Julia S Burns	835 Fox St		Ashland 97520
[illegible]	6/23/06	Cheryl French	453 Taylor St		Ashland 97520
[illegible]	6/23/06	Donald A. Morgan	366 Tudor St		Ashland 97520
[illegible]	6/24/06	TIM OLSON	1177 ASHLAND MWFRD		ASHLAND 97520
[illegible]	6/24/06	SUSAN GRAHAM	2817 E. MAIN		Ashland 97520
[illegible]	6/24/06	KEN BENDAT	455 Courtney St		Ashland 97520
[illegible]	6/24/06	THOMAS FOLEY	938 S. Hosey St		Medford OR 97501
[illegible]	6/24/06	Martha Wilhelm	480 Rock St.		Ashland 97520

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CIRCULATOR SIGNATURE CHRISTOPHER BRATT

PRINTED NAME OF CIRCULATOR Chester Bratt

CIRCULATOR'S ADDRESS (Street, City, and Zip Code)

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

THIS IS A JACKSON AND JOSEPHINE COUNTY PETITION. SIGNERS OF THIS PETITION SHOULD BE REGISTERED VOTERS IN ONE OF THESE COUNTIES.

TO THE BUREAU OF LAND MANAGEMENT:

We, the undersigned residents of Jackson and Josephine Counties, hereby petition the Bureau of Land Management (BLM) to stop work on their Timber Mountain/John's Peak Off Highway Vehicle (OHV) Management Plan and Environmental Impact Statement and remove the arbitrary 1995 designation of 16,250 acres forOHV use, encompassing and negatively impacting those public lands, rural private landowners and the communities of Jacksonville, Rogue River, Gold Hill, Ruch, Applegate, Provolt, Murphy, and Grants Pass.

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
	6/10/06	Naomi D'Alessandro	10068 Caveo Hwy	POB 2167 Cave Jct	Cave Jct 97523
	6/10/06	KENT FISHER	871 HAYS CUTOFF	PO 788	97523 OR
	6/10/06	JOYA FEETLIN	10248 TAKILMA RD.	PO BOX 1020	Cave Junction 97523
	6/10/06	Deborah Lukas	9044 Takilma Rd	POB 2093	Cave Junction 97523
	6/10/06	ERIC CERECEDA	1434 ARROWHEAD DR	POB 501 OBRIEN	OBRIEN 97534
	6/10/06	FRANK ANDERSON	9703 TAKILMA RD.	BOX 427	97523 OR
	6/10/06	Jeff Staab	9346 Takilma Rd	POBOX 2221	97527 OR
	6/13/06	Geraldine Davidson	4199 Takilma Rd		97523 OR
	6/13/06	Michael Hohm	4199 TAKILMA RD		97523 OR
	6/13/06	CHRISTOPHER BRATT	5317 THOMPSON CR. RD		APPLEGATE 97530

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CIRCULATOR SIGNATURE Christopher Bratt

PRINTED NAME OF CIRCULATOR MOLLY AYERS & CHRIS BRATT

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 5317 THOMPSON CR. RD APPLEGATE, OR 97530

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
Heidi Gottlieb	7·9·06	Heidi Gottlieb	1218 Rose Ln		Ashland 97520
[illegible]	7/9/06	Keith Larson	927 Oak St.		Ashland 97520
[illegible]	7/9/06	Anja Schiller	927 Oak St.		Ashland 97520
[illegible]	7/9/06	Randy Ddinger	240 OHIO St		Ashland 97520
Linda Torrel	7-9-06	Linda Torrel	10667 W Evans Crk Rd		Rogue River 97537
[illegible]	7-9-06	Diane K Odion	670 Morton St		Ashland OR 97520
Carynn Jacobson	7-11-06	Carynn Jacobson	875 Faith Ave #5		Ashland OR 97520
Cynthia Zawatski	7/12/06	Cynthia ZAWATSKI	41-5th St		Ashland OR 97520
Angie Thusius	7/13/06	Angie Thusius	897 Beach		Ashland
Myra Erwin	7-13-06	MYRA ERWIN	300 GRANDVIEW DR		ASHLAND 97520

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CIRCULATOR SIGNATURE Chester Bratt

PRINTED NAME OF CIRCULATOR CHRISTOPHER BRATT

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) _____

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
Jason Spevak	07/02/06	JASON SPEVAK	317 WIGHTMAN		ASHLAND 97520
Diane Amarotico	7/02/06	DIANE AMAROTICO	265 Alta Ave.		Ashland "
Don Bagnesh	7/3/06	DON BAGNESH	433 Herbert St		Ashland
Loretta Payton	7/3/06	Loretta Payton	435 Berry Cr.		TALENT, OR
Consuelo Korne	7/3/06	CONSUELO KORNE	220 RAPP ROAD #68		TALENT, OR
Robert L Pocan	7/3/06	ROBERT L POCAN	1123 VILLAGE SQ DR		ASHLAND OR 97520
Ed Hillard	7/4/06	Ed Hillard	1450 Tyler Creek Rd		Ashland 97520
Gretchen Hillard	7/4/06	Gretchen Hillard	1450 Tyler Creek Rd		Ashland 97520
Kate Cleland-Siffle	7/4/06	KATE CLELAND-SIFFLE	811 Palmer Rd.		Ashland, 97520
William K. Siffle	7/4/06	William K. SIFFLE	811 Palmer Rd		Ashland 97520

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CIRCULATOR SIGNATURE Chris Bratt

PRINTED NAME OF CIRCULATOR CHRISTOPHER BRATT

CIRCULATOR'S ADDRESS (Street, City, and Zip Code)

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
[illegible]	7-2-06	Marcy B. Greene	1000 Strawberry Ln.		Ashland 97520
[illegible]	7-2-06	Janet C Hoyt	1032 Oak Knoll Dr		Ashland, OR 97520
[illegible]	7/2/06	patricia morgi	4791 Sterling Creek	PO Box 130	Jville 97530
[illegible]	7/2/06	Kim DeCosta	260 W. Hersey St.		Ashland 97520
[illegible]	7/2/06	Linda Weyant	260 W Hersey St		Ashland 97520
[illegible]	7/2/06	Steve Smith	4862 Payne Rd	P.O. Box 130	Talent 97540
[illegible]	7/2/06	LYNN Smith	4862 Payne Rd	PO Box 130	Talent 97540
[illegible]	7/2/06	Ron Sissem	225 Gangnes Dr	Talent	Talent 97540
[illegible]	7/2/06	Elena Withers	840 #2 B St. Ashland 97520		Ashland 97520
[illegible]	7/2/06	Hillary Tiefer	565 Wrights Creek Dr Ashland 97520		Ashland 97520

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CIRCULATOR SIGNATURE [illegible]

PRINTED NAME OF CIRCULATOR CHRISTOPHER BRATT

CIRCULATOR'S ADDRESS (Street, City, and Zip Code)

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M Gray	7/4/06	Melinda Gray	3482 Parkway Medford		97504
Gerry Golden	7/4/06	Gerry Golden	1340 Brentcrest Dr		97501
Ellen Micheles	7/4	Ellen Micheles	3880 Strawberry Fields	White City	97503
Mary Zarc	7/5/06	MARY ZARC	242 MEADOW DRIVE	Ashland	97520
[illegible] Tollenaere	7/5/06	Mary Jennifer Damon-Tollenaere	235 Fifth St.	Ashland	97520
[illegible] Langlois	7/5/06	Lois Taylor Langlois	815 Cypress Point Loop	Ashland	97520
David Duval	7/5/06	David Duval	1208 Rose Ln	Ashland	97520
Robin Thompson	7/5/06	Robin Thompson	707 Helman St.	Ashland, OR	97520
Diane Taudvin	7/8/06	Diane Taudvin	135 Nutley St.	Ashland OR	97520
Kirt VanDerZee	7/6/06	KIRT VANDERZEE	469 ALLISON ST	ASHLAND, OR	97520

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CIRCULATOR SIGNATURE Christopher Batt

PRINTED NAME OF CIRCULATOR CHRISTOPHER BATT

CIRCULATOR'S ADDRESS (Street, City, and Zip Code)

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
Lene Price	7-6-06	LENE PRICE	469 ALLISON		ASHLAND 97520
Brandie Lynn	7-6-06	BRANDIE LYNN	414 STEINMAN DR		ASHLAND 97520
Scott Morrell	7/6/06	Scott Morrell	5508 Pioneer Rd. Medford		Medford 97501
DAN ELSTER	7/06/06	DAN ELSTER	2844 HERSEY #8		ASHLAND OR 97520
Reece	7/08/06	Marilyn Reece-Sullivan	1997 Tolman Creek Rd ~~Ashland~~		Ashland, OR 97520
Janice L Wright	7/08/06	Janice L. Wright	425 Morton		Ashland 97520
Karen Mihaljevich	7/8/06	KAREN MIHALJEVICH	808 POMPADOUR; ASHLAND		Ashland 97520
Mark Northcross	7/8/06	Mark Northcross	244 Manor Dr. ~~Medford~~ OR		Med Valley 94941
Marta Marthas	7/9/06	MARTA MARTHAS	160 Hillcrest Street		Ashland 97520
Kathleen Kehoe	7/9/06	Kathleen Kehoe	198 Logan Dr.		Ashland, 97520

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CIRCULATOR SIGNATURE Chris Bratt

PRINTED NAME OF CIRCULATOR CHRISTOPHER BRATT

CIRCULATOR'S ADDRESS (Street, City, and Zip Code)

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Barbara L Southerland	11/13/06	BARBARA SOUTHERLAND	7749 COLONIAL WAY	SAME	CENTRAL POINT 97502
2. [redacted]	11-15-06	[redacted]	[redacted]		[redacted]
3. Dean H Muir	11/15/06	DEAN H. MUIR	7749 COLONIAL WAY	SAME	CENTRAL POINT 97502
4. Sherrell Burton	11-18-06	Sherrell Burton	3479 Kane CK RD	SAME	Central Point 97502
5. Ellen J. Calkins	11·17·06	ELLEN J. CALKINS	3047 ROGUE RIVER HWY		97525
6.					
7.					
8.					
9.					
10.					

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CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR DAVE MAXWELL

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1007 Foots CREEK RD. GOLD HILL OR 97525

SHEET NUMBER:

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1. Billy D. Defries	11-05-06	BILLY D. DEFRIES	805 GALLS CR Rd		GoldHill 97525
2. Cora Deize	11/6-06	Cora Deize	1223 Galls Creek		Gold Hill 97525
3. Leslie Horton	11/6-06	Leslie HORTON	1315 Galls Cr. Rd.		Gold Hill 97525
4. Glenda R. Taylor	11/7/06	Glenda Taylor	5559 Kane Creek Rd		Central Point 97502
5. Dan Christy	11/7/06	Dan Christy	8427 OLD Stage Rd		Central Point 97502
6. Jace Carlson	11/7/06	Jace Carlson	548 Glen Wy		CP 97502
7. John Empio	11/8/06	John Empio	2898 old military Rd		CT. PT. 97502
8. Wilbert W. Lull	11-8-06	Wilbert W. Lull	3497 Old Military Rd		Central Point 97502
9. [illegible]	11-11-06	Patrick Nascimento	3445 Kane creek		Central point 97502
10. Jean Nascimento	11-11-06	JEAN NASCIMENTO	3445 KANE CREEK		CENTRAL PT 97502

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CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR DAVE MAXWELL

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1007 Foots CREEK RD.
GOLD HILL OR 97525

SHEET NUMBER:

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1. [illegible]	11/1/06	THOMAS PARKS	2542 OLD MILITARY RD. CENT. PT.		CENTRAL POINT 97502
2. Katherine A Drovdahl	11/1/06	Katherine A Drovdahl	5595 Kane Creek		Central Point 97502
3. Judy Breeden	11/1/6	Judy Breeden	3440 Old Military Rd Cent. Pt.		Central Pt. 97502
4. Don E. Haney	11-1-06	Don E. Haney	4071 Galls Creek Rd. Gold Hill, OR		Gold Hill, 97525
5. Marcia Jane Hyatt	11-2-06	Marcia Jane Hyatt	8149 Colonial Way Central Point, OR		Central Point 97502
6. Charles Hyatt	11-02-06	Charles Hyatt	8149 colonial way		Central Point OR 97502
7. [illegible]	11/3/06	Herbert Milcuve	717 Galls Crk Rd. G.H		Gold Hill 97525
8. [illegible]	11/5/06	Shari-Kim Roby	7920 Colonial Way		Central Point OR 97502
9. Brenda M. Kohut	11/15/06	Brenda M. Kohut	7920 Colonial Way		Central Pt 97502
10. Elba D. Defreies	11-5-06	ELBA D. Defreies	805 Galls Ck Rd		Gold Hill 97525

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CIRCULATOR SIGNATURE [illegible]

PRINTED NAME OF CIRCULATOR DAVE MAXWELL

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1007 FOOTS CREEK RD. GOLD HILL OR 97525

SHEET NUMBER: 10

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
[illegible]	7/4/2006	Michael Biggs	300 Gangnes DR		Talent, OR 97540
[illegible]	7/4/2006	Dawn Mellon	300 Gangnes Dr.		Talent, OR 97540
[illegible]	7/4/2006	Becky West	2919 Diane		Ashland OR 97520
[illegible]	7/4/2006	Diane Mathews	429 E Hersey		Ashland OR 97520
[illegible]	7/4/2006	Lisa Shapiro	975 Walker		Ashland 97520
[illegible]	7/4/2006	Brad Holst	606 S Queen Br. Rd		Rogue River 97537
[illegible]	7/4/06	Dominique Brown	1067 Ashland ST		Ashland 97520
[illegible]	7/4/06	Angie Thusius	897 Beach, Ashland		Ashland
[illegible]	7-4-04	Paul Kwiatkowski	94 Morton		Ashland OR
[illegible]	7-4-04	Jan Anderson	980 Poormans Ck		Jacksonville 97530

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CIRCULATOR SIGNATURE _____

PRINTED NAME OF CIRCULATOR Christopher Pratt

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) _____

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TO THE BUREAU OF LAND MANAGEMENT:

Concentrated off-highway vehicle (OHV) usage is not compatible with the checkerboard of public and private land ownership in the Timber Mountain/Johns Peak area. We, the undersigned electors, petition the Bureau of Land Management (BLM) to stop work on the Timber Mountain/Johns Peak OHV Management Plan and Environmental Impact Statement, and remove the 1995 OHV Destination Area designation from 16,250 acres of public land between Jacksonville, Murphy, and Grants Pass.

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	3/4/07	James G. Wightman	899 Bishop Cr. Rd.		J'ville, OR 97530
2.	3/4/07	Amber M. Wightman	899 Bishop Cr. Rd.		J'ville, OR 97530
3.	3/5/07	Jane Duz	6451 Hwy 238 J.V.		J'ville OR 97530
4.	3/5/07	PAT McMURRIE	6451 Hwy #238 J.V.		J'VILLE, ORE. 97530
5.	3/5/07	Donita R. Gerald	6537 Hwy 238	P.O. Box 1840	J'Ville OR 97530
6.	3/5/07	Lewis Gerald	861 Bishop Creek	P.O. Box 1840	J'Ville OR 97530
7.	3/7/07	Mary E Chaplain	3000 Bishop Cr Rd	P.O. Bx 1112	Sunlo OR 97530
8.	3/07/07	Les Chaplain	3000 Bishop Creek		J'Ville
9.	3/7/07	Elwin Wines	2700 Bishop Cr Rd	←	Jacksonville, OR 97530
10.	3/7/07	Kasie Michel	6479 Hwy 238 JV	(same)	Jacksonville, OR 97530
11.	7/Mar/07	Mel Smallback	6369 Provolt Hwy	Box 1234	J'ville Or. 97530

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CIRCULATOR SIGNATURE Donita Reed Gerald

PRINTED NAME OF CIRCULATOR Donita Reed Gerald

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 6537 Hwy 238 J'Ville, OR. 97530

SHEET NUMBER:

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Concentrated off-highway vehicle (OHV) usage is not compatible with the checkerboard of public and private land ownership in the Timber Mountain/Johns Peak area. We, the undersigned electors, petition the Bureau of Land Management (BLM) to stop work on the Timber Mountain/Johns Peak OHV Management Plan and Environmental Impact Statement, and remove the 1995 OHV Destination Area designation from 16,250 acres of public land between Jacksonville, Murphy, and Grants Pass.

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	3/7/07	Mark Gardener	1016 Beechwood Ct		Medford 97504
2.	3/7/07	Michael Kellington	5690 Adams Rd Talent 97540		Talent 97540
3.	3-7-07	Jesse Pereira	16001 Wagner Cr Rd Talent		Talent 97540
4.	3-7-07	William Johnson	9490 Thompson Creek Rd		Applegate 97530
5.	3-7-07	Janice Petersen	5970 Hwy 238		Jacksonville 97530
6.	3/7/07	Garth Curtis	10,000 Yale Ck Rd		Ruch OR 97530
7.	3/8/07	Malachi Parker	1665 upper Applegate		Jacksonville, OR 97530
8.	3/8/07	Lorna J. Erskine	201 Forest Creek		J'ville 97530
9.	3/8/07	Ben H. Erskine	201 Forest Creek		J'ville 97530
10.					

I hereby certify that every person who signed this sheet did so in my presence and I believe that each person is a qualified voter in Jackson or Josephine County, Oregon. I also certify that I have received no compensation for these signatures.

CIRCULATOR SIGNATURE Robert E Johnson

PRINTED NAME OF CIRCULATOR Robert E Johnson

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 5970 Hwy 238 Jacksonville, OREGON 97530

SHEET NUMBER:

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

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TO THE BUREAU OF LAND MANAGEMENT:

We, the undersigned residents of Jackson and Josephine Counties, hereby petition the Bureau of Land Management (BLM) to stop work on their Timber Mountain/John's Peak Off Highway Vehicle (OHV) Management Plan and Environmental Impact Statement and remove the arbitrary 1995 designation of 16,250 acres forOHV use, encompassing and negatively impacting those public lands, rural private landowners and the communities of Jacksonville, Rogue River, Gold Hill, Ruch, Applegate, Provolt, Murphy, and Grants Pass.

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
Bruce R Sargent	7/3/06	BRUCE R. SARGENT	2200 Buckhorn Springs		Ashland 97520
[illegible]	7/3/06	Chris Foster	966 Tyler creek Rd		Ashland 97520
Lauren D. Sargent	7/3/06	Lauren D. Sargent	2200 Buckhorn Springs Rd.		Ashland 97520
Tessa Blocker	7/3/06	Tessa Blocker	2200 Buckhorn Springs Rd		"
Russell Sargent	7/3/06	Russell Sargent	2200 Buckhorn Springs Rd		Ashland, 97520
F. Boyd Peters	7/3/06	F. Boyd Peters	800 Railroad Ave		Wolf Creek 97497
C. Voorhees	7/4/06	Cary Voorhees	540 Lomas Rd.		Jacksonville 97530
Shelly McMillin	7/4/06	Shelly McMillin	540 Lomas rd		Applegate 97530
[illegible]	7/4/06	LEAH GREGORY	10792 Hwy 238		J'ville 97530
[illegible]	7/4/06	DORALIN GRUSHA	1707 TALENT AVE		TALENT 97540

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CIRCULATOR SIGNATURE Chris Bratt

PRINTED NAME OF CIRCULATOR CHRISTOPHER BRATT

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 5317 THOMPSON CR. RD APPLEGATE OR 97530

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PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

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TO THE BUREAU OF LAND MANAGEMENT:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Sherry L Walker	3/7/07	Sherry L Walker	9723 Hwy 238		Jacksonville OR 97530
2. [illegible]	3/7/07	William R Walker	9723 Hwy 238		Jacksonville 97530
3. Sherry L Walker	3/7/07	Sherry L Walker	1589 China Gulch	9723 Hwy 238	Jacksonville 97530
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CIRCULATOR SIGNATURE Michael P. Higgins

PRINTED NAME OF CIRCULATOR MICHAEL P. HIGGINS

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 9736 HWY 238 JACKSONVILLE, OR 97530

SHEET NUMBER:

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

THIS IS A JACKSON AND JOSEPHINE COUNTY PETITION. SIGNERS OF THIS PETITION SHOULD BE REGISTERED VOTERS IN ONE OF THESE COUNTIES.

TO THE BUREAU OF LAND MANAGEMENT:

Concentrated off-highway vehicle (OHV) usage is not compatible with the checkerboard of public and private land ownership in the Timber Mountain/John's Peak area. We, the undersigned electors, petition the Bureau of Land Management (BLM) to stop work on the Timber Mountain/John's Peak OHV Management Plan and Environmental Impact Statement, and remove the 1995 "OHV Area" designation from 16,250 acres of public land between Jacksonville, Murphy, and Grants Pass.

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Dorothy Lofstrom	12/8/06	Dorothy Lofstrom	4375 Tami Lane	—	Central Point 97502
2. Mark D. Lofstrom	12/8/06	MARK D. LOFSTROM	4375 TAMI LANE		CENTRAL POINT 97502
3. Sharon Becker	12/14/06	SHARON BECKER	1055 N. Sixth #117		J'ville 97530
4. Gordon Nunnally	12/30/06	GORDON NUNNALLY	3121 OLD MILITARY RD CENTRAL POINT 97502		CENTRAL POINT 97502
5. Miriam Nunnally	12/30/06	Miriam Nunnally	"		"
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CIRCULATOR SIGNATURE R Kingsnorth MERC.

PRINTED NAME OF CIRCULATOR R Kingsnorth

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 OLD MILITARY CP 97502

SHEET NUMBER:

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

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TO THE BUREAU OF LAND MANAGEMENT:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Marvin Rosenberg	1-31-07	MARVIN ROSENBERG	4001 LITTLE APPLEGATE	—	JACKSONVILLE 97530
2. K Schiff	1-31-07	KEN SCHIFF	1850 UPPER APPLEGATE		JVILLE 97530
3. [illegible]	1-31-07	Robert M Ivy	6265 Little Applegate		Jville 30
4. [illegible]	1-31-07	Joshua Leedy	11000 Hwy 238 Applegate		97530
5. Lori Shelton	2/3/07	Lori Shelton	410 G Ave La Grande OR		LaGrande 97850
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CIRCULATOR SIGNATURE David P. Calahan

PRINTED NAME OF CIRCULATOR DAVID P. CALAHAN

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 11,000 HWY 238 APPLEGATE, OR 97530

SHEET NUMBER:

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

THIS IS A JACKSON AND JOSEPHINE COUNTY PETITION. SIGNERS OF THIS PETITION SHOULD BE REGISTERED VOTERS or PROPERTY OWNERS IN THESE COUNTIES.

TO THE BUREAU OF LAND MANAGEMENT:

Concentrated off-highway vehicle (OHV) usage is not compatible with the checkerboard of public and private land ownership in the Timber Mountain/John's Peak area. We, the undersigned property owners, petition the Bureau of Land Management (BLM) to stop work on the Timber Mountain/John's Peak OHV Management Plan and Environmental Impact Statement, and remove the 1995 "OHV Area" designation from 16,250 acres of public land between Jacksonville, Murphy, and Grants Pass.

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	PROPRTY ADDRESS or TAX LOT	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Loretta M. Lukowski	3/7/07	LORETTA M. LUKOWSKI	10293314 -	2102 N.E. MASON ST. ~~PORTLAND, ORE.~~	PORTLAND 97211
2. Loretta M. Lukowski	3-7-07	LORETTA M. LUKOWSKI	10293436 -	2102 N.E. Mason St.	Portland OR 97211
3. Loretta M. Lukowski	3-7-07	LORETTA M LUKOWSKI	10779358	2102 N.E. Mason St	Portland OR 97211
4. Loretta M. Lukowski	3-7-07	LORETTA M. LUKOWSKI	10779366	2102 N.E. MASON ST.	Portland OR 97211
5. Loretta M. Lukowski	3-7-07	LORETTA M. LUKOWSKI	10291930	2102 N.E. Mason St	Portland OR 97211
6. Loretta M. Lukowski	3-7-07	LORETTA M. LUKOWSKI	10291371 -	2102 N.E. Mason St	Portland OR 97211
7. Loretta M. Lukowski	3-7-07	LORETTA M. LUKOWSKI	10293291 -	2102 N.E. Mason St	Portland OR 97211
8. Loretta M. Lukowski	3-7-07	LORETTA M. LUKOWSKI	10291581 -	2102 N.E. MASON ST.	PORTLAND OR 97211
9. Loretta M. Lukowski	3-7-07	LORETTA M. LUKOWSKI	10291573 -	2102 N.E. MASON ST.	PORTLAND OR 97211
10.					

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CIRCULATOR SIGNATURE Bob Kingsnorth

PRINTED NAME OF CIRCULATOR BOB KINGSNORTH

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 OLD MILITARY ROAD
CENTRAL POINT, OR 97502

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Joanne R. Wilcox	2/21/07	Joanne R. Wilcox	2569 Old Stage Rd.		Central Point 97502
2. L. Fae Vevera	2-21-07	L. Fae Vevera	2244 Hillside Ave		Central Point, 97502
3. Ann Dombras	2/21/07	Ann Dombras	3765 Old Stage Rd		CP 97502
4. Betty J Ballach	2/21/07	BETTY J BALLACH	4360 Old Stage Rd		CP 97502
5. Shirley Casperson	2/21/07	Shirley Casperson	1266 La Loma Dr.		Medford 97504
6. Nickie Van Vleck	2/21/07	Nickie Van Vleck	2940 Whitebrook Ln		Central Point 97502
7. Kathie J Darland	2/21/07	Kathie J Darland	4290 Old Stage Rd		Central Point 97502
8.					
9.					
10.					

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MERC

CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR E.C. KINGSNORTH

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 OLD MILITARY C.P 97502

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	4/7/14	Ron LeDoux	3392 Foots Creek Rd		Gold Hill 97525
2.	4/7/14	Richard Porta	3360 Foots Creek Rd		Gold Hill 97525
3.	4/7/14	Norma Porta	3360 Foots Creek Rd.		Gold Hill 97525
4.	4/7/14	Robert James	3388 Foots Creek Rd		Gold Hill, 97525
5.	4/7/14	Laurie James	3388 Foots Creek Rd		Gold Hill 97525
6.	4.8.14	Tom Moulder	1553 Foots Crk Rd		Gold Hill 97525
7.	4.8.14	Lester Bergold	3626 Hamer Ln		Gold Hill 97525
8.	4/9/14	Kevin Masterson	4767 Foots Creek Rd		Gold Hill 97525
9.	4/9/14	Kristin Thompson	3175 ~~Foots Creek~~ PR Hwy		Gold Hill 97525
10.					

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CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR Ron LeDoux

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 3392 Foots Creek Rd
Gold Hill OR 97525

SHEET NUMBER:

No Circulators for This Petition Are Being Paid

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Elizabeth A Adamson	4/19/14	(Pen name changed) Elizabeth A Adamson	3911 NE 61st Ave Vancouver Washington		Vancouver WA 98661-3251
2. Marie L. Accardo	4/20/14	MARIE L ACCARDO	2613 SE Briarwood Dr VAN. WA 98683	Executive	
3. Joseph Lukowski	4-20-14	Joseph Lukowski	1837 NE Ainsworth Portland, OR.		Portland 97211-5428
4. Theresa A Lukowski	4/22/14	THERESA A LUKOWSKI	6410 SE Ash St, Portland	97215	Portland, OR 97215
5. Edward A Lukowski	4/23/14	Edward A Lukowski	19007 NE 174ST ~~Brush Prairie~~	PO Box 848	Brush Prairie WA. 98606
6.					
7. "Above Signors are Joint owners of 1,000 Acres - Left				Fork Foots Creek Rd, Gold Hill, OR	
8.		Under Loretta Lukowski			
9.					
10.					

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CIRCULATOR SIGNATURE _____

PRINTED NAME OF CIRCULATOR _____

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) _____

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	4-15-14	Susan M LeDoux	4405 Foots Ck Rd	Same	Gold Hill 97525
2.	4/15/14	JOHN L. JORDAN	4382 FOOTS CR RD	SAME	GOLD HILL 97525
3.	4/15/14	Martha Dobney	3366 Foots Creek Rd.	same	Gold Hill 97525
4.	4/15/14	Allen L. Dobney	3366 Foots Cr. Rd.	Same	Gold Hill 97525
5.	8/28/14	Janet Allsman	854 Foots Crk Rd	same	Gold Hill 97525
6.	8/28	Marc Allsman	"	"	"
7.	10-3-14	RICHARD PORTA	3360 FOOTS CREEK ROAD		Gold Hill 97525
8.	10-3-14	NORMA PORTA	" "	" "	" "
9.					
10.					

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CIRCULATOR SIGNATURE _____

PRINTED NAME OF CIRCULATOR RONALD LEDOUX

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 3392 FOOTS CREEK Rd
Gold Hill OR 97525

SHEET NUMBER:

FOOTS CREEK AND SURROUNDING AREA RESIDENTS
PETITION AGAINST THE BUREAU OF LAND MANAGEMENT'S (BLM)
PROPOSAL FOR A PUBIC ACCESS PORTAL ON FOOTS CREEK ROAD,
GOLD HILL TO THE JOHNS PEAK OHV AREAS

We, the undersigned residents of Foots Creek and the surrounding areas, hereby petition the Bureau of Land Management to remove Foots Creek Road from consideration as a public access portal to the Johns Peak OHV area.

	NAME (PLEASE PRINT)	SIGNATURE	ADDRESS	PHONE
1	LOUISE Schwenne	Louise Schwenne	2808 Foots Cr	582-4
2	GREG SCHWENNE	Greg Schwenne	2808 FOOTS CR.	582-404
3	Crystal Schwenne	Crystal Schwenne	2808 FOOTS CR	582-404
4	GARY S. O'NEAL	Gary S. O'Neal	2092 Foots Cr.	582-05
5	Shirley Sewell	Shirley Sewell	6372 West Evans	582-45
6	Catherine Zorn	[illegible]	P.O. Box 1534 Rogue River	582-64
7	Ellen Vestrys	Ellen Vestrys	42 Little Meadow RR	582-103
8	Keith Lloyd Berry	[illegible]	PO B 431 Rogue River	582-827
9	GAYLE BENNETT	Gayle A. Bennett	2170 Foots Creek Rd.	582-306
10	RUTH GORMAN	Ruth Gorman	1790 Foots Creek	582-881
11	Charles GORMAN	Charles E. Gorman	1790 Foots Creek	582-888
12	ROSS LESLIE	Ross Leslie	1640 FOOTS CREEK RD.	582-00
13	Tracie Leslie	Tracie Leslie	1640 Foots Creek Rd	582-002
14	GRACE A. ERICKSON	Grace A. Erickson	2450 Foots Creek Rd	582-415
15	DAWN M. DAVIS	Dawn M. Davis	1984 Foots CREEK Rd	582-1406
16	JAMES T. DAVIS	James T. Davis	1984 Foots CREEK Rd	582-1406
17	Thomas J. Hice	[illegible]	2217 Foots Creek Rd	582-280
18	GILBERT D. HICE	Gilbert D. Hice	2221 " " "	582-1831
19	Linda Shepard	[illegible]	2221 Foots Cr Rd	582-605
20	JAVI JACKSON	Javi	1078 Foots Crk Rd	582-925
21	MARK JACKSON	Mark Jackson	1078 Foots Crk Rd	582-92
22	DAVID McCREARY	D. McCreary	2605 Foots Creek Rd	582-6247
23	DAN McCREARY	D. McCreary	2605 Foots Creek Rd	582-6247
24	George Christ	George Christ	1670 Foots Cr.	582-3848
25	Deanna Christ	Deanna Christ	1670 Foots Cr.	582-384
26	Margery E. McGowan	MARGERY E. McGOWAN	1608 FOOTS CR. R.F	582-128
27	Jackson McGowan	JACKSON McGOWAN	1608 FOOTS RD.	582-1283
28	Victoria J. Reese	Victoria Reese	2400 Foots Rd.	582-42
29	Thomas A. Reese	Thomas A. Reese	2400 Foots Creek Rd	582-4227
30	SHIRLEY GARLIE	Shirley Garlie	21900 Foots Creek Rd	582-1947
31	CECIL SHERLIE	Cecil Sherlie	2190 Foots Creek	582-1947
32	Alan Thompson	Alan Thompson	1550 2nd AVE Gold Hill	855-7147
33	Gary Myer	Gary Myer	1740 Foots Creek Rd Gold Hill	582-9012
34	Kathleen O'Neal	Kathleen O'Neal	2092 Foots Cr Rd, Gold Hill	582-9012
35	Wayne E. Johnson	Wayne E. Johnson	1858 FOOTS CR Rd. Gold Hill	582-1805
36	Judith M. Johnson	Judith M. Johnson	1858 Foots Cr. Rd Gold Hill	582-180
37	CAROLYN F. FLOYD	Carolyn Floyd	945 Foots Cr. Rd Gold Hill	582-1073
38	Charles LEWIS FLOYD	Charles L. Floyd	945 Foots Cr. Rd Gold Hill	582-10
39	E. RICHARD FISHER	E. Richard Fisher	2242 Foots CR Gold Hill	582-190
40	GILBERT A. HICE	Gilbert A. Hice	953 FOOTS CREEK RD. Gold Hill, OR	582-388
41	Brenda Kennedy	Brenda Kennedy	947 Foots Creek Rd Gold Hill OR	582-
42	Donald Kennedy	Donald Kennedy	" " "	
43	JOAN LINDSAY	Joan Lindsay	999 FOOTS CR	582-133

FOOTS CREEK AND SURROUNDING AREA RESIDENTS
PETITION AGAINST THE BUREAU OF LAND MANAGEMENT'S (BLM)
PROPOSAL FOR A PUBIC ACCESS PORTAL ON FOOTS CREEK ROAD,
GOLD HILL TO THE JOHNS PEAK OHV AREAS

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	NAME (PLEASE PRINT)	SIGNATURE	ADDRESS	PHONE
1	HINKLE, RAYMONA J.	[illegible]	2556 FOOTS CRK RD	541-582-3600
2	HINKLE - DORIS I	[illegible]	2556 Foots Crk Rd	541-582-3600
3	[illegible]	[illegible]	3773 Hosmer Ln	541 582 [illegible]
4	[illegible]	[illegible]	[illegible]	[illegible]
5	[illegible] Williams	[illegible]	3555 Hosmer Ln GH	582-3869
6	FOGERTY, JAMES	[illegible]	3388 Foots Creek Rd	582-2022
7	Shawn Mozenbacher	[illegible]	3384 Foots Cr	582-1490
8	GERALD T EASLEY	[illegible]	4261 Foots Cr GH OR	582 0847
9	RUSS TILLEY	[illegible]	4399 Foots Cr GH OR	582-4526
10	Sigfried Bielski BIELSKIS	[illegible]	2916 Foots Cr Rd GH OR	582 422[illegible]
11	Melinda VanderMeulen	[illegible]	2912 Foots Cr Rd GH OR	582-0194
12	GRACE A. ERICKSON	[illegible]	2150 Foots Creek Rd, GH	582-4133
13	Laurie James	[illegible]	3388 Foots Creek Rd, GH	582-2022
14	Sheryl Friend	[illegible]	4767 Foots Cr Rd GH	582-1513
15	Jim Friend	[illegible]	4767 Foots Cr. Rd. GH.	582-1513
16	Mary Osborn	[illegible]	4761 Foots Cr. Rd GH	582-2896
17	Larry Osborn	[illegible]	4761 Foots Cr. Rd GH	582-2896
18	Ron LeDoux	[illegible]	4405 Foots Cr Rd	582-0426
19	Susan M LeDoux	[illegible]		
20	Susan M LeDoux	[illegible]	4405 Foots CK Rd	582-0426
21	LENORA STORMS	[illegible]	4073 Foots Crk Rd	582-6024
22	GEORGE E STORMS	[illegible]	4073 Foots CRK Rd	582-6024
23	RICK GEBHARDT	[illegible]	3773 HOSMER LN.	582-4930
24	JANICE CLARK	[illegible]	3773 Hosmer Ln	582-4930
25	ANNE SCHROTH	[illegible]		
26	Michael Cavallaro	[illegible]	3626 Hosmer Ln	582-1998
27	Rox Cavallaro	[illegible]	3626 Hosmer Lane	582 1998
28	JESSIE BELL	[illegible]	3755 Hosmer Lane	582-4658
29	ELDON WADHAMS	[illegible]	3555 HOSMER LANE	582-3869
30	Charles BIELSKIS	[illegible]	2916 Foots Creek Rd	582-4228
31	Barbara Allen	[illegible]	2044 Foots Creek Rd	582-6442
32	Omer Hale	[illegible]	2030 Foots Creek Rd	582-1360
33	MURIEL HALE	[illegible]	2030 Foots Creek Rd	582-1360
34	Ellen Dark GLENTARY	[illegible]	1762 Foots Creek Rd	582-0311
35	Gene Miller	[illegible]	1700 Foots Creek Rd	582 0810
36	SANDRA E. Miller	[illegible]	1700 Foots Creek Rd	582 0810
37	EDITH TRAVER	[illegible]	1906 Rt. Foots Cr. Rd	582-4856
38	Gordon Hamlin	GORDON HAMLIN	1662 Foots Creek Rd	582-3764
39	DOROTHY HAMLIN	[illegible]	1662 Foots CREEK RD	582-3764
40	ERNEST RITCHETT Sr	[illegible]	1852 Foots Creek Rd	582-1374
41	Tim Rosa	[illegible]	212 Cedar St # R.R.	582-7016
42	Toni L. Zacharias	[illegible]	2652 Foots Creek Rd	582-2811
43	Lloyd J. ZACHARIAS	[illegible]	2652 Foots CR RD	582-2811
44	Mary C Bennett	[illegible]	2170 Foots Creek Rd	582-3005

FOOTS CREEK AND SURROUNDING AREA RESIDENTS
PETITION AGAINST THE BUREAU OF LAND MANAGEMENT'S (BLM)
PROPOSAL FOR A PUBIC ACCESS PORTAL ON FOOTS CREEK ROAD,
GOLD HILL TO THE JOHNS PEAK OHV AREAS

We, the undersigned residents of Foots Creek and the surrounding areas, hereby petition the Bureau of Land Management to remove Foots Creek Road from consideration as a public access portal to the Johns Peak OHV area.

	NAME (PLEASE PRINT)	SIGNATURE	ADDRESS	PHONE
1	Linda M. Guire	Linda M. Guire	1305 Foots Creek Rd.	582-014
2	Patricia A. Chastain	Patricia A. Chastain	2394 Foots Creek Rd	941-8351
3	Steven C Chastain	Steven C Chastain	2394 Foots Creek Rd	261-0684
4	Jeanne Jordan	Jeanne Jordan	2090 Foots Creek Rd	582 1463
5	Grace Crandall	Grace Crandall	2035 Foots CRK. Rd	5821875
6	Gerald CRANDALL	Gerald Crandall	2035 Foots CREK Rd	582-1875
7	Randy Bryant	Randy Bryant	2103 FT. CR. RD.	582-3460
8	Sharon Bryant	Sharon Bryant	2103 Foots Cr Rd G.H.	5823407
9	Jackie Carte	Jackie M. Carte	1601 Foots Cr Rd G.H.	582-1022
10	Mike Brinslow	Mike Brinslow	1911 Foots Creek Rd GH	582-0306
11	Ignacio Diaz	Ignacio Diaz	2047 Foots Creek Rd GH	8587534
12	Helen A. Johnston	Helen A. Johnston	2156 Foots Crk. Rd. G.H	582-154.
13	PENNY BULLOCK	Penny Bullock	2185 FOOTS CREEK RD.	582-597
14	Linda Jackson	Linda Jackson	2195 Foots Creek Rd A	582-393
15	Cyl Askins	Cyl Askins	2195 Foots Creek Rd B	821-3642
16	Bobbi Hopson	Bobbi Hopson	2611 Foots Creek Rd	582-2961
17	Roxann Doblittle	Roxann Doblittle	2007 Foots Creek Rd	582-1518
18	HELEN Raymond	Helen Raymond	1863 Foots CREEK RD	582 1809
19	Jim Cosad	Jim Cosad	1747 Foots Creek Rd	582-1462
20	Reggie Marshall	Reggie Marshall	1683 Foots Creek Rd	582-5971
21	Kaye MARSHALL	Kaye Marshall	1683 Foots Creek Rd	582-5971
22	Erin McMurtrey	Erin McMurtrey	1485 Foots Cr. Rd	582-6322
23	Melissa McMurtrey	Melissa K. McMurtrey	1485 Foots Creek Rd.	582-6322
24	EVERETT JORDAN	[illegible]	2090 FOOTS CR. RD.	582-1463
25	Danny Moore	Danny W. Moore	333 Mt. View Dr. #40 Talent	951-6951
26	JEANIE MOORE	Jeanie Moore	1534 FOOTS CR. RD., GH	582-366
27	Sharon Johnson	Sharon Johnson	2386 Foots Cr. Rd., GH	744-218.
28	DAVID C JOHNSON	[illegible]	2386 FOOTS Cr Rd, GH	744-218.
29	Elizabeth Holliday	Elizabeth Holliday	2141 Foots Cr. Rd G.H	582-426
30	Melanie Gutches	Melanie Gutches	2035 Foots Cr Rd G.H	944 1961
31	Kevin Denson	Kevin T Denson	1057 N.E. Churchill	955-165
32	Dick Robillard	Dick Robillard	3368 Foots Cr GH	582 3860
33	S. Cavallin-Robillard (SANDRA CAVALLIN ROBILLARD)	S. Cavallin-Robillard	3368 FOOTS CREEK G.H.	582-3860
34	DONNELL JONES	Donnell Jones	3170 Foots Crk. Rd	582-4948
35	NORMAN E JONES	Norman E Jones	3170 FOOTS CREEK	582 4948
36	DAVID MAXWELL	[illegible]	1057 FOOTS CRK. RD.	582-2087
37	Sherry M Ray	Sherry M Ray	645 Sardine Crk Rd	805-7598
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FOOTS CREEK AND SURROUNDING AREA RESIDENTS
PETITION AGAINST THE BUREAU OF LAND MANAGEMENT'S (BLM)
PROPOSAL FOR A PUBIC ACCESS PORTAL ON FOOTS CREEK ROAD,
GOLD HILL, TO THE JOHNS PEAK OHV AREAS

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	NAME (PLEASE PRINT)	SIGNATURE	ADDRESS	PHONE
1	Burt Eikleberry	Burt Eikleberry	4204 Foots Creek Rd.	582-0581
2	LINDA EIKLEBERRY	Linda Eikleberry	4204 FOOTS CREEK RD	582-0581
3	DERRYL FITCH	Derryl Fitch	3990 Foots Cr Rd	-4231
4	KAREN THORNTON	Karen L. Thornton	4058 FOOTS CR RD	582-294
5	William H. Thornton	William H. Thornton	4058 Foots Cr Rd	582-294
6	CRAIG RUTLEDGE	Craig E. Rutledge	4520 FOOTS CRK. RD.	582-696
7	Theresa Fitch	Theresa Fitch	3990 Foots Creek Rd	582-4231
8	Mike Fornaciari	Mike Fornaciari	2246 Foots Cr Rd	582 143
9	Kate Rutledge	Kate Rutledge	4520 Foots Cr. Rd.	582-6969
10	Larry Chapin	Larry Chapin	5130 Foots Cr Rd	582-272
11	CHARLES ULMER	Charles Ulmer	1946 FOOTS CR. RD	582-3008
12	Randy Jungwirth	Randy Jungwirth	4220 RT Foots CK Rd	582 8904
13	Bonnie R. Garrett	Bonnie R. Garrett	4220 Rt Foots Cr Rd	582-8904
14	Marc Levy	Marc Levy	4216 Rt Fork Foots Creek Rd	582-821
15	KATHY GRIFFITH	Kathy Griffith	3150 Rogue River Hwy Gold Hill	582-2209
16	Johnna Ulmer	Johnna Ulmer	1946 Foots cr. G.H.	582-30
17	Alice Hatch	Alice Hatch	5806 Foots Cr. R. G.H	582-356
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FOOTS CREEK AND SURROUNDING AREA RESIDENTS
PETITION AGAINST THE BUREAU OF LAND MANAGEMENT'S (BLM)
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GOLD HILL TO THE JOHNS PEAK OHV AREAS

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	NAME (PLEASE PRINT)	SIGNATURE	ADDRESS	PHONE
1	Ronald E. Alkire	Ronald E. Alkire	2044 Foots Rd	541 582 6442
2	Vera R. Findley	Vera R. Findley	3284 Foots Cr.	541-582-32[illegible]
3	Preston A. Peters	Preston A. Peters	1662 Pine Grove Rd RR	582-2217
4	Amy Frantz	Amy Frantz	3455 Hosmer Ln. GH	582-3969
5	Daniel J. McCabe	Daniel J. McCabe	2191 Foots Creek Rd L.F.	582-4569
6	Margaret McCabe	Margaret McCabe	2191 Foots Creek Rd.	582-4569
7	Josephine Schlehofer	Josephine Schlehofer	3396 Foots Ck. Rd. G.H.	582-3965
8	Richard Schlehofer	Richard Schlehofer	3396 Foots Ck Rd G.H	582-3965
9	Eric Kuehl	Eric Kuehl	1724 Foots Ck Rd	582-0875
10	Charles D. A. McCoy	Charles D. A. McCoy	1678 Rt. Fk. Foots Creek Rd	582-1159
11	Yolanda B. McPherson	Yolanda B. McPherson	1678 Rt Fk Foots Cr.	582-1159
12	Rose Brendlin	Rose Brendlin	1690 Rt Fk Foots Crk	582-0785
13	David E Walte	David E Walte	1111 Foots G. Rd	582-1180
14	Susan Moulder	Susan K. Moulder	1553 Foots Ck Rd	582-9200
15	Tom Moulder	Tom Moulder	1553 Foots Ck Rd.	582-9200
16	Robyn Moulder	[illegible]	1607 Foots Cr Rd	582-1532
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FOOTS CREEK AND SURROUNDING AREA RESIDENTS
PETITION AGAINST THE BUREAU OF LAND MANAGEMENT'S (BLM)
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GOLD HILL TO THE JOHNS PEAK OHV AREAS

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	NAME (PLEASE PRINT)	SIGNATURE	ADDRESS	PHONE
1	ELLEN J. CALKINS	Ellen J. Calkins	3041 Rogue River Hwy	582-8108
2	AMBROSE C. WOODALL	Ambrose C. Woodall	215 4th St. Rogue River	582-326[illegible]
3	Shirley R. Stanbrook	Shirley R. Stanbrook	16009 Foots Crk Rd	582-45[illegible]
4	Judy Sanders	Judy Sanders	9887 W. Evans	582-347
5	Jim Stanbrook	Jim Stanbrook	[illegible] Foots Cr Rd	582-[illegible]
6	JEANNE R HUDSON	[illegible]	8300 Rogue River Hwy	582-3378
7	MICHAEL P. BARBOUR	Michael P. Barbour	8300 ROGUE RIVER HWY	582-3378
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FOOTS CREEK AND SURROUNDING AREA RESIDENTS
PETITION AGAINST THE BUREAU OF LAND MANAGEMENT'S (BLM)
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	NAME (PLEASE PRINT)	SIGNATURE	ADDRESS	PHONE
1	Jeanine Sommic	Jeanine Sommic	3140 Foots Cr. Rd.	582-1932
2	Lidian Howe	L' Howe	3146 Foots Cr. Rd	" "
3	Frank Jones	Frank Jones	3026 Foots Cr Rd	582-4534
4	Peggy K. Jones	Peggy K. Jones	3026 Foots Cr Rd	582-4534
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No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

THIS IS A JACKSON AND JOSEPHINE COUNTY PETITION SIGNERS OF THIS PETITION SHOULD BE REGISTERED VOTERS IN ONE OF THESE COUNTIES

TO THE BUREAU OF LAND MANAGEMENT:

We, the undersigned residents of Jackson and Josephine Counties, hereby petition the Bureau of Land Management (BLM) to stop work on their Timber Mountain/John's Peak Off Highway Vehicle (OHV) Management Plan and Environmental Impact Statement and remove the arbitrary 1995 designation of 16,250 acres forOHV use, encompassing and negatively impacting those public lands, private landowners and the communities of Jacksonville, Rogue River, Gold Hill, Ruch, Applegate, Provolt, Murphy, and Grants Pass.

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	10-6-14	Dennis R. Ingram	1216 E Main ST, Medford, OR 97504		Medford OR 97504
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I hereby certify that every person who signed this sheet did so in my presence and I believe that each person is a qualified voter in Jackson or Josephine County, Oregon. I also certify that I have received no compensation for these signatures.

CIRCULATOR SIGNATURE

PRINTED NAME OF CIRCULATOR Dennis R Ingram

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1216 E Main ST Medford, OR 97504

SHEET NUMBER:

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	4/8/14	Paige Barker	1325 Burbridge Dr. 97537		Rogue River 97537
2.	4/8/14	Donna Earnest	11180 E Evans Crk Rd		Rogue River 97537
3.	4/8/14	Stacey Grondorf	903 W. Evans Crk. Rd		Rogue River 97537
4.	4/8/14	Angie Anstett	517 Gold Terrace		Rogue River 97537
5.	4/8/14	Daniel Earnest	11180 E East Evans Crk Rd		Rogue River 97537
6.	4/8/14	mike BLUMENTHAL	504 PINE ST #F		ROGUE RIVER 97537
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I hereby certify that every person who signed this sheet did so in my presence and I believe that each person is a qualified voter in Jackson or Josephine County, Oregon. I also certify that I have received no compensation for these signatures.

CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR Ron LeDoux

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 3392 Foots Creek Rd
Gold Hill OR 97525

SHEET NUMBER:

FOOTS CREEK AND SURROUNDING AREA RESIDENTS
PETITION AGAINST THE BUREAU OF LAND MANAGEMENT'S (BLM)
PROPOSAL FOR A PUBIC ACCESS PORTAL ON FOOTS CREEK ROAD,
GOLD HILL TO THE JOHNS PEAK OHV AREAS

We, the undersigned residents of Foots Creek and the surrounding areas, hereby petition the Bureau of Land Management to remove Foots Creek Road from consideration as a public access portal to the Johns Peak OHV area.

	NAME (PLEASE PRINT)	SIGNATURE	ADDRESS	PHONE
1	Kathy J Wadhams	Kathy J Wadhams	3555 Homer Ln, Gold Hill 97525	582-32
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FOOTS CREEK AND SURROUNDING AREA RESIDENTS
PETITION AGAINST THE BUREAU OF LAND MANAGEMENT'S (BLM)
PROPOSAL FOR A PUBIC ACCESS PORTAL ON FOOTS CREEK ROAD,
GOLD HILL TO THE JOHNS PEAK OHV AREAS

We the undersigned residents of Foots Creek and the surrounding areas, hereby petition the Bureau of Land Management to remove Foots Creek Road from consideration as a public access portal to the Johns Peak OHV area.

	NAME (PLEASE PRINT)	SIGNATURE	ADDRESS	PHONE
1	Lynne Doyle	Lynne Doyle	1696 Rt Fk Foots Cr Rd	582-3506
2	Greg Doyle	Greg Doyle	1696 Rt Fork Foots Cr Rd	582-3506
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No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

THIS IS A JACKSON AND JOSEPHINE COUNTY PETITION. SIGNERS OF THIS PETITION SHOULD BE REGISTERED VOTERS IN ONE OF THESE COUNTIES.

TO THE BUREAU OF LAND MANAGEMENT:

We, the undersigned residents of Jackson and Josephine Counties, hereby petition the Bureau of Land Management (BLM) to stop work on their Timber Mountain/John's Peak Off Highway Vehicle (OHV) Management Plan and Environmental Impact Statement and remove the arbitrary 1995 designation of 16,250 acres for OHV use, encompassing and negatively impacting those public lands, rural private landowners and the communities of Jacksonville, Rogue River, Gold Hill, Ruch, Applegate, Provolt, Murphy, and Grants Pass.

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Janet Kramer	5/4/07	JANET C. KRAMER	537 THOMPSON CRK. RD. #34		APPLEGATE 97530
2. Terry Rakiecki	5/4/07	TERRY L. RAKIECKI	537 THOMPSON CRK. RD #42		APPLEGATE 97530
3. Carol Rakiecki	5/4/07	CAROL RAKIECKI	537 THOMPSON CR RD #42		Applegate 97530
4. Terry L Ryan	5/4/07	TERRY L. RYAN	537 THOMPSON CR RD #5		APPLEGATE 97530
5. W Hower	5/5/07	William Hower	537 " " #36		"
6. Elaine K Hesson	5/6/07	Elaine K. Hesson	537 Thompson Cr. Rd #29		Applegate 97530
7. C.J. Meany	5/6/07	C.J. Meany	537 Thompson Cr Rd #26		Applegate 97530
8. Susan L. Meany	5/6/07	SUSAN L. MEANY	537 Thompson Cr. Rd #26		APPLEGATE 97530
9. Fred Shelton	5/10/07	FRED SHELTON	537 THOMPSON CR. RD #38		APPLEGATE 97530
10. Alden W. Casey	5-10-07	ALDEN W. CASEY	537 THOMPSON CR. RD #24		APPLEGATE 97530
11. Betty L. Casey	5-10-07	BETTY L. CASEY	537 THOMPSON CR. RD #24		APPLEGATE 97530

I hereby certify that every person who signed this sheet did so in my presence and I believe that each person is a qualified voter in Jackson or Josephine County, Oregon. I also certify that I have received no compensation for these signatures.

CIRCULATOR SIGNATURE David P. Kramer

PRINTED NAME OF CIRCULATOR DAVID P. KRAMER

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 537 THOMPSON CRK. Rd. #34 APPLEGATE OR. 97530

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

THIS IS A JACKSON AND JOSEPHINE COUNTY PETITION. SIGNERS OF THIS PETITION SHOULD BE REGISTERED VOTERS or PROPERTY OWNERS IN THESE COUNTIES.

TO THE BUREAU OF LAND MANAGEMENT:

Concentrated off-highway vehicle (OHV) usage is not compatible with the checkerboard of public and private land ownership in the Timber Mountain/John's Peak area. We, the undersigned property owners, petition the Bureau of Land Management (BLM) to stop work on the Timber Mountain/John's Peak OHV Management Plan and Environmental Impact Statement, and remove the 1995 "OHV Area" designation from 16,250 acres of public land between Jacksonville, Murphy, and Grants Pass.

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	PROPRTY ADDRESS or TAX LOT	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Harold W Cronin	4-8-07	Harold W. Cronin	373W250001300	2746 Ashland Mine Rd	Ashland OR 97520
2. Marjorie A Cronin	4-8-07	Marjorie A Cronin	373W250001300	2746 Ashland Mine Rd	Ashland Mine Rd Ashland OR 97520
3. Kathleen Wilson	4-8-07	Kathleen Wilson	373W250001300 ~~1055 Diana Ct 97501~~ Medford	1055 Diana Ct Medford 97501	Medford 97501
4. Tom Wilson	4/8/07	Tom Wilson	1055 Diana Ct 97501 Medford	1055 Diana Ct Medford OR 97501	Medford 97501
5. John D. Ferrin	4/8/07	John D. Ferrin	2470 Sun Oaks Dr.	2470 Sun Oaks Dr	Medford 97504
6. Darlene K. Ferrin	4/8/07	DARLENE K. FERRIN	2470 SUN OAKS DRIVE	—	MEDFORD, 97504
7. Lisa M Bock	4/8/07	Lisa M. Bock	4454 Dark Hollow Rd	—	Medford 97501
8. Lori McCarron	4-8-07	Lori McCarron	507 W. 1st St. (B)	—	Phoenix, OR 97535
9. William E Cronin	4-8-07	William E Cronin	10815 Yank Gulch Rd	—	Talent OR 97540
10. Charles A. Bock	4/8/07	CHARLES A. BOCK	4454 DARK HOLLOW RD.		MEDFORD, OR 97501

I hereby certify that every person who signed this sheet did so in my presence and I believe that each person is a qualified voter or property owner in Jackson or Josephine County, Oregon. I also certify that I have received no compensation for these signatures.

CIRCULATOR SIGNATURE Bob Kingsnorth

PRINTED NAME OF CIRCULATOR BOB KINGSNORTH

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 OLD MILITARY RD CENTRAL POINT, OR 97502

SHEET NUMBER:

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

THIS IS A JACKSON AND JOSEPHINE COUNTY PETITION. SIGNERS OF THIS PETITION SHOULD BE REGISTERED VOTERS or PROPERTY OWNERS IN THESE COUNTIES.

TO THE BUREAU OF LAND MANAGEMENT:

Concentrated off-highway vehicle (OHV) usage is not compatible with the checkerboard of public and private land ownership in the Timber Mountain/John's Peak area. We, the undersigned property owners, petition the Bureau of Land Management (BLM) to stop work on the Timber Mountain/John's Peak OHV Management Plan and Environmental Impact Statement, and remove the 1995 "OHV Area" designation from 16,250 acres of public land between Jacksonville, Murphy, and Grants Pass.

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	PROPRTY ADDRESS or TAX LOT	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. [illegible]	4-8-07	DAN FERRIN	208 W 5th	P.O. BOX 1183	Phoenix 97535
2. [illegible]	4-8-07	DAN FERRIN JR	208 N 5th	P.O. Box 1183	Phoenix 97535
3.					
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I hereby certify that every person who signed this sheet did so in my presence and I believe that each person is a qualified voter or property owner in Jackson or Josephine County, Oregon. I also certify that I have received no compensation for these signatures.

CIRCULATOR SIGNATURE _____

PRINTED NAME OF CIRCULATOR _____

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) _____

_____

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	PROPRTY ADDRESS or TAX LOT	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Justin Estremado	3-15-07	Justin Estremado	1605 Galls cr rd Gold Hill OR		97525 Gold Hill
2. Merle B. Blankenship	3-15-07	Merle B. Blankenship	1026 Jolisa st. Medford OR		Medford 97501
3. Janice Blankenship	3-15-07	Janice Blankenship	1026 Jolisa St. Medford OR		Medford - 97501
4. Virginia Robins	3-16-07	Virginia Robins	1025 Jolisa St. Medford OR		Medford, OR 97501
5. Diane Robins	3-16-07	Diane Robins	1025 Jolisa St. Medford OR	373W TL10700 + 1100	Medford OR 97501
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CIRCULATOR SIGNATURE Diane Robins

PRINTED NAME OF CIRCULATOR Diane Robins

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1025 Jolisa St. Medford OR 97501

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	3-3-07	RICHARD L. SPEARS	4060 HWY 238, ~~[illegible]~~		JACKSONVILLE OR 97530
2.	3/3/07	Randall D. Egan	3960 Hwy 238		Jacksonville OR 97530
3.	3/3/07	M.S. OSBORNE	3260 HWY 238		JACKSONVILLE 97530
4. Justin Armstrong	3/3/07	Justin Armstrong	3855 Hwy 238		Jacksonville OR
5.	3/3/07	Tiffer Werner	3788 Hwy 238		Jacksonville OR
6.	3/3/07	Nicholle Brummett	3788 Hwy 238		Jacksonville OR 97530
7.	3/03/07	Sandy Free	3959 Hwy 238		Jacksonville 97530
8.	3/03/07	Angeline Armstrong	3855 Hwy 238		JACKSONVILLE 97530
9.	3/3/07	MARY HOKE	3777 HWY 238		JACKSONVILLE 97530
10.	3/3/07	Glenn Governor	3691 Hwy 238		Jacksonville 97530

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CIRCULATOR SIGNATURE David P. Calahan

PRINTED NAME OF CIRCULATOR DAVID P. CALAHAN

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 16000 HWY 238
JACKSONVILLE, OR 97530

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	8/5/07	DOUG GREEN	3751 HWY 238	N/A	97049
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CIRCULATOR SIGNATURE David P Calahan

PRINTED NAME OF CIRCULATOR DAVID P. CALAHAN

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 11,000 HWY 238
APPLEGATE, OR 97530

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Dora Johnson	3-4-07 ~~1/2/31~~	Dora Johnson	5416 Longenecker Rd		97520
2. Teresa J Madsen	3/4/07	Teresa J. Madsen	5400 Hwy 238		97530
3. Benjamin Yuma	3-4-07	Benjamin Yuma	5422 Hwy 238	320 Gold Terrace Jacksonville	97530
4. Connie C Johnson	3-4-07	Connie C Johnson	5418 Longenecker	348 Hondelage Jacksonville	97530
5. Michele A Mazon	3-7-07	Michele A Mazon	7336 Upper Applegate		97530
6. David P Calahan	3-7-07	DEL JONES	8801 HWY 238 J'ville		97530
7. Kathy Jones	3-7-07	Kathy Jones	8801 Hwy 238 J'ville		97530
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CIRCULATOR SIGNATURE David P Calahan

PRINTED NAME OF CIRCULATOR DAVID P. CALAHAN

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 11,000 Hwy 238 JACKSONVILLE, OR 97530

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Spirit Mountain Found Sandra King, Ttee	2/3/07	Spirit Mtn. Found SANDRA KING, TTee	9400 Hwy. 238	Rd. PMB 32 181 Upper Applegate	J'ville, Or. 97530
2. Roger Layne	3/4/07	ROGER LAYNE	~~9744~~ - Hwy 238 J'VILLE 97530	1100 Kubli Rd	Grants Pass 97527
3. Barrie Layne	3/4/07	BARRIE LAYNE	9744 Hwy 238 J'VILLE 97530	"	"
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CIRCULATOR SIGNATURE Michael P. Higgins

PRINTED NAME OF CIRCULATOR MICHAEL P. HIGGINS

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 9736 HWY 238 APPLEGATE VALLEY, OR 97530

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	3/6/07	Steve Gehres	7716 Left Fork Humbug Creek	same	Applegate 97530
	3/6/07	Richard L. Goodnough	420 Left Fork Humbug Creek Rd	" "	" "
	3/7/07	Michelle LaFave	1030 Left Fork Humbug Ck Rd	"	Applegate 97530
	3/8/07	TYLER DAVIS	1337 L Fk Humbug Ck Rd	"	Applegate 97530
	3/7/07	MARY C CRETNEY	1500 Left Fork HUMBUG CRK Rd	"	Applegate 97530
	9 MAR 07	KEN CHAPMAN	1183 LEFT FORK HUMBUG CRK		APPLEGATE 97530
	3-9-07	Mel Canal	4077 Humbug "	"	Applegate 97530
	3/9/07	Cathy Egelston	318 L.F. Humbug Crk	171 W. Nevada Ashland 97520	Applegate 97530
	3/9/02	Karen Hardman	570 Hamilton Rd		Ruch 97530
	3/9/07	JEANETTE STOBIE	1133 HUMBUG CR Rd	PO Box 3163	APPLEGATE 97530
	3-9-07	Thalia Truesdell	10036 Hwy 238 J'ville		Jacksonville 97530
	3/9/07	WESLEY M CRETNEY	1500 LEFT HUMBUG CREEK		APPLEGATE 97530
	3/9/07	Norm Towe	9522 TCR		Applegate, 97530
	3/9/2007	April L. Whitten	11715 Hwy 238	PO Box "	97530

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CIRCULATOR SIGNATURE

PRINTED NAME OF CIRCULATOR Richard Goodnough

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 400 L. Fk Humbug Ck Rd

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. [signature]	4/07/14	KIRK McELNEY	3590 HOSMER LANE	1630 WILLIAMS HWY #183 GRANTS PASS OR 97527	GOLD HILL 97525
2. [signature]	4/7/14	Denise McElney	3590 Hosmer Lane	1630 Williams Hwy, 183 Grants Pass, OR 97527	Gold Hill 97525
3. [signature]	4.21.14	Wendy Harrop	8680 RR Hwy		GRANTS PASS 97527
4. [signature]	4/21/14	RUSS HARROP	8680 RR Hwy		GRANTS PASS 97527
5. [signature]	4/22/14	martha Holstrom	13100 N Applegate Rd		Grants Pass 97527
6. [signature]	4/22/14	Tiffany Baida	1465 Kubli Rd	"	GP 97527
7. [signature]	4/22/14	KENNETH EDMON	3582 HOSMER LANE		Gold Hill 97525
8. [signature]	4/22/14	Michele Edmon	3582 Hosmer Lane		Gold Hill 97525
9. [signature]	4/25/14	Barbara Anderson	3674 Hosmer Ln		Gold Hill 97525
10. [signature]	4/25/14	Joe Anderson	3674 Hosmer Ln		Gold Hill 97525

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CIRCULATOR SIGNATURE KIRK McELNEY [signature]

PRINTED NAME OF CIRCULATOR KIRK McELNEY

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 3590 HOSMER LANE GOLD HILL, OR 97525

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Ted Birdseye	Apr 21, 14	Ted Birdseye	3791 Rogue River Hwy	—	Gold Hill 97525
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CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR Roland V. Bredfontaine

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) P.O. Box 1675 Rogue River OR 97537

89 Champion Rd. Gold Hill 97525

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1. [illegible]	4-12-14	Roland L. McCostine	88 Champlin		Gold Hill OR 97525
2. Tom E. Hayes	4-25-14	Tom E. Hayes	885 Breezy Lane, Grants Pass	"Indian Hills"	Grants Pass, OR 97527
3. R.C. Oldham Jr	4-25-14	Richard C. Oldham	949 Foots Creek Rd		Gold Hill OR
4. Nancy Oldham	4-25-14	Nancy Oldham	949 Foots Creek Rd		Gold Hill OR
5. Sandy Whitcomb	4-26-14	Sandy Whitcomb	4220 Foots Ck Rd		Gold Hill OR 97525
6. Sandy Jungwirth	4-26-14	Sandy Jungwirth	4220 Foots Rd.		Gold Hill 97525
7. Richard S. Hart	4/29/14	Richard S. Hart	135 Foots Creek Rd		Gold Hill 97525
8. Judy Beaumont	7-11-14	Judy Beaumont	1520 Birdseye Cr		Gold Hill 97525
9. Lynne Doyle	7-12/14	Lynne Doyle	1696 Foots Cr Rd		Gold Hill 97525
10.					

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CIRCULATOR SIGNATURE Shayne Maxwell

PRINTED NAME OF CIRCULATOR Shayne Maxwell

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1657 Foots Creek Rd Gold Hill, OR 97527

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Lorraine Fleker	10-9-11	Lorraine Fleker	780 Birdseye Creek		Gold Hill 97525
2. [illegible]	[illegible]	[illegible]	[illegible]		[illegible]
3.					
4. Laurie Warren	10/10/11	Laurie Warren	780 Birdseye Ck.		Gold Hill 97525
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Sig. not legible

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CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR DENNIS L. MORGAN

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2742 BERDSEYE CR. DD
GOLD HILL, OR 97525

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	4/12/14	David E Cunningham	4800 Foots Crk Rd	Same	Gold Hill OR 97525
2.	4-12-14	Rhianna Goldman	4697 Foots Crk Rd	Same	Gold Hill OR 97525
3.	4/12/14	Gail Frank	4741 Foots CK Rd	" "	Gold Hill, OR. 97525
4.	4-12-14	Gerald Easley	4201 Foots Crk	"	Gold Hill OR. 97525
5.	4/12/14	Deb Vroman	4255 Foots Creek Rd.	'Same'	Gold Hill, OR 97525
6.	4/12/14	Sherry L. Love	4098 Foots Creek Rd	P.O. Box 2011 RR	Rogue River, OR 97537
7.		NEWTON ELDER	4409	" "	" "
8.	4/15/14	Hector Garcia	4781 Foots Creek Rd		Gold Hill, OR 97525
9.	4-15-14	Casey L. Garcia	4781 Foots Creek Rd	—	Gold Hill, OR 97525
10.	4/15/14	Donna L. Tilay	4399 Foots Creek Rd.	PO Box 1624, RR	Rogue River 97537

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CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR Ronald LeDoux

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 3392 Foots Creek Rd
Gold Hill OR 97525

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	4/27/14	R C Robillard	3368 Foots Ck Gold Hill	PO 600 Rogue River OR	Gold Hill 97525
2.	4-17-14	Sandra Cavallin-Robillard	" " "	" " "	Rogue River 97537
3.	4-18/14	Brad Linnell	1392 Foots ct		Gold hill 97525
4.	4/18/14	Sheryl Linnell	1392 Foots Crk Rd	" same	Gold Hill 97525
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TO THE BUREAU OF LAND MANAGEMENT:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Patricia L. Gehres	5/7/14	Patricia L. Gehres	776 Left Fork Humbug Crk Rd.		Applegate, 97530
2. Sima McCormack	5/8/14	Sima McCormack	318 Left Fork Humbug Ck Rd		Applegate, 97530
3. Marc Cookson	5/8/14	Marc Cookson	318 Left Fork Humbug Rd		Applegate 97530
4. Phyllis Zerr	5/8/14	Phyllis A. Zerr	18033 N. Applegate Rd.		Grants Pass 97527
5. Kristi Cowles	5/9/14	KRISTI COWLES	3269 Humbug Creek Rd		Applegate OR 97530
6. Arthur Coulton	5/9/14	ARTHUR COULTON	3269 Humbug Creek Rd (2)		"
7. Erika Fey	5/9/14	ERIKA FEY	311 L. FORK HUMBUG CR. RD		Applegate, OR 97530
8. Barbara Yates	5/9/14	BARB YATES (SUMMERBROOK)	4490 Humbug Creek Rd	PO Box 3157	"
9. Thalia Truesdell	5/10/14	Thalia Truesdell	10036 Hwy 238		Jacksonville OR 97530
10.					

I hereby certify that every person who signed this sheet did so in my presence and I believe that each person is a qualified voter in Jackson or Josephine County, Oregon. I also certify that I have received no compensation for these signatures.

CIRCULATOR SIGNATURE Michelle LaFave

PRINTED NAME OF CIRCULATOR Michelle LaFave

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1030 Left Fork Humbug Creek Rd. Applegate, OR 97530

SHEET NUMBER:

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

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1.	5-7-14	Sang Montage	3833 Humbug Creek Rd	POB 3225 Applegate OR 97530	97530 Applegate
2.	5-7-14	Stacie V. Brown	1004 Humbug Creek Rd	←	97530 Applegate
3.	5-7-14	Bill Dunlap	18475 N Applegate Rd	PO Box 3145	97530 Applegate
4.	5-7-14	J D Rogers	3905 Thompson Creek Rd Applegate		97530 Applegate
5.	5-7-14	Noa A. Lidoff	3833 Humbug Creek Rd.	POB 3225 Applegate OR	97530 Applegate
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CIRCULATOR SIGNATURE _____

PRINTED NAME OF CIRCULATOR Sang Montage

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 3833 Humbug Creek Rd Applegate, OR 97530

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1. Katherine A Drouillard	7-30-14	Katherine A Drouillard	5595 Kane Creek Rd	PO Box 1089 Gold Hill OR 97525	Central Point OR 97502
2. Jennifer Hall	7-30-14	Jennifer Hall	7472 Old Stage Rd		Central Point, OR 97502
3. Glenda K. Taylor	7-30-14	Glenda Taylor	5559 Kane Creek Rd	P.O. Box 179 Gold Hill OR 97525	Central Point OR 97502
4. Allan Taylor	"	Allan Taylor	"	"	"
5. Kerstin Cuffe	7-30-14	Kerstin Cuffe	5551 Kane Cr		Central Point, OR 97502
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CIRCULATOR SIGNATURE _____

PRINTED NAME OF CIRCULATOR Jennifer HALL

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 7472 Old Stage Rd.
Central Point, OR 97502

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Frank Calafiore	8/11/14	Frank Calafiore	2775 Birdseye crk. Rd. Gold Hill, OR 97525		
2. Ciara Gray	8-11-14	Ciara Gray	2890 1/2 Birdseye creek rd Gold Hill OR		
3. Ryan Gray	8-11-14	Ryan Gray	2890 1/2 Birdseye crk rd Gold Hill OR		
4. Myron L. Kitzenbach	8-12-14	Myron L. Kitzenbach	2640 Birdseye Crk. Rd. Gold Hill, OR 97525		
5. Francine Kitzenbach	8-12-14	Francine Kitzenbach	Same		
6. John Kitzenbach	8-12-14	John Kitzenbach	Same		
7. [illegible]	8-13-14	Greg C. Jackson	120 Oak St Rogue River		97537
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CIRCULATOR SIGNATURE Judy Beaumont

PRINTED NAME OF CIRCULATOR Judy Beaumont

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1520 Birdseye Creek Rd Gold Hill, OR 97525

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
[illegible]	4/28/14	Donald Dahrens	1841 Birdseye Creek Rd		Gold Hill 97525
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CIRCULATOR SIGNATURE [illegible]

PRINTED NAME OF CIRCULATOR DENNIS L. MORGAN

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2742 BIRDSEYE CR. RD

GOLD HILL, OR 97525

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
Thom R. Rogers	07/15/2014	Thom R. Rogers	1545 Bradley Cr. Rd		Gold Hill 97525
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CIRCULATOR SIGNATURE Dennis L. Morgan

PRINTED NAME OF CIRCULATOR DENNIS L. MORGAN

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 3747 Oregon St CR

GOLD HILL, OR 97525

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1.	4-13-14	Paul A. Logue	1302 Birdseye Ck. Rd.	P.O. Box 1865 Rogue River 97537	Gold Hill, 97525
2.	04/13/2014	Patricia E. Logue	1302 Birdseye Ck. Rd.	P.O. Box 1865 Rogue River 97537	Gold Hill, 97525
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CIRCULATOR SIGNATURE Dennis Morgan

PRINTED NAME OF CIRCULATOR DENNIS L. MORGAN

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2742 Birdseye Ck Rd

GOLD HILL OR 97525

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Melinda A. Fluck

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. [illegible]	4/12/14	Phil Cuna	6155 Abbie Ln Gold Hill	—	Gold Hill, OR 97525
2. [illegible]	4.13.14	Sami Pedersen	2757 Rogue River Hwy	—	Gold Hill, OR 97525
3. Marsha Foster	4-14-14	MARSHA FOSTER	5954 ABBIE LANE Gold Hill	—	GOLD HILL, OR 97525
4. [illegible]	4 14 14	JERRY LICHUAR	2531 R.R. Hwy Gold Hill	—	GOLD HILL, OR 97525
5. [illegible]	4 14/14	JERRY LICHUAR	2537 R.R. Hwy Gold Hill	—	GOLD HILL 97525
6. [illegible]	4/14/14	JERRY LICHUAR	2537-B R.R. Hwy Gold Hill	—	GOLD HILL 97525
7. Michelle Petersen	4/14/14	Michelle Petersen	5950 Abbie Lane Gold Hill, OR		Gold Hill OR 97525
8. Thomas L. Ward	4/14/14	Thomas L. WARD	3865 Abbie Lane Gold Hill		97525
9. Ellen J. Cagenus	4-16-14	ELLEN J. CAGENUS	3041 Rogue River Hwy Gold Hill		Gold Hill OR 97525
10. Glenda Pandev	4-16-14	Glenda Pandev	5845 Abbie Lane		Gold Hill 97525

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CIRCULATOR SIGNATURE Melinda A. Fluck

PRINTED NAME OF CIRCULATOR MELINDA A FLUCK

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 6155 ABBIE LN. GOLD HILL, OR 97525

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. BARRY Cole	4-16-14	BARRY Cole	5595 ABBIE LN	GOLD	97525
2. Susan Harryman	4-16-14	Susan Harryman	5808 Abbie Ln.	Gold Hill	97525
3. Ilene Anderson-Razey	4/20/14	Ilene Anderson-Razey	2597 RR Hwy	Gold Hill	97525
4. C L Shelton	4/20/14	Clarence L. Shelton	2705 RR Hwy	Gold Hill	97525
5. Karen Lamothe	4/20/14	KAREN LAMOTHE	5760 ABBIE LN	GOLD HILL	97525
6. Brian Scott	4/20/14	Brian Scott	5680 Abbie LN	Gold Hill	97525
7. John J. Gammick	4/20/14	John J. GAMMICK	5700 Abbie Lane	Gold Hill, Or	97525
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CIRCULATOR SIGNATURE Melinda A. Fluck

PRINTED NAME OF CIRCULATOR MELINDA A. FLUCK

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 6155 ABBIE LN. GOLD Hill, OR 97525

SHEET NUMBER:

6

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1. Margaret Arvin	4-16-2014	MARGARET ARVIN	3332 FOOTS CREEK RD		GOLD HILL, OR 97525
2. Phil Arvin	4-16-2014	PHILIP ARVIN	3332 FOOTS CK RD		GOLD HILL, OR 97525
3. M Karnazes	4-17-14	Margaret Karnazes	1485 Foots Creek Rd		Gold Hill, OR 97525
4. George Karnazes	4-17-14	GEORGE KARNAZES	1485 FOOTS CREEK RD		GOLD HILL, OR 97525
5. Janice Bettenburg	4-17-14	Janice Bettenburg	3532 Foots Creek		Gold Hill, OR 97525
6. G. Stapleton	4-18-14	G. Stapleton	93 Champlin Ln		Gold Hill, OR 97525
7. R. Falcon	4-18-14	R. Falcon	93 Champlin Ln		Gold Hill OR 97525
8. Alice B. Hatch	4.19.14	Alice B. Hatch	5806 Foots Cr Rd.	P.O. Box 418	Rogue River, OR 97535
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CIRCULATOR SIGNATURE Roland L. Pregontaino

PRINTED NAME OF CIRCULATOR Roland L. Pregontaino

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) P.O. Box 1675 Rogue River. 97537

89 Champlin Ln Gold Hill 97525

SHEET NUMBER:

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1. [illegible]		RICHARD G. GEBHARDT	3773 HOSMER LN. GOLD HILL		97525
2. [illegible]	4/24/14	Thomas Powers	3600 Hosmer Ln G.H.		97525
3. Carol Powers	4/24/14	Carol Powers	3600 Hosmer Ln G.Hill		97525
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CIRCULATOR SIGNATURE KIRK McELHEY [illegible]

PRINTED NAME OF CIRCULATOR KIRK McELHEY

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 3590 HOSMER LANE Gold Hill, OR 97525

SHEET NUMBER:

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1.	4-17-14	R C Robillard	3368 Foots Ck Gold Hill	PO 600 Rogue River OR	Gold Hill 97525
2.	4-17-14	Sandra Cavallin-Robillard	" " "	" " "	Rogue River 97537
3.	4-18-14	Brad Linnell	1392 Foots ct		Gold hill 97525
4.	4/18/14	Sheryl Linnell	1392 Foots Crk Rd	" same	Gold Hill 97525
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CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR Ronald LeDoux

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 3392 Foots Creek Rd
Gold Hill OR 97525

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1.	4/12/14	David E Cunningham	4800 Foots Crk Rd	Same	Gold Hill OR 97525
2.	4-12-14	Rhianna Goldman	4697 Foots Crk Rd	Same	Gold hill OR 97525
3.	4/12/14	Gail Frank	4741 Foots CK Rd	" "	Gold Hill, OR. 97525
4.	4-12-14	Gerald Easley	4201 Foots Crk	"	Gold Hill OR 97525
5.	4/12/14	Deb Vroman	4255 Foots Creek Rd.	Same	Gold Hill, OR 97525
6.	4/12/14	Sherry L. Love	4098 Foots Creek Rd	P.O. Box 2011 RR	Rogue River, OR 97537
7.		NEWTON ELDER	4409	" "	" "
8.	4/15/14	Hector Garcia	4781 Foots Creek Rd		Gold Hill, OR 97525
9.	4-15-14	Casey L. Garcia	4781 Foots Creek Rd	—	Gold Hill, OR 97525
10.	4/15/14	Donna L. Tilley	4399 Foots Creek Rd.	PO Box 1624, RR	Rogue River 97537

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CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR RONALD LEDOUX

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 3392 FOOTS CREEK Rd

Gold Hill OR 97525

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	4-15-14	Susan M LeDoux	4405 Foots Ck Rd	Same	Gold Hill 97525
2.	4/15/14	JOHN L. JORDAN	4382 FOOTS CR RD	SAME	GOLD HILL 97525
3.	4/15/14	Martha Dobney	3366 Foots Creek Rd.	same	Gold Hill 97525
4.	4/15/14	Allen L. Dobney	3366 Foots Cr. Rd.	Same	Gold Hill 97525
5.	8/28/14	Janet Allsman	854 Foots Crk Rd	same	Gold Hill 97525
6.	8/28	Marc Allsman	"	"	"
7.	10-3-14	RICHARD PORTA	3360 FOOTS CREEK ROAD		Gold Hill 97525
8.	10-3-14	NORMA PORTA	" "	" "	" "
9.					
10.					

I hereby certify that every person who signed this sheet did so in my presence and I believe that each person is a qualified voter in Jackson or Josephine County, Oregon. I also certify that I have received no compensation for these signatures.

CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR RONALD LEDOUX

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 3392 FOOTS CREEK Rd
Gold Hill OR 97525

SHEET NUMBER:

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once. ✓

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

THIS IS A JACKSON AND JOSEPHINE COUNTY PETITION. SIGNERS OF THIS PETITION SHOULD BE REGISTERED VOTERS IN ONE OF THESE COUNTIES.

TO THE BUREAU OF LAND MANAGEMENT:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Elizabeth A Adamson	4/19/14	(Pen: Black Channel) Elizabeth A. Adamson	3911 NE 61st Ave Vancouver Washington		Vancouver WA 98661-3251
2. Marie L. Accardo	4/30/14	MARIE L ACCARDO	2613 SE Briarwood Dr Van. WA 98683 Executive.		
3. Joseph Lukowski	4-20-14	Joseph Lukowski	1837 NE, Ainsworth Portland, OR.		Portland 97211-5428
4. Theresa A Lukowski	4/22/14	THERESA APLUKOWSKI	6410 SE Ash S, Portland	97215	Portland, OR 97215
5. Edward A Lukowski	4/23/14	Edward A Lukowski	19007 NE 174ST ~~Brush Prairie~~	PO Box 848	Brush Prairie WA. 98606
6.					
7. "Above Signors are Joint owners of 1,000 Acres - Left				Fork Foots Creek Rd, Gold Hill, OR	
8.		Under Loretta Lukowski			
9.					
10.					

I hereby certify that every person who signed this sheet did so in my presence and I believe that each person is a qualified voter in Jackson or Josephine County, Oregon. I also certify that I have received no compensation for these signatures.

Don't filled out

CIRCULATOR SIGNATURE _____

PRINTED NAME OF CIRCULATOR _____

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) _____

SHEET NUMBER: _____

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	4/7/14	Ron LeDoux	3392 Foots Creek Rd		Gold Hill 97525
2.	4/7/14	Richard Porta	3360 Foots Creek Rd		Gold Hill 97525
3.	4/7/14	Norma Porta	3360 Foots Creek Rd.		Gold Hill 97525
4.	4/7/14	Robert James	3388 Foots Creek Rd		Gold Hill, 97525
5.	4/7/14	Laurie James	3388 Foots Creek Rd		Gold Hill 97525
6.	4.8.14	Tom Moulder	1553 Foots Crk Rd		Gold Hill 97525
7.	4-8-14	Leslie Reynold	3626 Hamer Ln		Gold Hill 97525
8.	4/9/14	Kevin Masterson	4767 Foots Creek Rd		Gold Hill 97525
9.	4/9/14	Kristin Thompson	3175 ~~Foots Creek~~ PR Hway		Gold Hill 97525
10.					

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CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR Ron LeDoux

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 3392 Foots Creek Rd
Gold Hill OR 97525

SHEET NUMBER:

No Circulators for This Petition Are Being Paid

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	4/8/14	Paige Barker	1325 Burbridge Dr. 97537		Rogue River 97537
2.	4/8/14	Donna Earnest	11180 E Evans Crk Rd		Rogue River 97537
3.	4/8/14	Stacey Grondors	903 W. Evans Crk. Rd		Rogue River 97537
4.	4/8/14	Angie Anstedt	517 Gold Terrace		Rogue River 97537
5.	4/8/14	Daniel Earnest	11180 E East Evans Rd		Rogue River 97537
6.	4/7/14	mike BLUMENTHAL	504 PINE ST #F		ROGUE RIVER 97537
7.					
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CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR Ron LEDoux

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 3392 Foots Creek Rd
Gold Hill OR 97525

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	10-6-14	Dennis R. Ingram	1216 E Main ST, Medford, OR 97504		Medford OR 97504
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CIRCULATOR SIGNATURE

PRINTED NAME OF CIRCULATOR Dennis R Ingram

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1216 E Main ST
Medford, OR 97504

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Lorraine Flaker	10-9-11	Lorraine Flaker	780 Birdseye Creek		Gold Hill 97525
2. [illegible]	[illegible]	[illegible]	[illegible]		[illegible]
3.					
4. Laurie Warren	10/10/11	Laurie Warren	780 Birdseye Ck.		Gold Hill 97525
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Sig. not legible

I hereby certify that every person who signed this sheet did so in my presence and I believe that each person is a qualified voter in Jackson or Josephine County, Oregon. I also certify that I have received no compensation for these signatures.

CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR DENNIS L. MORGAN

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2747 BERDSEYE CR. RD. GOLD HILL, OR 97525

SHEET NUMBER:

No Circulators for This Petition Are Being Paid

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	5-7-14	Sang Montage	3833 Humbug Creek Rd	POB 3225 Applegate OR 97530	97530 Applegate
2.	5-7-14	Stacie V. Brown	1004 Humbug Creek Rd	←	97530 Applegate
3.	5-7-14	Bill Dunlap	18475 N Applegate Rd	PO Box 3145	97530 Applegate
4.	5-7-14	J D Rogers	3905 Thompson Creek Rd Applegate		97530 Applegate
5.	5-7-14	Noa A. Udoff	3833 Humbug Creek Rd.	POB 3225 Applegate OR	97530 Applegate
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CIRCULATOR SIGNATURE _____

PRINTED NAME OF CIRCULATOR Sang Montage

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 3833 Humbug Creek Rd Applegate, OR 97530

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Katherine A. Drovdahl	7-30-14	Katherine A. Drovdahl	5595 Kane Creek Rd	PO Box 1089 Gold Hill OR 97525	Central Point OR 97502
2. Jennifer Hall	7.30.14	Jennifer Hall	7472 Old Stage Rd		Central Point, OR 97502
3. Glenda R. Taylor	7-30-14	Glenda Taylor	5559 Kane Creek Rd	P.O. Box 174 Gold Hill OR 97525	Central Point OR 97502
4. Allan Taylor	"	Allan Taylor	"	"	"
5. Kerstin Cuffe	7-30-14	Kerstin Cuffe	5551 Kane Cr		Central Point, OR 97502
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CIRCULATOR SIGNATURE _____

PRINTED NAME OF CIRCULATOR Jennifer Hall

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 7472 Old Stage Rd, Central Point, OR 97502

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Frank Calafiore	8/11/14	Frank Calafiore	2775 Birdseye crk. Rd. Gold Hill OR. 97525		
2. Ciara Gray	8-11-14	Ciara Gray	2870 1/2 Birdseye creek rd gold Hill or		
3. Ryan Gray	8-11-14	Ryan Gray	2870 1/2 Birdseye crk rd gold Hill or		
4. Myron L. Kitzenbach	8-12-14	Myron L. Kitzenbach	2640 BIRDSEYE CRK. RD. GOLD HILL, OR. 97525		
5. Fernando Kitzenbach	8-12-14	Fernando Kitzenbach	SAME		
6. John Kitzenbach	8-12-14	John Kitzenbach	Same		
7. Greg C. Jackson	8-12-14	Greg C. Jackson	120 Oak St Rogue River		97537
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I hereby certify that every person who signed this sheet did so in my presence.
I also certify that I have received no compensation for these signatures.

CIRCULATOR SIGNATURE Judy Beaumont

PRINTED NAME OF CIRCULATOR Judy Beaumont

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1520 Birdseye Creek Rd Gold Hill, OR 97525

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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We, the undersigned residents of Jackson and Josephine Counties, hereby petition the Bureau of Land Management (BLM) to stop work on their Timber Mountain/John's Peak Off Highway Vehicle (OHV) Management Plan and Environmental Impact Statement and remove the arbitrary 1995 designation of 16,259 acres for OHV use, encompassing and negatively impacting these public lands, rural private landowners and the communities of Jacksonville, Rogue River, Gold Hill, Ruch, Applegate, Provolt, Murphy, and Grants Pass.

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
[illegible]	4/28/14	Donald Dahrens	1841 Birdseye Creek Rd		Gold Hill 97525
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CIRCULATOR SIGNATURE [illegible]

PRINTED NAME OF CIRCULATOR DENNIS L. MORGAN

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2742 BIRDSEYE CO. RD

GOLD HILL, OR 97525

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Tom R. Rogers	01/15/2014	Tom. R. Rogers	1845 Birdseye Cr. Rd		Gold Hill 97525
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CIRCULATOR SIGNATURE Dennis L. Morgan

PRINTED NAME OF CIRCULATOR DENNIS L. MORGAN

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2742 BIRDSEYE CR.
GOLD HILL, OR 97525

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	4-13-14	Paul A. Logue	1302 Birdseye Ck. Rd.	P.O. Box 1865 Rogue River 97537	Gold Hill, 97525
2.	04/13/2014	Patricia E. Logue	1302 Birdseye Ck. Rd.	P.O. Box 1865 Rogue River 97537	Gold Hill, 97525
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CIRCULATOR SIGNATURE Dennis Morgan

PRINTED NAME OF CIRCULATOR DENNIS L. MORGAN

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2742 Birdseye Ck Rd
GOLD HILL OR 97525

SHEET NUMBER:

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Melinda A. Fluck

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. [illegible]	4/12/14	Phil Cuva	6155 Abbie Ln G.Hill	—	Gold Hill, OR 97525
2. [illegible]	4.13.14	Sami Pedersen	2757 Rogue River Hwy G.H	—	Gold Hill, OR 97525
3. Marsha Foster	4-14-14	MARSHA FOSTER	5954 ABBIE LANE GOLD HILL	—	GOLD HILL, OR 97525
4. [illegible]	4-14-14	JERRY LICHUAR	2531 R.R. Hwy Gold Hill	—	GOLD HILL, OR 97525
5. [illegible]	4-14-14	JERRY LICHUAR	2537 R.R. Hwy Gold Hill	—	GOLD HILL 97525
6. [illegible]	4/14/14	JERRY LICHUAR	2537-B R.R. Hwy GOLD HILL	—	GOLD HILL 97525
7. Michelle Peterson	4/14/14	Michelle Peterson	5950 Abbie Lane Gold Hill, OR		Gold Hill, OR 97525
8. Thomas L. Ward	4/14/14	THOMAS L. WARD	3865 Abbie Lane Gold Hill		97525
9. Ellen J. Cackins	4-16-14	ELLEN J. CACKINS	3047 Rogue River Hwy Gold Hill		Gold Hill OR 97525
10. Glenda Pender	4-16-14	Glenda Pender	5845 Abbie Lane		Gold Hill 97525

I hereby certify that every person who signed this sheet did so in my presence and I believe that each person is a qualified voter in Jackson or Josephine County, Oregon. I also certify that I have received no compensation for these signatures.

CIRCULATOR SIGNATURE Melinda A. Fluck

PRINTED NAME OF CIRCULATOR MELINDA A FLUCK

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 6155 ABBIE LN.
GOLD HILL, OR 97525

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Edward C Mazza	9-6-06	Edward C Mazza	4216 R F Foots Ck	PO Box 1227	RR OR 97537
2. Deborah L Mazza	9-6-06	Deborah L Mazza	4216 Rt Foots Crk Rd	P.O. Box 1227	RR OR 97537
3. Allison M. Ayars	9-6-06	Allison M. Ayars	4004 Foots Creek Rd		GH OR 97525
4. Tim L Ayars	9-6-06	Tim L. Ayars	4004 Foots Creek Rd		GH OR 97525
5. Douglas R. Garvin	9-6-06	Douglas R. Garvin	4220 Foots Creek Rd		GH OR 97525
6. Don Gordon	9-6-06	Don Gordon	4216 Rt Fork Foots Ck		GH OR 97525
7. Derryl Fitch	9-6-06	Derryl Fitch	3990 "		"
8. Glena Rasmussen	9-22-06	Glena Rasmussen	760 E Calif Jville OR 97530		Jville OR 97530
9. Gail Frank	9/28/06	Gail Frank	4741 Foots Ck		Gold Hill OR 97525
10.					

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CIRCULATOR SIGNATURE Burton Eikleberry

PRINTED NAME OF CIRCULATOR Burton Eikleberry

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 4204 Foots Creek Rd
Gold Hill, OR 97525

SHEET NUMBER:

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

THIS IS A JACKSON AND JOSEPHINE COUNTY PETITION. SIGNERS OF THIS PETITION SHOULD BE REGISTERED VOTERS IN ONE OF THESE COUNTIES.

TO THE BUREAU OF LAND MANAGEMENT:

Concentrated off-highway vehicle (OHV) usage is not compatible with the checkerboard of public and private land ownership in the Timber Mountain/John's Peak area. We, the undersigned electors, petition the Bureau of Land Management (BLM) to stop work on the Timber Mountain/John's Peak OHV Management Plan and Environmental Impact Statement, and remove the 1995 "OHV Area" designation from 16,250 acres of public land between Jacksonville, Murphy, and Grants Pass.

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. [illegible]	11/19/06	JOSEPH WALKER	1404 BRITT AVE. MED.		MEDFORD 97501
2. Bev Walker	11/19/06	Bev Walker	1404 Britt Ave		Medford 97501
3. [illegible]	11/19/06	Majine Slawson	808 Cedar St.		Medford 97501
4. [illegible]	11/19/06	LYAL FIELD	890 LOZIER LN		MEDFORD 97501
5. [illegible]	11/19/06	James Vencill	8834 Arlington DR		Medford
6. Chuck Hill	11-19-06	CHUCK HILL	1570 S Peach ST 57		Medford 501
7. Elizabeth Alexander	11-19-06	ELIZABETH ALEXANDER	1025 ELLENDALE #303		MEDFORD 97504
8. Michael Murphy	11-19-06	MICHAEL MURPHY	141 South Church St.		Phoenix
9. Pam Murphy	11-19-06	Pam Murphy	141 S. Church St.		Phoenix
10. C. S. Fixsen	11-26-06	C.S. FIXSEN	718 W. 4th. St.		Medford

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CIRCULATOR SIGNATURE Edith Joyce Lall

PRINTED NAME OF CIRCULATOR Edith Joyce Lall

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 3353 Old Military Rd. Central Point, Or. 97502

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
Nancy Lee Rutledge	10/31/06	Nancy Lee Rutledge	2692 Old Military Rd.	—	Central Point OR 97502
2. Glenn D. Woods	10/31/06	Glenn Woods	3132 Old Military Rd		CENTRAL POINT OR 97502
3. Michael D. Baker	10/31/06	Michael D. Baker	2691 Old Military Rd		CP 97502
4. Linda Baker	10/31/06	Linda D. Baker	2691 Old Military Rd		CP 97502
5. [illegible]	11/3/06	EDWARD S. KLIMKO	3275 Old Military Rd		CP 97502
6. Patricia A. Walls	11/4/06	Patricia A. Walls	4365 Tami Lane		CP 97502
7. William B. Walls	11/4/06	William B. Walls	4365 TAMI LANE		C.P. 97502
8. Louise Lull	11/8/06	Louise Lull	3497 Old Military Rd		CP. 97502
9. Corrine Jennings	11-10-06	CORRINE JENNINGS	3060 OLD MILITARY RD.		CP. 97502
10. Virginia Post	11/14/06	Virginia C. Post	4247 Tami Lane		C.P. 97502

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CIRCULATOR SIGNATURE [illegible]

PRINTED NAME OF CIRCULATOR Carolyn Kingsnorth

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 Old Military Rd. Central Point OR 97502

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. [illegible]	10/11/06	Herb Quandt	9800 Hwy 238	PO Box 847	Jacksonville 97530
2. [illegible]	10/11/6	Martha Holstrom	13100 N. Applegate	—	Grants Pass 97527
[illegible]	10/12/06	Donna Schubert	495 E Park St	—	Grants Pass 97527
4. [illegible]	10/12/06	CHRIS MARTIN	1475 KUBLI RD.		GRANTS PASS 97527
5. [illegible]	10/12/06	Chateau Roberts	15200 Watergap Rd.	P.O. Box 84 Murphy OR 97533	Williams, 97544
6. [illegible]	10/12/06	Corey McTaggart	112 Independence GP	1415 P.O. Box GP	Grants Pass 97528
7. [illegible]	10-12-06	Nikki Perez	158 Glenn Way		Central Point 97504
8.					
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CIRCULATOR SIGNATURE [illegible]

PRINTED NAME OF CIRCULATOR Carolyn Kingsnorth

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 Old Military Rd
Central Point OR 97502

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
Bruce Burnett	8/15/2006	Bruce Burnett	2730 Birdseye Creek Road		Gold Hill, OR 97525
2. Charlotte Payne	8/15/06	CHARLOTTE PAYNE	2900 BIRDSEYE CRK. RD.		GOLD HILL, OR 97525
3. Edward E Payne	8/15/06	Edward E Payne	2700 Birdseye Rd		Gold Hill Ore 97525
4. Angelina Katzenbach	8-15-06	Angelina Katzenbach	2640 Birdseye Ck Rd	PO. Box 322 Rogue River, OR	Gold Hill OR 97525
5. Cheryl Katzenbach	8-15-06	CHERYL Katzenbach	4/2 NW. C & HB G.P.	"SAME"	GA 97526
6. Myron Katzenbach	8-15-06	MYRON KATZENBACH	2640 BIRDSEYE CRK. RD Gold Hill	SAME	97525
7. Ferrawanna Katzenbach	8-15-06	FERRAWANNA KATZENBACH	2640 Birdseye Ck. Rd.	SAME	97525
8. Victoria A. Morgan	8-16-06	VICTORIA A. MORGAN	2742 Birdseye Creek Rd	SAME	97525
9.					
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CIRCULATOR SIGNATURE Mary Ann Ross

PRINTED NAME OF CIRCULATOR Mary Ann Ross

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1900 Birdseye Creek Rd. Gold Hill, OR 97525

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Keith W. Harkness	08/11/06	KEITH W. HARKNESS	233 Rogue River Hwy #4		97527
2. [illegible]	8/11/06	Sherry Bowman-Harkness	233 Rogue River Hwy #4		97527
3. Barbara Bukovac	8/11/06	Barbara Bukovac	7001 Rogue River Hwy #25		97526
4. Wendy M. Harrop	8/14/06	Wendy M. Harrop	6850 Rogue River Hwy		97526
5. A. Hannan	8-14-06	A. HANNAN	740 Pleasant Ck Rd		97537
6. Terry Fimbres	8-14-06	Terry Fimbres	169 Earhart rd		97537
7. Sara Daugherty	8-14-06	Sara Daugherty	10640 Pleasant Ck Rd	PO BOX 1777	97537
8. Nancy Stobie	8-14-06	Nancy Stobie	101 Cluster Dr. Rogue River OR		97537
9. Ellen C. Trippet	8-14-06	Ellen C. Trippet	11278 E. Evans Ck. Rd		97537
10. Dennis Morgan	8-14-06	DENNIS L. MORGAN	2747 BIRDSEYE CK RD		97525

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CIRCULATOR SIGNATURE Mary Ann Ross

PRINTED NAME OF CIRCULATOR Mary Ann Ross

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1900 Birdseye Creek Rd. Gold Hill, OR. 97525

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	8-10-06	Tona Stewart	1144 Queensbranch Rd.		Rogue River 97537
2.	8-10-06	Ruth Heitkemper	630 Pleasant Crk	PO 335	Rogue River 97537
3.	8-10-06	Letitia S. Manley	5664 E. Evans Cr Rd.	POB 1645	Rogue River 97537
4.	8-16-06	Kimberly Wolfe	3160 Camage Dr		Medford 97501
5.	8-10-06	Jennifer K Sowell	340 White School Rd		Cave Junction 97523
6.	8-10-06	Mary Ann Ross	1900 Birdseye Crk Rd		Gold Hill 97525
7.	8-11-06	Jean Dilworth	330 Monica Dr.		Grants Pass 97526
8.	8-11-06	Eva M Fleming	16981 Ford Rd		Rogue River 97537
9.	8/11/06	Deborah L. Gonnella	1385 Murphy Cr. Rd.		Grants Pass OR 97527
10.	8/11/06	Ed Glovinsky	380 Manley Hts		GP, OR 97526

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CIRCULATOR SIGNATURE Mary Ann Ross

PRINTED NAME OF CIRCULATOR Mary Ann Ross

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1900 Birdseye Creek Road, Gold Hill, OR. 97525

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Sharon Kellington	8/14/06	Sharon Kollington	1236 La Loma	PO Box 357	97501
2. Lisa Odegaard	8/14/06	Lisa Odegaard	2664 Anderson Crk Rd.	Talent, OR	97540
3. [illegible]	8/14	Eric S. Goldman	918 Minton Rd	Rogue River OR	97537
4. [illegible]	8/14/06	Jack Oppenorth	575 Elizabeth	Ashland OR	97520
5. Sue Marion	8/14/06	Sue Marion	1725 Apache Dr.	Medford OR	97501
6. Claudia Chaves	8/14/06	CLAUDIA CHAVES	1788 Birdseye Cr Dr	Gold Hill, OR	97525
7. [illegible]	8/14/06	Emily Green	1511 Holly Park	Medford, OR	97504
8. [illegible]	8/14/06	ROBERT HEILBRONER	2664 Anderson Creek Rd	Talent, OR	97540
9. Michael Datz	8/15/06	Michael Datz	711 W 1st St.	Phoenix, OR	97535
10. [illegible]	8/15/06	KARIN DUNN	0820 QUAIL RUN	Talent OR	97540

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CIRCULATOR SIGNATURE Claudia Chaves

PRINTED NAME OF CIRCULATOR CLAUDIA CHAVES

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1788 Birdseye Cr Dr
Gold Hill, OR 97525

SHEET NUMBER: 1

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Lindsay Arneille	8/18/06	Lindsay J. Arneille	1158 IOWA ST		Ashland 97520
2. Kathryn M Gordon	8/18/06	Kathryn M Gordon	1030 Callaway Drive		Medford 97504
3. James L Burke	8/18/06	JAMES L BURKE	2388 GREENMEADOWS WAY		ASHLAND 97520
4. Lorraine Werblow	8/18/06	LORRAINE WERBLOW	3701 TIMEVIEW CT.		MEDFORD 97504
5. Mary Jane Morrison	8/25/06	MARY JANE MORRISON	4624 S. Pacific Hwy #59		Phoenix 97504
6. R.O. Robillard	8-28-06	R.O. ROBILLARD	3368 FOOTS CK	P.O. 600 ROGUE RIVER OR 97537	GOLD HILL 97525
7. Sandra Cavallin-Robillard	8-28-06	SANDRA CAVALLIN-ROBILLARD	3368 FOOTS CREEK RD	PO 600 ROGUE RIVER OR 97537	GOLD HILL 97525
8. Kathleen T. Griffith	8/28/06	KATHLEEN T. GRIFFITH	3156 ROGUE RIVER HWY.	GOLD HILL 97525	→
9. Craig Rutledge	8/28/06	CRAIG RUTLEDGE	4520 Foots Creek RD.		GOLD HILL 97525
10. Kate Rutledge	8/28/06	Kate Rutledge	4520 Foots Creek Rd.	Gold Hill →	97525

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CIRCULATOR SIGNATURE Burton Eikleberry

PRINTED NAME OF CIRCULATOR Burton Eikleberry

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 4204 Foots Creek Rd.
Gold Hill, OR 97525

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Burton Eikleberry	6-13-06	Burton Eikleberry	4204 Foots Creek Rd.	—	Gold Hill 97525
2. Karen A. Thornton	6/13/06	KAREN A. THORNTON	4058 FOOTS CREEK RD.	—	GOLD HILL 97525
3. Jim Hill	6/13/06	JIM HILL	2808 FOOTS CRK. RD	P.O. BOX 1736	ROGUE RIVER OR. 97537
4. Linda B. Miller	6/13/06	Linda B. MILLER	1823 Birdseye Cr Rd.	PO Box 328	Gold Hill, OR 97525
5. Charles C. Miller	6/13/06	Charles C. Miller	1823 Birdseye Cr Rd.	PO Box 328	Gold Hill, OR 97525
6. Linda Eikleberry	6-13-06	LINDA EIKLEBERRY	4204 FOOTS CREEK RD	P.O. BOX 323	GOLD HILL, OR 97525 → ROGUE RIVER, 9753
7. Coleman Tidwell	6-14-06	COLEMAN TIDWELL	7947 REDTHORNE RD		ROGUE RIVER 9753
8. Douglas R. Garcia	6-15-06	DOUGLAS R. GARCIA	4220 RT. FOOTS CRK. RD.		GOLD HILL, OR. 9752
9. Margaret Jakubcin	6-15-06	Margaret Jakubcin	2100 Kincaid Rd.	PO Box 377	Williams, OR 97544
10. R J Adamek	6/22/06	R J ADAMEK	1323 NW HIGHLAND AVE	SAME	G.P. OR 97526

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CIRCULATOR SIGNATURE Burton Eikleberry

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Alice Hatch	Aug 28, 06	Alice Hatch	5806 Foots Cr. Rd.	P.O. Box 418	Rogue River 97537
2. Carol Chapin	8-28-06	CAROL CHAPIN	5130 Foots CR Rd		Gold Hill OR 97525
3. Larry Chapin	8-28-06	Larry Chapin	513 Foots Cr Rd		Gold Hill 97525
4.					Gold Hill 97525
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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Rose Marie Stanley	6/20/06	Rose Marie Stanley	315 W. Evans Cr. Rd #5		Rogue River, OR 97537
2. Mary C. Collins	6/21/06	Mary C. Collins	315 W Evans Crk Rd #4		RR-97537
3. Lucius Bennett	7/4/06	LUCIUS BENNETT	315 W. EVANS CK RD #3		ROGUE RIVER, OR 97537
4. Jean Bennett	7/4/06	JEAN BENNETT	315 W. EVANS CK RD #9		ROGUE RIVER, 97537
5. Shirley Shirley	7/4/06	SHIRLEY SHIRLEY	2190 FOOTS CREEK RD		GOLD HILL 97525
6. Dick Fisher	7-4-06	DICK FISHER	2242 FOOTS CR	SAME	GOLD HILL 97525
7. Darlene Christie	7-6-05	DARLENE CHRISTIE	729 Rogue River		Rogue R. OR 97537
8. Ruby Stewart	7-6-05	Ruby Stewart	P.O. Box 729		Rogue R 97537
9.					
10.					

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CIRCULATOR SIGNATURE ~~GAYLE A. BENNETT~~ Gayle A Bennett

PRINTED NAME OF CIRCULATOR GAYLE A. BENNETT

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2170 FOOTS CREEK RD.
GOLD HILL, OR 97525-6721

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Sharon Bryant	8/5/06	Sharon Bryant	2103 Foots Crk Rd		Gold Hill 97525
2. Art Birds	8/6/06	Art Birds	448 Foots Crk Rd		Gold Hill 97525
3. Melanie Gutches	8/25/06	Melanie Gutches	2035 Foots Cr Rd		Gold Hill 97525
4. Grace Crandall	8/25	Grace Crandall	2035 Foots Crk Rd		Gold Hill 97525
5. J.A. Hofstrand	8/27/06	J.A. Hofstrand	2198 Foots Crk Rd		Gold Hill 97525
6. Kelly Gutches	8/27/06	Kelly Gutches	2035 Foots Cr Ro		Gold Hill 97525
7. Jeanne Jordan	8/28/06	Jeanne Jordan	2090 Foots Cr Rd		Gold Hill 97525
8. Everett Jordan	8/28/06	Everett Jordan	2090 Foots Cr Rd		Gold Hill 97525
9. Shayne Maxwell	8-28-06	Shayne Maxwell	1057 Foots Cr Rd		Gold Hill OR 97525
10.					

I hereby certify that every person who signed this sheet did so in my presence and I believe that each person is a qualified voter in Jackson or Josephine County, Oregon. I also certify that I have received no compensation for these signatures.

CIRCULATOR SIGNATURE Jeanne Jordan

PRINTED NAME OF CIRCULATOR Jeanne Jordan

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2090 Foots Creek Rd Right Fork Gold Hill, OR 97525

SHEET NUMBER:

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Glenda Oscar	8-15-06	Glenda Oscar	2041 Birdseye Cr. Rd	Gold Hill, OR	97525
2. Edwin A. Shelby	8/15/06	EDWIN A. SHELBY	2601 Foots Cr. Road 97525 Gold Hill	P.O. Box 1406	Rogue River 97537
3. David R. Smith	8/16/06	DAVID R. SMITH	1821 Birdseye Cr. Rd.	Gold Hill, ORE.	97525
4. Norma Smith	8/16/06	NORMA SMITH	1843 Birdseye Cr. Rd.	Gold Hill OR	97525
5. Maynard E. Smith	8/16/06	MAYNARD E. SMITH	1843 Birdseye Cr. Rd	Gold Hill, OR	97525
6. Sandra J. Smith	8/19/06	Sandra J. Smith	1847 Birdseye Ck Rd	Gold Hill, OR	97525
7. Marc Smith	8-19-06	MARC SMITH	1847 BIRDSEYE CR.	GOLD HILL, OR	97525
8.					
9.					
10.					

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CIRCULATOR SIGNATURE Mary Ann Ross

PRINTED NAME OF CIRCULATOR Mary Ann Ross

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1900 Birdseye CK. Rd. Gold Hill, OR. 97525

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. S Simonett	8-15	S. SIMONETT	PO Box 1228/RR	→	97537
2.					
3.					
4.					
5.					
6.					
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10.					

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CIRCULATOR SIGNATURE Mary Ann Ross

PRINTED NAME OF CIRCULATOR Mary Ann Ross

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1906 Birdseye Creek Rd.
Gold Hill OR 97525

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	03-04-07	Geraldine Kulp	130 Spencer Gulch Rd	PO Box 1395	Jacksonville 97530
2.	03/04/07	Shirley Oaches	211 Spencer Gulch Rd		Jacksonville Oregon
3.	3/4/07	BONNI ENGELHARDT	528 Lomas Rd		RUCH 97530 92530
4.	3/4/7	Martha J. Hess	1104th St	Box 1356	Phoenix, OR 97535
5.	3/4/07	Cary Voorhees	540 Lomas Rd		Jacksonville, OR 97530
6.	3-4-07	Greta Mikkelsen	740 G St.		Jville 97530
7.	3/4/07	MARDELLA DAY	88 FOREST CR RD		JVILLE 97530
8.	3-4-07	CHRIS MADSEN	5400 Hwy 238	SAME	JVILLE 97530
9.	3-4-07	WAYNE Meeds	2622 Forest Cr Rd		Jvlle Oregon 97530
10.	3-4-07	Loretta Meeds	2310 Forest Creek Rd		Jacksonville OR 97530

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CIRCULATOR SIGNATURE David P. Calahan

PRINTED NAME OF CIRCULATOR DAVID P. CALAHAN

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 16000 Hwy 238
JACKSONVILLE, OR 97530

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Shelly McMillin	3/1/07	Shelly McMillin	540 Lomas rd	Applegate	OR. 97530
2. Jeremy P Grissell	3-1-07	Jeremy Grissell	528 Lomas rd	Applegate	OR 97530
3. Wesley Offenbacher	3-3-07	Wesley Offenbacher	10638 Hy 238	Jacksonville	OR 97530
4. Patty Offenbacher	3-03-07	Patty Offenbacher	10638 Hy 238	J'ville	OR 97530
5. Randy Costello	3-3-07	Randy Costello	819 Bishop Ck. Rd.	Jacksonville	OR 97530
6. Noah Nichols	3-3-07	Noah Nichols	856 Bishop Crk. Rd.	J'ville	OR 97530
7. Russell Legel	3/3/07	Russell Legel	6484 Hwy 238	J-ville	OR 97530
8. George Iberger	3/3/07	George Iberger	785 Forest Ck Rd	Jacksonville	OR 97530
9. Virginia M Iberger	3/3/07	Virginia M Iberger	785 Forest Cr. Rd.	Jacksonville	OR 97530
10. Louise Karon	3/3/07	Louise Karon	92 forest Creek Rd	Jacksonville	OR 97530

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CIRCULATOR SIGNATURE David P Calahan

PRINTED NAME OF CIRCULATOR DAVID P. CALAHAN

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 16,000 Hwy 238 JACKSONVILLE, OR 97530

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Gary Lisman	4-26-06	Gary Lisman	7218 Applegate Rd.		OR 97530
2. Marion Hardden	4/26/06	Marion Hardden	4035 Little Applegate Rd		J'ville OR 97530
3. James Sartorio	4/26/06	JAMES SARTORIO	4035 LITTLE APPLEGATE RD		J'ville OR 97530
4. Barbara Mumblo	4-26-06	Barbara Mumblo	4009 Yale Creek Rd Jacksonville		OR 97530
5. Martha Hess	4-26-06	Martha Hess	110 4th St. Phoenix	Box 1356	Phoenix 97535
6. [illegible]	4-29-06	LEAH GREGORY	10792 HWY 238		J'ville 97530
7.					
8.					
9.					
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CIRCULATOR SIGNATURE D Calahan

PRINTED NAME OF CIRCULATOR DAVID P. CALAHAN

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 11,000 HWY 238 APPLEGATE, OR 97530

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
[illegible]	6-13-06	Tom Brovarney	1686 China Gulch Rd		Jacksonville 97530
[illegible]	6-13-06	Pam Brovarney	1686 China Gulch Rd		Quilla 97530
[illegible]	6-19-06	Yvonne Turpin	8800 Hwy 238		Jville 97530
[illegible]	6-26-06	Patricia H Gordon	1550 Yellow Brick Rd		Jville 97530
[illegible]	6-27-06	Jerry W. Dawson	2255 China Gulch Rd		Jville 97530
[illegible]	6/27/06	Evelyn G. Smith	2025 China Gulch Rd		Jville 97530
[illegible]	6/27/06	Elwin R. Huskill	1666 China Gulch Rd		Jville 97530
[illegible]	6/27/06	Deana E Huskill	1666 China Gulch Rd		Jacksonville 97530
[illegible]	6-28-06	ARTHUR H. ANDERSON	49 CHINA GULCH RD		JACKSONVILLE 97530
[illegible]	6-28-06	VICTORIA D. ANDERSON	49 CHINA GULCH ROAD		JACKSONVILLE 97530

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CIRCULATOR SIGNATURE [illegible]

PRINTED NAME OF CIRCULATOR HAL MACY

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1800 CHINA GULCH RD. J'VILLE, OR 97530

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[illegible]	6-26-06	ROTH C. AUSTIN	3972 LITTLE APPLEGATE RD		97530
[illegible]	06/26/06	JACK SHIPLEY	1340 MISSOURI FLAT RD GRANTS PASS OR 97527		97527
[illegible]	6 26 06	Michael Zepponi	11745 Highway 238 Jacksonville		97530
[illegible]	6-26-06	ROBERT M. FISCHER	4137 THOMPSON CREEK RD APPLEGATE, OR 97530		97530
[illegible]	6-26-06	Linda I Fischer	4137 Thompson Crk Rd		97530
[illegible]	6-26-06	Arlene Aron	1684 Humbug Creek Rd		97530
[illegible]	6-27-06	ROSALIND MALY	1800 China Gulch		97530
[illegible]	6-27-06	GAIL GARTNER	4450 Humbug Ck Rd.		97530
[illegible]	6-27-06	Maureen Smith	1050 Humbug Ck Rd		97530
[illegible]	6-27-06	Janis Mohr-Tipton	3000 Humbug Ck Rd		97530

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CIRCULATOR SIGNATURE Hal Macy

PRINTED NAME OF CIRCULATOR HAL MACY

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1800 CHINA GULCH RD. J'VILLE, OR. 97530

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[illegible]	6/29/06	T. TAYLOR	4835 THOMPSON CREEK	APPLEGATE	97530
[illegible]	6/30/06	Geoff Baker	4099 Hunter Creek Rd	Applegate	97530
[illegible]	7/2/06	Michael Webster	9395 Hwy 238	J'Ville	97530
[illegible]	7/4/06	MICHAEL KAHN	1360 CHINA GULCH RD	J'VILLE	97530
[illegible]	7/4/6	PATTI PHILLIPS-KAHN	1360 CHINA GULCH RD	J'VILLE	97530
[illegible]	7/4/6	DENISE BLIVEN	PO Box 1266 1500 China Gulch	J'Ville OR	97530
[illegible]	7/4/06	EDWARD L BLIVEN	1500 CHINA GULCH ROAD	JACKSONVILLE	97530
[illegible]	7/7/06	BARBARA SOMMERS	393 GRAYS CREEK RD	GRANTS PASS	97527
[illegible]	7/7/06	Peter Dittler	393 Grays Creek Rd	Grants Pass	97527

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CIRCULATOR SIGNATURE [illegible]

PRINTED NAME OF CIRCULATOR HAL MACY

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1800 CHINA GULCH RD. J'VILLE

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1. J. F. Duggan	7/4/06	John F. Duggan	5505 Forest Crk. Rd.	P.O. Box 524	J'ville, 97530
2. Annice Olene Bloch	7/29/06	Annice Olene Bloch	2110 Creek Dr	2110 Creek Dr Ashland	Ashland OR 97520
3. Diane P. Macy-Meads	7/29/06	Diane P. Macy-Meads	2880 Forest Creek Rd	Jacksonville OR	97530
4. Karen Mitchell	7/29/06	Karen Mitchell	3680 Forest Cr. Rd.	Jacksonville	97530
5. Denise K Real	7/29/06	Denise Real	5505 Forest Cr. Rd	PO Box 524 Jacksonville	97530
6. Terry Ross	7/29/06	Terry Ross	2510 Forest Ck. Rd		Jacksonville 97530
7. Frank Cline	7/29/06	FRANK CLINE	6319 McLOUGHLIN	CENTRAL PT, OR	
8. Jim Stoin		Jim Stoin	2622 Feste Cr		
9. Jim Stumbo	7/29/06	Jim Stumbo	3666 Forest Creek Rd		Jacksonville 97530
10. Susan Meeds-Bashe	7/29/06	Susan Meeds-Bashe	2889 Forest Ck. RD.	Jacksonville	J'ville, OR 97530

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CIRCULATOR SIGNATURE J. F. Duggan

PRINTED NAME OF CIRCULATOR John F. (Jack) Duggan

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 5505 Forest Creek Rd / P.O. Box 524 Jacksonville, OR 97530-0524

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. [illegible]	7-18-06	D M Bee	3155 Forest Ave	Box 726 J'ville	J'ville 97530
2. Ginger Casto	7/19/06	Ginger Casto	2688 Little Applegate		J'Ville 97530
3. [illegible]	7/19/06	D'Miles Salmon	388 Upper Applegate Rd	P.O. Box 719	J'Ville 97530
4. Alison Sills	7/21/06	Alison Sills	3004 Hwy. 238		J'ville 97530
5. Cheryl von Tress	7/21/06	Cheryl von Tress	~~RDB 116~~ 525 Welcum Ln	PO Box 416	J'ville 97530
6. Gail Gardner	7/23/06	Gail K. Gardner	Box 143		J'ville 97530
7. [illegible]	7/23/06	Debra Keberle	875 Humbug Cr. Rd.	PO Box 477	J'ville 97530
8. [illegible]	7/22/06	Danielle Drosack	4645 Cherry Ln	Medford OR	97504
9. [illegible]	7/24/06	E Bretko	Po Box 1653	Jacksonville OR	97530
10. Monica McFadden	7/25/06	Monica E. McFadden	3737 Hwy 238	Jacksonville	97530

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CIRCULATOR SIGNATURE [illegible]

PRINTED NAME OF CIRCULATOR Carolyn Kingsnorth

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 Old Military Rd.
Central Point OR 97502

SHEET NUMBER:

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[illegible]	8/30/06	JANE E. FOSSEN	11831 U. APPLEGATE Rd	JACKSONVILLE	OR 97530
[illegible]	8-30-06	Chant Thomas	10000 Little Applegate	Jacksonville	97530
[illegible]	8/30/06	KEN SCHIFF	1850 UPPER APPLEGATE Rd	J'VILLE	97530
[illegible]	8/30/06	JAMES SARTORIO	4035 LITTLE APPLEGATE RD	J'Ville	97530
[illegible]	8/30/06	Marion Hadden	" "	"	"
[illegible]	8-30-06	Robert M Ivy	6265 Little Applegate	J'ville	97530
[illegible]	8-30-06	THEO. E. SHAFFER	2459 LITTLE APPLEGATE	J'VILLE	97530
[illegible]	8-30-06	DUANE BOWMAN	2131 LITTLE APPLEGATE RD	J'VILLE	97530
[illegible]	8/30/06	ERIN VOLHEIM	4873 Little Applegate Rd	J'ville	97530
[illegible]	9/14/06	CHRIS BEEKMAN	7632 Hwy 238 J'VILLE	J'VILLE	97530

MAIL TO:
SHANNE MANUEL
1057 FOOS CR RD
GOLD HILL OR 97525

I hereby certify that every person who signed this sheet did so in my presence and I believe that each person is a qualified voter in Jackson or Josephine County, Oregon. I also certify that I have received no compensation for these signatures.

CIRCULATOR SIGNATURE [illegible]

PRINTED NAME OF CIRCULATOR JANE E. FOSSEN

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 11831 UPPER APPLEGATE Rd.
JACKSONVILLE, OR 97530

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

THIS IS A JACKSON AND JOSEPHINE COUNTY PETITION. SIGNERS OF THIS PETITION SHOULD BE REGISTERED VOTERS IN ONE OF THESE COUNTIES.

TO THE BUREAU OF LAND MANAGEMENT:

We, the undersigned residents of Jackson and Josephine Counties, hereby petition the Bureau of Land Management (BLM) to stop work on their Timber Mountain/John's Peak Off Highway Vehicle (OHV) Management Plan and Environmental Impact Statement and remove the arbitrary 1995 designation of 16,250 acres forOHV use, encompassing and negatively impacting those public lands, rural private landowners and the communities of Jacksonville, Rogue River, Gold Hill, Ruch, Applegate, Provolt, Murphy, and Grants Pass.

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Lori Cooper	8/14/06	Lori J. Cooper	2255 China gulch Rd.		Jacksonville 97530
2. [illegible]	8-14-2006	Jerry W. Dawson	2255 China Gulch Rd.		Jacksonville 97530
3. Helen Howard	9-15-06	Helen Howard	4415 Cedar Flat Rd		Williams 97544
4. [illegible]	8-15-06	CLAUDIA BEAUSOLEIL	4495 CEDAR FLAT RD		WILLIAMS, 97544
5. [illegible]	8-15-06	ANN GUNTER	110 DAVIDSON RD		WILLIAMS 97544
6. [illegible]	8/15/06	Joanne Wagner	4474 Hillcrest Rd		Medford 97501
7. [illegible]	9/17/06	Tom Werner	31 TWIN OAKS RD.		JACKSONVILLE 97530
8. Gail Gonsalves	9-17-06	Gail Gonsalves	256 Twin Oaks Rd		Ruch
9. [illegible]	9-17-06	YVONNE TURPIN	8800 Hwy 238		"
10. J. Gonsalves	9-17-06	J. GONSALVES	256 TWIN OAKS		Ruch

I hereby certify that every person who signed this sheet did so in my presence and I believe that each person is a qualified voter in Jackson or Josephine County, Oregon. I also certify that I have received no compensation for these signatures.

CIRCULATOR SIGNATURE Lori Cooper

PRINTED NAME OF CIRCULATOR Lori Cooper

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2255 China gulch Rd. Jacksonville OR 97530

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Karoli Cadarette	9/17/06	Karoli Cadarette	1310 China Gulch Rd.		Jacksonville 97530
2. Douglas K. Stewart	9-17-06	Douglas K. Stewart	1310 China Gulch Rd.		Jacksonville 97530
3. [illegible]	9-17-06	Timothy W. Ryan	388 Ridgewood Dr		J-Ville 97530
4. [illegible]	9-17-06	Sandra L. Ryan	388 Ridgewood Dr.		Jacksonville 97530
5. Karri Lea DeVos	9-17-06	Karri Lea DeVos	208 Twin Oaks Rd		Jacksonville 97530
6. [illegible]	9-17-06	James L DeVos	208 Twin Oaks Rd		Jacksonville 97530
7. Janice Wilt	9/17/06	Janice Wilt	466 China Gulch		Jacksonville 97530
8. Joyce Webber	9/17/06	Joyce Webber	316 Ridgewood		J-Ville 97530
9.					
10.					

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CIRCULATOR SIGNATURE Lori Cooper

PRINTED NAME OF CIRCULATOR Lori Cooper

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2255 China Gulch Rd. Jacksonville OR 97530

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Louis A Sequeira	11/14/06	Louis A. SEQUEIRA	138 KANAKA FLATS RD JACKSONVILLE, OR 97530	P.O. BOX 323 JACKSONVILLE, OR 97530	JACKSONVILLE 97530
2. Rita Jann Geesin	11/14/06	Rita Jann Geesin	8275 Upper Applegate Rd Jacksonville, OR 97530	PO Box 931	Jacksonville, OR 97530
3. Adrienne Kay Hassanein	11-14-06	Adrienne Kay Hassanein	2620 Little Applegate Rd. Jacksonville, OR 97530		J'ville 97530
4. Richard M. Hassanein	11-14-06	RICHARD HASSANEIN	2620 L. APPLEGATE RD JACKSONVILLE OR 97530		J'VILLE 97530
5. Gary Lisman	11-14-06	Gary Lisman	7219 Applegate Rd. Jacksonville, OR 97530		J'ville 97530
6. Frank F. Ditto	11-14-06	Frank F. Ditto	6791 UPPER APPLEGATE RD Jacksonville OR. 97530		97530
7. Sandra L. Ditto	11-14-06	Sandra L Ditto	6791 UPPER Applegate Rd. Jacksonville OR		97530
8. Phil Dollison	11-14-06	Phil Dollison	6621 Upper Applegate Rd Jacksonville 97530		J'ville 97530
9. Kenneth G Kasal	11-16-06	Kenneth G KASAL	120 Reservoir Rd Jacksonville OR 97530		J'ville 97530
10. Joyce L Kasal	11-16-06	Joyce L Kasal	120 Reservoir Rd Jacksonville 97530		J'ville 97530

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CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR Carolyn Kingsnorth

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 2550 Old Military Rd. Central Point OR 97502

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Constance Gourley	9-20-06	Constance Gourley	244 Dunlap Rd		Jacksonville, Or 97530
2. Phyllis Johns	9-20-06	Phyllis Johns	10056 Hwy 238	PO Box 501	Jacksonville, OR 97530
3. Julia A Kenney	9-20-06	Julia A Kenney	233 Thompson Creek	PO BOX 3217	Applegate 97530
4. Shannon Buscho	9-20-06	SHANNON M. BUSCHO	14319 HWY 238		APPLEGATE 97530
5. Lois Robinson	9-20-06	Lois Robinson	5550 Humbug C.R.R.D.		Jacksonville OR 97530
6. Betty L Smith	9-20-06	Betty L. Smith	18200 Hwy 238 ~~Hunt Pass~~		Grants Pass 97527
7. Babette S Rapp	9/20/06	Babette S. Rapp	17900 HWY 238	PO BOX 3319 Applegate OR 97530	Grants Pass 97527
8. Nancy A. Yie	9/21/06	NANCY A. YIE	14500 N. Applegate Rd		GRANTS PASS 97527
9. Karen J. Higgins	9-20-06	KAREN J. HIGGINS	9736 - HWY 238		JACKSONVILLE OR 97530
10. Mike Higgins	9-24-06	MIKE P. HIGGINS	9736 HWY 238		JACKSONVILLE 97530

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CIRCULATOR SIGNATURE Karen Higgins

PRINTED NAME OF CIRCULATOR ~~[illegible]~~ KAREN HIGGINS

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 9736 Hwy 238

JACKSONVILLE OR. 97530

SHEET NUMBER:

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Catherine B Ingles	9/24/06	CATHERINE B INGLES	9740 Hwy 238 B		JACKSONVILLE OR 97530
2. David Ingles	9-24-06	DAVID INGLES	9740 Hwy 238		Jacksonville 97530
3. Susan DeVitt	9-24-06	Susan DeVitt	11412 Hwy 238		Jacksonville 97530
4. [illegible]	9/24/06	JAMES DeVitt	11412 Hwy 238		Jacksonville, OR 97530
5. [illegible]	9/24/06	Ronald Burley	14111 Hwy 238		Applegate, OR 97530
6. [illegible]	9/26/06	DAVID M. PALMER	9730 Hwy 238		JACKSONVILLE OR 97530
7. Pamela F Palmer	9-26-06	Pamela F. Palmer	9730 Hwy 238		JACKSONVILLE OR. 97530
8.					
9.					
10.					

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CIRCULATOR SIGNATURE Michael P. Higgins

PRINTED NAME OF CIRCULATOR MICHAEL P. HIGGINS

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 9736 HWY 238 JACKSONVILLE, OR 97530.

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
Homer D. Meeds	3-4-07	Homer D. Meeds	2510 Forest Creek Rd	Jacksonville	OR 97530
Susan S Phelps	3-4-07	Susan S Phelps	3805 Forest Creek Rd	Jacksonville	OR 97530
3. Kathryn Voorhees	3-4-07	Kathryn Voorhees	9374 Hwy 238	Jacksonville	OR 97530
4. Michael Wisnovsky	3-5-07	Michael Wisnovsky	709 Wideout Lane	Jacksonville	OR 97530
5. Monica E. McFadden	3-5-07	Monica E McFadden	3737 Hwy 238	Jacksonville	OR 97530
6. Judith A Waiport	3-5-07	Judith A Waiport	330 Slate Creek Rd	Grants Pass	OR 97527
Bruce Waiport	3-5-07	Bruce Waiport	330 Slate Creek Rd	Grants Pass	OR 97527
8. Charles Adams	3-5-07	Charles Adams	900 Hamilton	Jacksonville	OR 97530 (900 HAMILTON)
9. Day W. Boddorff	3/7/07	DAY W. BODDORFF	1470 HAMILTON Rd	Jacksonville	OR
10.			and 1380 HAMILTON	Jacksonville	OR 97530

and 7446 Upper Applegate

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CIRCULATOR SIGNATURE David P Calahan

PRINTED NAME OF CIRCULATOR DAVID P. CALAHAN

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 11,000 HWY 238 JACKSONVILLE, OR 97530

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	3/7/07	THERESA AUKER BECKER	4089 HUMBUG CR RD		APPLEGATE 97530
2.	3/7/07	Elizabeth Hampton	1240 Humbug CK Rd		Applegate 97530
3.	3/7/07	Robert E Johnson	5970 Hwy 238		Jacksonville OR 97530
4.	3/7/07	Doris A. Houck	5980 Hwy 238		Jacksonville OR 97530
5.	3/7/07	Scott Bies	3162 Forest Cr. Rd		Jacksonville, OR 97530
6.	3/7/07	ADAM CUMMINGS	3162 Forest CR. Rd		Jacksonville, OR 97530
7.	3/7/07	MATT Thames	255 WILLIAMS LN.		SHADY COVE OR, 97530
8.	3/7/07	Morgan DeLong	167 Lincoln #13		Ashland, OR 97520
9.	3/7/07	Donna D Davis	3201 FOREST CK RD		Jacksonville, OR 97530
10.	3/7/07	KEN STEBBINS	3043 FOREST CR RD		JACKSONVILLE OR 97530

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CIRCULATOR SIGNATURE DPCalahan

PRINTED NAME OF CIRCULATOR DAVID P. CALAHAN

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 11,000 HWY 238 APPLEGATE, OR 97530

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1.	12/31/06	Rona Jones	14130 Hwy 238	—	Applegate
2.	1-17-06	GERY KAPPEN	4427 Humbug Cr. Rd.		Applegate 97530
3.	3/3/07	Rebecca Bentley	592 Latigo Ranch	Wms	Wm 97544
4.	3/3/07	Betty Edgar	121 Bonlinda Lane		Williams 97544
5.	3/1/07	Dorothy Hawthorne	1616 S1 Hwy 238	—	GP 97527
6.	3/3/07	MIKE WALSH	12100 No Applegate	—	AV 97527
7.	3-6-07	Jim Clover	1831 Slagle Creek		G.P. 97527
8.	3/6/07	KATHY L. CARSTENS	17252 N. Applegate Rd	P.O. Box 3237	G.P. 97527
9.	3/6/07	[illegible]	16955 Hwy 238 Applegate	P.O. Box 3282	Applegate 97530
10.	3/6/07	DONALD M STEINERT	800 MESSINGER RD.		GP 97527

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CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR TERESA ACKER BECKER

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 4099 HUMBUG CR RD APPLEGATE OR 97530

SHEET NUMBER:

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1. Wendy Mainwaring	3-7-07	Wendy Mainwaring	6499 Hwy 238	ø	Jacksonville 97530
2. James Mainwaring	3-7-07	James Mainwaring	" Same	ø	Same
3. Kayla Mainwaring	3-7-07	Kayla Mainwaring	" Same	ø	Same
4. Violet L Cox	3-7-07	VIOLET L. COX	6413 Hwy 238	ø	Same
5. Naomi Jean	3-7-07		" "	ø	97530
6. Renee Legel	3/7/07	Renee Legel	6484 Hwy 238		97530
7. Carol Brooks	3/7/07	Carol Brooks	6480 Hwy 238		Jacksonville 97530
8. C. Suzanne Bissey	3/7/07	C Suzanne Bissey	23130 Cedar St. R Falls 97501	P.O. Box 3464 Ashland, OR	Ashland 97520
9. Sheila Kaczor	3/7/07	Sheila KACZOR	4389 TANI LANE CP		C.P. OR 97502
10. David Bissey	3-7-07	[illegible]	23130 Cedar St. C. Falls 97501	Po Box 3464 Ashland. OR	Ashland 97520.
Michael Brooks	3/7/07	MICHAEL A BROOKS	6480 HWY 238 J'ville	PO BOX 435 J'ville	Jacksonville 97530

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CIRCULATOR SIGNATURE Donita Reed Gerald

PRINTED NAME OF CIRCULATOR

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 6537 Hwy 238

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Doris I Hinkle	8-8-06	DORIS I HINKLE	2556 FOOTS CRK RD	SAME	97525 GOLD HILL-OR
2. Raymond J. Hinkle	8-8-06	RAYMOND J. HINKLE	2556 FOOTS CRK. RD	SAME	97625 GOLD HILL, ORE.
3. Grace A. Erickson	8-9-06	GRACE A. ERICKSON	2650 Foots Creek Rd	Same	97525 Gold Hill OR
4. Lois McConnell	8-09-06	LOIS McConnell	2810 Foots CK	"	Gold Hill, OR
5. Claude McConnell	8-09-6	CLAUDE McCONNELL	2810 FOOTS CR RD	"	Gold Hill 97525
6.					
7.					
8.					
9.					
10.					

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CIRCULATOR SIGNATURE Jeanie Moore

PRINTED NAME OF CIRCULATOR JEANIE MOORE

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1534 FOOTS CRK. RD. GOLD HILL, OR 97525

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Judy A Beaumont	8.10.6	Judy Beaumont	—	P.O. BX535	Rogue River 97537
2. Lee Beaumont III	8-10-6	Lee Beaumont	—	PO BX535	Rogue River 97537
3. Debbie Spark	8-10-6	Debbie Spark	264 Walker Rd		Grants Pass 9752
4. Charles M. Spark	8-10-06	CHARLES M. SPARK	264 WALKER RD G.P.		Grants Pass 97527
5. April Kelly	8-11-06	April Kelly	949 Wards Crk Rd		Rogue River OR 97537
6. Kelley D Doerges	8-11-06	Kelley D. Doerges	1652 NE Terrace Dr		Grants Pass OR 97
7. Pamela VanArsdale	8-11-06	PAMELA VANARSDALE	201 GARDINER ST	PO BOX 848	ROGUE RIVER 97537
8. Daniel Stone	8-11-06	Daniel Stone	201 Gardiner St		Rogue River 9753
9.					
10.					

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CIRCULATOR SIGNATURE Jeanie Moore

PRINTED NAME OF CIRCULATOR JEANIE MOORE

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1534 FOOTS CREEK RD. GOLD HILL, OR 97525

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TIMBER MOUNTAIN/JOHNS PEAK PETITION

SIGNATURE SHEET

THIS IS A JACKSON AND JOSEPHINE COUNTY PETITION. SIGNERS OF THIS PETITION SHOULD BE REGISTERED VOTERS IN ONE OF THESE COUNTIES.

TO THE BUREAU OF LAND MANAGEMENT:

We, the undersigned residents of Jackson and Josephine Counties, hereby petition the Bureau of Land Management (BLM) to stop work on their Timber Mountain/John's Peak Off Highway Vehicle (OHV) Management Plan and Environmental Impact Statement and remove the arbitrary 1995 designation of 16,250 acres forOHV use, encompassing and negatively impacting those public lands, rural private landowners and the communities of Jacksonville, Rogue River, Gold Hill, Ruch, Applegate, Provolt, Murphy, and Grants Pass.

SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1 Wayne E. Johnson	8-9-06	WAYNE E JOHNSON	1858 FOOTS CK RD.		GOLD HILL 97525
2. Thomas King	08/09/06	THOMAS KING	2140 FOOTS CREEK RD		GOLD HILL 97525
3. Margaret McCabe	08/09/06	MARGARET McCABE	2191 Foots Creek.		Gold Hill 97525
4. ~~DANIEL J. McCABE 8/9/06~~					
5. Daniel J. McCabe	8/9/2006	DANIEL J. McCABE	2191 FOOTS CREEK		GOLD HILL 97525
6.					
7.					
8.					
9.					
10.					

I hereby certify that every person who signed this sheet did so in my presence and I believe that each person is a qualified voter in Jackson or Josephine County, Oregon. I also certify that I have received no compensation for these signatures.

CIRCULATOR SIGNATURE Jeanie Moore

PRINTED NAME OF CIRCULATOR JEANIE MOORE

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1534 FOOTS CRK. RD. GOLD HILL, OR 97525

SHEET NUMBER:

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Roy G. Ripley	6-13-06	Roy G. Ripley	2193 Foots Crk Rd		Gold Hill 97525
2. Toni L. Zacharias	6-13-06	Toni L. Zacharias	2652 Foots Cr. Rd.		Gold Hill 97525
3. Ruth Gorman	6-13-06	RUTH GORMAN	1790 FOOTS CRK		GOLD HILL 97525
4. Charles Gorman	"	CHARLES GORMAN	"		"
5. Bob James	8-11-06	Bob James	3388 Foots Creek Rd		Gold Hill 97525
6. Laurie D. James	8-11-06	Laurie James	" "		"
7. Donna Christ	8-11-06	Donna Christ	1670-Foots Creek	~~1690~~ P.O. Box 1517-Rogue Ra.	" 97525
8. George Christ	8-11-06	George Christ	1670 Foots Cr.	PO Box 1517 Rogue River	97525
9.					
10.					

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CIRCULATOR SIGNATURE Jeanie Moore

PRINTED NAME OF CIRCULATOR JEANIE MOORE

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1534 FOOTS CRK. RD. GOLD HILL, OR 97525

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Richard Schlehofer	6/13/06	Richard Schlehofer	3396 Foots Creek		Gold Hill 97525
2. [illegible]	6-13-06	Mark Hetz	1978 Foots Creek		Gold Hill 97525
3. Phyllis LoVetere	8-8-06	Phyllis LoVetere	2019 Rogue River Hwy #13		Gold Hill 97525
4. RC Carlson		RC Carlson	51 Galls Ln Rd		Gold Hill, 97525
5. Robert M. Canty	8-10-06	Robert M. Canty	5529 Kane Crk. Rd		Central Pt. OR 97502
6. Jan Fish	8-10-06	Jan Fish	603 Dardanelles St		Gold Hill OR 97525
7. Peter Fish	8/10/06	Peter Fish	603 Dardanelle St.		Gold Hill OR 97525
8. D. Milburn	8/10/06	Doug Milburn	9262 Hwy 234		Gold Hill, OR 97525
9. Patty Milburn	08-10-06	Patty Milburn	9262 Hwy 234		Gold Hill, OR 97525
10. Margie Bury	8/10/06	Margie Bury	8401 Old Stage #13		Central Pt. 97502

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CIRCULATOR SIGNATURE Richard Schlehofer

PRINTED NAME OF CIRCULATOR Richard Schlehofer

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 3396 Foots Creek
Gold Hill, OR 97525

SHEET NUMBER:

7

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	10/30/06	SUSAN PENNER	3051 GALLS CK RD.	PO BOX 1077	GOLD HILL, 97525
2.	10/30/06	DOUGLAS PENNER	3051 GALLS CR. RD	P.O. BOX 1077	GOLD HILL 97525
3.	10/30/2006	William E. Scarrow	3093 Galls Creek Rd	P.O. Box 1036	Gold Hill 97525-1036
4.	10/30/06	MARGIE BUOY	8401 OLD STAGE RD		CP. 97502
5.	10/31/06	ALLAN TAYLOR	5559 Kane Creek Rd	—	CP 97502
6.	10/31/06	GRACIE L. THOMPSON	4400 Kane Crk Rd	PO Box 643	Gold Hill OR 97525
7.	10-31-06	PATTY MILBURN	9260 Hwy 234		Gold Hill OR 97525
8.	11-1-06	Michael A. Breeden Sr.	3440 Old Military R. C.P.		Central Point 97502
9.	11/1/06	RACHEL K. HANEY	4071 Galls Creek Rd.	—	Gold Hill, OR 97525
10.	11/1/06	Patricia B Parks	2542 Old Military Rd		C.Pt. 97502

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CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR DAVE MARWELL

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1007 ROOTS CREEK RD. GOLD HILL OR 97525

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Brad Owen	11/7/06	Brad Owen	2569 Beall Ln		Central Point 97502
2. John Hughes	11/19/06	John Hughes	884 N Ross Ln		Medford OR 97501
3. Brian Hughes	11-19-06	Brian Hughes	2465 Thom Dale Dr	884 N. Ross Ln	Medford OR 97501
4. [illegible]	11/25/06	Teresa Dungannon	822 Amerman	Same	Phoenix, OR 97535
5. [illegible]	11/25/06	Josh Dungannon	822 Amerman St	Same	Phoenix, OR 97535
6. Jodi Oberg	11/23/06	Jodi Oberg	1189 Kelly St		Medford, OR 97501
7. Ginger Vanek	11/27/06	Ginger Vanek	2720 Freeland CP	Same	Central Pt 97502
8.					
9.					
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CIRCULATOR SIGNATURE Wilbert W. Lull

PRINTED NAME OF CIRCULATOR Wilbert W. Lull

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 3497 Old Military Rd.
Central Point, Oregon 97502

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. [illegible]	11-14-06	George Holberton	15391 Jones Rd		White City OR 97503
2. [illegible]	11-14-06	Buck Walker	11800 Hwy 234 Gold Hill		Gold Hill 97525
3. [illegible]	11-14-06	David Anderson	1316 Flower way		Medford 97504
4. [illegible]	11-14-06	Audrey DeMott	3538 OLD MILITARY		CENTRAL POINT 97502
5. [illegible]	11-14-06	Carlton DeMott	3538 Old Military Rd		Central Point 97502
6. [illegible]	11-14-06	MICHELLE HARAN	3466 OLD MILITARY RD		CENTRAL POINT 97502
7. [illegible]	11-14-06	MARIE Chubb	4110 Freeman Rd		Central Point OR
8. [illegible]	11/14/06	Duane Dunganon	822 Amerman Dr.		Phoenix, OR
9. [illegible]	11/14/06	Arlene L. Holmes	4385 S. Pacific Hwy #17		Phoenix OR 97535
10. [illegible]	11-14-06	Cynthia Lee White	2482 Robin Ln.		Central Point 97502

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CIRCULATOR SIGNATURE Wilbert W. Lull

PRINTED NAME OF CIRCULATOR Wilbert W. Lull

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 3497 Old Military Rd. Central Point, Oregon 97502

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1. Ora Debrick	11-11-06	Ora Debrick	555 Freeman Rd #18	Same	Central Point OR 97502
2. Margaret Martin	11-11-06	MARGARET MARTIN	11401 OLD STAGE RD.	GOLD HILL	97525
3. Clare L. Moore	11-11-06	CLARE L. MOORE	494 Fredenburg St	P.O. Box 255 Gold Hill	Gold Hill 97525
4. Elizabeth Weyland	11-11-06	Elizabeth J. Weyland	4500 Gobbs Cr Rd	Same	Gold Hill OR 97525
5. Sherry Bilodeau	11-11-06	Sherry Bilodeau	1625 Lampman	Same	Gold Hill, OR 97525
6. Emilie R. Welch	11-11-06	Emilie Rubelch	470 Old Hwy 62 #37	Same	Eagle Point OR 97524
7. Larry Carter	11/11/06	Larry Carter	115 Onyx St. Apt #18	Same	Eagle Point 97524
8. Raymond R. Hein	11-11-06	RAYMOND R. HEIN	1102 SUNSET AVE	MEDFORD, OR	97501
9. Sharon E Heisel	11-11-06	Sharon E Heisel	3775 Roads End Blvd	Central Point OR	Central Pt OR 97502
10. Earl K. Henagin	11-13-06	Earl K Henagin	3603 Old Military Rd	Central Point OR	97502

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PRINTED NAME OF CIRCULATOR Wilbert W. Lull

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1. Louis G. Mayerski	11/8/06	LOUIS MAYERSKI	4386 TAMI LANE		CENTRAL POINT
2. Brett Funk	11/9/06	Brett Funk	106 Victoria Way		CP, 97502
3. Michael H. Mills	11/9/06	MICHAEL H. MILLS	973 OLD STAGE RD		CENTRAL POINT 97502
4. John Ferrario	11/9/06	JOHN FERRARIO	1958 OLD MILITARY RD		CENTRAL POINT 97502
5. Vernon E. Oberg	11/9/06	Vernon E. Oberg	1189 Kelley St. Medford		Medford 97501
6. [illegible]	11-9-06	Ron Goslen	2542 FONTAINE CR MEDFORD		MEDFORD 97504
7. Ronald W. Myers	11/9/06	Ronald W. Myers	2533 Avyonne Medford		Medford 97504
8. Peter Johann	11-09-06	Peter Johann	5271 Griffin Ln Medford		Medford 97501
9. Patricia A. Kaiser	11-9-06	PATRICIA A KAISER	983 PALINA		Eagle Point, 97524
10. Michael Kaiser	11-9-06	MICHAEL KAISER	983 PALINA	PO. Box 124	Eagle Point 97524

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1. Kristi Rutledge	10/28/06	KRISTI RUTLEDGE	4378 Kane Cr. Rd	SAME	CENTRAL PT 97502
2. Laurie Parish	10/28/06	Laurie Parish	4378 Kane Creek Rd	PO Box 425	Gold Hill OR 97525
3. Jan G. Fish	10/28/06	Jan Fish	603 Dardanelles St.		Gold Hill 97525
4. Cary Marshall	10/28/06	CARY MARSHALL	830 CAROLINA DR	PO BOX 938	C.P. 97502
5. Roberta Marshall	10-28-06	Roberta Marshall	6501 Kentucky Dr	Same	C.P. 97502
6. Karen Apostol	10/29/06	KAREN APOSTOL	5537 Kane Crk Rd	Same	CP 97502
7. John Apostol	10/29/06	John Apostol	5537 Kane Crk Rd	"	CP 97502
8. Candace Miller	10/29/06	Candace Miller	5299 Kane Creek Rd	Same	CP 97502
9. Peter Fish	10/29/06	PETER FISH	603 Dardanelles St		Gold Hill 97525
10. Shirley L. Grethe	10/30/06	Shirley L. Grethe	3432 Galls Creek Rd	Same	Gold Hill 97525

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CIRCULATOR SIGNATURE [signature]

PRINTED NAME OF CIRCULATOR DAVE MAXWELL

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1087 Foots Creek Rd. Gold Hill OR 97525

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1. Michelle Bienick	9/7/6	Michelle Bienick	1881 Humbug Creek Rd	—	Applegate OR 97530
2. [illegible]	9/7/06	Aaron Krikava	1881 Humbug Creek Rd	—	Jacksonville OR 97530
3. Matt Tietjen	9/7/06	Matt Tietjen	2175 Humbug Creek Rd	—	Applegate 97530
4. Jen Tietjen	9/7/06	Jen Tietjen	2175 Humbug Ck Rd	—	Applegate 97530
5. Michelle Goldfeder	9/07/06	Michelle Goldfeder	1881 Humbug CK RD	—	Applegate, 97530
6. John LaFave	12/4/06	John LaFave	1030 Lt. Fk. Humbug Ck Rd		Applegate 97530
7. Michelle LaFave	12/4/06	Michelle LaFave	1030 Left Fork Humbug Ck Rd		Applegate 97530
8.					
9.					
10.					

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CIRCULATOR SIGNATURE Michelle LaFave

PRINTED NAME OF CIRCULATOR Michelle LaFave

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1030 Left Fork Humbug Ck Rd
Applegate, OR 97530

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1. George A Ortiz	11-9-06	GEORGE A. ORTIZ	2583 HOWARD AVE		MEDFORD 97501
2. George A Ortiz Jr	11-9-06	George A. Ortiz Jr	223 mace Rd		Medford 97501
3. Jay H Dumas	11-9-06	JAY H DUMAS	510 S 2nd		Talent 97540
4. John Graves	11-9-06	John Graves	1748 Lillian ST. medford ore	P.O Box 8301 medford, ore	medford 97504
5. James L. Daniken	11-9-06	James L. Daniken	1294 Gulls Crk		Gold Hill 97525
6. William Getting	11-9-06	William Getting	1902 MYERS LN		MEDFORD 97501
7. William E Turner	11-9-06	William E. Turner	439 HAVEN ST.		medford or 97501
8. Ted Brown	11-9-06	TED BROWN	112 Vincent Ave. C.P.		Central Point 97502
9. Ronald Sherman	11-9-06	RONALD SHERMAN	693 ELDERMILL RD.	TRAIL, OR 97541	TRAIL, OR 97541
10. Edith Joyce Lull	11-10-06	Edith Joyce Lull	3353 old Military Rd.		Central Point, OR, 97502

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CIRCULATOR SIGNATURE Wilbert W. Lull

PRINTED NAME OF CIRCULATOR Wilbert W. Lull

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 3497 Old Military Rd. Central Point, Oregon 97502

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1. Gerald T Easley	8-8-06	GERALD T EASLEY	4201 FOOTS CRK		Gold Hill OR 97525
2. Victoria M. Moulder	8-8-06	Victoria M. Moulder	1607 Foots crk Rd		Gold Hill 97525
3. Robyn L. Moulder	8-8-06	Robyn L. Moulder	1607 Foots CR. RD.		Gold Hill, 97525
4. [illegible]	8-8-06	Thomas L. Moulder	1553 Foots Crk rd		Gold Hill 97525
5. Susan K. Moulder	8-8-06	Susan K. Moulder	1553 Foots Crk Rd.		Gold Hill, OR 97525
6. Richard G. Gebhardt	8-9-06	RICHARD G. GEBHARDT	3273 HOOMER LN.		GOLD HILL OR [redacted]
7. Vera R. Findley	8-9-06	VERA R. FINDLEY	3284 Foots Cr. Rd		GOLD HILL OR 97525
8. Margery E. McGowan	8-9-06	MARGERY E. MC GOWAN	1608 Foots CR. RD.		Gold Hill, 97525
9. Jackson McGowan	8-9-06	JACKSON MCGOWAN	1608 FOOTS CR. RD		GOLD HILL 97525
10. Judith M. Johnson	8-9-06	Judith M. Johnson	1858 Foots cr Rd		Gold Hill 97525

I hereby certify that every person who signed this sheet did so in my presence and I believe that each person is a qualified voter in Jackson or Josephine County, Oregon. I also certify that I have received no compensation for these signatures.

CIRCULATOR SIGNATURE Jeanie Moore

PRINTED NAME OF CIRCULATOR JEANIE MOORE

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1534 FOOTS CRK. RD., GOLD HILL, OR 97525

SHEET NUMBER:

No Circulators for This Petition Are Being Paid

PETITION I.D. - TMJP

Only sign this petition once.

TIMBER MOUNTAIN/JOHNS PEAK PETITION

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1. Yolanda McPherson	6-15-06	YOLANDA McPHERSON	1678 Foots Crk		Gold Hill 97525
2. Gayle A. Bennett	6-13-06	GAYLE A. BENNET	2170 FOOTS CREEK RD.		GOLD HILL 97525
3. Harry L Bennett	6-13-06	HARRY L BENNET	2170 Foots Creek		Gold Hill 97525
4. Cyndi Austin	6-13-06	CYNDI AUSTIN	1055 FOOTS CREEK RD		GOLD HILL, 97525
5. Jean B. Moore Jeanie Moore	6-13-06	JEAN B. MOORE JEANIE MOORE	1534 FOOTS CRK. RD.		GOLD HILL, 97525
6. Seldom	6-13-06	SELDOM	1998 FOOTS CREEK RD		GOLD HILL, OR 97525
7. Dave South	6-13-06	DAVE E. SOUTH	943 FOOTS CREEK RD		GOLD HILL 97525
8. Kathy O'Neal	6-13-06	Kathleen Kathy O'Neal	2092 Foots Cr. Rd		Gold Hill 97525
9. Charles Bielski	6-13-06	Charles Bielski	2916 Foots Ck Rd		Gold Hill, 97525
10. Larry Chapin	6-13-06	Larry Chapin	5130 Foots Cr Rd		Gold Hill 97525

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CIRCULATOR SIGNATURE Jeanie Moore - Jean B Moore

PRINTED NAME OF CIRCULATOR JEANIE MOORE - JEAN B. MOORE

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1534 FOOTS CREEK RD. GOLD HILL, OR 97525

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
1.	7/29/06	Robert Thompson	3680 Forest Ck Rd	Jacksonville	97530
2.	7/29/06	Norman Glex	2267 Forest Cr Rd	Jacksonville	97530
3.	7-29-06	DIANE P. MEEDS	2889 Forest Ck. Rd.	Jville	97530
4.	7-29-06	Loretta Meeds	2510 Forest Creek Rd	Jacksonville	97530
5.	7.29.06	LaVonne Stumbo	3666 Forest Crk Rd	Jacksonville	97530
6.	7-29-06	Lorna J. Erskine	201 Forest Creek	Jacksonville	97531
7.	7-29-06	Bruce D. Meeds	2616 Forest Cr Rd	J.ville	97531
8.					
9.					
10.					

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CIRCULATOR SIGNATURE

PRINTED NAME OF CIRCULATOR John F. (Jack) Duggan

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 5505 Forest Crk. Rd / P.O. Box 524 Jacksonville, OR 97530-0524

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Daniel S Kellogg	6-13-06	Daniel S Kellogg	2132 Sardine Crk Rd		Gold Hill, OR
M. K. Michelsen	6-13-06	Mary-Kay Michelsen	2810 Diane St, Ashland		Ashland, OR
Tonya Graham	6-13-06	Tonya Graham	2007 Mae St.		Ashland, 97520
Connie E. Young	6-22-06	Connie E. Young	12061 Wrest Hwy. GP 97527		Grants Pass 97527
Gary E. Gnovick	6-22-06	Gary E. Gnovick	7829 N. Applegate GP 97527		Grants Pass 97527
Joseph McAleavey	06/22/06	Joseph McAleavey	2351 China Gulch Rd. Jacksonville, OR 97530		Jacksonville, OR 97530
George Rice	6/22/06	GEORGE RICE	4599 Thompson Creek Rd.	Applegate 97530	Applegate 97530
[illegible]	6-22-06	Isaac D Reser	3405 Thompson Crk Rd		Applegate OR
[illegible]	6-22-06	Geoff Backer	4099 Humbug Crk Rd		Applegate OR 97530
[illegible]	7/2/06	Steve Gehres	776 West Humbug Crk Road		Applegate 97530

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CIRCULATOR SIGNATURE Chris Beath

PRINTED NAME OF CIRCULATOR CHRISTOPHER BEATH

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 5

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
Joan Peterson	6/24/06	Joan Peterson	5317 Thompson Cr. Rd.		Applegate, OR 97530
Jeanne Fletcher	6-24-06	Jeanne Fletcher	8116 Thompson Creek Rd		Applegate, OR 97530
Jodi Wells	6-24-06	Jodi Wells	11881 Upper Applegate		Jacksonville, OR 97530
Petra Irwin	6-24-06	PETRA IRWIN	7542 Sterling Cr		Jacksonville
Linda Norick	6.24.06	Linda Norick	4000 Yale Crk. Rd		JVL. 97530
Liz Hampton	6/24/06	Elizabeth Hampton	1240 Humbug Crk Rd		Applegate, 97530
[illegible]	6/24/06	Anne Glose	334 Andesite Dr		Jacksonville 97530
Rhonda Ordale	6-24-06	Rhonda Ordale	11260 Redwood Hwy		Wilderville
Janeen Sathre	6/24	Janeen Sathre	1519 Palmer Crk Rd		Jacksonville

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CIRCULATOR SIGNATURE Joan Peterson

PRINTED NAME OF CIRCULATOR Joan Peterson

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 5317 Thompson Cr Rd Applegate, OR 97530

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Neal G. Anderson	6/22/06	NEAL G. ANDERSON	7400 GRIFFIN LANE	JACKSONVILLE	97530
Terry L. Tuttle	6/22/06	Terry L. Tuttle	1884 Bristol Dr.	Medford	97504
[illegible]	7/8/06	MEYERA ROBBINS	7120 Griffin Ln	Jville	97530
Jan Gregory	7/8/06	Jan Gregory	8232 Wagner Cr. Rd.	Talent	97540
Candace L Kahn	7/8/06	Candace L Kahn	P.O. Box 639 7121 Griffin Lane	Jacksonville	97530
[illegible]	7/8/06	THOMAS J. ROCK	7107 GRIFFIN LANE 97530	Jacksonville	97530
[illegible]	7/8/06	Laurence M. Kahn	7121 Griffin Lane	P.O. Box 639 [redacted]	Jacksonville 97530
[illegible]	7/8/06	William Daniel Gregory	8232 WAGNER CREEK ROAD	TALENT	97540
Hope E. Robertson	7/8/06	HOPE E. ROBERTSON	7400 Griffin Lane	Jacksonville	97530

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CIRCULATOR SIGNATURE Neal G. Anderson

PRINTED NAME OF CIRCULATOR NEAL G. ANDERSON

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 7400 GRIFFIN LANE, JACKSONVILLE OR 97530

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Clare Stevens	6/27/06	CLARE STEVENS	15001 Hwy 238 G.P	—	97527
Shawn Center	6/28/06	Shawn Center	7350 Hwy 238 JV	—	97536
Jeffrey Ryan	6-28-06	Tiffany Ryan	181 Upper Applegate Rd JV		97530
Jacob Tomos	6-30-06	Jacob Tomos	234 Upper Applegate JV	—	97530

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CIRCULATOR SIGNATURE Hal Macy

PRINTED NAME OF CIRCULATOR HAL MACY

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1800 CHINA GULCH RD. J'VILLE OR 97530

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SIGNATURE	DATE SIGNED MO/DAY/YR	PRINT NAME	RESIDENCE ADDRESS (STREET AND NUMBER)	MAILING ADDRESS IF DIFFERENT	CITY AND ZIP CODE
Rex Fletcher	8/23/2006	Rex Fletcher	8116 Thompson Creek Rd		97530
Jeanne Fletcher	8-24-06	Jeanne Fletcher	8116 Thompson Creek Rd		97530

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CIRCULATOR SIGNATURE _____

PRINTED NAME OF CIRCULATOR CHRISTOPHER BRATT

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) _____

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John E. Chachere	6-28.06	JOHN E. CHACHERE	57 CHINA GULCH RD	J'VILLE	97530
Rudi Eck	6-28.06	RUDI H. ECK	55 CHINA GULCH RD.	J'VILLE	97530
Christa Eck	6/28/06	CHRISTA ECK	55 " " "	J"Ville	97530
Joe Alonzo	6/29/06	Joe Alonzo	213 " "	J"Ville	97530
Debra Alonzo	6/28/06	Debra Alonzo	213 China Gulch	J'Ville	97530
Lorraine Kinion	6/28/06	LORRAINE KINION	227 China Gulch	J'Ville	97530
Muriel Brinkman	6/29/06	Muriel Brinkman	250 CHINA GULCH	J'Ville	97530
Richard Goble	6/28	Richard Goble	444 China Gulch	J'VL	97530
Timothy L. Johnson	6/30/06	Timothy L. Johnson	1467 China Gulch	J'Ville	97530
Hal Macy	6/30/06	HAL MACY	1800 CHINA GULCH RD	J'VILLE	97530

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CIRCULATOR SIGNATURE Hal Macy

PRINTED NAME OF CIRCULATOR HAL MACY

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1800 CHINA GULCH RD. J'VILLE 97530

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1. Lee Rickords	8/29/06	Lee Rickords	2124 Forest Creek Rd.		J-ville 97530
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

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CIRCULATOR SIGNATURE _____

PRINTED NAME OF CIRCULATOR CK Wasworth

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) _____

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1. Charles D. A. McCoy	6/13/06	CHARLES D. A. McCOY	1678 FOOTS CREEK RD		GOLD HILL 97525
2. Michael J Prinsloo	6/13/06	Michael J Prinsloo	1911 Foots Crk Rd GH OR		97525
3. Maynard Hadley III	6-13-06	Maynard Hadley III	4984 Rt Fork Foots Ck Rd	Medford OR 97501 Po Box 8195	97525
4. Patricia A Moore	6-13-06	PATRICIA A MOORE	1998 FOOTS CREEK RD GOLD HILL		97525
5. Deb Vroman	6/13/06	DEB VROMAN	4255 FOOTS CREEK RD GOLD HILL		97525
6. Betty Hofstrand	6/13/06	Betty Sea Hofstrand	~~218~~ 2198 Foots Creek Rd		97525
7. Deborah McBride	6/13/06	Deborah McBride	2600 FOOTS CREEK RD		97525
8. Kathy J Windham	6-13-06	Kathy J Windham	3555 Hosmer Ln (Foots Crk)	~~97525~~	97525
9. William P. McVeigh	6/13/06	WILLIAM P. McVEIGH	3755 HOSMER LN.		97525
10. Linda S Mayeda	6/13/06	Linda S Mayeda	3292 Foots Creek R Fork Rd		GOLD HILL 97525

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CIRCULATOR SIGNATURE Jeanie Moore

PRINTED NAME OF CIRCULATOR JEANIE MOORE

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1534 FOOTS CRK. RD. GOLD HILL, OR 97525

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1. George Mayeda	6-13-06	George Mayeda	3292 Foots Creek Rd	—	Gold Hill 97525
2. Daryl Fitch	6-13/06	DERYL FITCH	3990 F.C.		"
3. Theresa Fitch	6/13/06	Theresa Fitch	3990 Foots Creek Rd		Gold Hill 97525
4. Reginald S. Marshall	6-13-06	Reginald S. Marshall	1683 Foots Creek Rd		Gold Hill 97525
5. Gary S. O'Neal	6/13/06	GARY S. O'NEAL	2098 FOOTS CREEK RD		GOLD HILL, 97525
6. Lloyd J. Zacharias	6-13-06	Lloyd J. Zacharias	2652 Foots Cr Rd Rt. F.K.		GOLD HILL, 97525
7. Everett Jordan	6/13/06	EVERETT JORDAN	2090 FOOTS CR RD		GOLD HILL, 97525
8. Jeanne Jordan	6/13/06	Jeanne JORDAN	2090 Foots Cr Rd		Gold Hill 97525
9. [illegible]	6-13-06	DAVE MAXWELL	1057 FOOTS CRK RD.		G.H. 97525
10. Ben Ramsey	6/13/06	Ben Ramsey	1886 Lamm Rd		G.H. 97525

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CIRCULATOR SIGNATURE Jeanie Moore - Jean B. Moore

PRINTED NAME OF CIRCULATOR JEANIE MOORE - JEAN B. MOORE

CIRCULATOR'S ADDRESS (Street, City, and Zip Code) 1534 FOOTS CREEK RD. GOLD HILL, OR 97525

SHEET NUMBER:

Collective Comments on Bureau of Land Management Draft Resource Management Plan / Environmental Impact Statement

Pacific Rivers Council .org

WILD SALMON CENTER

American Rivers
Rivers Connect Us

TROUT UNLIMITED

RMPs for Western Oregon
Bureau of Land Management
P.O. Box 2965
Portland, Oregon 97208

RE: Pacific Rivers Council, Wild Salmon Center, American Rivers, and Trout Unlimited Comments on Draft Resource Management Plan/ EIS

Dear Bureau of Land Management:

Thank you for the opportunity to comment on the Draft Environmental Impact Statement for the Western Oregon Resource Management Plan (RMP). Please enter this letter, our official comments, the embedded maps, and attached appendixes into the comment record. Please note, included maps are zoomable high-resolution vector images and contain a great deal of detail.

Pacific Rivers Council, Wild Salmon Center, American Rivers, and Trout Unlimited collectively represent over 350,000 individuals throughout the United States who are deeply concerned with the health of aquatic and riparian ecosystems in western Oregon. The 2.5 million acres covered by the draft RMP are of critical importance, providing Oregonians with multiple ecological, economic and cultural benefits. These lands safeguard critical sources of drinking water, support fish and wildlife habitat, sequester large amounts of carbon and provide opportunities for hunting, fishing, hiking and wildlife viewing.

BLM should be commended for providing a great deal of information in a consumable and transparent format with its suite of map-based tools. This valuable resource assisted our analysis and evaluation of the proposed alternatives.

We have analyzed the potential impacts that the preferred alternative will have on water quality, drinking water source areas and fish habitat in select watersheds. With the exception of the no action alternative, which preserves the Aquatic Conservation Strategy (ACS) of the Northwest Forest Plan, the remaining alternatives modify or eliminate key elements of the ACS and fail to meet the objectives of "clean water" established by BLM's "Purpose and Needs" statement. We urge BLM to develop and include in its analysis a "water layer" to ensure that important water quality areas and priority aquatic habitats are adequately identified and protected. We respectfully offer several science-based templates for how this could be accomplished, while still meeting BLM's other 'Purpose and Needs" objectives. A risk-based approach to watershed protection will also better insulate Oregon's critical water resources from the impacts of climate change by protecting key features in priority systems, securing cold water sources and enhancing resilience at the watershed scale. Additionally, we recommend that any alternative give more consideration to the cumulative effects of larger disturbances caused by higher intensity harvest activities, a dense road network and the lack of aquatic protections on neighboring private lands.

We look forward to working with the RMP planning team to develop a riparian strategy that is protective of water quality, drinking water, and fish habitat and that meets the stated Purpose and Need of the RMP.

Sincerely,

Greg Haller, Pacific Rivers Council

Greg Block, Wild Salmon Center

David Moryc, American Rivers

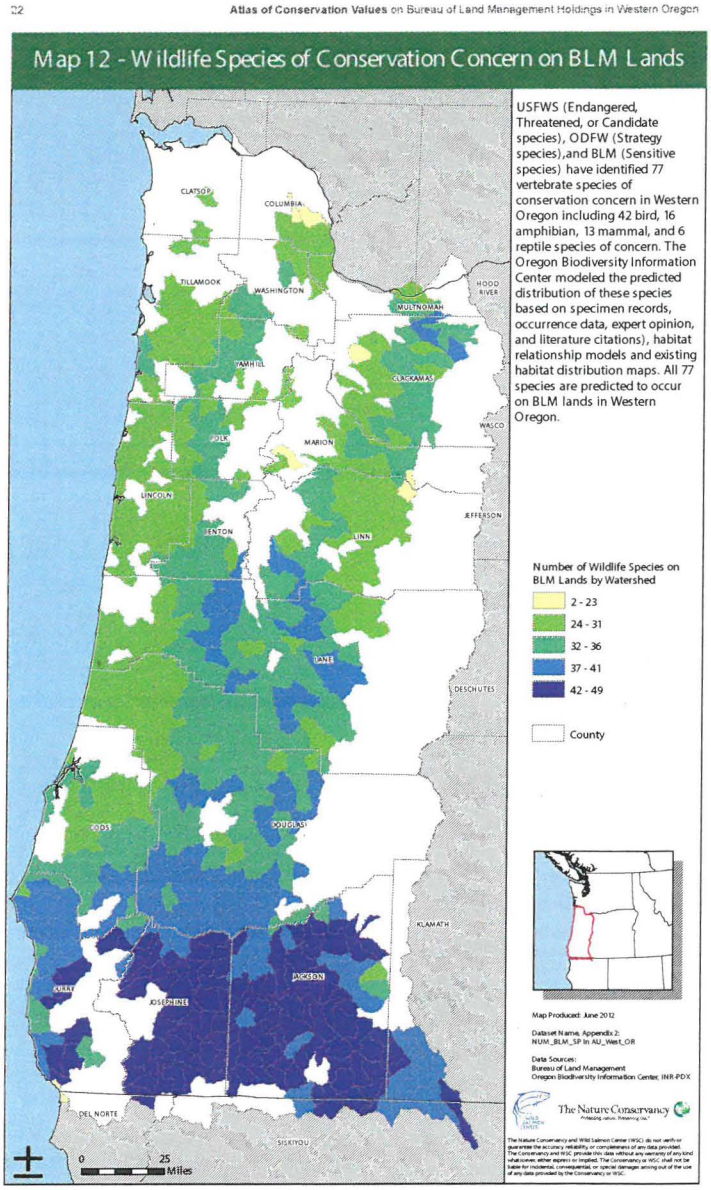
Dean Finnerty, Trout Unlimited

COLLECTIVE COMMENTS FROM PACIFIC RIVERS COUNCIL, WILD SALMON CENTER, AMERICAN RIVERS, AND TROUT UNLIMITED ON THE BLM DRAFT RESOURCE MANAGEMENT PLAN/ ENVIRONMENTAL IMPACT STATEMENT

I. BLM managed lands in Western Oregon are vital to the protection of water quality, watershed health and fish and wildlife.

The nearly 2.5 million acres of BLM-managed public lands in western Oregon generate critical ecosystem services, including providing drinking water to over 1.5 million Oregonians. Notably, 73% of these lands are within "Drinking Water Protection Areas" identified by the Oregon Department of Environmental Quality.[1]

BLM lands (and other federal lands managed under the Northwest Forest Plan) in western Oregon are widely regarded by state fish and wildlife agencies, conservation planners and resource managers as "anchor" habitat for clean water, recreation and fish and wildlife habitat. In fact, over 80% of BLM holdings in western Oregon have been identified as priority lands and waters for the conservation of native species and habitats.[2] Reliance on the provision of multiple ecosystem services from these anchors is amplified by the wide disparity between the levels of protection afforded to federal lands and adjacent private lands managed under state law. These mixed ownership "checkerboard" lands present serious challenges to federal land managers obligated to manage federal lands in compliance with environmental laws, including the Clean Water Act and Endangered Species Act.



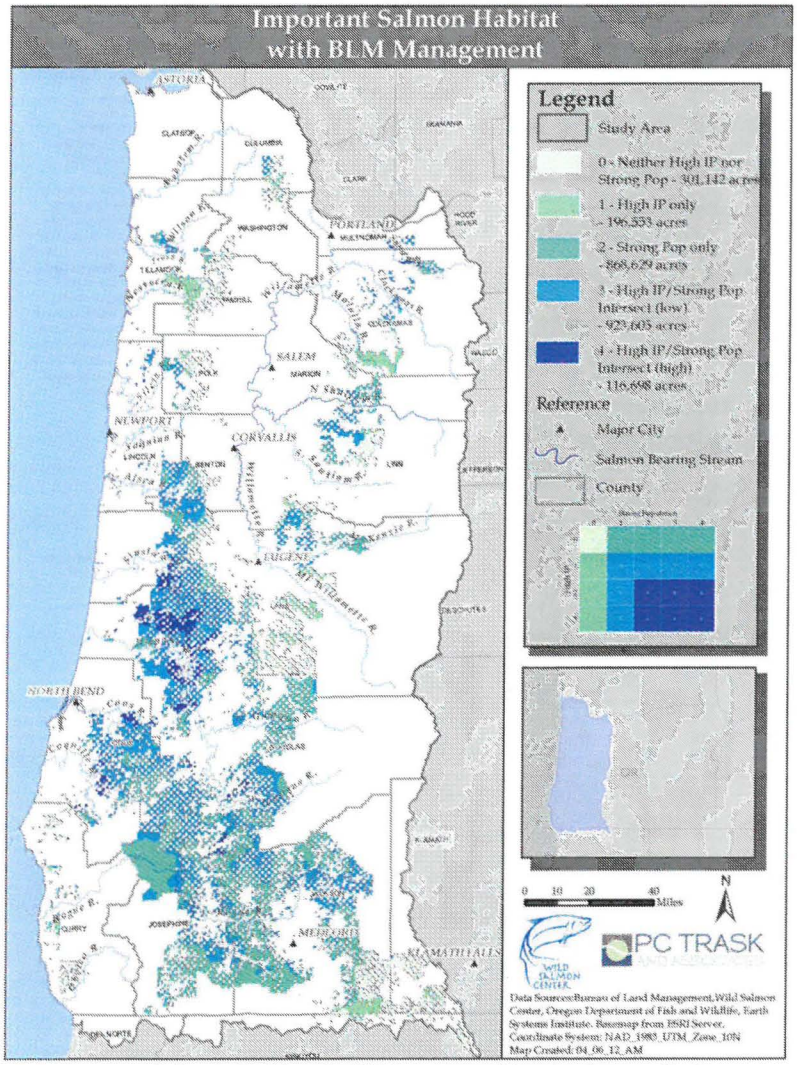
Wildlife Species of Conservation Concern. *Atlas,* Appendix 1

For decades the BLM and others have acknowledged and highlighted the importance of lands under BLM management to anadromous fish, including ESA-listed salmon and steelhead.[3] [4] Salmon are "keystone" species supporting over a hundred species. and a strong indicator of ecosystem health for Oregon and the Pacific Northwest, Of the 14,662 salmon bearing river miles in western Oregon, 1,414 miles are on BLM lands.[5] These river systems provide spawning, rearing and migrational habitat for populations of Chinook (Fall, Spring, Summer), chum, coho and steelhead (Winter and Summer).[6] Importantly, 56 of Oregon's 63 salmon populations rated by experts as "strong, diverse and wild" spend a portion of their life cycle in rivers on BLM lands in Western Oregon.[7] 1.9 million acres of BLM watersheds have been identified as having one or more "strong salmon populations". Many of these river miles are designated as "critical habitat" for ESA-listed

salmon and steelhead under the Endangered Species Act, and most of these rivers are listed as "impaired" under section 303(d) of the Clean Water Act.

II. TIMBER HARVEST ACTIVITIES HAVE THE POTENTIAL TO ADVERSELY IMPACT WATERSHED HEALTH, INCLUDING WATER QUALITY AND AQUATIC HABITAT

If not avoided or mitigated, timber harvest practices can adversely impact watershed health in myriad ways. With respect to salmon, a catalog of many of these potential effects are identified under the Magnuson Fisheries Conservation and Management Act provisions under which the vast majority of western Oregon's salmon populations are deemed "essential fish habitat".[8]



Important Salmon Habitat in BLM managed lands. *Appendix 3*

Examples of adverse impacts caused by forestry activities include depopulating streams of large woody debris, which provides key habitat for salmon and many other aquatic species; excessive sediment deliveries to streams and rivers through chronic road sediment delivery, mass wasting events (such as road failures, or landslides), and inadequate riparian buffers; higher stream temperatures from reductions in streamside shading; chemical contamination from herbicides, pesticides or other substances; and changes to hydrological regimes due to loss of vegetative cover and absorption capacity.

Harvest intensity levels also impact watershed health. Peer-reviewed research shows a clear relationship between the total basal area harvested in basins and stream temperature, even if harvest is not concentrated in riparian zones.[9] These impacts have serious implications for the design and management -- at landscape scale-- of harvest and conservation measures.

As discussed below, BLM acknowledges many of these individual issues specifically, but fails to consider the cumulative impact on several of these at the same time over larger spatial scales (i.e. – watershed scale), especially where larger disturbances would result from proposed higher intensity harvest activities in select areas. Even modest and incremental adverse impacts occasioned by BLM activities can cause significant adverse impacts at watershed scale when aggregated with significant adverse impacts on water quality and fish habitat originating on nearby private lands in the same watershed. Nor does BLM offer adequate information on why they propose high intensity harvest in select areas.

III. BLM HAS FAILED TO PROVIDE A JUSTIFIABLE AND SCIENCE-BASED RATIONALE FOR SUBSTANTIALLY ALTERING THE HIGHLY SUCCESSFUL AQUATIC CONSERVATION STRATEGY.

The Aquatic Conservation Strategy ("ACS") is a comprehensive, region-wide strategy designed to maintain, restore, and protect those processes and landforms that create good ecological conditions in watersheds, such as high-quality habitat for aquatic and riparian organisms and good water quality.[10] The strategy contains nine objectives that describe general characteristics of functional aquatic and riparian ecosystems intended to maintain and restore good habitat in the context of ecological disturbance. This approach was intended to prevent further degradation of aquatic ecosystems and restore habitat over broad landscapes, as opposed to focusing on individual projects or species.

Fifteen years of monitoring data (1994–2008) on a broad suite of stream conditions have shown marked improvements in the majority (69%), directly contributing to improved watershed health.[11] [12] BLM readily acknowledges that watershed health is improving. The BLM states in its current DEIS that "monitoring results conclude that the ecological condition of approximately two-thirds of the watersheds in the Northwest Forest Plan area have improved in condition in the past two decades."[13] Yet, despite successful results for water quality, fish and wildlife resulting from the implementation of the ACS, BLM radically alters the ACS by eliminating one of its key components -- key watersheds -- while at the same time reducing by half the size of ACS riparian reserves on fish bearing streams and more than half on non fish bearing streams. BLM does so without offering to replace or improve the ACS by identifying and protecting priority watersheds for drinking water or fish and wildlife.

In addition to protecting water quality, aquatic species and riparian-dependent species, ample stream buffers provide critical connectivity and migration corridors through a highly fragmented landscape. Recent scientific literature highlights the vital role connectivity and corridors play, especially connecting federally protected areas at high elevations with lower elevation ecoregions. It is precisely the fragmented, checkerboard nature of the O&C lands which makes these fish and wildlife corridors vitally important. Narrowing them across the entire landscape will essentially constrain migration further by squeezing migrating species into a narrower band of usable high quality habitat.[14]

The determination of where to focus timber harvest and the relative intensity of harvest levels in those locations is, in large part, a determination of where to increase or decrease risk to water quality and other aquatic goals on the landscape. In other words, the well documented and understood impacts of logging and related activities at the site and watershed scale depend on the level of human induced disturbances and the protection measures in place to avoid or mitigate impacts. Elimination of Key Watersheds and reduction of buffer widths -- everywhere -- essentially removed the only tool BLM employs to identify and protect priority watersheds.

Simply establishing "minimum" rules and guidelines for the many factors affecting water quality and aquatic habitat will not address cumulative effects caused by increased harvest intensity and inadequate protections on neighboring private lands. Riparian processes and naturally functioning watersheds are immensely complex; one can not simply aggregate "minimum" protective measures and assume that protections can be cut back to minimum levels without increasing risk at watershed scales. Priority watersheds warrant a lower level of risk to serve as anchors of watershed protection for key basins and degraded watersheds require the full protection of the ACS to recover.

BLM has not demonstrated that the proposed deviations from the Northwest Forest Plan and its ACS will provide reasonable assurance of compliance with Clean Water Act requirements, including numeric and narrative water quality criteria, relevant targets in Total Maximum Daily Loads (TMDLs), presumptions against degradation and the full protection of beneficial uses. Our description of the agency's water quality obligations coupled with conclusions of expert reports demonstrate that the agency's analysis of impacts on freshwater ecosystems is profoundly flawed and is based on a failure to recognize the full extent of the BLM's obligation to prevent degradation of water quality, particularly in smaller and non-perennial water bodies. Our comments identify numerous aspects in which the BLM's findings that water quality will be adequately protected by the proposed management do not have a sufficient scientific basis. In sum, the agency has not adequately justified its proposal to abandon an approach we know is capable of meeting water quality standards and which has been approved by EPA for this purpose.

A. High priority aquatic habitat and water quality sources at risk

Current management is predominantly characterized by thinning regimes. In addition to thinning, BLM now proposes higher intensity harvest levels ranging from 5-30% green tree retention. The determination of where to place higher harvest units on the landscape is critically important, but is not explained adequately in the DEIS. This is especially true for considering potential aquatic and water quality impacts in light of the fact that the only land allocations that consider water at scale -- key watersheds and the ACS -- have been eliminated (key watersheds) or reduced (smaller riparian reserves). The absence of employing water screening and filtering layers in BLM's planning has put key aquatic resources at risk.

To illustrate, consider "Crucial Aquatic Habitat" identified by the Oregon Department of Fish and Wildlife's database, developed to assist in land use and site planning decisions.[15]

In Alternative B, more than 80% of the area identified for so-called "moderate timber harvest" (5-15% green tree retention) is ranked as the highest and second highest priority category for Crucial Aquatic Habitat.

In other words, the most aggressive harvest practices, road building and attendant disturbances from road use, large equipment, mass wasting events and other impacts are designated to take place in many of Oregon's most important aquatic refuges.

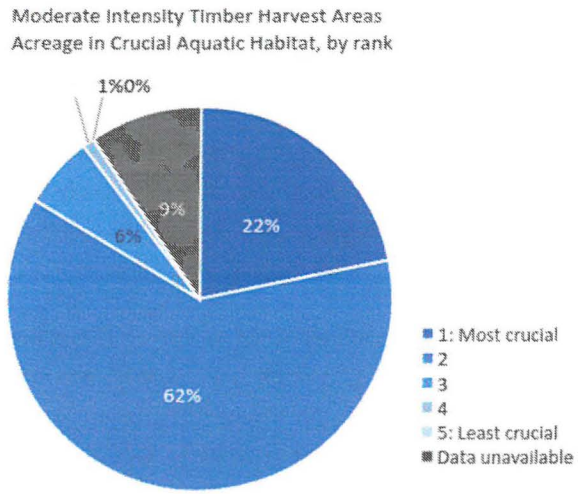


Figure 1, Appendix 6, O & C Methods

1. Drinking Water Source Areas

Similarly, a third of surface water Drinking Water Source Areas ("DWSA") designated by the Oregon Department of Environmental Quality within western Oregon counties contain land identified for moderate harvest intensity, and 20% contain areas identified for low harvest intensity. Most DWSAs have less than 5% of their area identified for low or moderate harvest under Alternative B, but there are 8 with more than 20% identified for moderate harvest; three of these serve the city of Scappoose.

Public Water Source name	Source Name	City	Percent area in Moderate Harvest Intensity
SCAPPOOSE, CITY OF	LAZY CREEK	SCAPPOOSE	41%
BUELL-RED PRAIRIE WATER ASSN	GOOSENECK CREEK	SHERIDAN	39%
YONCALLA, CITY OF	ADAMS CREEK	YONCALLA	31%
SCAPPOOSE, CITY OF	SOUTH FORK SCAPPOOSE CREEK	SCAPPOOSE	29%
SCAPPOOSE, CITY OF	GOURLEY CREEK	SCAPPOOSE	28%
CARLTON, CITY OF	PANTHER CREEK	CARLTON	25%
COLTON WATER DISTRICT	JACKSON CREEK	COLTON	23%
MCMINNVILLE WATER AND LIGHT	MCGUIRE RESERVOIR	McMINNVILLE	20%

Figure 2: Public Water Sources in Moderate Harvest Intensity.
Appendix 6, O & C Methods

Soil Sensitivity

20% of the area identified for moderate intensity harvest in Alternative B is characterized as sensitive to high soil erosion potential.

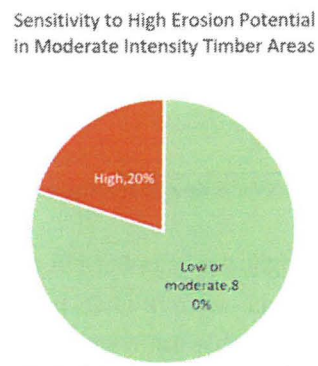


Figure 3: Soil Sensitivity in Moderate Intensity Timber Areas. Appendix 6, O & C Methods

Key Watersheds

Of 99 key watersheds identified in the NWFP, 25 contain moderate harvest intensity areas and 35 contain low intensity areas under Alternative B. Four key watersheds contain moderate harvest intensity areas totaling 10-17% of their area, one watershed has 35% of its area identified for low intensity forest and 12 have 1-8% identified. *See figure 4.*

Key Watershed Number	Key Watershed Tier	Key Watershed Name	Key Watershed ID	Acres	Acres in Moderate Harvest Intensity	Acres in Low Harvest Intensity	Percent area in Moderate Harvest Intensity	Percent area in low harvest intensity
323	1	N. FORK CHETCO RIVER	O-323	19427	3351	437	17%	2%
303	1	ELKHORN CREEK	O-303	11034	1383	0	13%	0
301	1	KILCHIS RIVER	O-301	6176	647	496	10%	8%

309	1	N. FORK SILETZ FIVER/ WARNICKE CREEK	O-309	11581	1107	340	10%	3%
337	1	LITTLE N. SANTIAM RIVER	O-337	67100	4758	0	7%	0
431	2	EAGLE CREEK	O-431	49875	1625	0	3%	0
345	1	MARTEN/BEAR CREEKS	O-345	11488	297	829	3%	7%
323	1	CHERRY CREEK (N. FK. COQUILLE)	O-323	8332	151	0	2%	0
304	1	UPPER NESTUCCA RIVER	O-304	88399	1231	7	1%	0.01%
425	2	BULL RUN RIVER	O-425	15046	116	0	1%	0
388	1	JENNY CREEK	O-388	84402	618	1722	1%	2%

Figure 4: NWFP Key Watersheds in Low to Moderate intensity harvest. Appendix 6, O & C Methods

Accordingly, we urge BLM in all of its alternatives (except the "No Action" alternative,) to re-establish key watersheds - with full ACS protections and no reduction in buffer widths or to update the key watersheds with readily available information to identify priority watersheds which warrant the full application of the precautionary approach, or put another way, less risk. Below, we offer specific sources of information to draw from to refine and develop water filters / layers, refine key watersheds and/or identify priority watersheds.

2. Key watersheds

Key watersheds identify high priority sources of water and healthy aquatic areas or refugia for aquatic- and riparian-dependent species with critical management protections. Government monitoring reports clearly indicate that key watersheds were in better condition than non-key watersheds in both 1994 and 2008.[16] Key watersheds also identify watershed-scale blocks of contiguous lands managed by other federal or state agencies or departments. For example, many of BLM's key watersheds are contiguous with USFS managed lands, establishing large tracts of federal land managed at scale for water quality and aquatic health. In a fragmented landscape with dramatically different management regimes on private and federal parcels, relatively intact contiguous blocks of habitat and the riparian corridors that connect them are critical components.

Despite the success of federal agencies in designating and protecting key watersheds, BLM proposes to eliminate them without explanation or justification. Key watersheds maintain stricter rules regarding road construction and maintenance -- a key contributor to degraded water quality and fish habitat through road failures and chronic sediment delivery from road runoff. Key watersheds are also priorities for scarce and competitive restoration dollars and, most importantly, are the ONLY management areas or designations utilized

by BLM that conform to actual hydrological units, rather than other ecological parameters such as critical habitat or stand age.

While we agree that key watershed concept could be re-conceptualized and updated to provide meaningful watershed-scale protections to minimize risks in priority areas, we assert that they need to be strengthened, not eliminated.

Except for the "No Action" alternative, every BLM alternative eliminates key watersheds, most likely applying an unstated assumption that proposed late-successional reserves or other "reserves" will apply similar levels of protection to affected watersheds. In other words, BLM may assume that late successional designations will afford similar protections without the need to retain key watersheds as separate management areas subject to specific rules and guidelines specifically directed at water quality.

Yet, late successional or other management areas are not coextensive with key watershed boundaries, nor do they manage to maximize the same values. Figure 4 illustrates that under Alternative B, significant areas of currently designated key watersheds would be subject to high intensity harvest levels (harvest levels between 5-30% retention). For example, without explanation, BLM proposes in Alternative B to harvest intensively over 1000 acres -- over 18% -- of the Kilchis Key Watershed, recognized by State and Federal officials as one of the most important refuges for wild salmonids in Oregon. Similarly, in the highly valued steelhead refuge on the North Siletz, BLM proposes in Alternative B clear-cuts on approximately 13% of the key watershed. Other examples highlight similar results in critical aquatic habitat on the Little North Santiam River (which provides drinking water to Salem); the North Fork Chetco Key Watershed; and the Elk Creek key watershed.

Every alternative shows similar or worse exposure to degradation in key watersheds except for the "No Action" alternative. Importantly, BLM includes no analysis of any potential adverse aquatic impacts in current key watersheds resulting from significant disturbances caused by the cumulative impact of harvest activities, including sediment flows from harvest, road building and use and heavy equipment. In simple terms, BLM has failed to explain how areas currently regarded as priorities for maintaining or improving key sources of clean water are discarded and put at risk by more intensive harvest regimes.

3. Major Reductions in the size of Riparian Reserves

Riparian Reserves -- establishing vegetative buffers alongside rivers, streams, wetlands and other important water features-- constitute the backbone of the ACS and, like key watersheds, have proven extremely effective at reducing adverse impacts to water.[17] [18] The size and location of buffers is a key tool to manage risk at watershed scale, from highly protective watershed buffers near drinking water source areas and conduits (e.g. -- Bull Run) to allowing for more risk to water quality in areas less sensitive to anticipated impacts. These reserves are essential to conserve watershed health and account for 2.6 million acres of the Northwest Forest Plan area. Under current management,

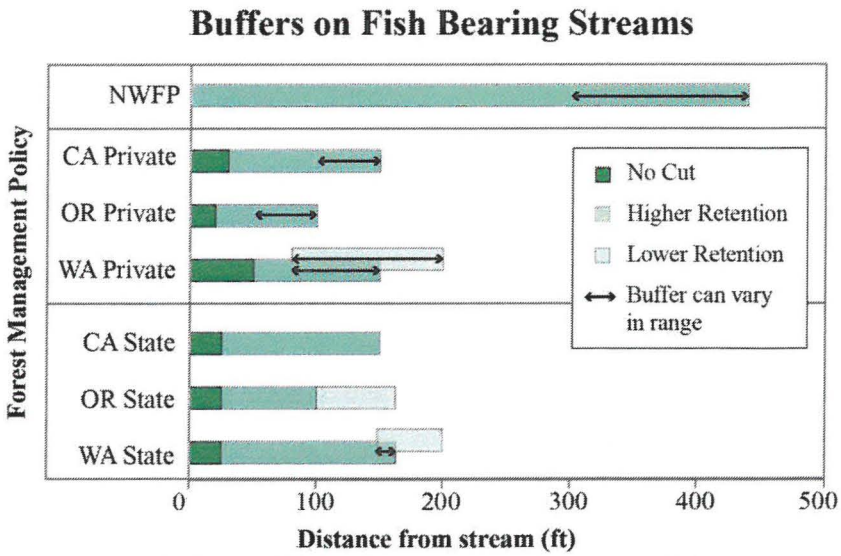


Figure 5: Buffers on fish bearing streams in neighboring states

any activities within the Riparian Reserves must be ecologically restorative.

Protection and proper management of buffers within the reserves is essential to protect water quality, fish and wildlife. Riparian Reserves were created under the Northwest Forest Plan as an essential part of the Aquatic Conservation Strategy. The NWFP established interim buffers to protect salmon and water quality in the early 1990's which remain in effect today primarily because the watershed analyses to modify buffers was never completed as intended. An analysis of stream conditions ten years after implementation of the buffers demonstrated improvement of habitat conditions and water quality in nearly all streams under the NWFP.

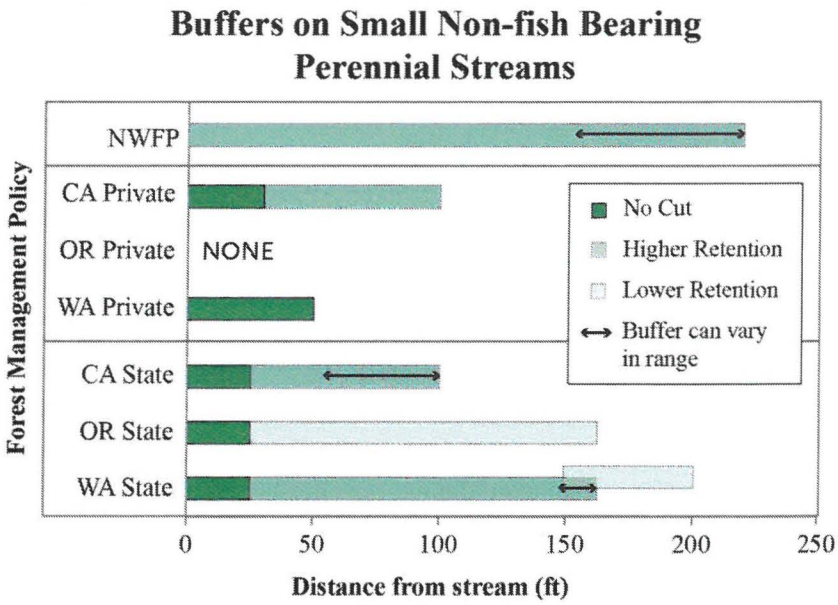


Figure 6: Buffers on non-fish bearing streams in neighboring states

Except for the no action alternative, the alternatives in the plan will likely lead to a degradation of water quality and habitat for aquatic and riparian dependent species. Absent a method to assess on an ongoing basis, the effects of the alternatives at the watershed and landscape level is unacceptable and not based in sound peer reviewed science. It is our understanding that these changes are based on emerging hypotheses suggesting smaller buffer widths along certain types of streams would be adequate to protect species and water quality, thereby allowing additional harvest than under current regulations. We strongly encourage the BLM to use more caution here. Until this science matures, we recommend testing this new approach through a series of pilot projects, accompanied with robust monitoring and adaptive management protocols. These protocols should include a mechanism to increase buffer width and alter treatments if the monitoring indicates negative effects on water quality or habitat. The monitoring program should be linked to the existing multi-agency Aquatic and Riparian Effectiveness Monitoring Program.

The current ACS riparian reserves -- and accompanying buffers-- are especially important in light of the growing need for watershed resilience due to climate change and other stressors on water quality in the region. As discussed above, riparian reserves provide critical connectivity and corridors to fish and wildlife in a very fragmented landscape. Reduction of riparian reserves will necessarily reduce available habitat for migrating species.

Outside of the "No Action" Alternative, only Alternative D potentially provides adequate minimum buffers for large wood recruitment and shading; however, as explained below, the buffers advanced in Alternative D should only be considered for non-priority watersheds (i.e. -- outside key watersheds, drinking water protected areas, salmon strongholds, etc...) in areas found to be *least* sensitive to water quality or aquatic habitat disturbances and containing the *lowest* conservation values. This approach is practicable, as shown by the adoption of similar screens and filters in legislation introduced by Senator Ron Wyden.[19]

Recommendation #1: Develop water layers and filters to identify and protect priority watersheds -- Aquatic Conservation Areas -- and areas of special concern, warranting the highest level of aquatic and water quality protection (or lowest risk)

Above all, the undersigned groups urge BLM not to alter the existing ACS without first developing a "water layer" to help meet the water quality-related goals of BLM's Purpose and Needs Statement and to comply with the Clean Water Act, Endangered Species Act (fish and riparian dependent species) and other legal requirements. While developing a water sensitivity analysis may have been challenging decades ago, many credible data layers, peer-reviewed research and other best available scientific data now exist to permit BLM to assess and evaluate risk to water quality and aquatic resources at landscape scale.

BLM should not rely simply on late successional reserves or the delineation of critical habitat for terrestrial species as a proxy for important aquatic habitats and water quality. High quality habitat on federal land is critical for maintaining high quality sources of water and for sustaining core centers of abundance and diversity ("strongholds") for aquatic species NOT covered by the Endangered Species Act. These priority watersheds generate myriad ecosystem services and warrant special protection.

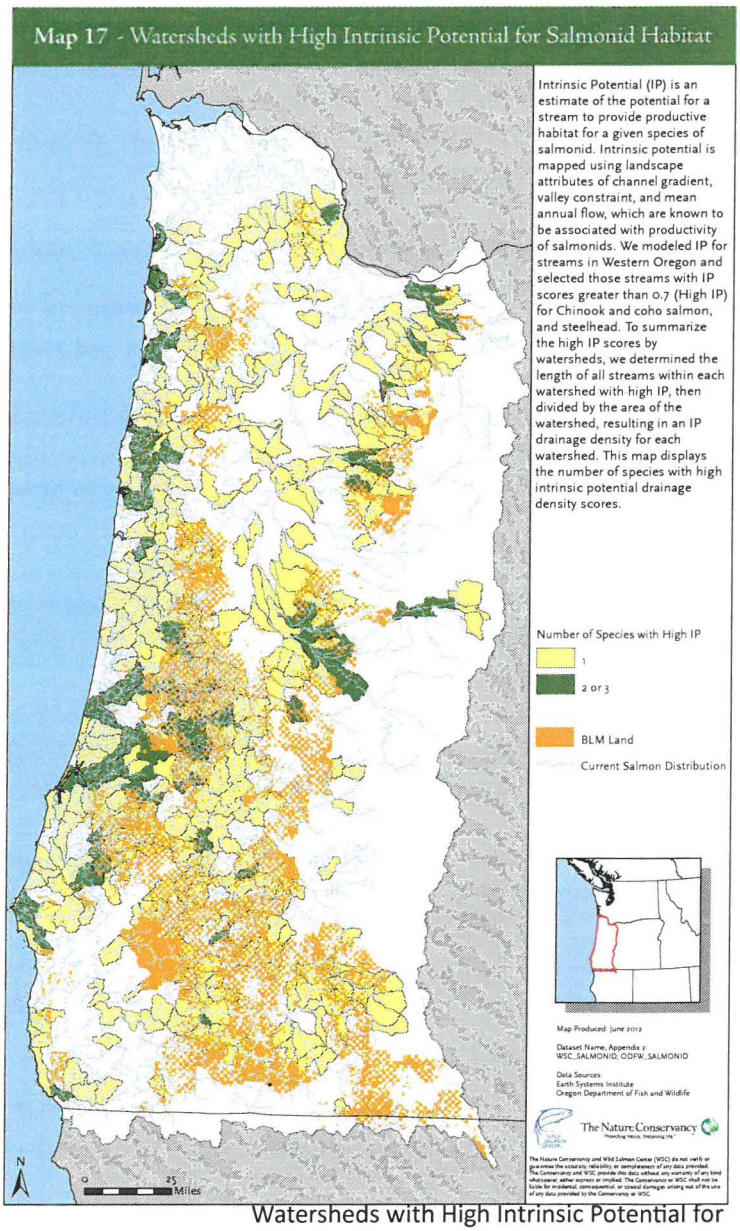
BLM can not simply adopt minimum riparian buffers and ignore disturbances on neighboring private lands and harvest activities on other BLM lands within a watershed. An improved "key watershed" concept with more meaningful aquatic and water quality prescriptions should link harvest intensity and riparian protections according to a watershed-scale risk-based assessment. Currently, risk is addressed in BLM's planning process more through ESA-driven single species factors than watershed scale processes and functions. Adding a water quality layer that protects and maintains *healthy* aquatic source populations ("strongholds") and high water quality areas is an essential complement to measures taken for depleted species.

BLM can look to new or improved sources of data to identify areas warranting a higher level of protection, where the precautionary approach should inform BLM to adopt a suite of proactive, protective measures equal to or exceeding water quality measures in the full ACS and key watersheds. Data sources to identify priority watersheds include:

1. Salmon Strongholds and Strong salmon populations[20]

    a. Database developed by experts based on abundance, diversity and % wild as part of the Salmon Stronghold Partnership, with participation from key federal, state and non-governmental actors.

2. Areas of high intrinsic potential for salmon and steelhead.[21]



Watersheds with High Intrinsic Potential for Salmonid Habitat. *Atlas, Appendix 1.*

a. Intrinsic potential for Chinook, Coho and Steelhead. Now commonly employed by NOAA, State Fish and Wildlife Agencies and others to identify priority stream reaches for protection or restoration.

3. Key watershed areas (subject to updating with new information).[22]

4. DEQ drinking water protection areas and intakes[23] [24]

   a. ex: Special Drinking water management areas delineated by municipal water authorities in Wyden Bill.[25]

5. NOAA recovery plans and State "Conservation Opportunity Areas" in the Oregon Conservation Strategy.[26]

6. "Crucial Aquatic Habitat" areas identified in Oregon Department of Fish and Wildlife "COMPASS" map and database.[27]

7. Identification of water source areas likely to be resilient to climate change, including spring-fed systems and core cold water habitat.

8. New DEQ landslide and steep slope models and analysis

9. TNC groundwater study to determine areas of critical importance and recharge areas potentially affected by altered flow regimes and absorption capacity due to vegetative cover.[28]

10. Where riparian reserves and late successional forest border one another, riparian reserves should "borrow" additional acreage to ensure these areas are managed primarily for riparian (rather than late successional) values, where substantial differences in management regimes exists (e.g. -- road construction).

The illustrative maps herein and attached show how this approach can identify priority areas while still retaining significant acreage for harvest, including "ecological forestry" models advanced by Dr. Norm Johnson and Jerry Franklin.[29]

IV. Priority watersheds warrant specific rules and guidelines to ensure that the primary management directive for such areas prioritizes aquatic health and water quality.

BLM should articulate and adopt specific management practices and prescriptions designed to ensure that water quality and aquatic habitat in priority watersheds is maintained and enhanced. Such rules include:

1. Robust restrictions on road-building, including the net decrease in roaded miles in priority watersheds and identification of priority road mitigation or decommissioning, including road obliteration and re-contouring the former road prism

2. Low intensity timber-as-a-by-product harvest practices undertaken to promote watershed function and natural ecological processes at watershed scale.

3. Tree tipping, where appropriate, and other management actions to increase the supply of large woody debris to streams. Retention of all trees 80 years and older in riparian areas or upslope areas capable of delivering LWD.

4. Two site potential tree buffer widths on fish-bearing and perennial streams; one site potential tree length buffers on intermittent streams with robust (150' or greater) "no-touch" inner riparian reserves.

5. Active engagement zones with nearby private landowners to encourage incentive-based conservation of high priority private riparian lands.

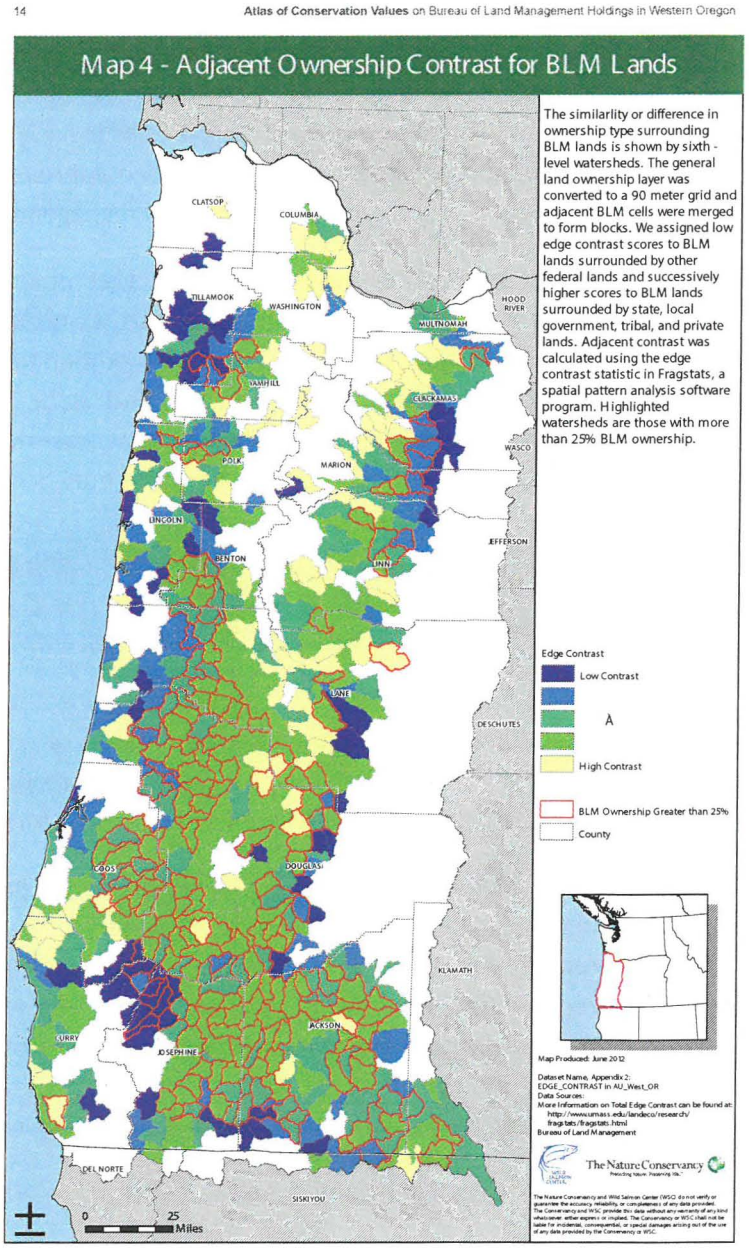
Generally, we support BLM's proposal to limit thinning in riparian reserves by either applying "no touch" areas for inner buffers or adopting strict basal retention rules to prevent "abusive" thinning activities. Importantly, we consider current over-thinning actions, as reflected in the "No Action Alternative", as violating the rules pertaining to the ACS.[30]

V. Failure to consider landscape- scale impacts to water quality in mixed ownership watersheds containing private lands create an unacceptable, much lower standard of protection.

BLM faces a difficult challenge achieving its commitment to clean water and attaining compliance with the Clean Water Act, ESA and other federal laws at watershed scale. The checkerboard nature of the O&C lands in western Oregon sets federally managed lands side-by-side with private industrial timber operations and other private uses. Typically, a higher percentage of federally managed lands are located higher in the watershed, with urban, forest and agricultural operations concentrated in lower elevations.

The challenge lies in the dramatic disparity between water quality protection laws and standards applicable to private lands and public lands in the same watershed. For example, on average, BLM and USFS riparian protections, including most notably streamside buffers, are eight times more protective than neighboring private forest lands. *See Figures 5 and 6.*

The deficiencies of Oregon's rules and regulations protecting water quality have been widely noted, most recently in the disapproval of Oregon's non point source program in the Coastal Zone Act Reauthorization Amendments. EPA, NOAA and others have repeatedly asserted that Oregon's water protection efforts do not meet federal endangered species or clean water standards.[31] The Oregon Independent Multidisciplinary Science Team (IMST) similarly concluded that the Oregon Forest Practices Act failed to incorporate the objectives of the Oregon Plan for Salmon and Watersheds into its existing framework.[32]



Adjacent Ownership Contrast for BLM Lands, *Appendix 1.*

BLM must factor in water impacts from adjacent private lands in mixed ownership watersheds (the vast majority). *See Appendix 12:* Drinking Water Source Areas map from ODEQ. Most streams within the BLM management areas are listed as impaired under Section 303(d) of the Clean Water Act, primarily owing to management practices on private lands. The area of highest risks/impact to state waters arises from the lack of adequate streamside buffers on non-fish bearing streams, particularly small, seasonal streams. These streams represent a very significant percentage of stream miles within watersheds and have been found to be an important determinate on water quality, both for sediment, temperature and the delivery of large woody debris necessary for fish.[33] By eliminating key watersheds, proposing more aggressive levels of harvest intensity and reducing riparian buffer widths by at least half, BLM is increasing risk to precisely this vulnerable category of streams and rivers.

BLM has not demonstrated that the proposed deviations from the Northwest Forest Plan and its ACS will provide reasonable assurance of compliance with Clean Water Act requirements, including numeric and narrative water quality criteria, relevant targets in Total Maximum Daily Loads (TMDLs), presumptions against degradation and the full protection of beneficial uses. The agency's analysis of impacts on freshwater ecosystems is profoundly flawed and is based on a failure to recognize the full extent of the BLM's obligation to prevent degradation of water quality, particularly in smaller and non-perennial water bodies. These comments and supporting expert reports, identify numerous aspects in which the BLM's findings that water quality will be adequately protected by the proposed management alternatives do not have a rational basis.

We propose addressing the private lands component of mixed ownership watersheds in Recommendation #1 above. Additionally, BLM can take proactive measures in priority watersheds to work with private landowners to better protect aquatic resources. In addition to facilitating land exchanges to promote conservation values in priority watersheds, BLM can partner with state, business and non-governmental groups to identify opportunities to meet watershed goals at scale by assisting private landowners to access federal, state or private funds available to improve water quality or aquatic habitat.

Recommendation #2: BLM's "moderate" harvest intensity levels should be modified to reduce impacts for fish, clean water and watershed health

BLM euphemistically labels aggressive regeneration harvest as "moderate" intensity level harvests. Green tree retention levels below the basic parameters of ecological forestry have no place on federally managed forests, especially where neighboring private lands are likely retaining one or two trees per acre, leaving a heavily disturbed landscape with serious implications for fish, wildlife and the hydrological regimes.

Apart from the mere "social license" to operate in this manner on public lands, BLM has failed to evaluate the impacts of low-retention regeneration harvest in moderate scenarios on run-off, sedimentation and wood recruitment. The scientific literature clearly indicates that excessive reduction of basal area can affect water temperature, groundwater recharge levels (as water run-off increases due to lack of ground cover); soil degradation and nutrient depletion and other unassessed impacts.[34] Accordingly, we suggest substantially substituting "modest harvest scenarios" with variable retention harvest methods resulting in higher green tree retention levels, excluding riparian reserves or buffers, even if they reach into the harvest unit.[35]

For moist forest management, Johnson summarizes this approach as follows:[36] [37]

- Retain existing older stands and individual older trees found within younger stands proposed for management, using a selected threshold age;
- Accelerate development of structural complexity in younger stands, using diverse silvicultural approaches, including cluster-based algorithms as a marking guide;
- Implement variable retention regeneration harvests in younger Moist Forest stands (stands generally less than 80 years of age), retaining such structures as individual trees, snags, and down logs and intact forest patches;
- Accommodate development of diverse early seral ecosystems following harvest, by using less intense approaches to site preparation and tree regeneration;
- Embed the preceding objectives in a silvicultural system that includes creation and management of multi-aged, mixed-species stands on long rotations (e.g., 100-160 years); and,
- Develop landscape-level plans for distributing variable retention regeneration harvests to assure desired placement and appropriate scale of implementation.

VI. Examples of priority areas warranting special consideration from BLM.

Several of BLM's alternatives schedule aggressive harvest in areas that warrant a higher level of protection due to their outstanding conservation values. Below, we include a non-exhaustive list of several of these places. For demonstration purposes, we include Maps illustrating high intensity harvest in special areas under Alternative B.

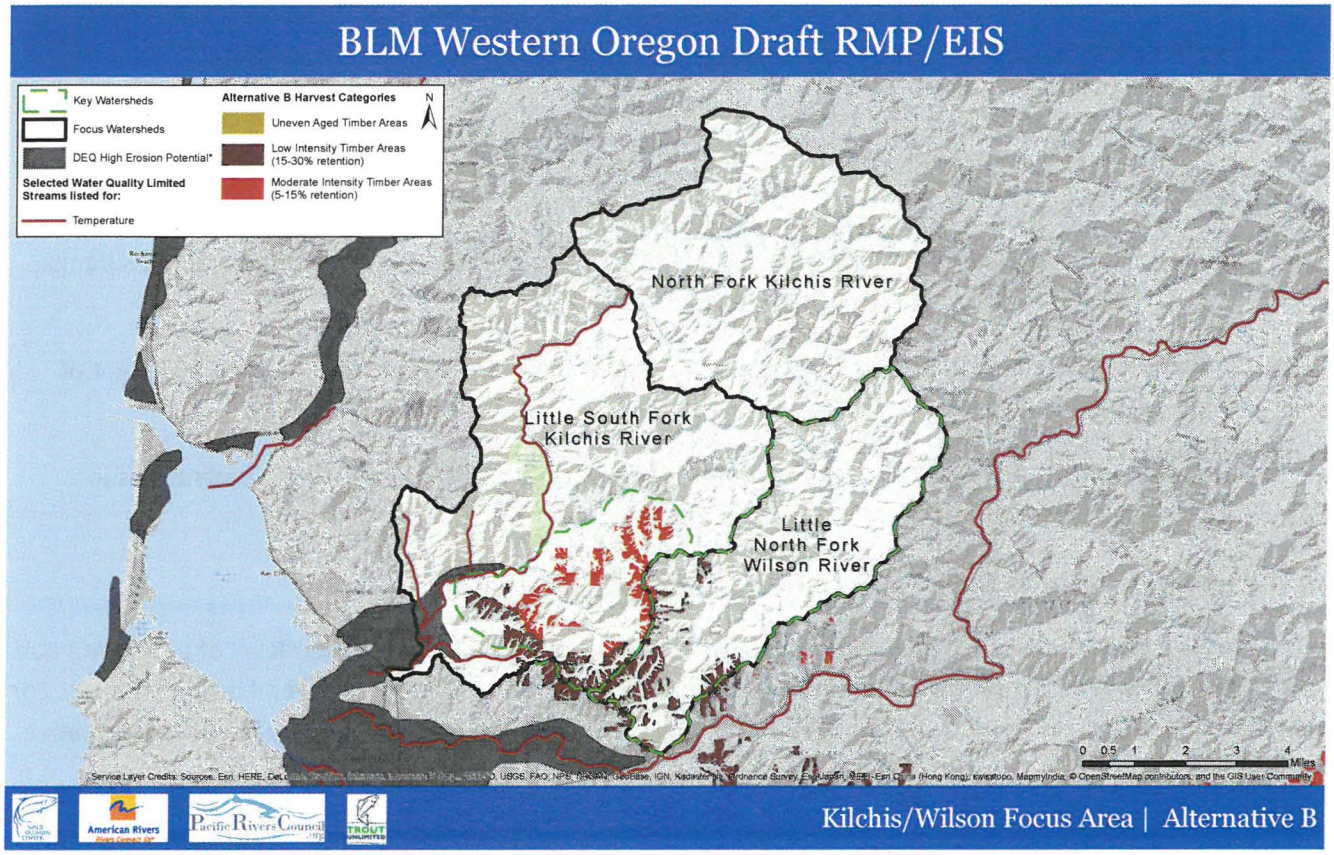
The following focused watershed analyses are demonstrative of a greater need to plan more closely with state and other federal agencies working throughout the plan area, using available data to create the best possible management outcomes rather than perpetuating what is merely passable. The O&C Lands checkerboard pattern creates a situation where landowners actions throughout watersheds can combine to significantly degrade water quality and riparian habitat. These cumulative impacts are difficult to quantify, but can be some of the most significant impacts to the plan area. BLM must take a role that is consistent with FLPMA, the O&C act, and its Purpose and Needs statement to create a healthy landscape that will support fish, wildlife, and a strong base for large wood recruitment.

A. Kilchis Tract (9204 acres (8,480 public domain, 724 O&C Salem District)

Forestlands in the "Kilchis Block" comprise 9,204 acres of predominantly late successional forest, just outside of the three successive "Tillamook Burn" fires several decades ago. Nearly 5,000 acres are older than 80 years old, exhibiting mature forest characteristics beneficial for fish and wildlife. Proposed for protection as a salmon refuge in legislation introduced by Senator Ron Wyden, this area should *not* be scheduled for regeneration harvest (low or moderate intensity variable retention harvest).[38]

As a percentage of BLM land in total within the Kilchis Block, 55% is within Tier Key Watersheds (31% in the Kilchis and 25% within the Little North Fork of the Wilson River), totalling over 5000 acres of land. These lands are recognized by Oregon Department of Fish and Wildlife, USFS, USFWS, and many others as one of the most important fish refuges in the state. Additionally, the area is treasured for outdoor recreation, including hiking, hunting, angling and wildlife viewing. BLM itself characterizes the river segments of the Kilchis, Wilson and

Trask as "outstandingly remarkable" for recreation and other values in BLM's River Suitability Determination for Wild & Scenic Rivers.[39]



Kilchis/ Wilson Focus Area Map. *Appendix 8*

Recently, the Oregon Department of Fish and Wildlife has designated the Kilchis River as a "Wild Fish Emphasis Area," eliminating and reducing hatchery releases in the Kilchis and nearby rivers to better protect wild salmon.[40]

Additionally, the entire area encompassed by the BLM Public Domain and O&C Lands in this area is identified as the highest priority " *Aquatic Crucial Fish Habitat*" in ODFW's citing tool "COMPASS", designed to help inform land use and natural resource management.[41]

BLM itself regards this area as warranting special protection. BLM recently summarized the areas as follows:

> Many of the BLM acres within the Kilchis Block are located within a very unique and biologically significant area of the Tillamook County and of the North Coast Range. It is situated within a narrow band of forest, just a few miles wide, which is sandwiched between the 360,000 acre "Tillamook Burn", which was burnt over in a series of four catastrophic fires from 1933 to 1951, and the broad, flat, agricultural Tillamook Bay valley. This narrow band of forest, skirting around the perimeter of "the burn" in roughly a northwest/southeast orientation, contains much of the remaining later seral stage habitat located in that portion of the county. Historical and/or recent logging within this band has resulted in significant fragmentation, although there are still a few larger tracts of mature timber remaining. The larger tracts of mature forest are located primarily within Kilchis County Park, on BLM lands and on ODF ownership – primarily within the Wilson River corridor. It is no coincidence that

these late seral stage habitat remnants, rare in this portion of the state, contain a substantial portion of the regions known T&E species sites. At one time, at least four northern spotted owl sites, averaging about 3 miles apart, occurred and may still occur, along this band of forest, as well as several occupied murrelet sites which continue on to the north in the same pattern of distribution along the edge of "the burn."

The Kilchis Block contains at least one active bald eagle nest.

The area likely contains numerous active red tree vole sites; USFWS has determined the North Coast Distinct Population Segment of red tree voles to be warranted but currently precluded from listing under the Endangered Species Act by higher priority actions.

Many forested stands within the Kilchis Block are structurally complex multi-storied conifer stands helping to meet Recovery Action 32 of the Revised Spotted Owl Recovery Plan.

A number of streams within the Kilchis Block contain excellent habitat for ESA listed Oregon Coast Coho Salmon.

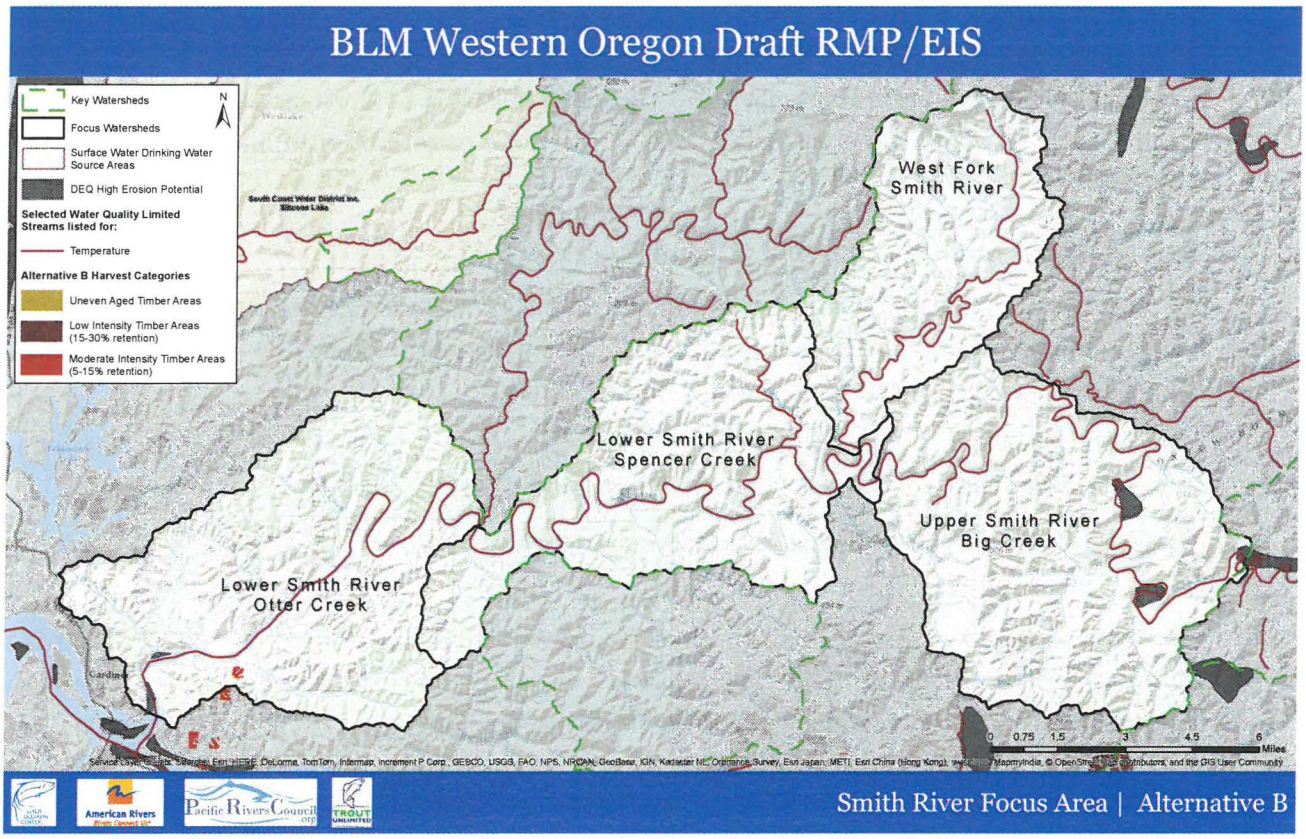
The areas streams support significant salmon populations (chinook, coho, chum, steelhead, sea run cutthroat) that contribute to both sport and commercial fisheries production. These fisheries values have both statewide and national significance for recreational fishing.

-Memo from BLM Salem District Office to Wild Salmon Center, 7/11/14 on file

Moreover, the Kilchis Block is directly contiguous to a large acreage of state land and county land that has significant conservation value. A recent proposal endorsed by a range of fishing and conservation groups (North Coast State Forest Coalition [forestlegacy.org]) requests that the Oregon Department of Forestry, which manages the land for the state, cooperate with BLM to consider opportunities for conservation that would come from complementary strategies (see Appendix 14). This request to the state for conservation of the Kilchis and Lower Wilson Rivers comes in the context of both the proposal by Senator Wyden and the discussion of the revision of the forest management plan that governs the Tillamook State Forest. Cooperation between BLM and state management would create an enormous opportunity for developing protected, older interior forest habitats in an area of the state where such habitat is exceedingly rare. In addition to including the entire Kilchis Block as a late successional reserve, we request that the BLM cooperate with ODF and support proposals for creating larger interior forest habitats through join planning efforts.

B. Smith River and West Fork Smith River, Douglas County, Oregon (94,110 acres in Coos Bay District)

The Smith River (a tributary of the Umpqua river) is a major producer of wild coho salmon, wild fall chinook salmon, wild winter steelhead and coastal cutthroat trout. These fall and winter runs of salmon and steelhead produce a sport fishery that is hugely important to the economy of Reedsport, Oregon. Over the past several years, millions of dollars in restoration work has been conducted in the Smith River basin. Many of its important tributaries have received in-channel restoration work such as large woody debris and rock weirs. Many more projects are currently scheduled and underway with money and work coming from the BLM, OWEB, People of the Umpqua River Watershed Council and the Smith River Watershed Council. Non-governmental organizations including volunteers from Trout Unlimited have invested many hours of work over the past two years, planting approximately 4,000 trees within the riparian areas where this restoration work has taken place.



Smith River Focus Area Map. *Appendix 9*

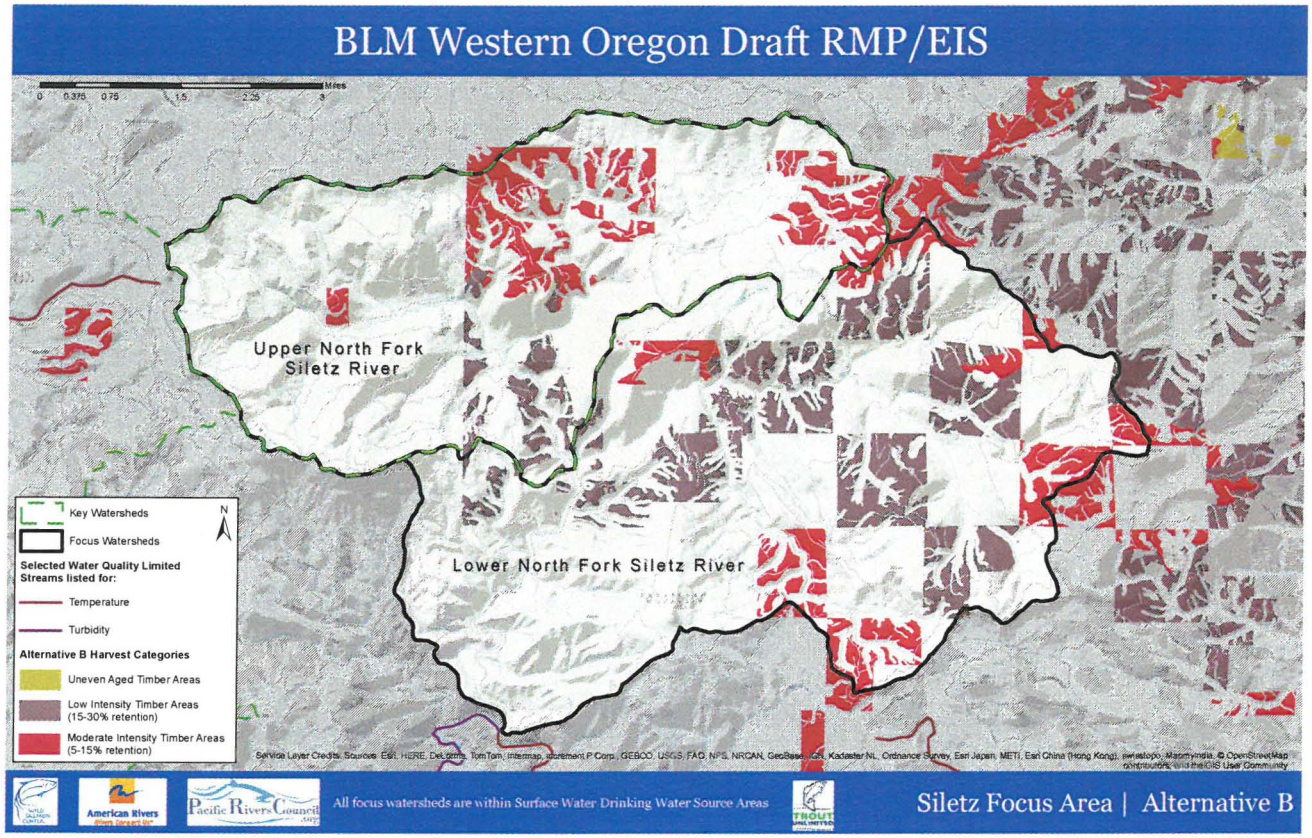
The west fork of the Smith River has a "Life-cycle Salmonid Study" that has been underway continuously since 1998. This joint study includes scientists from the BLM, USFS, ODFW and students from Oregon State University. This study involves a mark-recapture of adult salmonids component, as well as a juvenile escapement component. It is the consistent observed increase in juvenile recruitment of salmon and steelhead escapement that has most scientists interested in this study. While preliminary, it seems completed restoration work is beginning to yield results in the increased smolt escapement numbers.

Because of the Smith River's importance economically to the citizens of Reedsport and the surrounding communities as well as the efforts and costs of recent restoration projects, coupled with the great science coming from the life-cycle salmonid study, the above signed organizations implore the BLM to consider these aspects before applying anything other than the "no action" alternative.

C. North Fork Siletz River, Lincoln County, Oregon (4,124 acres, Salem District)

The North Fork of the Siletz provides critical habitat for summer steelhead in the Siletz basin. The cold-water refugia provided by current riparian buffers prescribed under the NWFP in the BLM managed forests are crucial for the survival of these rare coastal summer steelhead. Only one other coastal basin summer steelhead run exists in Oregon and that run is located in the North Umpqua. The vast majority of the North Umpqua river falls under the management of the USFS. The incredible water quality of the North Umpqua is a direct result of the management actions of that agency. North Fork Siletz summer steelhead deserve the same protections. Volunteers from Trout Unlimited's "Bluebacks" Chapter located in Corvallis, Oregon have been volunteering countless hours assisting fish biologists from ODFW conducting snorkel surveys here. Trout Unlimited has immediate and future plans to expand our efforts in this important watershed. Additionally, due to the vast

holdings of private industrial timber lands surrounding the BLM managed forests in this watershed, it's even more crucial that BLM only consider the "no action" alternative here as well.



North Fork Siletz River Focus Area Map. *Appendix 10*

D. Canton Creek in the Roseburg District (40,573 Acre watershed, 17,726 in O&C Lands)

Canton Creek--- the largest tributary of Steamboat Creek--- is both extremely important to fish and extremely vulnerable to new disturbances. Canton Creek is a strategically important producer of steelhead trout, coho salmon, chinook salmon and cutthroat trout within the North Umpqua drainage. Canton Creek is already large wood deficient, and greatly segmented by the O&C checkerboard, with a significant portion (9,800 acres, 24%) of land in the watershed belonging to industrial timber owners who are only bound by the very weak protections of the OFPA.[42] Canton Creek along O&C lands has been identified as CWA 303(d) impaired for sediment and impaired for temperature. Additionally, Oregon DEQ has identified an area of the watershed as having high erosion potential. Proposed actions other than Action Alternative A create a substantial risk to these already susceptible fish populations.

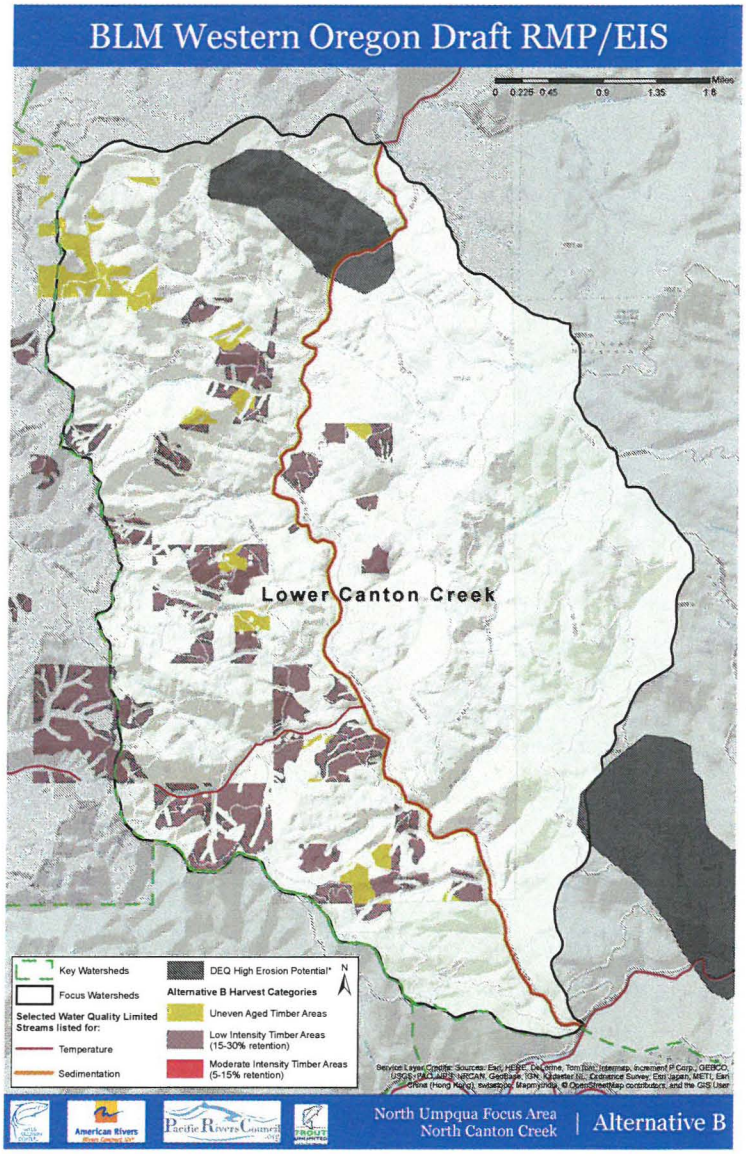
(i) *CWA 303(d) Sediment and TMDL temperature allocation listing, and high erosion potential combined are detrimental to stream health*

Canton Creek through the O&C ownership area is extremely vulnerable to increased disturbances as recognized by Oregon DEQ. BLM proposes harvest that requires only 15% tree retention for BLM lands along Canton creek from Steamboat creek to the top of the Lower Canton Creek watershed near No Man Creek. The section of Canton Creek existing within the BLM plan area already exceeds current TMDL allocations for all landowners,

including BLM, for temperature. The creek is also 303(d) listed for sediment in the plan area. In 2008, ODEQ evaluated the WOPR DEIS alternatives for their adequacy in meeting TMDL load allocations and Oregon's water quality standards for temperature.[43] DEQ found that temperature increases and reductions to effective shade that exceed the TMDL load allocation and therefore did not meet the temperature standard. Because the proposed harvest in the preferred alternative is similar to what ODEQ modeled in the WOPR, we find that the proposed harvest in Canton would likely result in temperature increases that exceeded the TMDL load allocation. BLM has already exceeded its non-point source allocation for temperature on Canton Creek and should increase its riparian reserves in Canton Creek and similarly vulnerable watersheds.

(ii) Cumulative Impacts considered within the segmented landscape do not allow for a healthy watershed consistent with BLM Purpose and Needs

Canton Creek is representative of the vulnerable, 303(d) listed, over-harvested areas that are hit hard from private timber through the segmented checkerboard landscape, and should be protected by BLM to the greatest extent possible. BLM does not meet its Purpose and Need of providing clean water in watersheds in any alternative along Canton Creek, except perhaps for Alternative D. Reduced riparian buffers throughout the Canton Creek watershed, coupled with segmented ownership, and high landslide potential will degrade water quality in an already compromised watershed. BLM must analyze and discretely disclose the interplay between these impacts and their cumulative effects on the landscape.



Canton Creek Focus Area Map. *Appendix 11*

Canton Creek has an incredibly high road density, with over 500 road stream crossings in the lower reaches of the watershed and 811 total crossings recognized in the 1995 Watershed Analysis. BLM has already created a high-risk situation for this watershed. Many of these roads do not have adequate drainage or other deferred maintenance issues that further contribute to sedimentation issues.[44] BLM's proposed increases in harvest will put more pressure on these roads and lead to further water quality degradation.

VII. Plan-area wide concerns with BLM RMP EIS planning process

A. BLM must consider cumulative effects in a discrete way throughout the plan area

Recommendation #3: BLM should create a discrete cumulative effects section outlining effects of each alternative pursuant to NEPA.

BLM does not consider cumulative effects in a transparent or discrete way in this DEIS. CEQ notes that "[e]vidence is increasing that the most devastating environmental effects may result not from the direct effects of a particular action, but from the combination of individually minor effects of multiple actions over time," and BLM must, under NEPA, consider those effects.[45] However, BLM's own NEPA guidelines state that BLM "must be able to describe the incremental differences in cumulative effects as a result of the proposed action and alternatives."[46] BLM states in the DEIS that the cumulative impacts within a plan area as large as western Oregon are inherently included and described by projecting future trends through modeling.[47] These two approaches are contradictory; BLM should have a discrete cumulative effects section outlining effects of each alternative pursuant to NEPA. BLM's cursory discussion of cumulative effects does not consider the future impacts of those effects in any way. BLM takes an inadequate approach to its cumulative effects discussion. First, BLM does not provide detail or clear rationale on its analysis. Second, its analysis of reasonably foreseeable future effects is extremely narrow. Third, BLM postpones its analysis and tiers it to other district or site-specific plans.

BLM does not provide detail in its analysis of cumulative effects in the DEIS. In *Neighbors of Cuddy Mountain v. U.S. Forest Service*, the Court found USFS cumulative effects analysis inadequate when providing "some information... but the analysis provided was very general."[48] Cumulative effects analysis must constitute a "hard look" at past, present, and reasonably future effects of the proposed action.[49] USFS in *Cuddy* analyzed each effect in a vacuum and with no detail in regard to the effect of the action on old growth habitat.[50] It is inadequate to conclude that there are *no* cumulative effects without evidence to support their assertion.[51] [52] Like the USFS in *Cuddy*, BLM's analysis is limited. BLM mentions only that their past and present condition analysis necessarily includes cumulative effects analysis, but says nothing more in terms of incremental or cumulative effects in a discrete way. In terms of future analysis, BLM states that "reasonably foreseeable future actions [on BLM administered lands] are those actions that would occur as described under the various alternatives," and leaves it to each individual topic section to discuss its effects, but is still missing ---after recognizing that cumulative effects will exist in the plan area--- a discrete cumulative effects analysis.[53] Therefore, if BLM cannot skirt its duty to analyze cumulative effects when it finds none, it follows that it must be inadequate to conclude that because there *are in fact* cumulative impacts BLM should do nothing to analyze the effects. BLM neither provides detail or clear rationale of its analysis, nor any meaningful analysis of past, present or reasonably foreseeable future actions in this document.

BLM tiers and postpones its cumulative effects analysis to district- and project-level plans. CEQ and caselaw recognize that scale can be a difficult hurdle in preparing a cumulative effects analysis, but tiering that analysis to a different planning process is not an appropriate response.[54] [55] [56] BLM deflects its duty to analyze cumulative effects in the current RMP/DEIS, stating that "[t]here are other broad-scale analyses currently underway that the BLM considers as reasonably foreseeable actions for analyzing cumulative effects." and mentions those plans while stating the analysis will be done later at these district- and project-level plans.[57] BLM may not tier cumulative effects analysis for the entire plan to future documents as proposed.

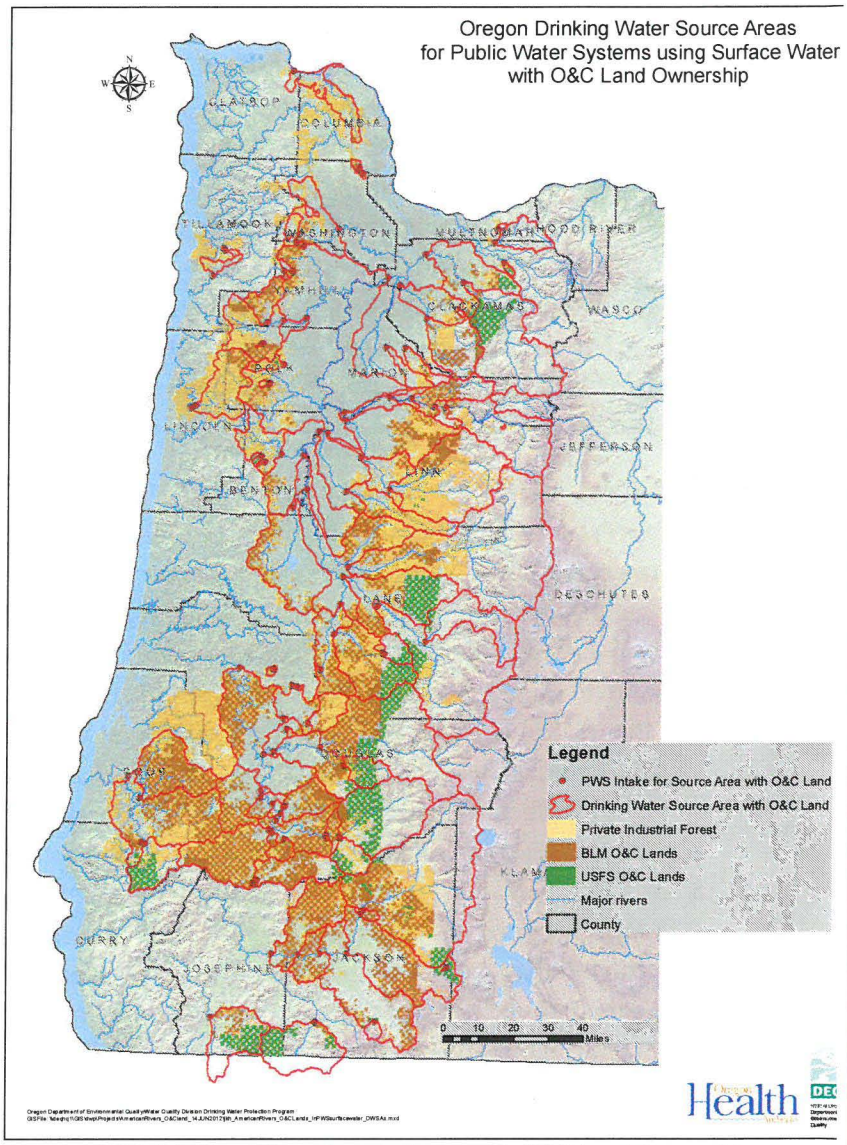
B. BLM creates significant risk to drinking water resources throughout the plan area, inconsistent with its Purpose and Need statement

BLM's lands in western Oregon play a critical role in providing clean water services for our residential, agricultural and industrial customers downstream. According to the Oregon Department of Environmental

Quality (DEQ) over a million and a half Oregonians receive their drinking water from sources on O&C lands. Seventy-three percent of the BLM lands in western Oregon are located in areas identified by the DEQ as Surface Water Source Drinking Water Areas. Overall, there are 81 public water supplies that have O&C lands within their drinking water source area. *See Appendix 12.*

Watershed conservation efforts on Portland's Bull Run Watershed have saved taxpayers tens of millions of dollars in avoided secondary treatment costs. Tualatin ratepayers saved millions of dollars by planting trees instead of purchasing an expensive refrigeration system to cool river water. The City of Medford is addressing water temperature by working with landowners to conduct streamside restoration activities rather than constructing cooling towers or other engineered options. In Eugene, the Eugene Water and Electric Board has devised an innovative payment for ecosystem services project to incentivize private landowners to protect their drinking water source areas on the McKenzie River and its tributaries. Indeed, effective management practices help these healthy watersheds act as natural cooling and filtering systems for rivers and streams flowing through them.

In watersheds with a mix of federal and private ownership we support strategies and additional resources that would facilitate and encourage work with private landowners in source drinking water areas. Effective watershed management saves tens of millions of dollars by helping filter water, mitigating the severity of floods and droughts, and supplying clean drinking water often reducing the need for additional expensive treatment plants to filter pollutants.



Oregon DEQ Drinking Water Source Areas with O&C Land Ownership.

Appendix 12

Key sites within these drinking water source areas warrant significant protection because of the large number of people who rely on clean water from these lands, and the high economic cost of water quality degradation. It is economically advantageous to protect municipal drinking water sources. Water quality degradation from activities such as industrial logging operations have the potential to cause expensive remedial efforts and water treatment expenditures.

EPA has determined that the ratio of contaminant cleanup costs to basic prevention and protection ranges from 5:1 to 200:1.[58] Investing in forest and watershed protection can result in significant savings to a utility in treatment costs.

We encourage you to consider conservation of areas important for drinking water on federal lands as part of a coordinated effort to maintain and enhance drinking water quality and as a way to reduce treatment costs downstream. Source drinking water areas, areas with high erosion or runoff potential such as steep slopes or erodible soils, and areas that have historic or existing landslides close to the drinking water supply intakes should receive special consideration for conservation and mirror the approach Senator Wyden took to establish Drinking Water Protected Areas in watersheds.[59]

Recommendation #4: Sensitive areas within Drinking Water Source Areas should be mapped and timber harvest should be avoided in these areas to reduce risk to drinking water and to meet the Purpose and Need to protect clean water in the plan.

New readily available information can be integrated into the plan to identify sensitive areas for drinking water to reduce the risk of contamination of surface water. The sensitive areas are those where potential contamination sources or land use activities, if present, are likely to negatively impact the water supply. Elevated landslide rates because of heavy rainfall in forested landscapes can adversely impact aquatic habitat and water quality. Under climate change scenarios for the plan revision area, we are likely to see an increase in landslide rates. A Weyerhauser study found an increase in landslides is directly linked to younger stand age trees. Higher rainfall levels led to an approximate two to three times increase in landslides in younger stands.[60] Further an Oregon Department of Forestry study found that landslides in harvested areas contributed more sediment material and travelled farther than areas not harvested.[61] Areas slated for increased intensity of harvest identified as having a higher likelihood of landslides would lead to an increased risk to water quality.

The BLM should analyze high erosion potential, including the presence of concave or convex geologic features, permeability of soils, high runoff potential and landslide proneness and use this information to reduce risk in these areas by limiting the type and intensity of harvest. Soils classified as sensitive should include soil with slopes of 30% or greater and soil erodibility factors of 0.25 or greater as the Oregon Department of Environmental Quality has done. The soil erodibility factor is a measure of the susceptibility of soil particles to detachment and transport by rainfall and runoff.

Just as the plan relies on the BLM's Timber Production Capability Classification as a method of evaluating which forest lands are suitable to produce timber on a sustained yield basis, including the identification of fragile conditions, the agency should develop a similar database of sensitive areas with a high risk of landslides. The BLM should develop corresponding management prescriptions to reduce risk to clean water and watershed health.

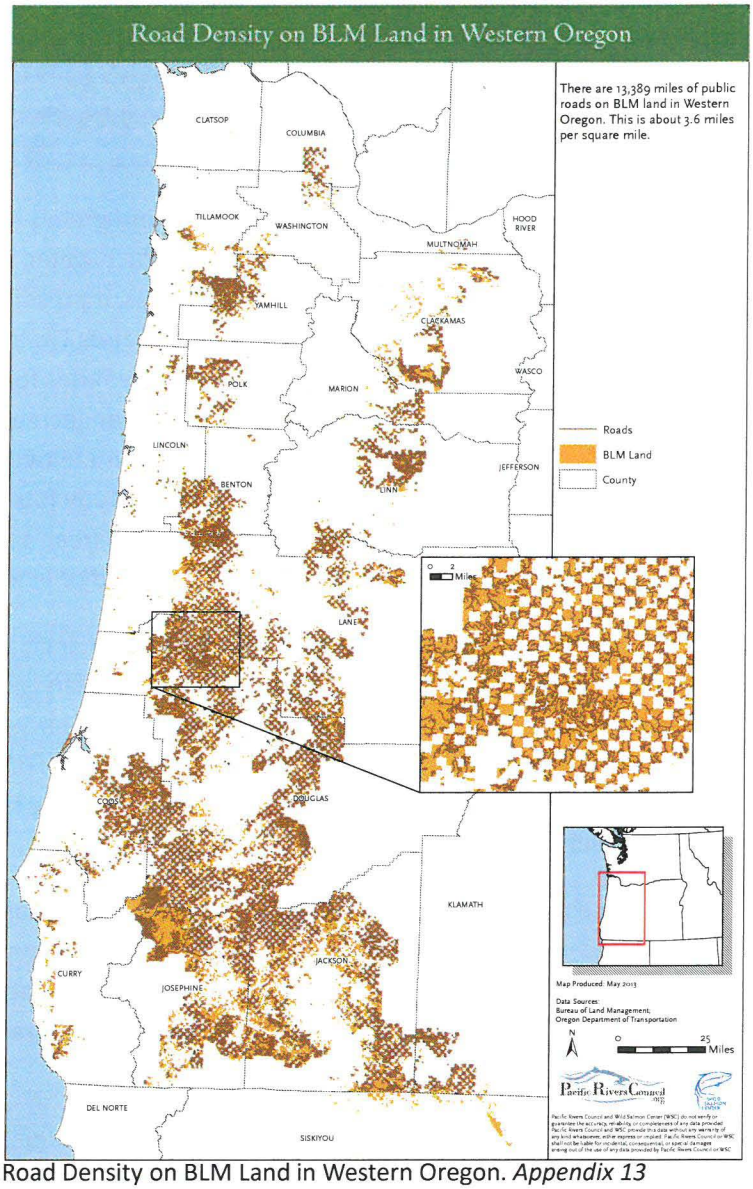
Erosion potential within a watershed could be evaluated using the SSURGO (Soil Survey Geographic Database) data sets from the USDA Natural Resources Conservation Service. In addition, the STATSGO (State Soil Geographic Database), and the Soil Resource Inventory were used. The basis of soil erodibility can be based on the Standard Revised Universal Soil Loss Equation from the USDA Agricultural Research Service as defined in the Washington State's Standard Methodology for Conducting Watershed Analysis.[62] Recent research at the Oregon Department of Geology and Mineral Industries could be used to identify methods to systematically map previous landslides.

C. Impact on Water Quality from Roads

BLM has identified $326.8 Million in deferred maintenance to forest roads, bridges, and culverts on over 14,000 miles of road.[63] BLM must identify which of these roads are absolutely necessary to its operations before continuing to leave these poorly maintained roads open to logging and OHV use. By BLM's own admission, road construction contributes to sedimentation. On a total of over 2.5 million acres, only 373 miles of road are slated for long term closure, and even more remarkably 93 miles slated for permanent closure in the first decade.[64] This incredibly small proportion of roads slated for closure must be justified in light of the fact that BLM cannot maintain its existing road network.

Through its district-by-district Transportation Management Plans BLM should mandate a thorough inventory system consistent with its Purpose and Needs statement. BLM has not gone far enough in this DEIS to address the importance of decommissioning roads that BLM cannot keep above substandard condition.

BLM's road network is far larger than it should be- road densities of 3-6 miles of road per square miles across the plan area are common. Key Watersheds designations provide protections and guidelines for building roads in these vulnerable areas. Under the ACS, roads have specific standards and guidelines and requirements for aquatic species health- these standards and guidelines are abandoned with the rest of the ACS under all action alternatives.[65] We recommend BLM reduce road densities as much as possible, especially in key watersheds.[66] There is no dispute among the research, "the net effect of roads [is] an increase in basin-wide sediment production."[67] Current road densities exceed those practicable for clean water and fish population survival. BLM should first consider which roads are absolutely necessary. Only roads which are encumbered by reciprocal right-of-way and those which are not only necessary but comply with BMPs should remain in service. After BLM has considered what is absolutely necessary for logging operations consistent with ACS, it should set a standard below 2 miles per square mile for logging operations. Current levels in the harvest area are at 3.6 miles per square mile on average and in many sensitive areas are closer to 6 miles per square mile.



Road Density on BLM Land in Western Oregon. *Appendix 13*

Recommendation #5: BLM should consider permanent closure and decommissioning for roads it cannot maintain.

With respect to soil resources, BLM only analyzes timber harvest, fire treatment, off-highway vehicle use, and road *construction*. BLM does not analyze the increased impacts from its deferred maintenance, or the impacts from the existing road network which is not only deteriorating, but its use will be increased under all action alternatives. BLM cannot reasonably avoid analysis of the existing road network and its effects on soil resources and its variance across proposed action alternatives. There is a great deal of variance across alternatives in the plan area as demonstrated by BLM's own mapping toolkit. BLM must explain how existing road network use will contribute to soil and water quality degradation in its EIS.

D. *BLM does not consider a true No-Action Alternative pursuant to NEPA and does not provide a reasonable baseline for continuation of current BLM activities in Western Oregon*

The No Action alternative presented in the DEIS does not represent a continuation of current BLM activities in western Oregon. The No Action alternative must represent a continuation of the current management, but under this "No Action" management, harvest increases significantly, and resource management neither represents a continuation of current practices nor a reasonable baseline. A true No Action alternative -as required by NEPA- is not included for consideration. BLM states that "NEPA regulations require that an EIS analyzes a No Action alternative... No Action means there is no change from current management direction," then BLM shifts, stating the No Action alternative "in this Draft RMP/EIS is implementation of the 1995 RMPs as written (in contrast to the BLM's current implementation[)]."[68] BLM seems to suggest it can ignore the directive of NEPA in order to advance a policy that mandates a great deal more land for harvest than is currently available.

BLM does *consider* consideration of a true no-action alternative, but states that it will not be a sustainable.[69] BLM's current management has lead to development of fewer than 250,000 Mbf/year consistently, primarily because harvest efforts in the past decade have been directed toward thinning and eventually all stands available will be adequately thinning. Prior to the primarily thinning focused management, however, there have been other methods for harvest.

BLM claims that a true no-action alternative does not meet its Purpose and Need of supplying a sustainable yield of timber, but this is a flawed interpretation. A sustainable yield sets a ceiling, not a floor to timber yield. BLM has an affirmative duty to not *over*-harvest O&C lands pursuant to the enumerated goals of the O&C Lands Act. BLM treats the goal of a "permanent timber supply" as a mandate to cut as much as possible, but this is not a natural reading or interpretation of the Act. Additionally, a No Action alternative is the only alternative which, under NEPA, is NOT required to meet a Purpose and Need. The purpose of a No Action alternative is to provide a baseline from which impacts from proposed action alternatives can be measured.

E. BLM has overstated the role of and has improperly interpreted the O&C Act.

While this plan goes some distance in its review of science and implementation of reasoning, BLM has ignored the majority of the science it cites and instead favors an alternative that will neither meet its Purpose and Need, nor the goals outlined in the O&C Lands Act "for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities." This list of uses is not exhaustive, but representative of the wide variety of important functions of BLM lands. FLPMA, adopted after the O&C act, clarifies that "BLM lands shall be managed 'on the basis of multiple use and sustained yield."[70] BLM's preferred alternative wrongfully elevates timber production over its multiple-use mission. BLM must represent the long-term needs and values of the general public, not just the short-term desires of very few industrial timber

producers. The preferred alternative in the DEIS creates too great a risk for riparian and aquatic resources in the plan area. These resources in western Oregon are already at a great risk- BLM must be a model steward for our rivers, streams, and the species that depend on them.

F. BLM must act in accordance with its duties to the Clean Water Act

The purpose of the Clean Water Act is "restore and maintain the chemical, physical, and biological integrity of the Nation's waters."[71] Each factor listed above is important to achieving the goals of the Act and the agencies should continue to protect waters based on these factors. Except for the "No Action" alternative, the modifications of the aquatic conservation strategy by reducing riparian buffer widths and eliminating Key Watersheds are inconsistent and contrary to the Purpose and Needs objective of providing "clean water in watersheds."

All waters that are hydrologically or biologically connected to navigable or other waters of the United States are protected by the Act. Water quality standards extend to seeps, springs, wet meadows, and wet areas, recognizing the importance of these aquatic features to the aquatic ecosystem. While adjacency of a stream or wetland to a navigable water body would indicate a very high likelihood that management of such stream or wetland would affect that navigable water body, lack of adjacency certainly does not indicate the converse. Examples of protected waters of direct or indirect hydrological connection to navigable or other waters of the US include:

- Streams that flow intermittently, ephemerally, in the sub-surface, or through human made conveyances;
- All wetlands that discharge to groundwater that later flows into a navigable stream, and wetlands that are discharged to from groundwater which is hydrologically connected to navigable waters
- Wetlands within the 100-year floodplain of a navigable water
- The hyporheic zone of any navigable water or one of its tributaries ("the area of flow beneath the surface of the stream bed[72] In alluvial valleys, the hyporheic zones may extend several meters below the channel bed, as well as a kilometer or more laterally.")[73]
- Groundwater

These aquatic areas have the ability to influence important attributes of the waters that they are connected to, including nutrient, sediment and other pollutant loading, stream temperature, flow maintenance and fish and amphibian habitat.

1. Duties Specific to Federal Agencies under the Clean Water Act

The Clean Water Act is very clear that federal agencies are required to meet pollution control requirements, including state water quality standards. Federal agencies "having jurisdiction over any property or facility, or... engaged in any activity resulting, or which may result, in the discharge or runoff of pollutants... shall be subject to, and comply with, all Federal, State, interstate and local requirements, administrative authority, and process and sanctions respecting the control and abatement of water pollution in the same manner, and to the same extent as any nongovernmental entity... the preceding requirement shall apply to any requirement, whether substantive or procedural."[74]

The essential function of a TMDL is to set a loading capacity for a particular pollutant (e.g. solar heating; turbidity), accounting for seasonal factors, "critical conditions" and a margin of safety to compensate for uncertainty. The portion of an overall loading capacity allocated to types of non-point source dischargers – such as forestland managers - is determined through the description of load allocations. TMDL load allocations clearly fall under the heading of the water quality requirements that the Act contemplates are enforceable as against federal agencies.[75]

2. Key Aspects of Water Quality Affected by the Draft RMP/EIS

Section 303 of the Act protects beneficial uses of regulated waters. Water quality is critical to maintaining beneficial uses including agricultural, industrial, domestic and municipal water supplies, recreation, power generation, and maintaining populations and habitat of salmon and other aquatic organisms.

The existing Northwest Forest Plan provisions have been approved by EPA in numerous instances as adequate to provide reasonable assurance that the load allocations determined in TMDLs for both sediment and temperature will be met. No such supportable finding is made in the DEIS.

3. Importance of non-perennial waters

Attainment of §303 water quality standards cannot be meaningfully discussed without reference to the condition of headwater streams, many of which exhibit only seasonal flow, and wetlands. Intermittent streams play an important role in storing and processing organic materials, later transporting the products downstream.[76] Intermittent streams also store sediment, later providing it to larger streams.[77]

Wetlands contribute to meeting water quality standards by accumulating nutrients, trapping sediments and pollutants, and transforming substances.[78] [79] [80] [81] [82] [83] [84] [85] Hydrologic pathways such as precipitation, surface runoff, groundwater, tides, and flooding rivers transport energy and nutrients to and from wetlands.[86]

Additionally, by reducing flood flow amounts and velocities, wetlands reduce erosion.[87] Because wetlands receive, store, and release water in various ways, including through contact with groundwater and surface water, filling or discharging pollutants to wetlands can have water quality impacts in other parts of a watershed. Wetland Functions and Values Training Module, EPA. Failing to protect from management-caused degradation all waters that are hydrologically connected to "navigable" or other waters will, in some cases, result in the "discharge of pollutants"[88] and failure to meet water quality criteria and fully protect beneficial uses.

G. BLM's proposed actions must comply with Oregon DEQ/EPA Antidegradation Policy. OAR 340-041-0004 et. seq.

Oregon's Antidegradation Policy applies broadly to all "decisions that affect water quality" and is intended to prevent "unnecessary further degradation from new or increased point and nonpoint sources of pollution... and to protect, maintain, and enhance existing surface water quality to ensure the full protection of all existing beneficial uses."[89] With certain enumerated exceptions, decisions which would degrade water quality are required to undergo an "antidegradation review." BLM has not undertaken such a review.

BLMs preferred alternative does not comply with Oregon's antidegradation policy.

The Clean Water Act requires all states (and tribes) to develop a three-tiered antidegradation program. Tier 1 maintains and protects existing uses and water quality conditions necessary to support such uses. Established existing uses must be protected even if it is not listed in the water quality standards as a designated use. Tier 1 requirements are applicable to all surface waters.

Tier 2 maintains and protects "high quality" waters --water bodies where existing conditions are better than necessary to support CWA Section 101(a)(2) "fishable/swimmable" uses. Water quality can be lowered in such waters but State Tier 2 programs must identify procedures that must be followed and questions that must be answered before a reduction in water quality can be allowed. However, water quality cannot be lowered to a level which would interfere with existing or designated uses.

Tier 3 maintains and protects water quality in outstanding national resource waters (ONRWs). ONRW classification provides exceptional ecological significance, i.e., those which are important, unique or sensitive ecologically.

Tier 2 applies to any significant new of degradation -even if would not cause a violation of minimum standards. BLM's preferred alternative clearly represents a new source of degradation because the intensity of the harvest (and the resulting impact to water quality) proposed in the preferred alternative - 5-30% retention in low and moderate intensity timber areas and clearcuts in the matrix - is significantly different than the level of harvest that is occurred to date, which has been predominately thinning.

1. Waters Meeting Standards (High Quality Waters).

The duty not to degrade these high quality waters without a showing is non-discretionary. Where water quality standards are being met, Oregon's policy is "that level of water quality must be maintained and protected," unless – after intergovernmental and public participation processes are completed – it is determined that: (1) The rules note that "Insignificant temperature increases... are not considered a reduction in water quality."[90] We find that there is not a rational scientific basis to find that the proposed reduction in riparian protection will not lead to a significant increase in stream temperatures.[91] The rules also note that Short Term Water Quality Degradation with substantial and desirable environmental benefits may be allowed, but the weakened aquatic conservation measures proposed in the DEIS would not meet this exemption from antidegradation review.

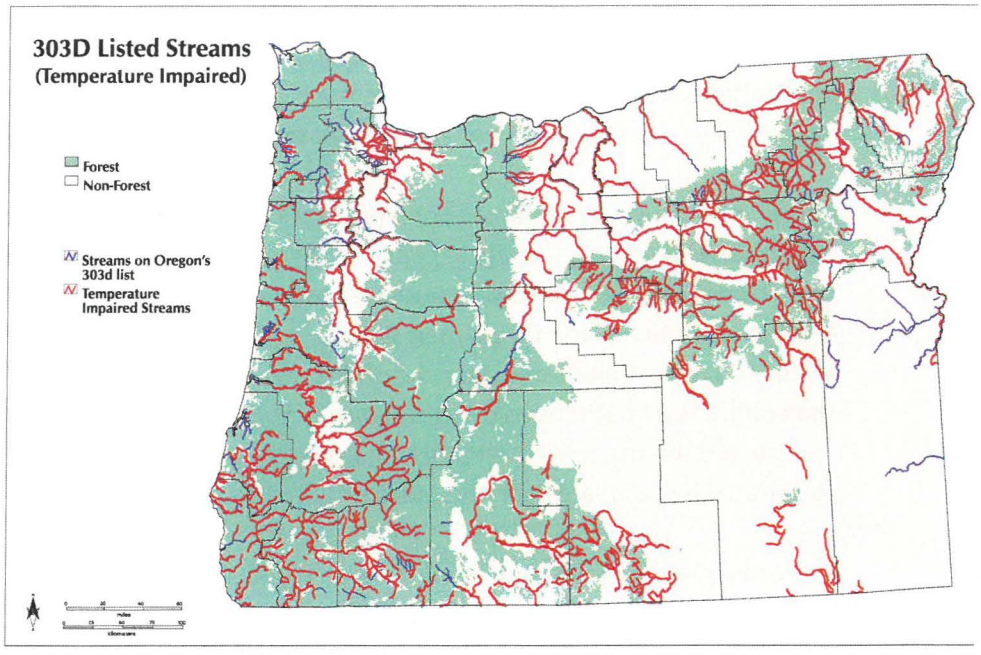
2. Impaired/303d Waters.

Where water quality already is impaired, further degradation will only be allowed upon the application of an exception by the Oregon Environmental Quality Commission or ODEQ based on certain required findings in addition to those required to degrade waters meeting or exceeding standards.[92] Virtually all rivers in the plan area are 303d listed for temperature, and many are listed for sediment. *See Appendix 7.*

3. Outstanding Resource Waters

Outstanding Resource Waters have the smallest allowance for exceptions to the state policy's presumption against water quality degradation.[93] The DEIS does not address the proposal's compliance with the antidegradation aspect of water quality standards in any meaningful way. Antidegradation compliance has been flagged as a priority in Oregon. According to its the State Watershed Recovery Plan "DEQ will implement its antidegradation water quality standard to address degradation of water quality that is currently cleaner

than parameter specific water quality standards would allow... and will work with... federal natural resource agencies to ensure the antidegradation standard is implemented for nonpoint sources."



303D Temperature Impaired Streams in Oregon. Appendix 7

H. BLM DEIS fails to demonstrate compliance with Clean Water Act

Water quality standards under the Clean Water Act apply not only to fish bearing, perennial, or "high intrinsic potential" streams, but to all waters of the state. In order for the BLM's management plan to meet minimum water quality requirements, it must ensure that water quality standards and the beneficial uses they are designed to protect are, in fact, fully protected. These uses include all aquatic life -- not just salmonids.

The default riparian buffers and prescriptions of the Northwest Forest Plan's ACS – including the overarching principle that deviation from these defaults requires watershed analysis that demonstrates that any management within the buffers (Riparian Management Areas, RMAs) promotes maintenance or recovery of riparian function – remain the best available science to ensure these requirements are met.

As a matter of public policy, it is a waste of public resources for the federal government to engage in revisions to its management plans which do not result in a high likelihood that the new management practices will be sufficient as implementation mechanisms to meet water quality standards, including those which have been translated into watershed-specific Total Maximum Daily Loads. The expenditure of political and financial resources needed to make changes to the existing program should not be wasted on a process that must be repeated time and again in individual watersheds.

We remind the BLM again that compliance with water quality standards means more than attainment of numeric or narrative "criteria." Antidegradation obligations and the overarching duty to "fully protect beneficial uses" also apply. In order to satisfy its Purpose and Need, BLM must, at a bare minimum, comply with Clean Water Act provisions.

I. BLM has not demonstrated compliance with the Endangered Species Act

BLM's wildlife conservation strategy is shortsighted and planning only for ESA-listed species ignores the significance of other species in the plan area, and creates significant risk to those species. This shortsightedness aside, Under ESA Section 7(a), BLM retains an affirmative duty to at a minimum plan for endangered species by conserving habitats affected by it management. This duty goes beyond simply avoidance of "jeopardy" for

listed species and requires the BLM to use its full authority and discretion to advance species conservation purposes independently of the mandates of other legal authorities.[94] Furthermore, when faced with alternative policy choices, the conservation duty compels the BLM to choose the alternative that best achieves species conservation where non-conservation purposes would be equally served.

Additionally, The duty under section 7(a)(1) of the ESA to conserve threatened and endangered species directs that all federal agencies "shall, in consultation with and with the assistance of [FWS and NMFS], utilize their authorities in furtherance of the purposes of [the ESA] by carrying out programs for the conservation of endangered species and threatened species ...." Section 2(c)(1) further "declare[s]... the policy of Congress that all Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes of [the ESA]." Conservation under the ESA means "to use and the use of all methods and procedures which are necessary to bring any endangered or threatened species to the point at which the measures provided pursuant to [the ESA] are no longer necessary."

The conservation provision was interpreted by the Supreme Court in Tennessee Valley Authority (TVA) v. Hill, where the Court concluded that the ESA's call for federal agencies to carry out programs for the conservation of endangered and threatened species is "no less than "stringent, mandatory language" that "reveals an explicit congressional decision to require agencies to afford first priority to the declared national policy of saving endangered species."[95] In essence, this means that the ESA gives "endangered species priority over the primary missions of federal agencies."[96]

Importantly, the BLM's conservation duty goes beyond that which is required to avoid jeopardy – the focal requirement of the Section 7 consultation process that will ensue prior to a Record of Decision on the RMP.[97] The BLM, therefore, need not skimp on species conservation for fear of running afoul of its other mandates – including the O & C Act – because the ESA grants broad discretion to advance species conservation purposes that supersede the mandates of other legal authorities. (We note, however, that even the ESA does not authorize a federal agency to do something that it has no power to do under its enabling statutes. Maintaining the NWFP's aquatic protections would not require the BLM to go beyond the powers it is given in FLPMA).[98]

When faced with alternative policy choices, the ESA's conservation duty also restricts the agency's discretion to choose among alternatives. Caselaw informs us that if an alternative to a challenged action would be equally as effective at serving the BLM's non-conservation interests, but would enhance conservation to an equal or greater degree, then the agency must adopt the better conservation alternative.[99]

Caselaw also indicates that to the extent the BLM chooses management actions which do not maximize species conservation, that is should be prepared to articulate the rational connection between some set of relevant factors at the management decision being made.[100]

Where recovery plans have been established, this conservation duty extends to implementing the relevant provisions of these plans to accomplish the Act's goal of recovery. Previously, FWS was found to have an affirmative duty from ESA to follow through with measures identified in recovery plans.[101] The DEIS does not mention BLM's duties arising from recovery plans that do exist, and make no specific commitments based on the fulfillment of recovery plan objectives.

VII. "Suitability analysis" and Potential Wild and Scenic Rivers in Western Oregon

We support the finding of suitability for the Little North Santiam River, North Fork Siletz River, Rogue River, Sandy River, Table Rock Fork of the Molalla River and the West Fork Illinois. However, for several of the rivers found not suitable, it is unclear what justification BLM relied upon for the determination and we disagree with BLMs conclusions about the numerous rivers it deemed unsuitable for the reason outlined below.

A. Federal Agency Responsibility under the Wild and Scenic Rivers Act

Section 5(d)(1) of the Wild and Scenic Rivers Act[102] directs federal agencies, including the BLM to undertake studies of potential additions, commonly known as eligibility and suitability determinations, to the national Wild and Scenic Rivers System during land management revisions.

The Wild and Scenic Rivers Act requires federal agencies to identify potential Wild and Scenic Rivers in federal agency planning and revision processes under Section 5(d)(1). The Act states:

> *"In all planning for the use and development of water and related land resources, consideration shall be given by all Federal agencies involved to potential national wild, scenic and recreational river areas, and all river basin and project plan reports submitted to the Congress shall consider and discuss any such potentials."*

B. The BLM Misapplied the Eligibility and Suitability Standard Under the Wild and Scenic Rivers Act

The plain language of the Wild and Scenic Rivers Act is extremely clear on its establishment of a national policy and process to identify and protect certain rivers through Wild and Scenic eligibility determinations. The Act goes on to describe how suitability determinations are to be conducted. The BLM has erred in its application of the Wild and Scenic Rivers Act as it relates to eligibility and suitability: first by "releasing" eligible rivers that meet the plain language test of the Act but are found "not suitable," and second by applying the standard reserved for determining suitability.

Section 1(a) of the Act describes the policy goals of the Wild and Scenic RIvers Act:

"It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations."

And Section 2(b) describes the simple process for determining whether a river is eligible:

> *"Every wild, scenic or recreational river in its free-flowing condition, or upon restoration to this condition, shall be considered eligible for inclusion in the National Wild and Scenic Rivers System..."*

Federal agencies are granted authority to assess rivers for inclusion in the WIld and Scenic System under section 5(d)(1) of the Act and other authorities. However, the Act and authorities do not permit agencies to "release" rivers from eligibility as is described in the BLM WIld and Scenic Policy Manual.[103] As is described in

Section 2(b) eligibility is an objective test and a suitability determination should not and cannot alter this determination. Congress may choose not to designate a river that is eligible but found not-suitable, but the agency does not have the authority to find a river not eligible due to subjective considerations.

Congress identified the factors to be considered and documented as a basis for determining the suitability of a river for the National System in Sections 4(a), 5(c) and 6(c).

Section 4(a) in part:

> *The Secretary of the Interior or, where national forest lands are involved, the Secretary of Agriculture or, in appropriate cases, the two Secretaries jointly shall study and submit to the President reports on the suitability or nonsuitability for addition to the national wild and scenic rivers system of rivers which are designated herein or hereafter by the Congress as potential additions to such system... In conducting these studies the Secretary of the Interior and the Secretary of Agriculture shall give priority to those rivers:*
>
> *(i) with respect to which there is the greatest likelihood of developments which, if undertaken, would render the rivers unsuitable for inclusion in the national wild and scenic rivers system, and*
>
> *(ii) which possess the greatest proportion of private lands within their areas... Each report, including maps and illustrations, shall show among other things the area included within the report; the characteristics which do or do not make the area a worthy addition to the system; the current status of landownership and use in the area; the reasonably foreseeable potential uses of the land and water which would be enhanced, foreclosed, or curtailed if the area were included in the national wild and scenic rivers system; the federal agency (which in the case of a river which is wholly or substantially within a national forest, shall be the Department of Agriculture) by which it is proposed the area, should it be added to the system, be administered; the extent to which it is proposed that such administration, including the costs thereof, be shared by state and local agencies; and the estimated cost to the United States of acquiring necessary lands and interests in land and of administering the area, should it be added to the system. Each such report shall be printed as a Senate or House document.*

Section 4(a) is described, nearly verbatim in the BLM's Wild and Scenic Rivers Policy Manual and in the Wild and Scenic Suitability analysis, as the justification and to provide the criteria for a suitability analysis. The section grants authority to the agencies to study rivers for their suitability only if they are directed by Congress and is intended to apply to Congressional study rivers.

C. The BLM Suitability Analysis Lacks Essential Data

Section 4.1 A of the BLM Wild and Scenic Rivers Policy Manual requires an additional assessment of eligible rivers if the original information is not longer available, outdated or new information about Outstandingly Remarkable Values is available.[104] If Suitability factors have changed, this analysis must be revised as well.[105] In this instance each of these changed circumstances warrant a revisiting of the determinations of eligibility and suitability from the 1995 ROD which was relied upon as the basis for the 51 streams under consideration in the DEIS.

"If a systematic evaluation of eligible rivers or a comprehensive administrative unit-wide suitability study has been previously completed and documented, additional assessment and study through the land use planning process need only be done if: (1) the documentation no longer exists or is incomplete or outdated; (2) changed circumstances warrant additional review of eligibility (e.g., a new outstandingly remarkable value, see chapter 3.1E); (3) there is a change in the suitability factors (see chapter 3.4A)..." (Department of the Interior, BLM Wild and Scenic Rivers Policy and Program Direction for Identification, Evaluation, Planning, and Management, Section 4.1 A, 2012.)

The BLM neglected to include some key sources of information that skewed the Wild and Scenic analysis in the draft RMP/EIS. Since the initial Wild and Scenic analyses by the BLM in 1990, the State of Oregon and the Oregon Watershed Enhancement Board has developed and implemented a policy to support individual watershed councils in nearly every river considered in the BLM's 1990, 1995 and 2015 Wild and Scenic analyses. Each of these watershed councils are required to conduct a detailed watershed analysis and these analyses contain vital information essential to the Wild and Scenic determinations. The analyses the BLM provided does not include mention of these watershed assessments. Furthermore the watershed councils typically have developed action plans for conservation of their watersheds that would likely be consistent with the goals of Wild and Scenic eligibility and suitability determinations.

D. It is Unclear how BLM weighted its Suitability Criteria in the Suitability Analysis of Eligible Rivers

The BLM's suitability justifications must be made transparent as part of this NEPA process, including how the criteria were weighed and used to determine whether or not each stream was considered to be Wild and Scenic suitable. We also request that the BLM provide a list of all streams in the plan area that were visited and evaluated for potential eligibility and suitability in the 1995 Plan but not brought forward in this analysis. This is particularly important when determining whether or not a stream possesses criteria warranting suitability and if formerly eligible streams are to be released from eligibility. Transparent documentation and analysis allows all interested parties to work from the same set of premises, resulting in a more complete, comprehensive, and objective inventory.

BLM applied 13 suitability criteria factors[106] to each river segment in its Wild and Scenic Rivers Suitability Report. However, BLM does not explain whether some criterion are weighted more than other factors, though it is apparent that one – Criteria 10: existing support or opposition of designation – is clearly given greater weight, and is done so in an arbitrary and highly subjective manner. For example, it appears that nearly every river segment BLM found unsuitable, Criteria 10 was the primary basis for that determination. The BLM noted that the outreach to determine the existing support or opposition for designation as a part of the suitability analysis included contacting over 300 participants and an online survey. The sole opposition referenced, in **BOLD** typeface, no less, was a conversation with Doug Robertson, President, Association of O&C Counties, who apparently stated that because an eligible river was not included in the *O&C Trust, Conservation, and Jobs Act*, it is "**therefore unlikely to be supported for suitability or designation**." In fact, this is the only text in bold in the entire Wild and Scenic Rivers Suitability report other than the headings. Senator Wyden has also introduced O&C legislation,[107] which enjoys widespread support throughout Oregon, and which designates many more rivers under the Wild and Scenic Rivers Act than the legislation that Mr. Robertson champions. BLM should have referenced this legislation when applying Criteria 10 to suitability determinations. Further, inserting Mr. Roberston's statement in bold typeface, as BLM did, clearly indicates that his opinion was

the determining factor that BLM relied upon for its conclusion that a river was not suitable. This emphasis calls into question the impartiality of the public input into the entire analysis as required by law. [108] [109] [110] [111]

E. Comments on river recommendations

We request that you reconsider the findings for the following rivers:

North Fork Clackamas River- The BLM should revise the draft and find the 14.5 miles of the river suitable due to its outstanding fish values, consistency with state and federal conservation goals as it is a designated State Scenic Waterway, identified in the Oregon Conservation Strategy by the Oregon Department of Fish and Wildlife, and a priority watershed for the U.S. Forest Service. Suitability would help unify these complimentary efforts and provide a comprehensive framework for working with stakeholders and agencies in the watershed to protect and enhance ORVs.

North Fork Siletz River- The BLM should revise the draft finding and include the entire eligible segment as suitable. As was noted for the Rogue River, suitability and designation would provide a comprehensive framework for working with local governments to protect against land uses that are incompatible with ORVs.

Big Butte Creek- The BLM should revise its draft findings and find this creek eligible and suitable. Big Butte Creek is outstanding as the lone Rogue River tributary for spring chinook spawning due to its high volume of cold water. The Creek will be essential to the long term viability of the spring chinook population due to the fact that it is unaffected by the operations of Lost Creek Reservoir. As was noted for the Rogue River, suitability and designation would provide a comprehensive framework for working with local governments to protect against land uses that are incompatible with ORVs.

Cow Creek- The BLM should revise its draft findings and find this creek eligible and suitable. As was noted for the Rogue River, suitability and designation would provide a comprehensive framework for working with local governments to protect against land uses that are incompatible with ORVs.

Elk Valley Creek- The BLM should revise its draft findings and find this creek eligible and suitable. Elk Valley Creek meets all of the criteria including a Tier 1 and Key Watershed under the Northwest Forest Plan. It is also a BLM Priority Watershed as outlined in its 2015 Strategic Plan. As was noted for the Rogue River, suitability and designation would provide a comprehensive framework for working with local governments to protect against land uses that are incompatible with ORVs.

Sams Creek-The BLM should revise its draft findings and find this creek eligible and suitable. Sams Creek, as was noted in the BLM's analysis, has among the highest salmon and steelhead smolt production (1 of 6 streams with a total of 25% of annual production) in the entire Rogue River watershed, which is the second largest producer of salmon in the lower 48 United States behind the Columbia River. As such, a finding of eligibility and suitability would also protect and enhance the fisheries ORV for the Wild and Scenic mainstem Rogue River. As was noted for the Rogue River, suitability and designation would provide a comprehensive framework for working with local governments to protect against land uses that are incompatible with ORVs.

South Fork Little Butte Creek-The BLM should revise its draft findings and find this creek eligible and suitable. The South Fork of Butte Creek's fisheries values are nationally extraordinary, known to be one of the best producers of salmon in the Rogue River, which is the second largest producer of salmon in the lower 48 United States behind the Columbia River. As was noted for the Rogue River, suitability and designation would provide a comprehensive framework for working with local governments to protect against land uses that are incompatible with ORVs.

F. BLM must reconsider western Oregon rivers considered eligible before the 2015 RMP

Unfortunately, the analysis excludes rivers that either should have been analyzed or reconsidered due to new information. The BLM must reconsider Wild and Scenic eligibility and suitability consideration for additional rivers in the plan area. Therefore the BLM does not meet the standard the Wild and Scenic Rivers Act requires.

The 2015 BLM list of 51 eligible rivers does not include streams that were originally found to be eligible but later ruled-out as non-suitable before the 2015 RMP was drafted. That original list of eligible rivers appears only in the 1995 RMP Draft EIS and earlier documents, available in District offices, not readily accessible online and only appears in the BLM's 2015 Wild & Scenic Suitability Report by reference stating see BLM's Final Wild and Scenic River Eligibility reports for each western Oregon BLM District.[112]

See listings below for eligible rivers that were *not* carried forward to the 2015 list.

Medford District: The 1995 RMP considered 89 rivers. 59 of those were found eligible, and 45 of those 59 were studied for suitability prior to the 2015 RMP. The following table lists eligible rivers that were *not* carried forward to the 2015 RMP, plus four that were found suitable and carried forward.

Many of these are short segments that directly adjoin the Rogue River and its established Wild and Scenic River corridor, and in that sense, their designation would serve to expand that protected corridor. See Rogue River section, below for justification for Wild and Scenic River potential reconsideration.

Mileage and ORVs are included (s=scenery, g=geology, r=recreation, f=fish, w=wildlife, h=history, c=culture).

BLM Medford District Rivers	**Miles**	**ORVs**
Alder Creek	1	Scenery, Recreation
Anna Creek	1.7	Scenery, Recreation
Ash Creek	2.6	Scenery, Recreation
Bailey Creek	2.7	Scenery, Recreation
Big Butte Creek, N Fk	13.4	Fisheries
Big Windy Creek	6.8	Scenery, Recreation
Big Windy Creek, E Fk	3.5	Scenery, Recreation
Booze Creek	0.9	Scenery, Recreation
Bunker Creek	6.4	Scenery, Recreation

Centennial Gulch	1.8	Scenery, Recreation
Copsey Creek	1.1	Scenery, Recreation
Cowley Creek	0.8	Scenery, Recreation
Deer Creek, N Fk	2.9	Fisheries
Ditch Creek	2.1	Scenery, Recreation
Dulog Creek	1.7	Scenery, Recreation
Elk Valley Creek, E Fk	2.3	Fisheries
Galice Creek, N Fk	5.5	Scenery, Recreation
Grave Creek	10.9	Fisheries
Hewitt Creek	2.2	Scenery, Recreation
Howard Creek	7	Scenery, Recreation, Fisheries
Jenny Creek (Ashland area)	17.6	Fisheries, History
Jenny Creek (Grants Pass)	4.4	Scenery, Recreation
Kelsey Creek	4.8	Scenery, Recreation, Fisheries
Little Windy Creek	2.5	Scenery, Recreation
Long Gulch Creek	2	Scenery, Recreation
Lost Creek	0.9	Scenery
Meadow Creek	3.8	Scenery, Recreation
Missouri Creek	4.4	Scenery, Recreation
Montgomery Creek	1.3	Scenery, Recreation
Mule Creek	7.6	Scenery, Recreation, Fisheries
Ninemile Creek	1.6	Fisheries
Powell Creek	7.7	Scenery, Recreation, Fisheries
Quail Creek	1.8	Scenery, Recreation
Quartz Creek	2.4	Scenery, Recreation
Rock Creek	6	Fisheries
Rum Creek	3.2	Scenery, Recreation
Russian Creek	1.9	Scenery, Recreation
Sams Creek	5.5	Fisheries
Silver Creek, N Fk	6	Scenery, Recreation, Fisheries
Slide Creek	1	Scenery, Recreation

BLM Medford District Rivers	Miles	ORVs
Alder Creek	1	Scenery, Recreation
Anna Creek	1.7	Scenery, Recreation
Ash Creek	2.6	Scenery, Recreation
Bailey Creek	2.7	Scenery, Recreation
Big Butte Creek, N Fk	13.4	Fisheries
Big Windy Creek	6.8	Scenery, Recreation
Big Windy Creek, E Fk	3.5	Scenery, Recreation
Booze Creek	0.9	Scenery, Recreation
Bunker Creek	6.4	Scenery, Recreation
Centennial Gulch	1.8	Scenery, Recreation
Copsey Creek	1.1	Scenery, Recreation
Cowley Creek	0.8	Scenery, Recreation
Deer Creek, N Fk	2.9	Fisheries
Ditch Creek	2.1	Scenery, Recreation
Dulog Creek	1.7	Scenery, Recreation
Elk Valley Creek, E Fk	2.3	Fisheries
Galice Creek, N Fk	5.5	Scenery, Recreation
Grave Creek	10.9	Fisheries
Hewitt Creek	2.2	Scenery, Recreation
Howard Creek	7	Scenery, Recreation, Fisheries
Jenny Creek (Ashland area)	17.6	Fisheries, History
Jenny Creek (Grants Pass)	4.4	Scenery, Recreation
Kelsey Creek	4.8	Scenery, Recreation, Fisheries
Little Windy Creek	2.5	Scenery, Recreation
Long Gulch Creek	2	Scenery, Recreation
Lost Creek	0.9	Scenery
Meadow Creek	3.8	Scenery, Recreation
Missouri Creek	4.4	Scenery, Recreation
Montgomery Creek	1.3	Scenery, Recreation
Mule Creek	7.6	Scenery, Recreation, Fisheries

Figure 7: Medford District Rivers Not Carried Forward

Figure 8: Salem District Rivers Not Carried Forward

Coos Bay District: Eligibility studies dated July 5, 1990 indicated 11 eligible rivers. The following should be carried forward for consideration in the the BLM's 2015 RMP.

Eligible rivers not carried forward to 2015 RMP	miles	ORVs
Chetco, N Fk	11	Fisheries, History
Coos, S Fk	37	Fisheries, Recreation
Coquille, E Fk	32	Fisheries, Wildlife
Coquille, N Fk	42	Fisheries, Wildlife
Coquille, S Fk	35	Fisheries, Prehistory
New	9.5	Scenery, Fisheries, Geology, History, Ecological
Pistol, S Fk	12	Fisheries, Wildlife
Smith	61	Fisheries, Wildlife
Wassen	4	Fisheries, Wildlife, Ecological

Figure 9: Coos Bay District Rivers Not Carried Forward

G. BLM Should Update the Outdated Comprehensive River Management Plan for the Rogue River

The Rogue River was one of the original eight Wild and Scenic Rivers designated when the Wild and Scenic Rivers Act was signed into law on October 2, 1968 by President Lyndon Johnson. On June 28, 1972 a river management plan for the Rogue was published in the Federal Register. The plan has not been updated since despite significant new data and changes in use on this nationally outstanding river. It appears that the BLM is in violation of Section 3(d)(2) of the Wild and Scenic Rivers Act and should include a plan and schedule for revising the Rogue River Comprehensive River Management Plan in its Final DEIS.

Sections 3(d)(1) and 3(d)(2) of the Wild and Scenic Rivers Act require the development and updating of river management plans and the BLM has not updated the Rogue River management plan in over 43 years. Section 3(d)(1) and Section 3(d)(2) read:

> *For rivers designated on or after January 1, 1986, the Federal agency charged with the administration of each component of the National Wild and Scenic Rivers System shall prepare a comprehensive management plan for such river segment to provide for the protection of the river values. The plan shall address resource protection, development of lands and facilities, user capacities, and other management practices necessary or desirable to achieve the purposes of this Act. The plan shall be coordinated with and may be incorporated into resource management planning for affected adjacent Federal lands. The plan shall be prepared, after consultation with State and local governments and the interested public within 3 full fiscal years after the date of designation. Notice of the completion and availability of such plans shall be published in the Federal Register.*

For rivers designated before January 1, 1986, all boundaries, classifications, and plans shall be reviewed for conformity within the requirements of this subsection within 10 years through regular agency planning processes.

Under the Wild and Scenic Rivers Act, federal agencies are required to protect and enhance the Outstandingly Remarkable Values of designated rivers. The development of Comprehensive River Management Plans that include baseline data and management requirements allow federal agencies to protect this valuable national resource.

H. Molalla River and Table Fork of the Molalla River should be found eligible and suitable

The Molalla River and Table Rock Fork of the Molalla River's fisheries, cultural, and scenic values coupled with the broad support for conservation and cooperative management warrant a finding of eligibility and suitability for the upper 21.3 miles of the Molalla and the Table Rock Fork. In 2008, the citizens of Molalla came together and formed the Molalla River Alliance consisting of elected officials, conservation groups, law enforcement, and local citizens. The community decided to pursue a "wild and scenic" designation for their river to preserve the quality and biodiversity of the area and drinking water for downstream communities while promoting tourism to aid the local economy.

Oregon's Senators Wyden and Merkley and Representatives DeFazio, Schraeder and Walden have introduced various bills in Congress to designate 21.3 miles of the Molalla River as a "recreational" river and the Table Rock Fork of the Molalla River under the Wild and Scenic Rivers Act.[115] The legislation includes the approximately 15.1-mile segment of the Molalla from the southern boundary line of T. 7 S., R. 4 E., sec. 19, downstream to the edge of the Bureau of Land Management boundary in T. 6 S., R. 3 E., sec. 7 and the Table Rock Fork of the Molalla River 6.2-mile segment from the easternmost Bureau of Land Management boundary line in the NE1/4 sec. 4, T. 7 S., R. 4 E., downstream to the confluence with the Molalla River.

This proposed designation is notable for helping to safeguard the special character of these rivers, while also recognizing the potential for their appropriate use and development. It encourages river management that crosses political boundaries and promotes public participation in developing goals for river protection.

I. Wild and Scenic Rogue River and Tributary streams on BLM lands should be found eligible and suitable

We support the BLM's recommendation of the Rogue River as "suitable". Several of the streams in this bill have not been analyzed or identified in the Draft EIS for eligibility or suitability and the agency must do so.

Oregon's Wild and Scenic Rogue River is made up of numerous tributary streams that contribute significantly to the health and vitality of this iconic river system. These streams provide fish habitat for anadromous fish particularly coho salmon and steelhead that are present in hundreds of miles across dozens of the Rogue's headwater streams. [1] The oxygen-rich streams also provide thermal refuge and contribute colder stream temperatures to the larger Rogue River. [2] However, climate change is expected to warm stream temperatures in the river basin over the next few decades. [3] In addition, harmful human activities such as logging, mining, and road building in the river basin both increase sediment and debris in these streams and also remove vital streamside shade. [4] These headwater streams and their 'outstandingly remarkable values' (ORVs) are

increasingly at risk from warming temperatures and degraded riparian habitat and therefore should be assessed for Wild and Scenic eligibility by the BLM.[116]

Oregon Senators Wyden and Merkley and Oregon Representatives DeFazio, Schraeder, Bonemici and Blumenauer have co-sponsored legislation that would provide additional protections for the Rogue and its tributaries important recreational, ecological and economic natural resource. Over 125 local and regional businesses and organizations, including the Association of O&C Counties support additional Wild and Scenic protections for the Rogue including the tributary streams identified below. The Rogue is a hub for outdoor recreation drawing thousands of visitors from around the world and it is one of Oregon's most important sport and commercial fisheries supporting roughly 450 jobs in nearby communities to the tune of $13 million annually. The agency must analyze the following additional important free-flowing tributary streams of the Rogue for Wild and Scenic River status and we recommend it deem them "eligible" and "suitable":

KELSEY CREEK: The approximately 6.8-mile segment of Kelsey Creek from the Wild Rogue Wilderness boundary in T. 32 S., R. 9 W., sec. 25, Willamette Meridian, to the confluence with the Rogue River, as a wild river.

EAST FORK KELSEY CREEK: The approximately 0.2-mile segment of East Fork Kelsey Creek from headwaters downstream to the Wild Rogue Wilderness boundary in T. 33 S., R. 8 W., sec. 5, Willamette Meridian, as a scenic river; The approximately 4.6-mile segment of East Fork Kelsey Creek from the Wild Rogue Wilderness boundary in T. 33 S., R. 8 W., sec. 5, Willamette Meridian, to the confluence with Kelsey Creek, as a wild river.

WHISKY CREEK: The approximately 0.6-mile segment of Whisky Creek from the confluence of the East Fork and West Fork to 0.1 miles downstream from road 33-8-23, as a recreational river; The approximately 1.9-mile segment of Whisky Creek from 0.1 miles downstream from road 33-8-23 to the confluence with the Rogue River, as a wild river.

EAST FORK WHISKY CREEK: The approximately 0.9-mile segment of East Fork Whisky Creek from its headwaters to Wild Rogue Wilderness boundary in T. 33 S., R. 8 W., sec. 11, Willamette Meridian., as a scenic river; The approximately 2.6-mile segment of East Fork Whisky Creek from the Wild Rogue Wilderness boundary in T. 33 S., R. 8 W., sec. 11, Willamette Meridian., to 0.1 miles downstream of road 33-8-26 crossing, as a wild river; The approximately 0.3-mile segment of East Fork Whisky Creek from 0.1 miles downstream of road 33-8-26 to the confluence with Whisky Creek, as a recreational river.

WEST FORK WHISKY CREEK: The approximately 4.8-mile segment of West Fork Whisky Creek from its headwaters to the confluence with the East Fork Whisky Creek, as a wild river.

BIG WINDY CREEK: The approximately 1.5-mile segment of Big Windy Creek from its headwaters to 0.1 miles downstream from road 34-9-17.1, as a scenic river; The approximately 5.8-mile segment of Big Windy Creek from 0.1 miles downstream from road 34-9-17.1 to the confluence with the Rogue River, as a wild river.

EAST FORK BIG WINDY CREEK: The approximately 0.2-mile segment of East Fork Big Windy Creek from its headwaters to 0.1 miles downstream from road 34-8-36, as a scenic river; The approximately 3.7-mile segment of East Fork Big Windy Creek from 0.1 miles downstream from road 34-8-36 to the confluence with Big Windy Creek, as a wild river.

LITTLE WINDY CREEK: The approximately 1.2-mile segment of Little Windy Creek from its headwaters to the Wild Rogue Wilderness boundary in T. 33 S., R. 9 W., sec. 34, Willamette Meridian, as a scenic river; The approximately 1.9-mile segment of Little Windy Creek from the Wild Rogue Wilderness boundary in T. 33 S., R. 9 W., sec. 34, Willamette Meridian to the confluence with the Rogue River, as a wild river.

HOWARD CREEK: The approximately 0.3-mile segment of Howard Creek from its headwaters to 0.1 miles downstream of road 34-9-34, as a scenic river; The approximately 6.9-mile segment of Howard Creek from 0.1 miles downstream of road 34-9-34 to the confluence with the Rogue River, as a wild river.

MULE CREEK: The approximately 3.5-mile segment of Mule Creek from its headwaters downstream to the Wild Rogue Wilderness boundary as a scenic river; The approximately 7.8-mile segment of Mule Creek from the Wild Rogue Wilderness boundary in T. 32 S., R. 9 W., sec. 29, Willamette Meridian, to the confluence with the Rogue River, as a wild river; The approximately 3.5-mile segment of Anna Creek from its headwaters to the confluence with Howard Creek, as a wild river.

MISSOURI CREEK: The approximately 3.1-mile segment of Mule Creek from its headwaters downstream to the Wild Rogue Wilderness boundary in T. 33 S., R. 10 W., sec. 24, Willamette Meridian, as a scenic river; The approximately 1.6-mile segment of Missouri Creek from the Wild Rogue Wilderness boundary in T. 33 S., R. 10 W., sec. 24, Willamette Meridian, to the confluence with the Rogue River, as a wild river.

JENNY CREEK: The approximately 3.1-mile segment of Jenny Creek from its headwaters downstream to the Wild Rogue Wilderness boundary in T. 33 S., R. 9 W., sec. 28, Willamette Meridian, as a scenic river; The approximately 1.8-mile segment of Jenny Creek from the Wild Rogue Wilderness boundary in T. 33 S., R. 9 W., sec. 28, Willamette Meridian, to the confluence with the Rogue River, as a wild river.

RUM CREEK: The approximately 2.2-mile segment of Rum Creek from its headwaters to the Wild Rogue Wilderness boundary in T. 34 S., R. 8 W., sec. 9., Willamette Meridian, as a scenic river; The approximately 2.2-mile segment of Rum Creek from the Wild Rogue Wilderness boundary in T. 34 S., R. 8 W., sec. 9, Willamette Meridian, to the confluence with the Rogue River, as a wild river.

EAST FORK RUM CREEK: The approximately 0.8-mile segment of East Fork Rum Creek from its headwaters to the Wild Rogue Wilderness boundary in T. 34 S., R. 8 W., sec. 10., Willamette Meridian, as a scenic river; The approximately 1.3-mile segment of East Fork Rum Creek from the Wild Rogue Wilderness boundary in T. 34 S., R. 8 W., sec. 10, Willamette Meridian, to the confluence with Rum Creek, as a wild river.

WILDCAT CREEK: The approximately 1.7-mile segment of Wildcat Creek from its headwaters downstream to the confluence with the Rogue River, as a wild river.

MONTGOMERY CREEK: The approximately 1.8-mile segment of Montgomery Creek from its headwaters downstream to the confluence with the Rogue River, as a wild river.

HEWITT CREEK: The approximately 1.4-mile segment of Hewitt Creek from its headwaters to the Wild Rogue Wilderness boundary in T. 33 S., R. 9 W., sec. 19.,Willamette Meridian, as a scenic river; The approximately 1.2-mile segment of Hewitt Creek from the Wild Rogue Wilderness boundary in T. 33 S., R. 9 W., sec. 19, Willamette Meridian, to the confluence with the Rogue River, as a wild river.

BUNKER CREEK: The approximately 6.6-mile segment of Bunker Creek from its headwaters to the confluence with the Rogue River, as a wild river.

DULOG CREEK: The approximately 0.8-mile segment of Dulog Creek from its headwaters to 0.1 miles downstream of road 34-8-36, as a scenic river; The approximately 1.0-mile segment of Dulog Creek from 0.1 miles downstream of road 34-8-36 to the confluence with the Rogue River, as a wild river.

QUAIL CREEK: The approximately 1.7-mile segment of Quail Creek from the Wild Rogue Wilderness boundary in T. 33 S., R. 10 W., sec. 1, Willamette Meridian, to the confluence with the Rogue River, as a wild river.

MEADOW CREEK: The approximately 4.1-mile segment of Meadow Creek from its headwaters to the confluence with the Rogue River, as a wild river.

RUSSIAN CREEK: The approximately 0.1-mile segment of Russian Creek from its headwaters to the Wild Rogue Wilderness boundary in T. 33 S., R. 8 W., sec. 20., Willamette Meridian, as a scenic river; The approximately 2.5-mile segment of Russian Creek from the Wild Rogue Wilderness boundary in T. 33 S., R. 8 W., sec. 20, Willamette Meridian, to the confluence with the Rogue River, as a wild river.

ALDER CREEK: The approximately 1.2-mile segment of Alder Creek from its headwaters to the confluence with the Rogue River, as a wild river.

BOOZE CREEK: The approximately 1.5-mile segment of Booze Creek from its headwaters to the confluence with the Rogue River, as a wild river.

BRONCO CREEK: The approximately 1.8-mile segment of Bronco Creek from its headwaters to the confluence with the Rogue River, as a wild river.

COPSEY CREEK: The approximately 1.5-mile segment of Copsey Creek from its headwaters to the confluence with the Rogue River, as a wild river.

CORRAL CREEK: The approximately 0.5-mile segment of Corral Creek from its headwaters to the confluence with the Rogue River, as a wild river.

COWLEY CREEK: The approximately 0.9-mile segment of Cowley Creek from its headwaters to the confluence with the Rogue River, as a wild river.

DITCH CREEK: The approximately 1.8-mile segment of Ditch Creek from the Wild Rogue Wilderness boundary in T. 33 S., R. 9 W., sec. 5, Willamette Meridian, to its confluence with the Rogue River, as a wild river.

FRANCIS CREEK: The approximately 0.9-mile segment of Francis Creek from its headwaters to the confluence with the Rogue River, as a wild river.

LONG GULCH: The approximately 1.4-mile segment of Long Gulch from its headwaters to the Wild Rogue Wilderness boundary in T. 33 S., R. 10 W., sec. 23, Willamette Meridian, as a scenic river; The approximately

1.1-mile segment of Long Gulch from the Wild Rogue Wilderness boundary in T. 33 S., R. 10 W., sec. 23, Willamette Meridian, to the confluence with the Rogue River, as a wild river.

BAILEY CREEK: The approximately 1.4-mile segment of Bailey Creek from its headwaters to the Wild Rogue Wilderness boundary on the west section line of T. 34 S., R. 8 W., sec. 14, Willamette Meridian, as a scenic river; The approximately 1.7-mile segment of Bailey Creek from the west section line of T. 34 S., R.8 W., sec.14, Willamette Meridian, to the confluence of the Rogue River, as a wild river.

SHADY CREEK: The approximately 0.7-mile segment of Shady Creek from its headwaters to the confluence with the Rogue River, as a wild river.

SLIDE CREEK: The approximately 0.5-mile segment of Slide Creek from its headwaters to 0.1 miles downstream from road 33-9-6, as a scenic river; The approximately 0.7-mile section of Slide Creek from 0.1 miles downstream of road 33-9-6 to the confluence with the Rogue River, as a wild river.

QUARTZ CREEK: The approximately 3.3-mile segment of Quartz Creek from its headwaters to its confluence with the North Fork Galice Creek., as a scenic river.

NORTH FORK GALICE CREEK: The approximately 5.7-mile segment of the North Fork Galice Creek from its headwaters to its confluence with Galice Creek, as a recreational river.

J. Additional information on the Nestucca River and Walker Creek Justifying Eligibility and Suitability

Based on previous BLM and U.S. Forest Service analyses and new information on the productivity of salmon stocks and recreational use the upper Nestucca River (BLM Segments A and B) and Walker Creek from the headwaters to the confluence with the Nestucca River must be found eligible and meet the criteria for suitability. This finding would also be consistent with the management goals of the U.S. Forest Service for the watershed.

At a minimum, the upper 15.5 miles of the Nestucca River from its confluence with Ginger Creek downstream until it crosses T. 4 S., R. 7 W., sec. 7, Willamette Meridian and the approximately 2-mile segment of Walker Creek from the headwaters in T. 3 S., R. 6 W., sec. 20 downstream to the confluence with the Nestucca River in T. 3 S., R. 6 W., sec. 15, Willamette Meridian, should qualify as a recreational river. These streams qualify based both on their outstanding values of fisheries, recreation and scenery and the breadth of local and statewide support for their conservation. The Nestucca-Neskowin Watershed Council, a local organization made up of a diverse group of stakeholders, expressed support for the federal designation of these segments as a part of Senator Wyden and Merkley's Oregon and California Land Grant Act of 2014. Oregon and California Land Grant Act of 2014, S. 2734, 113th Cong. §7 (2014). As noted below a diverse coalition of local, state and national groups support the federal designation for these segments.

The upper 26 miles of the Nestucca River and four miles of Walker Creek are already managed as Oregon State Scenic Waterways by the Oregon Parks and Recreation Department. Nearly all of the other 28 designated State Scenic Waterways on BLM land are federally designated Wild and Scenic Rivers.

In terms of their outstanding fisheries values, salmon production in the Nestucca River is outstanding even among the productive salmon streams found on the North Coast of Oregon. The river supports strong populations of fall chinook, Coho, Winter steelhead and coastal and resident cutthroat trout. The upper Nestucca River watershed is also classified as by the Oregon Department of Fish and Wildlife. Millions of dollars have been invested over the past two decades in restoration of fisheries health in the Nestucca River including recent bridge and culvert replacement projects.

Recreationally, the upper Nestucca is already managed by the BLM as a Special Recreation Area and is utilized for hunting, camping, hiking and as a fishing destination. The road along the upper river and Walker Creek is a scenic byway and provides a unique travel experience over the Oregon Coast Range mountains along the river.

Several organizations and agencies have prioritized the Upper Nestucca for protection and restoration including the BLM, the U.S. Forest Service, the Oregon Department of Fish and Wildlife, Oregon Parks and Recreation Department, the Nestucca-Neskowin Watershed Council, American RIvers, Pacific Rivers Council and Trout Unlimited. A finding of eligibility and suitability would be consistent with and supportive of the management goals of these other agencies and organizations.

K. Additional Rivers Should Be Studied and Deemed Eligible and Suitable

Additional rivers on BLM lands not studied as a part of the DEIS should also be analyzed and recommended as "eligible" and "suitable" since they too enjoy broad support from an array of businesses, local, state and national hunting, fishing and conservation organizations including the Backcountry Hunters and Anglers, the Association of Northwest Steelheaders, Pew Charitable Trusts and the Northwest Sportfishing Industry Association as a part of Senators Wyden and Merkley's Senate bill, Oregon and California Land Grant Act of 2014, S. 2734, 113th Cong. §7 (2014). The rivers include:

NESTUCCA RIVER: The approximately 15.5-mile segment from its confluence with Ginger Creek downstream until it crosses T. 4 S., R. 7 W., sec. 7, Willamette Meridian as a recreational river.

WALKER CREEK: The approximately 2-mile segment from the headwaters in T. 3 S., R. 6 W., sec. 20 downstream to the confluence with the Nestucca River in T. 3 S., R. 6 W., sec. 15, Willamette Meridian, as a recreational river.

NORTH FORK SILVER CREEK: The approximately 6-mile segment from the headwaters in T. 35 S., R. 9 W., sec. 1 downstream to the edge of the Bureau of Land Management boundary in T. 35 S., R. 9 W., sec. 17, Willamette Meridian, as a recreational river.

JENNY CREEK: The approximately 17.6-mile segment from the Bureau of Land Management boundary located at the north boundary of the southwest quarter of the southeast quarter of T. 38 S., R. 4 E., sec. 34, Willamette Meridian, downstream to the Oregon State border, as a scenic river.

SPRING CREEK: The approximately 1.1-mile segment from its source at Shoat Springs in T. 40 S., R. 4 E., sec. 34, Willamette Meridian, downstream to the confluence with Jenny Creek in T. 41 S., R. 4 E., sec. 3, Willamette Meridian, as a scenic river.

LOBSTER CREEK: The approximately 5-mile segment from T. 15 S., R. 8 W., sec. 35, Willamette Meridian, downstream to the edge of the Bureau of Land Management boundary in T. 15 S., R. 8 W., sec. 15, Willamette Meridian, as a recreational river.

ELK CREEK: The approximately 7.3-mile segment from its confluence with Flat Creek near river mile 9, to the southern edge of the Army Corps of Engineers boundary in T. 33 S., R. 1 E., sec. 30, Willamette Meridian, near river mile 1.7, as a scenic river.

END COMMENTS

Sources and Notes

[1] Atlas of Conservation Values on Bureau of Land Management Holdings in Western Oregon, June 2012, Nature Conservancy and Wild Salmon Center (Map 20). PDF Attached as Appendix 1

[2] Atlas of Conservation Values on Bureau of Land Management Holdings in Western Oregon, June 2012, Nature Conservancy and Wild Salmon Center (9, Map 19). PDF Attached as Appendix 1

[3] Bureau of Land Mgmt., Anadromous Fish Habitat Management on Public Lands: A Strategy for the Future (1998).

[4] Dominick A. DellaSala Et Al., Importance of Western Oregon BLM Lands and Reserves to Fish and Wildlife Conservation (October 2005).

[5] Atlas of Conservation Values on Bureau of Land Management Holdings in Western Oregon, June 2012, Nature Conservancy and Wild Salmon Center (Map 10). PDF Attached as Appendix 1

[6] Atlas of Conservation Values on Bureau of Land Management Holdings in Western Oregon, June 2012, Nature Conservancy and Wild Salmon Center (5). PDF Attached as Appendix 1

[7] Atlas of Conservation Values on Bureau of Land Management Holdings in Western Oregon, June 2012, Nature Conservancy and Wild Salmon Center (6). PDF Attached as Appendix 1

[8] Pacific Fishery Management Council, Appendix A to the Pacific Coast Salmon Fishery Management Plan as Modified by Amendment 18 to the Pacific Coast Salmon Plan Identification and Description of Essential Fish Habitat, Adverse Impacts, and Recommended Conservation Measures for Salmon (1999).

[9] Michael M. Pollock Et Al., Stream Temperature Relationships to Forest Harvest in Western Washington. Journal of the American Water Resources Association, 45: 141–156, (2009).

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[11] *Id*

[12] Gordon H. Reeves Et Al. The Aquatic Conservation Strategy of the Northwest Forest Plan, Conservation Biology, Volume 20, No. 2, 319-329.

[13] BLM 2015 DEIS Vol. 1, p. 223.

[14] *See Generally:* Alexander K. Fremier Et al. *A riparian conservation network for ecological resilience*, Biological Conservation, Nov. 2015 ,Volume 191, (29–37).

[15] *See Generally*, Centralized Oregon Mapping Products and Analysis Support System *at:* https://nrimp.dfw.state.or.us/compass/.

[16] Steven Lanigan Et Al. Northwest Forest Plan, The First 15 Years (1994–2008) Pacific Northwest Research Station Forest Service, United States Department of Agriculture, General Technical Report PNW-GTR-856 February 2012 Watershed Condition Status and Trend.

[17] FEMAT 1993.

[18] Dominick A. DellaSala Et Al., Importance of Western Oregon BLM Lands and Reserves to Fish and Wildlife Conservation (October 2005).

[19] *"Oregon and California Land Grant Act of 2013"* introduced by Senator Wyden. Oregon and California Land Grant Act of 2014, S. 2734, 113th Cong. §7 (2014).

[20] Atlas of Conservation Values on Bureau of Land Management Holdings in Western Oregon, June 2012, Nature Conservancy and Wild Salmon Center (Map 11). PDF Attached as Appendix 1

[21] Atlas of Conservation Values on Bureau of Land Management Holdings in Western Oregon, June 2012, Nature Conservancy and Wild Salmon Center (Map 17). PDF Attached as Appendix 1

[22] Atlas of Conservation Values on Bureau of Land Management Holdings in Western Oregon, June 2012, Nature Conservancy and Wild Salmon Center (Map 7). PDF Attached as Appendix 1

[23] Atlas of Conservation Values on Bureau of Land Management Holdings in Western Oregon, June 2012, Nature Conservancy and Wild Salmon Center (Map 20). PDF Attached as Appendix 1

[24] Appendix 2: Oregon Department of Environmental Quality Drinking Water Source Areas and Land Use (PDF Attached).

[25] Oregon and California Land Grant Act of 2014, S. 2734, 113th Cong. §7 (2014)

[26] Oregon Division of Fish and Wildlife, (July 31 2015 2:44 PM) http://www.dfw.state.or.us/conservationstrategy/.

[27] (July 31 2015 2:46pm) https://nrimp.dfw.state.or.us/compass/.

[28] Jenny Brown Et Al., Groundwater Dependent Biodiversity and Associated Threats: A Statewide Screening Methodology and Special Assessment of Oregon, The Nature Conservancy, February 2008.

[29] *See Generally:* Jerry F. Franklin and Norman K. Johnson. 2012. A Restoration Framework for Federal Forests in the Pacific Northwest. Journal of Forestry 110(8):429–439.

[30] *See generally*, Michael M. Pollock Et Al. Does Riparian Forest Restoration Thinning Enhance Biodiversity? The Ecological Importance of Large Wood. Journal of the American Water Resources Association (JAWRA) 50(3): 543-559. DOI: 10.1111/jawr.12206, 2014.

[31] NOAA/EPA Finding That Oregon Has Not Submitted a Fully Approvable Coastal Nonpoint Program, 1, 3-5, January 30, 2015.

[32] Independent Multidisciplinary Science Team, 1999. Recovery of Wild Salmonids in Western Oregon Forests: Oregon Forest Practices Act Rules and the Measures in the Oregon Plan for Salmon and Watersheds. Technical Report 1999-1, Governor's Natural Resource Office.

[33] *Id.*

[34] Michael M. Pollock Et Al., *Stream Temperature Relationships to Forest Harvest in Western Washington,* Journal of the American Water Resources Association, 45: 141–156. (2009).

[35] *See generally:* Jerry F. Franklin, K. Norman Johnson, Applying Restoration Principles on the BLM O&C Forests in Southwest Oregon, Oregon State University Nov. 30, 2010. These methods should only be applied where appropriate (largely under 80 year old plantation stands of Douglas Fir).

[36] See Generally: Norman K. Johnson and Jerry F. Franklin, Recommendations for Future Implementation of Ecological Forestry Projects on BLM Western Oregon Forests. BLM Report, April 2013.

[37] Jerry F. Franklin and Norman K. Johnson, Comparison of Variable Retention Harvest and Clear Cuts in: A Restoration Framework for Federal Forests in the Pacific Northwest. Journal of Forestry 110 (8) 2012: 429-439.

[38] Oregon and California Land Grant Act of 2014, S. 2734, 113th Cong. §7 (2014).

[39] Bureau of Land Management Wild & Scenic Rivers: Suitability Report, Northwest Oregon, (2013).

[40] Oregon Dep't of Fish and Wildlife, Coastal Multi-Species Conservation and Management Plan: Public Review Draft Executive Summary, January 2014.

[41] *See Generally,* Oregon Department of Fish and Wildlife: Centralized Oregon Mapping Products and Analysis Support System. (July 31 2015 2:50 PM) https://nrimp.dfw.state.or.us/compass/

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[43] Doug Drake ET AL., Western Oregon Plan Revision Draft Environmental Impact Statement Science Team Review, 97, March 2008.

[44] Canton Creek Watershed Analysis (49).

[45] Council on Envtl. Quality, Considering Cumulative Effects Under the National Environmental Policy Act (1), 1997, [*hereinafter* CEQ Cumulative Effects].

[46] BLM National Environmental Policy Act Handbook (61).

[47] (DEIS 93-94)

[48] 137 F.3d 1372 (1378) [*hereinafter Cuddy*].

[49] *Id*.

[50] *Id* at 1379.

[51] *Id* at 1381.

[52] CEQ Cumulative Effects (11).

[53] DEIS 93.

[54] CEQ Cumulative Effects (4).

[55] *Native Ecosystems Council v. Dombeck*, 204 F.3d 886 (896).

[56] *Kern v. Bureau of Land Management*, 284 F.3d 1062.

[57] DEIS 95.

[58] Office of Ground Water and Drinking Water, U.S. EPA., Benefits and Costs of Prevention: Case Studies of Commuity Wellhead Protection, Volume 1, *in:* Source Water Protection Business and Economics Series Report No. 2. November 30, 1995 (17-24).

[59] Oregon and California Land Grant Act of 2014, S. 2734, 113th Cong. §7 (2014).

[60] Ted Turner Et Al., Landslide densities associated with rainfall, stand age and topography on forested landscapes, southwestern Washington, USA. In: Forest Ecology and Management (259).

[61] Dr. E George Robison Et Al., Storm Impacts and Landslides of 1996: A Final Report, Oregon Department of Forestry, June 1999 (PDF).

[62] Washington Forest Practices Board, 1993.

[63] (DEIS 646).

[64] (650 DEIS).

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[67] B.C. Wemple et al. 2001 p 202.

[68] [emphasis added]. DEIS 27.

[69] DEIS 77.

[70] *Seattle Audobon Soc. v Lyons, 871 F. Supp. 1291 1302.*

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[74] 33 U.S.C. §1323.

[75] *See e.g*. Steve Mashuda, Water Quality Standards: A Primer. November 2002.

[76] FEMAT 1993 at V-36.

[77] *Id*.

[78] *See e.g.* National Research Council, Committee on Characterization of Wetlands. 1995. Wetlands: Characteristics and Boundaries, at 31, *citing* Mitsch, W.J., C.L. Dorge, and J.R. Wiemhoff. 1979.

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[87] *Id.*

[88] 3 U.S.C. 1362(12), CWA §502(12)

[89] OAR 340-041-0004.

[90] OAR 340-041-0004 (3)(c).

[91] *See Generally:* Dale McCullough, Attachment to Pacific Rivers Council Comments on BLM WOPR 11 January 2008.

[92] OAR 340-041-0004 (9).

[93] OAR 340-041-004 (8).

[94] 6 U.S.C. § 1531.

[95] TVA v. Hill, 437 U.S. 153 (1978) at 183, 185.

[96] Id.

[97] *See e.g.* Carson-Truckee Water Conservancy District v. Watt, 741 F. 2nd 257, at 261-262 (9th Cir. 1984) cert. denied, 470 U.S. 1083 (1985) (finding Section 7(a)(1) grants wide discretion to administer all programs to advance conservation and is not limited to jeopardy-avoidance actions).

[98] Sierra Club v. Babbitt, 65 F.3d 1502 (9th Cir. 1995).

[99] Pyramid Lake Paiute Tribe v. United States Department of the Navy, 898 F.2d 1410 (9th Cir 1990) (balancing conservation duty against conflicting discretionary duties).

[100] NWF v. Hodel, 23 Env't Rep. Cas. (BNA) 1089, 1092 (E.D. Cal Aug. 26, 1985).

[101] Southwest Center for Biological Diversity et. al. v. Bartel et. al, Case No. 98-CV- 2234-B(JMA)

[102] 16 U.S.C. 1271-1287

[103] Bureau of Land Management, 6400 – Wild and Scenic Rivers – Policy and Program Direction for Identification, Evaluation, Planning, and Management (Public), 6-136, 13 July 2012. (3.2)

[104] (Department of the Interior, BLM Wild and Scenic Rivers Policy and Program Direction for Identification, Evaluation, Planning, and Management, Section 4.1 A, 2012.)

[105] Id.

[106] BLM Manual Section 6400 (BLM 2012)

[107] Oregon and California Land Grant Act of 2014, S. 2734, 113th Cong. §7 (2014)

[108] ODFW. April 2008. Oregon Plan for Salmon and Watersheds. Abundance Monitoring of Juvenile Salmonids In Oregon Coastal and Lower Columbia Streams, 2007. Report Number: OPSW-ODFW-2008-1.

[109] Watershed Sciences, LLC. March 2004. Aerial Surveys in the Rogue River Basin: Thermal and Color Videography. Report to Oregon Department of Environmental Quality.

[110] Doppelt, B., Hamilton, R. Deacon Williams, C., Koopman, M. Dec. 2008. Preparing for Climate Change in the Rogue River Basing of Southwest Oregon.

[111] Johnson, S.L., and J.A. Jones. 2000. Stream Temperature Responses to Forest Harvest and Debris Flows in Western Cascades, Oregon. Canadian Journal of Fisheries and Aquatic Sciences: 57(Supplement 2), 30-39.

[112] BLM, Wild & Scenic Rivers Suitability Report, Northwest Oregon; 2015, (2).

[113] *See:* Bureau of Land Management, Western Oregon, Resource Management Plan, 1995 (78). PDF.

[114] (August 3 2015 11:16) http://www.nps.gov/ncrc/programs/rtca/nri/states/or.html

[115] Mollala River Wild and Scenic Rivers Act H.R. 1230, 113th Cong. §2 (2013).

[116] See Appendix 5 Wild and Scenic Rivers

July 27, 2015

Jerome E. Perez, State Director
RMPs for Western Oregon
Bureau of Land Management
P.O. Box 2965
Portland, Oregon 97208

Re: Comments on BLM's Draft Resource Management Plan/Environmental Impact Statement for Western Oregon

Dear Mr. Perez:

The Josephine County Democratic Central Committee (Democratic Party) voted unanimously to request that you include the Natural Selection Alternative as an option and analyze it in detail in the Final Resource Management Plan/Environmental Impact Statement for Western Oregon.

Our public lands provide clean drinking water, protect wild salmon, and preserve water quality in our rivers, lakes, and streams. These lands are home to some of the last remaining ancient forests in America. We should focus on a responsible plan for lands and leave a legacy for future generations. Deer Creek Association has submitted such a plan, the Natural Selection Alternative. The Natural Selection Alternative is based on the best available science and offers a solution for long term economic stability. It would achieve BLM objectives and minimize environmental impacts.

The BLM alternatives proposed would not provide a sustained yield of timber, would fail to adequately address climate change and species extinctions, would increase fire hazards and degrade water, destroy wildlife habitats and natural community ecosystems and would harm recreation, tourism and our local economy.

The Natural Selection Alternative, unlike the BLM alternatives, would meet all environmental protection requirements and sustain natural community ecosystems across the landscape, essential to producing a sustainable, predictable supply of timber providing community long term economic stability and social health.

Respectfully yours,

Pat Bath

Pat Bath, Secretary
Tom Johnson, President
Josephine County Democratic Central Committee

July 9, 2015

Jerome E. Perez, State Director
RMPS for Western Oregon
Bureau of Land Management
P.O. Box 2965
Portland, Oregon 97208

E-mail: jperez@blm.gov
E-mail: blm_or_rmpwo_comments@blm.gov

Subject: Comments - RMPs for Western Oregon, Draft Environmental Impact Statement

The purpose of this letter is to submit the Rocky Mountain Elk Foundation's (RMEF) comments regarding the Draft Environmental Impact Statement (DEIS) for the revision of the Western Oregon Resource Management Plans that will guide the management of more than 2.4 million acres of public forest in western Oregon.

The RMEF is a leading national non-profit hunter based wildlife habitat conservation organization with more than 205,000 members in 500 chapters nationwide. Our mission is to ensure the future of elk, other wildlife, their habitat, and our hunting heritage. We strongly support public access for hunting, fishing and other recreation. Over the past 30 years RMEF has helped conserve or enhance wildlife habitat on over 6.6 million acres (a considerable portion of those acres were accomplished in partnership with the US Bureau of Land Management).

RMEF concurs with the BLM's assessment that changed conditions on the ground, legal imparities and new science speak to the need for revision of the Western Oregon Resource Management Plans (RMP). We suggest that revision of the RMP presents a sterling opportunity to demonstrate the compatibility of forest management and wildlife management, an opportunity that must not be missed.

The stated purpose of the BLM's current planning efforts is to increase harvest of forest products on a sustained-yield basis from the Oregon and California (O&C) Railroad Grant lands under BLM management. Sustained-yield forest management, including regeneration harvest and subsequent reforestation, will provide a mosaic of early successional vegetation type where early succession obligate species thrive. Timber harvest and healthy early succession obligate wildlife populations, including deer and elk, are intimately associated, and the requirements of each can be achieved concurrently.

The early successional stage is vital to both sustained-yield forest management and to provide wildlife habitat; it is where the young trees for the next forest crop are found and where the grasses, forbs and shrubs grow that deer, elk, neotropical migratory birds and other wildlife utilize as feed and habitat. The early successional stage of a forest is the most biological species rich of all the stages in forest succession. More than 100 species of wildlife are obligates to the early successional stage (O'Neil et al 2001).

The DEIS clearly states that on the BLM's lands the early successional stage is well below the average Historical Range of Variability in its prevalence on the landscape; in fact it is shown as absent (DEIS p685, Fig. 3-161). Additionally, the DEIS acknowledges that the populations of black-tailed deer and elk are below Oregon Department of Fish and Wildlife management objectives in the planning area and on BLM lands likely due, in part, to lack of high quality forage from early successional stage habitat. The DEIS further states that deer, elk and certain neo-tropical migratory birds will benefit from increased early successional habitat which would occur in varying amounts within from several of the Action Alternatives analyzed (DEIS p676-679, 679-696, Wildlife).

We have reviewed the DEIS's four Action Alternatives and the No Action alternative and the analysis presented for each. We believe none of them takes full advantage of the opportunity to improve O&C forest lands through sustained-yield management and concurrently increase the amount of early successional forest habitat necessary to stem the decline of wildlife obligates to this critical forest stage.

RMEF is particularly concerned the BLM may have arbitrarily limited the size of the Harvest Land Base in any action alternative to 30 percent of the forest land in the decision area (DEIS p246).

Therefore RMEF strongly recommends for the Final DEIS the development and analysis of an additional Action Alternative which maximizes the size of the Harvest Land Base. This new alternative would be achieved by reducing the Late Successional Reserve allocation to the minimum necessary to protect habitat of the Northern Spotted Owl and the Marbled Murrelet, holds the Riparian Reserve allocation to the minimum appropriate to ensure protection of the water resource, and holds Other Reserves to the minimum. This new additional alternative would provide an increase in sustained-yield harvest quantity and a larger amount of early succession forest habitat for wildlife obligates to this critical and highly species diverse stage of forest succession. Attachment 1 to this letter contains additional comments regarding the DEIS.

Thank you for the opportunity to present our comments regarding the DEIS. RMEF wishes to continue to be engaged in this important planning action, please keep us informed.

Blake Henning
Vice President for Lands and Conservation
Rocky Mountain Elk Foundation

Attachment: Additional RMEF Comments, BLM Western Oregon RMP DEIS

Reference:

O'Neil, Thomas A., David H. Johnson, Charley Barrett, Maria Trevithick, Kelly A. Bettinger, Chris Kiilsgaard, Madeleine Vander Heyden, Eva L. Greda, Derek Stinson, Bruce G. Marcot, Patrick J. Doran, Susan Tank, and Laurie Wunder. Matrixes for Wildlife-Habitat Relationship in Oregon and Washington. Northwest Habitat Institute. 2001. in D. H. Johnson and T.A. O'Neil (Manag. Dirs.) Wildlife-Habitat Relationships in Oregon and Washington. Oregon State University Press, Corvallis, OR, USA. 2001. P736.

Attachment to Rocky Mountain Elk Foundation letter, dated July 6, 2015

Subject: Additional Comments and Recommendations, BLM RMP DEIS

The following are additional comments submitted by the Rocky Mountain Elk Foundation:

1. Establish a Working Relationship with Oregon Department of Fish and Wildlife. RMEF strongly recommends the new RMP Final DEIS contain direction at resource Area level to establish and maintain free flowing communication with the Oregon Department of Fish and Wildlife and to assist ODFW where possible to achieve its species management plan stated population objectives.

2. OHV Special Recreation Areas and Trail Systems. With respect to OHV Special RMAs and trail systems, the RMP Final EIS should provide direction to collaborate and cooperate in sighting any new OHV recreation facilities to avoid degradation of critical big game habitat by vehicle noise and to mitigate disturbance of existing OHV recreation facilities.

3. Recognize hunting and fishing as primary recreational activates.

4. Presidential Executive Order 13443. In the RMP Final EIS incorporate the requirements of Presidential Executive Order 13443, Section 2, throughout the body of the document with particular emphasis in AE & EC analysis of the Deer and Elk section, in the Recreation section, and the objectives and direction for Harvest Land Base.

5. Designation of Roosevelt elk and black-tailed deer as Management Indicator Species.. RMEF strongly recommends that both Roosevelt elk and black-tailed deer be designated as Management Indicator Species in the new RMP.

6. Provide Public Access to Large Blocks of Isolated BLM Lands. In the RMP provide direction for the BLM to actively seek to obtain public access ROW agreements to large isolated blocks of BLM lands in order that the public may make use of them for recreational purposes.

7. Provide for use of gaps in thinned stands in the wet forest environment. Add in the next edition of the RMP EIS direction for use of gaps to provide opportunity for early succession vegetation within thinning prescriptions in the wet forest region; provide maximum gaps size and maximum percent of the stand in gaps.

8. Add Deer and Elk Habit Management Areas in Districts where they do not currently exist. Provide Deer and Elk Management Areas where needed in each of the Six BLM Districts where, in collaboration with ODFW, it is determined such areas are needed; management objectives and direction must be provided. The DEIS states Deer and Elk Management Areas are now present in three of the six BLM Districts are now present and would be retained.

9. Consider all meadow, grass land and aspen habitat for designation as Areas of Critical Environmental Concern. All meadow, grassland and aspen habitat not already under consideration as ACECs should be analyzed for designation. These types of habitat are designated by the Oregon Conservation Strategy as critical wildlife habitat. BLM decision area contains a very small proportion of these types adding to their critical nature.

Jasmine Benjamin

From: m1allen@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Thursday, August 20, 2015 8:42 AM
To: RMP-Comments@heg-inc.com
Subject: Fwd: Comment Draft 2015 RMP/EIS for Western Oregon
Attachments: Williams CF RMP drft cmt aug 14_2015.docx #3.docx; Map Layton Ditch-RMP 2015.docx; RMP Williams Alternative ,2012-2.docx RMP 2015 attach.docx; portable pyrolysis for biochar.pdf attach for RMP 2015.pdf

---------- Forwarded message ----------
From: [redacted]
Date: Wed, Aug 19, 2015 at 11:14 PM
Subject: Comment Draft 2015 RMP/EIS for Western Oregon
To: "blm_or_rmpwo_comments@blm.gov" <blm_or_rmpwo_comments@blm.gov>

Dear Mr Perez,
Please accept our comment on the Draft 2015 RMP/EIS for Western Oregon. Attached is our Comment and attachments to the Comment.
We would appreciate a response to ensure that you have received the Comment.

Thank You,
Williams Community Forest Project
williamscommunityforestproject.org
info@williamscommunityforestproject.org

Williams Community Forest Project

Jerome E. Perez, State Director
Washington/Oregon Bureau of Land Management
P.O. Box 2965
Portland, Oregon 97208
Submitted via Email: <blm_or_rmpwo_comments@blm.gov>

August 19, 2015

RE: Draft 2015 Resource Management Plan/EIS for Western Oregon

Dear Mr. Perez:

The Williams Community Forest Project (WCFP) works to create and promote ecologically maintained forests in the Williams Creek watershed to serve as a model for future generations and support the Williams community economically, aesthetically and socially . Mature and old growth forests on BLM lands harbor several nesting spotted owls. Our streams have abundant habitat for coho salmon and steelhead. The vibrant rural community of Williams (population 2,500) is about 15 miles southeast of Grants Pass.

Thank you for extending the opportunity to comment on the Draft RMP/DEIS. We previously submitted to BLM a "Williams Watershed Community Alternative" dated October 12, 2012 (attached). We know that the 1995 Medford District RMP is a scientifically sound starting point for RMP revisions because it has a proven track record for improved forest and stream conditions over the past 20 years. We cannot fully support any of the action alternatives because they abandon many of the key elements of science based ecosystem management contained in the Northwest Forest Plan.

We recommend that BLM develop one or more additional alternatives for the Final EIS. None of the action alternatives or a mix of action alternatives is acceptable. The action alternatives are a giant step backwards to mandated industrial clear cutting. The same kind of deforestation we abhor on private lands. We have fought long and hard to reduce clear cutting on federal lands and maximize restoration thinning. We recommend that BLM must develop an action alternative that minimizes any form of clear cutting in the final EIS. Similarly, the BLM foolishly proposes to go back to 1980s skimpy forest buffers along our southwest Oregon salmon streams which regularly endure air temperatures exceeding 100 degrees. Everybody , including the Oregon Board of Forestry, knows that warmer, dryer conditions in the future (climate change, ongoing drought) means we need more forest protection along SW Oregon salmon streams, not less protection as proposed in every DEIS action alternative. Our comments and previously submitted "Williams Watershed Community Alternative" are intended to provide the basis for a new conservation oriented alternative in the final impact statement that we can support. The new alternative would fulfill the requirement for an "environmentally preferred alternative".

_____

Claudia Beausoleil, President
Williams Community Forest Project
PO Box 36 | Williams | OR | 97544

Williams Community Forest Project Comment
Draft 2015 Resource Management Plan/EIS for Western Oregon

1. **The RMP/DEIS erred by failing to identify the Grayback Mountain Trail and the Layton Ditch Trail as Special Recreation Management Areas. The RMP/DEIS erred by not identifying all 16 miles of the Layton Ditch Trail located on BLM lands.**

We recommend that the FEIS and the Proposed Resource Management Plan identify the Grayback Mountain Trail and Layton Ditch Trail as Special Recreation Management Areas with trail management corridors similar to those proposed for Sterling Mine Ditch Trail. Proposed designation for these trails as Extensive Recreation Management Area is desirable but inadequate for our recreational objectives for these trails (DEIS:1282).

<u>Layton Ditch Trail Special RMA Map #172</u>

We have expressed our desire to collaborate with BLM to upgrade this trail so we can have it designated as an Oregon Scenic Trail. Grants Pass Field Manager Allen Bollschwieler has informed us that the Special RMA designation for the Layton Ditch Trail would be needed to make BLM collaboration with us to upgrade the trail a priority. The Layton Ditch Trail is literally in Williams backyard, a community of about 3,000. We do minor trail maintenance (e.g. cut poison oak) and sponsor public hikes. Grants Pass is about 20 miles away and Medford about 35 (DEIS 453). The low elevation trail would be available for hiking 12 months of the year and features a continuous low slope that is very desirable for older hikers not wishing to hike the steep mountain trails. The trail traverses natural vegetation types of the Siskiyou foothills featuring Douglas-fir, pine, oak, chaparral and high wildflower diversity. The trail is also used by equestrians and has potential for mountain bike use which is becoming increasingly popular.

Interactive Map Trail Location

The interactive map is in error because it only identifies about 4 miles of trail along the Layton Ditch. We recommend that the the FEIS and the Proposed Resource Management Plan identify an additional 8 miles of Layton Ditch Trail on BLM lands. Three additional miles on BLM need to be identified in T38S-R4W-Sec 25 and T38S-R5W-Sec 30. Four additional miles on BLM need to be identified in T39S-R4W-Sections 14, 23 and 25. We provide a map of the entire Layton Ditch Trail. We recently learned at a meeting with Grants Pass BLM that the ditch berm constructed by miners over 150 years ago is visible on BLM LIDAR which makes it easy to accurately map.

We have expressed our desire to collaborate with BLM to upgrade the Layton Ditch trail and have it designated as an Oregon Scenic Trail. Our objective is to collaborate with private property owners and BLM to obtain legal easements or acquisition of private parcels that currently fragment the trail into 3 BLM segments. We provide a map of the entire 15 mile Layton Ditch Trail from Pipe Fork north to Layton Mine. We request BLM identifying a need to

collaborate with WCFP and private land owners to obtain legal easements for hikers to traverse the entire 15 mile trail.

Visitor Activities (Medford Layton Ditch Trail Extensive RMA)
Besides the listed mountain biking, hiking, and equestrian, the Layton Ditch Trail would also provide environmental education (see Photo 1), wildlife viewing and botanical viewing. We support the statement that "[t]he Layton Ditch Trail ERMA has potential to draw locals and visitors to the area seeking non-motorized trail experiences"

Visitor Experiences (Medford Layton Ditch Trail Extensive RMA)
In addition to the listed visitor experiences we suggest adding the following:

• *Enjoying being able to frequently participate in desired activities in the settings I like*
Members of WCFP and the Williams Community frequently engage in individual hikes, advertised public hikes and group trail maintenance.
• *Enjoying teaching others about the outdoors*
We appreciate the interpretive sign near the trailhead and will pursue more interpretive signs as well as sponsoring nature hikes.
• *Enjoying in participating in group outdoor events*
The WCFP sponsor group hikes and group trail maintenance.
• *Enjoying having access to hands on environmental learning*
The purpose and need for past and ongoing forest management will be used as examples for environmental learning.
• *Enjoying having access to natural landscapes*
The areas adjacent the trail are largely natural except for effects of fire suppression.

Visual Resource Management(Medford Layton Ditch Trail Extensive RMA)
We recommend that the FEIS/Proposed RMP indicate VRM Class II for Layton Ditch Trail which is more accurate for the majority of the trail and would support our goal to have the Layton Ditch Trail designated as an Oregon Scenic Trail.

Trails and Travel Management (Medford Layton Ditch Trail Extensive RMA)
We agree with the stated management actions:
• *Open to all non-motorized trail uses (hike/bike/equestrian)*
• *Designate area as closed for OHV*
We suggest "Closed seasonally to equestrian use" because wet season use by equestrians is damaging the Layton Ditch Trail.

Forest Management (Medford Layton Ditch Trail Extensive RMA)
We have expressed our desire to collaborate with BLM to upgrade the Layton Ditch trail and have it designated as an Oregon Scenic Trail. We recommend that the FEIS/Proposed RMP include the following forest management restrictions to better manage the Layton Ditch Trail for existing high visual quality and for future management as an "Oregon Scenic Trail":
• Close to firewood cutting.
• Do not allow timber harvest within buffer to address catastrophic events (i.e. no salvage

logging in the buffer)
• Allow timber harvest if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics.
• Allow fuel treatments or other vegetation modifications if compatible with meeting recreation objectives, not interfering with recreation opportunities, and maintaining setting characteristics.
• Establish a no commercial harvest buffer of 200 feet (off of centerline) for all linear trails.
• Allow timber harvest activity within buffer to protect/maintain recreation-setting characteristics and/or to achieve recreation objectives.

Grayback Mountain Trail Special Recreation Management Area (Map No. 146)
http://www.blm.gov/or/resources/recreation/site_info.php?siteid=367
With the help of the Forest Service, the community of Williams, and volunteers on Public Lands Day events, the Bureau of Land Management was able to construct the 6 mile trail between 1989 and 2006. A Special Recreation Management Area is suggested for this trail because it is on steep ground and will require costly maintenance on regular basis, however, we are prepared to provide volunteer help. This trail provides exceptional remoteness and naturalness as it connects to the Forest Service Boundary Trail in the Kangaroo Roadless Area. The trailhead is within 25-30 miles of both Medford and Grants Pass.

Layton Ditch Trailhead Special Recreation Management Area (Map No. 173)
The current trailhead location does not provide adequate parking for the expected intensity of use. Even with carpooling we need a larger cleared pull out space for at least 6 vehicles for our public hikes/ trail maintenance work parties. The trailhead lacks a visible sign that clearly indicates the beginning of the Layton Ditch Trail. Trail head signs are needed on both sides of road 39-5-1.

Rock Creek Trails Extensive Recreation Management Area (Map No. 192)
We support this designation in the FEIS/Proposed RMP because the Rock Creek Trails Extensive Recreation Management Area is clearly intended for development of non-motorized recreational activities. This area needs to be enlarged for the FEIS/PRMP to include all portions of Grayback Trail and Layton Ditch extensions. Please add the following BLM lands to Rock Creek Trails ERMA:

T39S-R5W-Sections 1,29,32
T38S-R5W-Section 25
T38S-R4W-Sections 30,31

Mungers Butte Extensive Recreation Management Area (Map No. 186)
The Mungers Butte ERMA assessment states that it has "potential to draw motorized and non-motorized trail system users." We strongly oppose designation of this 11,873 acre ERMA because of ongoing resource damage from motorized vandals (aka Off Highway Vehicle use). We assert that the ongoing motorized use is best labeled "vandalism" not "recreation" because it is not authorized or is causing significant resource damage to public property, our public property. Currently, due to lack of science based roads management, it is impossible to prevent OHV

damage to BLM lands. This is especially true during the wet season when POC root disease can be moved by vehicles into uninfected areas. The RMP/DEIS fails to address the ongoing threat of motorized use spreading POC disease in the Williams Watershed. Designating the Mungers Butte ERMA to "draw motorized users" would exacerbate the risk of spreading POC root disease.

The DEIS:468 states "Under all alternatives, the BLM would manage recreation to protect habitat for Federal threatened and endangered species. In all alternatives, recreation would be similarly affected by management for threatened and endangered species because law, direction, and policy require that listed species be protected."

The Mungers Butte ERMA must be dropped from anticipated Proposed RMP because designation would likely adversely affect northern spotted owl, coho salmon, and fisher. Anticipated increased motorized use from designation would increase noise and human disturbance to nesting northern spotted owls and likely decrease nesting success. Similarly, fishers would be adversely affected from human disturbance. Motorized use in and along streams would adversely affect coho salmon. Shade for streams would decrease due to motorized introduction of POC root disease. Anticipated increased motorized use from designation would increase fire danger that would have adverse impacts on these ESA species.

The FEIS/PRMP would improve on its purpose for ESA species recovery by identifying priority areas such as the Williams Watershed where existing private land NRF habitat could be maintained with coordinated protection agreements involving FWS, BLM, private land owners, and the Williams Community Forest Project.

Large tracts of high quality Nesting Roosting Foraging habitat exist on private lands in southern Oregon with virtually no protection from state authorized clear cutting. The anticipated uplisting of the NSO to endangered clearly warrants the RMP revision process to seek innovative agreements to stave off imminent removal of large tracts of NRF that currently help support northern spotted owls/barred owls on intermingled private/public lands. Anticipated removal of private land NRF habitat via clear-cutting in 40-250 acre patches is certain to contribute towards further competition between barred and spotted owls as their collective habitat shrinks.

The 55,602 acre Williams Creek watershed south of Ruch in Josephine County, Oregon has typical western Oregon mixed public/private ownership. The USDI/BLM Williams Integrated Vegetative Management Project Environmental Assessment (p.118) reports that **25% of the NRF habitat in the watershed is private.** Unfortunately, each year large swaths of this private land NRF habitat are clear- cut with no apparent forest retention for spotted owls. During 2012, a typical private land clear-cutting commenced on Lone Creek within the Williams Watershed with a planned 250 acre clear-cut of presumably NRF habitat (Oregon Department of Forestry (Merlin Office) Timber Sale Notice #2011-712-00077).

We assert that federal land spotted owl habitat modeling are not adequately incorporating the rapid loss of NRF from private land clear cutting at scales relevant to existing northern spotted owls. For example, no critical habitat is designated on private lands so private land clear cutting appears to have "no effect" with critical habitat modeling, when in fact private land clear cutting is likely the major cause for removal of NRF habitat in most mixed ownership 5th field watersheds in Josephine County (e.g. Williams Creek, Cheney Creek, Deer Creek, Sucker Creek). Private land forests are often discounted as being too young to contribute to the habitat needs of northern spotted owls in the short term. This assumption is clearly wrong for Josephine County, Oregon where substantial amounts of NRF remain on private lands intermingled with critical habitat designations on public lands.

Table 3-8. Acres of Northern Spotted Owl Habitat Types within the Williams IVM Project Area

Habitat Type	Ownership			TOTAL
	BLM	Forest Service	Private	
Nesting, Roosting & Foraging (NRF)	10,691	352	3,718	14,761
Dispersal Only Habitat	5,639	*	*	5,639
Unsuitable Habitat	11,832	*	*	11,832
* = Unclassified (not NRF)	0	506	22,865	23,371
TOTAL	28,162	858	26,582	**55,602**

Table 3-8 from USDI/BLM Williams Integrated Vegetative Management Project Environmental Assessment. Private lands support 25% of the NRF habitat and unknown amount of Dispersal. The NRF habitat is being rapidly removed with large scale clear-cutting that could be prevented with negotiated agreements , 3rd party purchases and/or conservation easements.

We are interested in investing time and resources towards protecting the whole watershed where recreation and NSO recovery can be implemented that integrates management across ownerships with appropriate compensation to willing landowners. For example, the treat and maintain prescription may be agreeable to some timber owners. We need to act quickly as the private land NRF has high timber value with clearcutting likely.

Certainty for progress towards recovering NSO and protecting fisher habitat in the Williams Watershed requires that the PRMP explicitly prohibit all forms of "even age management"

such as clear-cutting, shelterwood, structural retention, and/or regeneration harvest for both live and fire killed stands in the Grants Pass Resource Area and/ or Williams Watershed.

Currently the action alternatives have a loophole that would allow up to 6 acre "gaps" or mini-clearcuts in thinning units for dry forests. This standard needs to be reduced to 1 acre gaps maximum in the Williams Watershed and/or Grants Pass Resource Area. NSO and most other late successional animals do not benefit from gaps greater than 1 acre. A simple solution and one advocated by Jerry Franklin is to have many small gaps of less than 1 acre which is more similar to historic patch size.

The action alternatives would allow clearcutting of burned forests that would otherwise only be treated with thinning. This is wrong and not based on best available science. A burned forest must supply large wood and snags for at least 100 years while the new forest is growing. Retaining all fire killed trees is especially important to NSO recovery. We recommend that post fire logging be limited to non-controversial hazard tree removal from main roads for all BLM lands in the Grants Pass Resource Area and/or Williams Watershed.

All action alternatives have flaws compared to NW Forest Plan, but in general we support action alternative D because it has the greatest protection for streams among action alternatives (120 ft no cut buffers). We recommend that alternative D have a single protection standard (120 years) for structurally-complex forests to simplify management and reduce fraud. In addition, we assert that the best available science would support the retention of all trees 120 years and older. This means that the older "legacy trees" (>120 years) would be retained in all harvest units. This 120 year standard is consistent with ecological forestry science. In addition, cutting trees >120 years is harmful to our needs for having older trees in recreational settings and the needs of late successional wildlife. Trees 120 years and older are fire resistant and have the best chance of surviving fire. It is illogical to spend millions to protect trees from fire and then cut the most fire resistant trees.

The FEIS/PRMP needs to identify biochar and pyrolysis techniques to treat activity slash and reduce carbon emissions. Specifically we want the Williams Watershed to be designated for testing the use of pyrolysis (biochar) to treat activity slash and fuels treatment burn piles. We attach the publication "Can Portable Pyrolysis Units Make Biomass Utilization Affordable While Using Bio-Char to Enhance Soil Productivity and Sequester Carbon" Please take this suggestion seriously as we have conducted biochar workshops in the Williams Watershed and would like to see some science based progress about archaic and harmful pile burning.

The FEIS/PRMP needs to identify removal of plastic prior to igniting burn piles as a best management practice to reduce unwanted air pollution. The DEQ identifies plastic removal prior to burning but the Grants Pass Resource Area refuses to require contractors to do this simple and effective mitigation. Despite health assurances by local BLM pile burners, we are harmed when plastic is burned with the burn pile. We smell it. Please identify removal of plastic prior to ignition as a requirement for the Grants Pass Resource Area or the PRMP could merely make plastic removal a requirement for the Williams Watershed. We value breathing air with no

chemical smell. We do not trust assurances by BLM that burning plastic does not harm us and animals.

The DEIS/RMP is defective because it fails to adequately discuss the importance of Port Orford Cedar to water quality and critical coho stream habitat function.

USDI BLM/USDA FS 2003: 29 states that "Port-Orford-cedar is an important species in riparian ecosystems (fig. 2.11). Where present, it plays a role in maintenance of water quality. It can provide shade and thereby lower stream temperatures. It may also provide bank stability, and when it dies and falls into the stream, aquatic structure (fig. 2.12). Since Port-Orford-cedar is highly resistant to decay, it may be expected to have a longer residence time in streams than other associated conifers. This may be especially important on serpentine soils where Port-Orford-cedar may be the only, or most abundant, tree species growing on a site." Although spatial stream riparian POC data is available, the RMP/DEIS failed to illustrate or analyze the spatial distribution of POC along streams in the planning area/decision area or its spatial relevance to critical coho salmon stream habitat.

The DEIS/RMP is defective because it failed to conduct an up to date and relevant spatial analysis of the spread of POC root disease and failed to disclose the adverse consequences of root disease spread to shade and stream temperature, especially for serpentine (ultramafic) streams.

DEIS 20-21 states that "The BLM has also amended the Coos Bay, Medford, and Roseburg District RMPs with the Record of Decision and Resource Management Plan Amendment for Management of Port-Orford-Cedar in Southwest Oregon, Coos Bay, Medford, and Roseburg District (USDI BLM 2004), which was based on an interagency supplemental EIS. Under all alternatives in this RMP revision, the BLM would continue to manage Port-Orford-Cedar in accordance with this 2004 Record of Decision."

Merely citing an outdated ROD for POC management is inadequate for this RMP to comply with NEPA, ESA and the CWA.

The "Range-Wide Assessment of Port-Orford-Cedar (Chamaecyparis lawsoniana) on Federal Lands" (USDI BLM USDA FS 2003) is based on data that is over 15 years old ("The completion date for all chapters other than Chapter Seven is June 2001). The DEIS/RMP is defective because it failed to conduct spatial analysis needed to detect and analyze the consequences to shade and stream temperature of the ongoing spread of the root disease due to logging, logging roads, mining, grazing and OHV. We assert that some streams are experiencing reduced shade due to cumulative effects of the root disease and perhaps even stream warming on planning area streams, especially infested serpentine streams.

The DEIS/RMP is defective because it failed to describe the connection between logging road density/ timber harvest density in coho salmon watersheds (i.e. critical habitat) and increased occurrence of the root disease and subsequent loss of stream shade.

Jules et al. 2002:3167: reports that "Twenty-six of the 36 (72%) separate infection events we identified were caused by dispersal via vehicles along roads, and the remainder by foot traffic. Survival analysis demonstrated that cedar populations in creeks crossed by roads were more likely to be infected than those creeks that were not crossed by roads." Clark (2011:Abstract) reports: Both road networks
And timber harvest patchworks were significantly related to cedar root rot heterogeneity. Chi-squared contingency tables showed that infestation rates were 2.2 times higher in catchments with roads compared to roadless catchments and 1.4 times higher in catchments with road---stream intersections compared to those that were unconnected. Infestation was twice as likely in catchments with both harvest and road presence than road presence alone. We assert that the DEIS/RMP failed to disclose the cumulative effects of roads and timber harvest towards increased root disease infestation and increased risk over the next 10- 100 years.

The DEIS/RMP is defective because it failed to assess the consequences towards increased root disease risk and increased loss of shade from action alternatives that would increase logging roads, greatly increase the allowed use of OHV on user created roads and trails and kill live POC along streams.

The Hydrology section (DEIS 286-320) fails to estimate the cumulative effect of shade loss from past logging/logging roads and proposed logging/logging roads. Similarly, it fails to estimate or describe the loss of streambank stability and increased erosion due to root disease death of POC. POC is often the dominant tree stabilizing streambanks because of its tolerance to high water tables along streams.

The DEIS:637 falsely states: "The BLM analyzed the effects that off-highway vehicle allocations would have on other affected resources within the planning area." The action alternatives would allow OHV use on 2.3 million acres that are known to contain thousands of miles of user created (existing) routes. (DEIS 1376). Therefore, it would seem probable that there would be significant impacts to critical habitat (e.g. coho streams) and listed fish species from ongoing use and the proposed allocations due to root disease spread. However, the DEIS:286-320 Hydrology has no discussion of loss of shade, streambank stability or other impacts from OHV use or proposed OHV allocations. The DEIS:217-235 Fisheries has no discussion about impacts from OHV use or OHV allocations with respect to increased spread of POC root disease.

Although the DEIS 154 states that "[w]arming temperatures, wetter springs, and increased drought stress may increase the extent and impact from Swiss needle cast, sudden oak death, Port Orford-cedar root disease, other root diseases such as Armillaria and Heterobasidion, bark beetles, and western spruce budworm in western Oregon", neither the hydrology section nor the fisheries section describes the consequences of warming temperatures increasing the impact from Port Orford-cedar root disease.

The DEIS: 959 states "Apply treatments, including commercial treatments, as needed for treatment of diseases including but not limited to: Port-Orford-cedar root rot disease. Fall and remove trees as needed for riparian restoration projects or stand maintenance, including but

not limited to alder or brush field conversions, or for treatment of diseases including but not limited to Port-Orford-cedar root rot disease outbreaks." Although not stated, "treatments" may include the killing of live POC trees along streams as a form of "sanitation". We have observed senseless girdling and killing of live shade POC trees along Sucker Creek on BLM lands. The DEIS fails to acknowledge or discuss the loss of shade for critical coho stream habitat from this senseless practice.

The DEIS/RMP is defective because it failed to identify specific road closures and seasons designed to reduce the risk of POC disease spread.

The DEIS/RMP fails to disclose that since the 1980s the BLM has installed POC gates on logging roads to prevent publicly operated motorized vehicles from spreading the root disease. For example, near the town of Williams, Oregon, the BLM, after public suggestion, closed five miles of road adjacent to lands infested with the pathogen. According to Frank Betljewski (BLM) The closure has so far succeeded in preventing the disease from spreading into the area. Temporarily closing roads on federal lands during the rainy season has had positive results, but the Forest Service and the BLM have problems when gates are removed or damaged. Currently the BLM is not adequately maintaining POC gates and the DEIS/RMP is defective for not addressing this issue. Delaying decisions about POC road closures is not based on the best available science, since allowing motorized use could easily result in an infestation that is not reversible. We assert the RMP/DEIS must identify a suite of permanent and seasonal road closures to ensure water quality is maintained. The RMP/DEIS is defective because it has not provided BMPs for excluding public motorized vehicles from riparian reserves to prevent loss of shade trees and prevent streambank instability caused by the death of POC from the root disease.

The DEIS/RMP is defective because it failed to identify a commitment by BLM for personnel and resources to be an active participant in the POC technical team or similar interagency coordination effort.

Oregon's Port Orford cedar technical team is the state's primary organ for addressing the *P. lateralis* infection. Members represent the US Forest Service, Bureau of Land Management, Oregon State University Department of Forest Ecosystems and Society, OSU Extension Service, University of Oregon Climate Leadership Institute, University of Washington Climate Impacts Group, Washington State Department of Natural Resources, US Forest Service Pacific Northwest Research Station, and professional foresters. The team, composed of forest management, ecology and other technical specialists, provides an extensive resource of skilled researchers with many years of experience working with POC and the root disease. The membership of the team is sufficient to provide the kinds of technical expertise and range of knowledge needed to advise BLM on the implementation of its RMP.

The DEIS/RMP is defective because it failed to discuss new information about the use of disease resistant POC or identify priority locations for planting disease resistant POC.

With respect to POC the DEIS 265 states "This (Alt A) would also preclude replanting stands with disease-resistant trees, such as rust-resistant sugar pine or root disease-resistant Port-Orford-cedar."

DEIS 959 states: "Apply treatments, including commercial treatments, as needed for treatment of diseases including but not limited to: Port-Orford-cedar root rot disease. Fall and remove trees as needed for riparian restoration projects or stand maintenance, including but not limited to alder or brush field conversions, or for treatment of diseases including but not limited to Port-Orford-cedar root rot disease outbreaks."

Sniezko et al. (2012 abstract) reports: "In 1997, the USDA Forest Service and USDI Bureau of Land Management began a large operational program to develop populations of POC with genetic resistance to *P. lateralis*. With essential ongoing pathology support from Oregon State University, this resistance program has advanced rapidly. The program goal includes developing orchards for production of resistant seed, while maintaining genetic variation and adaptability within the species. Using classical selection and testing techniques, over 12,600 initial field selections have been made, resistance screening protocols refined, 13 breeding zones delineated, field trials established, eight seed orchards started, and resistant seed produced and being used for some breeding zones. Early, short-term testing in the greenhouse of orchard seedlots shows a 30 percent or higher survival than woods-run seedlots. In greenhouse testing, survival among individual susceptible and resistant families varies from 0 to 100 percent, and at least two types of resistance are apparent. Field trials have been established and early results are encouraging, but much longer monitoring is needed to examine a full range of sites for efficacy and durability of resistance under different environments and a changing climate."

http://www.fs.fed.us/psw/publications/documents/psw_gtr240/

The DEIS/RMP is defective because it fails to describe how the RMP will continue implementing the "Operational Program to Develop *Phytophthora lateralis*-Resistant Populations of Port-Orford-cedar (*Chamaecyparis lawsoniana*)" as described by Sniezko et al. 2012. The RMP DEIS also fails to adequately identify priority planting sites of disease resistant POC along critical coho salmon habitat and serpentine streams.

The DEIS/RMP fails to adequately prioritize Invasive Plants and invasive Marijuana Gardens

The highest priority invasive plant is Japanese knotweed because it can displace native riparian reserve vegetation and has almost no wildlife value. Illegal marijuana gardens on public lands are also a high priority for eradication/prevention because "grow areas" also threaten Riparian Reserves due to destruction of native vegetation, water diversions, excessive use of fertilizers, and killing of native animals (including NSO and rare fishers) with rodenticide application**.** Water quality for coho salmon can be degraded.

The DEIS/RMP fails to adequately restrict herbicides

There would be no use of herbicides/pesticides on BLM lands within the Williams Watershed. This means no herbicide use along roadways or for killing common and widely distributed alien species such as Armenian blackberry and meadow knapweed. Difficult species would be controlled by hand pulling or covered.

The BLM Medford District would coordinate with Oregon Department of Forestry, Oregon Department of Agriculture, Josephine County, and private timber land owners to obtain information about the legal location, herbicide type, and date for herbicide spraying in the Williams Watershed. This information would be posted on BLM website and updated each morning. The web site would be for informational purposes only.

Each year, the Medford District would lead one or more tours for the general public, elected officials, agencies, and private timber owners to demonstrate BLM successful regeneration of conifer trees in the Williams Watershed without the use of herbicides or pesticides.

The DEIS/RMP is defective because it failed to identify the Williams Watershed as a key or priority watershed to receive special management identified in the NW Forest Plan Aquatic Conservation Strategy and SONCC Coho Recovery Plan.

The 52,000 acre Williams Creek Watershed is major coho salmon producing tributary to the Applegate River in the Rogue Basin.[1] Annual heavy snowpack on 6,600 ft Big Sugarloaf Peak/Grayback Mountain assures dependable perennial streamflow to support robust fish populations and thriving agriculture. Key spawning 7th field watersheds would be identified through watershed analysis and key spawning/rearing 6th field watersheds would also be identified. Identification of key coho spawning areas would help focus road sediment reduction or wood placement to smaller areas where it would have the most benefit.

<u>The DEIS/RMP fails to identify priorities for active Riparian Reserve Restoration</u>
Restoration would be informed by the Recovery Plan for Southern Oregon Northern California Coastal Evolutionary Unit for Coho salmon.[2]

The DEIS/RMP fails to provide for explicit actions and schedule to reduce sediment from roads
Reducing road densities or reducing the percent of roads connected to the stream network in seventh field and sixth field coho watersheds would be a high priority because lower road densities are correlated with higher coho salmon spawning densities. Logging roads have increased sediment loads in streams up to four times the natural rates. These uncharacteristic rates are harmful to aquatic species. Chronic sediment runoff from road surfaces are shunted into streams via ditches and culverts. Disconnecting the road sediment runoff from the stream system is an effective technique to reduce sediment without having to decommissioning the road. Each year an average of 2% of total system roads would be decommissioned or disconnected from stream network and each year an average of 4% of total non-system roads would be closed and hydrologically obliterated if necessary. The “average" would be a 3 year rolling average.

The DEIS/RMP fails to provide a schedule and quantitative goals to Improve Fish Passage
Roads and other human created structures continue to block passage in many small tributaries in the Williams Watershed. Collaborative efforts with the watershed council, private land owners, and ODFW is a high priority for Riparian Reserve Restoration. Each year a minimum of 2 human created barriers impeding or blocking coho salmon passage will be removed through collaboration with private land owners, if necessary.

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[1] Williams Watershed Analysis.1996. Grants Pass Resource Area- Medford District BLM http://www.blm.gov/or/districts/medford/plans/files/WilliamsWA_acc.pdf

[2] See chapter 31. Recovery Plan for Southern Oregon/Northern California Coast Coho Salmon (Oncohynchuskisutch). National Marine Fisheries Service, Arcata, CA.

The DEIS/RMP fails to provide for actions to restore natural flows
Public lands will be systematically searched for unauthorized water uses. Priority for corrective actions will be along coho streams**.**

The DEIS/RMP fails to provide for active restoration of beaver that are critical for coho recovery.
Beaver were historically common but are now rare in the watershed and mostly limited to private agricultural lands. Beaver create over wintering pools that greatly increases coho production. Low gradient small perennial streams could be opened up with fire or snag creation to be more attractive to beaver. Cuttings of desirable foods could be placed along streams near known colonies to attract beaver. Beaver excluder devices will be used as models to prevent the use of lethal methods.

The DEIS/RMP fails to use the best available science when illogically advocating for commercial thinning along streams.
Thinning is not necessary in natural stands because all sizes of wood is important to the stream and for wildlife. Some first order channel locations may lack wood and be incising or have migrating nickpoints. Small trees could be felled and the tree boles deposited in the stream channel to stabilize headcuts. Trees could also be killed to create snags, ensure future down wood and open up canopy for willow growth desirable to beaver. In any event, all trees over 12 inches dbh within Riparian Reserves would be retained as standing live, snag or down wood. Small trees (<20 " dbh) would be available for recreational facilities such as bridges over streams or fences to keep out OHV.

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USDI BLM/USDA FS 2003. A Range-Wide Assessment of Port-Orford-Cedar (Chamaecyparis lawsoniana) on Federal Lands. http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5316517.pdf

Williams Community Forest Project

Michael Mottice, **Acting State Director** **October 24, 2012**
USDI Bureau of Land Management
Oregon State Office
P.O. Box 2965
Portland, OR 97208
BLM_OR_RMPs_WesternOregon@blm.gov

Re: Williams Community Alternative/ Medford District RMP Revision

Dear Mr. Mottice:

The Williams Community Forest Project (WCFP) works to create and promote ecologically maintained forests in the Williams Creek watershed to serve as a model for future generations and support the Williams community economically, aesthetically and socially.http://www.williamscommunityforestproject.org/ In the spring of 2012, the Williams Citizen Advisory Council (CAC) approved of community members and the Williams Community Forest Project (WCFP) to proceed with developing a "Restoration Alternative" for the BLM Resource Management Plan revisions. (The CAC is part of county land use planning and consists of locally elected citizens that hold public meetings to address land use issues within the Williams watershed. The CAC reports back to the Josephine County planning department and other government agencies about land use activities.)

The WCFP developed the attached "Williams Watershed Community Alternative" (Williams Alternative) for consideration during ongoing BLM Resource Management Plan revisions .Please consider analyzing environmental impacts from some or all aspects of the Williams Watershed Community Alternative within one or more of the action alternatives being developed in the anticipated RMP impact statements. We believe the Williams Alternative could provide the basis for the required "Environmentally Preferable Alternative"(Medford RMP p. 5). The 1995 Medford District RMP is a scientifically sound starting point for RMP revisions but it needs updating due to the listing of coho salmon, cessation of old growth regeneration harvests, and recent science based advances in forest and stream management (i.e. new information).

_____
Cheryl Bruner, President
Claudia Beausoleil, Vice President
Williams Community Forest Project
PO Box 36 | Williams | OR | 97544
541.846.1729

C: Allen Bolschweiller, Dayne Barron, Josephine County Planning, Josephine County Commissioners
Enc: Williams Community Watershed Community Alternative to Revise the 1995 Medford District Resource Management Plan.

Williams Community Watershed Community Alternative to Revise the 1995 Medford District Resource Management Plan

Introduction

The 52,000 acre Williams Creek Watershed is major coho salmon producing tributary to the Applegate River in the Rogue Basin.[1] Annual heavy snowpack on 6,600 ft Big Sugarloaf Peak/Grayback Mountain assures dependable perennial streamflow to support robust fish populations and thriving agriculture. Mature and old growth forests on BLM lands harbor several nesting spotted owls. The vibrant rural community of Williams (population 2,500) is about 15 miles southeast of Grants Pass.

Williams Watershed Community Alternative

We assume the "no action" alternative is the present Medford District 1995 Resource Management Plan[2] (RMP) as amended. The Williams Alternative would merely revise certain aspects of the existing plan (i.e. "no action" alternative) and the forthcoming Medford District RMP would make these revisions explicit for the Williams Watershed.

Vision[3]

Modern land management must recognize that humans have retained an innate affinity for nature, despite being embedded in a modern technological society. Scientists in numerous disciplines have developed a large body of observations and empirical evidence to support the concept of biological values of nature.[4] All forest values are recognized as valid and will be given appropriate environmental analysis followed by balanced management decisions. Forests provide at least nine values that have distinct human functions that are particularly relevant to the Williams community as well as the broader body public.[5]

- *Utilitarian value* is the practical and material exploitation of nature to provide physical sustenance and security.

- *Naturalistic value* is satisfaction derived from direct experience or contact with nature. This engenders curiosity, outdoor skills, as well as mental and physical development.

- *Ecologic-scientific value* is the systematic study of structure, function and relationship in nature that fosters a quest for knowledge, understanding and development of observational skills.

- *Aesthetic value* is the inherent physical appeal and beauty of nature that is inspirational and also provides harmony, peace and security.

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[1] Williams Watershed Analysis.1996. Grants Pass Resource Area- Medford District BLM http://www.blm.gov/or/districts/medford/plans/files/WilliamsWA_acc.pdf

[2] Record of Decision and Resource Management Plan (RMP) 1995 USDI Bureau of Land Management Medford District OR http://www.blm.gov/or/plans/wopr/exrmp/medford/rod.html

[3] RMP 1995:20

[4] *Biophilia* 1984. Edward O. Wilson Cambridge Harvard University Press; The Biological Basis for Human Values of Nature .1992. Stephen R. Kellert. In: *The Biophilia Hypothesis*. S.R. Kellert and E.O. Wilson eds. Island Press ; *A Sand County Almanac: And Sketches Here and There*. 1949. Aldo Leopold; Williams Watershed Analysis. 1996.

[5] The Biological Basis for Human Values of Nature. 1992. Stephen R. Kellert

- *Symbolic value* is the use of nature to communicate with metaphorical expression, language and expressive thought e.g., "water is the life blood of the landscape".

- *Humanistic value* is strong affection, emotional attachment and "love" for nature that results in group bonding, sharing, cooperation, and companionship (e.g., Williams Community Forest Project is an example of the expression of the humanistic value).

- *Moralistic value* is strong affinity, spiritual reverence, and ethical concern for nature. It provides order and meaning in life, kinship, and affiliation ties. (e.g., "its plainly wrong to cut down trees that are hundreds of years old")

- *Dominionistic value* is the mastery, physical control, and dominance of nature and provides purpose for mechanical skills, physical prowess, and ability to subdue. (e.g. fuels managers accomplishing multiple objectives with controlled burns.)

- *Negativistic value* is fear, aversion, alienation from nature and is useful for security, protection, safety. (e.g. "those blackberry thickets could cause your house to burn down").

All public lands regardless of land use allocation will be managed with appropriate consideration for these human values. People will find fulfillment on all public lands, including those that are actively managed because their human relationships with the forest (as based on one or more of the biological values) would be considered in environmental analysis [6] and reflected in decisions. Both managed and unmanaged forests would be expected to be fully functional for all values and none will be dominated by utilitarian values (e.g., past regeneration harvests of mature and old growth forests). The Williams community will be proud of forest management and be supportive of management actions.

The BLM and citizen groups will collaborate with private land owners to demonstrate the effectiveness and acceptance of BLM managed lands (e.g., fuels treatments, sustained timber yield without clear-cutting, yarding without excessive road construction, and successful conifer regeneration without use of herbicides). The goal is to have forests transcend property boundaries and function for the community as a unified whole as they did historically.

Strategy

Forests would be managed with two major land allocations: **Upland Forests and Riparian Reserves.** The Upland Forest designation would replace the current dichotomy of Matrix/Late Successional Reserve. All **Upland Forests** would be managed to provide improved or maintained conditions for late successional species, especially the federally listed spotted owl.

Upland forests would be classified as Dry Forest or Moist Forest based on plant association groups as Illustrated on Figure 3 (p. 14) of Pilot Project Report[7] and Williams Watershed Analysis p. 34. Moist/Dry

[6] §1508.14 Human environment."Human Environment" shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment. §1508.8 Effects… Effects includes ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. (emphasis added)http://ceq.hss.doe.gov/ceq_regulations/Council_on_Environmental_Quality_Regulations.pdf

[7] Southwest Oregon Secretarial Pilot Projects on BLM Lands: Our Experience So Far and Broader Considerations for Long-term Plans. February 15, 2012. K.Norman Johnson and J.F. Franklin. Unpublished Report. http://www.blm.gov/or/resources/forests/index.php

designations are interim and will be refined during watershed analysis. Specific plant association groups would be identified (mapped) during project planning and formally designated in decisions.

Existing **Riparian Reserves are** interim pending a Williams Watershed Analysis update. Watershed Analysis would be updated consistent with Aquatic Conservation Strategy objectives. The updated watershed analysis would establish Riparian Reserves with emphasis on needed recovery actions for the purpose of recovering federally listed coho salmon and restoration/protection of Port Orford cedar. [8]**This means that all vegetation treatment projects will include a purpose and need addressing recovery actions that would result in permanent sediment reductions from roads that impact coho salmon spawning within or below the project road system.** New information indicates that sediment loads from logging roads are at least four times higher than the most severe historic conditions.[9]Coho salmon have not evolved mechanisms to survive these severe sediment loads and they must be reduced. New information correlates higher numbers of spawning coho salmon with lower road densities, so it is imperative to reduce road densities and sediment delivery to streams from roads.[10]

Ecological Principles for Upland Dry Forest Management[11]

The majority of the Williams Creek watershed is in the dry forest category. Dry Forests generally developed with frequent, low- to mixed-severity wildfire regimes. Dry Forests and landscapes typically have been significantly altered by fire exclusion in the last 100 years[12] and by logging in the last 60 years. These effects have fundamentally altered the Dry Forests of the Middle Applegate, increasing their density and dominance by conifers, putting competitive pressures on old conifers and hardwoods, and reducing forest heterogeneity. The silvicultural prescription is designed to begin reversing the ecological effects of these past policies and increasing the ability of these forests to survive and flourish in the future.

Dry Forest management would involve a two step planning process for 5th field watersheds such as the Williams Creek Watershed.

First step is identification of landscape-level protection (deferred) designations in the RMP and prioritize the type and location treatments.

1) A minimum of 30% of the forested watershed (public plus private) would be retained on public lands in larger, dense closed-canopy patches to meet needs of the Northern Spotted Owl (NSO) and other

[8]See chapter 31 in National Marine Fisheries Service 2012. Public Draft recovery Plan for Southern Oregon/Northern California Coast Coho Salmon (Oncohynchuskisutch). National Marine Fisheries Service, Arcata, CA. http://swr.nmfs.noaa.gov/recovery/soncc_draft/SONCC_Coho_DRAFT_Recovery_Plan_January_2012.htm

[9]Colombaroli, D. and D. G. Gavin 2010. Highly episodic fire and erosion regime over the past 2,000 y in the Siskiyou Mountains, Oregon. Proceedings of the National Academy of Science.Vol107no.4418909-18914 http://www.pnas.org/content/107/44/18909.short

[10]Firman, J.C., E. Ashley Steel and 6 others. 2011. Landscape Models of Adult Coho Salmon Density Examined at Four Spatial Extents. Transactions of the American Fisheries Society 140:440-455.

[11] The term "restoration" is not used because it presupposes an unwarranted return to historic conditions rather than being forward looking with a novel management technique. Timber harvest is intended to "release" desirable plants from unwanted competition not "restore" them. See Johnson,K.N. and J.F. Franklin. 2012. Southwest Oregon Secretarial Pilot Projects on BLM Lands: Our Experience so Far and Broader Considerations for Long-term Plans http://www.blm.gov/or/news/files/pilot-report-feb2012.pdf; and Johnson, K.N. and J.F. Franklin. 2009. Restoration of Federal Forests in the Pacific Northwest: Strategies and Management Implications for additional Dry Forest techniques.

[12]Some scientists assert that historical data suggests current tree densities occurred in the past and fire suppression is simply allowing ecological succession to proceed unhindered. Baker. W. 2011. Reconstruction of the Historical Composition and Structure of Forests in the Middle Applegate Area, Oregon, using the General Land Office Surveys, and Implications for the Pilot Joe Project.

dense-forest related species and processes.[13] Private or county lands in conservation easements may also contribute towards the 30% standard. Patches straddling adjacent watershed boundaries would be considered for inclusion but only the area within the Williams Watershed would "count" towards the 30% minimum. The boundaries of deferred areas would not change during the life of the RMP (i.e. protected areas locations would not change for successive project level planning efforts).These protected areas would have no commercial or non-commercial forest vegetation management treatments (including no salvage) during the life of the RMP except for fuels treatment/hazard tree removal along roads.

2) Prioritize silivicultural treatments within the remaining landscape, with the highest priority being areas where treatments would reduce threats to the retained (deferred) dense forest patches. While these retained dense patches will eventually be lost to wildfire, insects, or timber harvest over time and require replacement, a thoughtful treatment strategy can lengthen their "hang time" and prepare other patches to provide that replacement habitat.

Non-commercial treatments would be prioritized primarily on spatial considerations (e.g. along roads, ridges, areas adjacent to spotted owl patches). Commercial treatments would be prioritized based on the forest stand's relative value to late successional wildlife and wildfire risk. This means that plantations (lowest value to wildlife and highest wildfire risk) would be highest priority, followed by oak woodlands, young natural conifer stands (<80 years), early mature natural conifer stands (80-120 years),mid mature natural conifer stands 120-160, late mature natural conifer stands 160-200 years, and old growth >200 years. Age and stand types would be identified in an updated Williams Watershed Analysis. Trees judged to be >100 years or older would be retained in treated stands 120 years and younger. Trees judged to be > 150 years would be retained in treated stands >160 years. A minimum of 20 live trees>20"dbh/acre would be retained in all treated units.

A publicly available GIS would be developed to track individual stand treatment history and be programmed to adjust stand age through time. An accepted methodology for computing stand age would be fully described in an RMP Appendix.

In treated conifer stands, densities will be reduced by almost 40%, while creating much more spatial heterogeneity through leaving trees in clumps and patches and creating small openings. Variable density thinning would have 15% skips (no treatment) and 15% gaps (heavy treatment causing regeneration). The principal "cut" tree would be small Douglas-fir/white fir and some large trees up to 30"dbh. The timber volume from large trees would not exceed 35% on any unit. Maximum gap size in spotted owl habitat would be ¾ acre and up to 2 acres elsewhere, however, most gaps would be <1 acre even in non-owl habitat. Gaps would be separated by a minimum of 150 ft. Skips would be primarily located in Riparian Reserves or swales. Maximum basal area reductions in mature stands would be 40%. Further basal area reductions in natural mature conifer stands could occur a minimum of ten years post treatment.

Thinned acres will have reduced future snags. Active mitigation measures are needed to create decadence.[14]Unwanted trees >30 dbh would be killed for snag development or felled and left on site. At

[13] Identification of deferred areas would be subject to review during draft EIS phase.

[14] J.F. Franklin, R.J. Mitchell, B.J. Palik. 2007. Natural Disturbance and Stand Development Principles for Ecological Forestry. USDA Forest Service /Northern Research Station. GTR NRS-19

least 1 large tree/acre on average will be selected for retention based on deformities or poor vigor indicating imminent death. One to five years after treatments, the thinned stands will be evaluated for snag densities. Units lacking large snags will have active management to create snag clusters within units.

Oak woodlands and pine- oak stands would have heavy conifer removal or snag creation of encroaching Douglas-fir (generally remove all trees<150 years) and treat edges to expand the deciduous oak stand to its former spatial extent. Shrubs would be radially thinned around larger oaks. A minimum of 15% of shrub cover would be retained. Shrubs would be retained along and adjacent to perennial water sources. All deciduous oaks would be retained and all other broad leaved trees >4"dbh would be retained. Subsequent controlled burning would be expected to kill some of the smaller broad leaved trees. Broad leaved trees and shade intolerant conifer trees would be released along roads and along natural or created openings by removing competing firs, similar to radial thinning. The permanent opening along roads will ensure these shade intolerant trees are not shaded out by firs in the future.

Most fuels treatments would be strategically placed along roads, on ridges, adjacent spotted owl patches, and adjacent tax lots with dwellings. Conifers up to 8 inches dbh could be cut. Broad leaved trees up to 4 inches dbh could be cut. All white oaks, riparian species, and uncommon species would be retained (elderberry, dogwood, scouler willow, maple, alder, cottonwood, etc). Fuels treatment units would be strategically placed to provide for easily controlled burning units. At least 50 controlled burning units would be programmed across the watershed primarily in areas dominated by oak and pine that obviously had historic fire at frequent intervals. Approximately ten percent of these units would be randomly burned each year creating a mosaic of burned and unburned areas with variable amounts and stages of regrowth. At least 15% of fuel treatment areas would be untreated areas dominated by shrubs that would be outside controlled burn patches. These protected shrub areas would be along draws or around perennial springs.

Ecological Principles for Upland Moist Forest Management[15]

Small portions of the Williams Creek watershed at high elevations are white fir plant association groups designated Moist Forests.[16]Moist Forest sites are typically more productive due to better developed soils and extended soil moisture. Existing old-growth forests on moist sites generally have retained their historic structure and composition and silvicultural treatments are not required for their conservation. Priorities for commercial treatment of Moist Forests would be the same as for Dry Forests (above) except that Moist Forest stands >160 years stand age would not be commercially treated (thinned). Plantations currently maturing where Moist Forests previously grew would be candidates for Variable Retention treatments that would cut 70%-85% of the stand and retain 15%-30% in strategic

[15]The term "restoration" is not used because it presupposes an unwarranted return to historic conditions rather than being forward looking with a novel management technique. Timber harvest is intended to "release" desirable plants from unwanted competition not "restore" them. See Johnson, K.N. and J.F. Franklin. 2012. Southwest Oregon Secretarial Pilot Projects on BLM Lands: Our Experience so Far and Broader Considerations for Long-term Plans http://www.blm.gov/or/news/files/pilot-report-feb2012.pdf; and Johnson, K.N. and J.F. Franklin. 2009. Restoration of Federal Forests in the Pacific Northwest: Strategies and Management Implications for additional Dry Forest techniques.

[16]Johnson and Franklin 2012 Fig. 3 p. 14; Williams Watershed Analysis p. 35.

patches.[17]Variable retention harvest would be designed to have natural conifer regeneration over time (forest renewal) with desirable early successional shrub and herbs dominating 70%- 85% of the treatment for at least a decade. Variable Retention harvest would be prohibited in natural Moist Forest stands until there is social acceptance by the community and long term ecological monitoring data demonstrating wildlife/plant benefits from this harvest technique in plantations.

Riparian Reserve Forests

Riparian Reserve forests are fundamentally different than upland forests (dry/moist stands) and require much different management priorities because they contain stream channels that require special protection and offsite restoration measures for roads to reduce sediment pollution. Natural erosion potential is high along and within stream channels due to floods and adjacent steep hill slopes are prone to mass wasting. Soils and micro climates are generally more productive than adjacent upland areas and Riparian Reserve forests are less prone to stand replacing fires. Requirements for down wood within and adjacent stream channels are much higher than in upland forests. In general, Riparian Reserves that interpenetrate Dry Forests are in much better condition to resist drought, fire, and insect attack. Riparian Reserve forests have much higher wildlife value because of generally higher riparian plant species diversity (e.g. Port Orford Cedar, alder, willows etc.), proximity to water, and complex structural features (e.g., stream channels, debris jams, floodplains). But most of all, Riparian Reserve forests contain large numbers of aquatic species, from aquatic insects to keystone species such as beaver and threatened coho salmon. Riparian Reserve forests and streams are the most ecologically diverse and most valuable component of a watershed. The principal focus for Riparian Reserve management is recovery of federally listed coho salmon.

Key Watersheds

The Williams Watershed would be designated a key watershed and receive special management identified in the Aquatic Conservation Strategy. In addition, key spawning 7th field watersheds would be identified through watershed analysis and key spawning/rearing 6th field watersheds would also be identified. Identification of key coho spawning areas would help focus road sediment reduction or wood placement to smaller areas where it would have the most benefit.

Riparian Reserve Restoration

Restoration would be informed by draft Recovery Plan for Southern Oregon Northern California Coastal Evolutionary Unit for Coho salmon.[18]

Reduce Sediment From Roads

Reducing road densities or reducing the percent of roads connected to the stream network in seventh field and sixth field coho watersheds would be a high priority because lower road densities are correlated with higher coho salmon spawning densities. Logging roads have increased sediment loads in streams up to four times the natural rates. These uncharacteristic rates are harmful to aquatic species. Chronic sediment runoff from road surfaces are shunted into streams via ditches and culverts. Disconnecting the road sediment runoff from the stream system is an effective technique to reduce sediment without having to decommissioning the road. Each year an average of 2% of total system

[17]J.F. Franklin, R.J. Mitchell, B.J. Palik. 2007 p. 25-29;Johnson and Franklin 2012 p. 15,19

[18]See chapter 31. Public Draft recovery Plan for Southern Oregon/Northern California Coast Coho Salmon (Oncohynchuskisutch). National Marine Fisheries Service, Arcata, CA. http://swr.nmfs.noaa.gov/recovery/soncc_draft/SONCC_Coho_DRAFT_Recovery_Plan_January_2012.htm

roads would be decommissioned or disconnected from stream network and each year an average of 4% of total non-system roads would be closed and hydrologically obliterated if necessary. The "average" would be a 3 year rolling average.

Improve Fish Passage
Roads and other human created structures continue to block passage in many small tributaries in the Williams Watershed. Collaborative efforts with the watershed council, private land owners, and ODFW is a high priority for Riparian Reserve Restoration. Each year a minimum of 2 human created barriers impeding or blocking coho salmon passage will be removed through collaboration with private land owners, if necessary.

Restore Natural Flows
Public lands will be systematically searched for unauthorized water uses. Priority for corrective actions will be along coho streams**.**

Restore Beaver
Beaver were historically common but are now rare in the watershed and mostly limited to private agricultural lands. Beaver create over wintering pools that greatly increases coho production. Low gradient small perennial streams could be opened up with fire or snag creation to be more attractive to beaver. Cuttings of desirable foods could be placed along streams near known colonies to attract beaver. Beaver excluder devices will be used as models to prevent the use lethal methods.

Thinning
Thinning is not necessary in natural stands because all sizes of wood is important to the stream and for wildlife. Some first order channel locations may lack wood and be incising or have migrating nickpoints. Small trees could be felled and the tree boles deposited in the stream channel to stabilize headcuts. Trees could also be killed to create snags, ensure future down wood and open up canopy for willow growth desirable to beaver. In any event, all trees over 12 inches dbh within Riparian Reserves would be retained as standing live, snag or down wood. Small trees (<20 " dbh) would be available for recreational facilities such as bridges over streams or fences to keep out OHV.

Chaparral

Areas dominated by native shrubs do not benefit from large scale eradication with fuels treatment.[19] Fuels treatment in shrub dominated areas would be limited to removal along roads, ridges and radial removal around large trees such as oaks and pines. Small scale gaps of less than 1 acre would be appropriate in large continuous patches of >5 acres.

Roads

Construction of permanent roads> 0.1 mile would be prohibited except for access to private property. Generally temporary roads would be constructed on pre-existing road prisms and not be >1.0 mile in length. New temp road prisms would be on stable slopes less than 35% and not be >0.5 mile in length. New road beds (temp plus permanent) would not exceed 1 mile total for any single project. Temporary

[19]Duren, O.C., and P.S. Muir. 2010. Does fuels management accomplish restoration in southwest Oregon, USA, chaparral? Insights from age structure. Fire Ecology 6(2): 76-96. doi: 10.4996/fireecology.0602076

roads would be hydrologically obliterated after use to restore natural drainage patterns, prevent stream capture of road surface, and OHV use would be improbable.

Cross country motorized travel is prohibited except by permit (e.g. motorized access for fuels treatment, timber harvest etc.). Public motorized use is limited to system roads on transportation plan. Maps illustrating roads open to motorized use and motorized campsites would be available at no charge to the public. User created routes and routes not on transportation plan would be systematically signed, blocked to access or hydrologically obliterated and revegetated. Motorized access to camp sites along perennial streams would be prohibited except where designated with signs and symbols on motorized use map.

Trails

Approximately 10 miles of user created hiking routes would be identified by the WCFP. These routes would be reconstructed to meet hiking trail standards and incorporated into the numbered trail system.

Invasive Plants and Marijuana Gardens

The highest priority invasive plant is Japanese knotweed because it can displace native riparian reserve vegetation and has almost no wildlife value. Illegal marijuana gardens on public lands are also a high priority for eradication/prevention because "grow areas" also threaten Riparian Reserves due to destruction of native vegetation, water diversions, excessive use of fertilizers, and killing of native animals (including rare fishers) with rodenticide application**.** Water quality for coho salmon can be degraded.

Herbicides

There would be no use of herbicides/pesticides on BLM lands within the Williams Watershed. This means no herbicide use along roadways or for killing common and widely distributed alien species such as Armenian blackberry and meadow knapweed. Difficult species would be controlled by hand pulling or covered.

The BLM Medford District would coordinate with Oregon Department of Forestry, Oregon Department of Agriculture, Josephine County, and private timber land owners to obtain information about the legal location, herbicide type, and date for herbicide spraying in the Williams Watershed. This information would be posted on BLM website and updated each morning. The web site would be for informational purposes only.

Each year, the Medford District would lead one or more tours for the general public, elected officials, agencies, and private timber owners to demonstrate BLM successful regeneration of conifer trees in the Williams Watershed without the use of herbicides or pesticides.

Port Orford Cedar[20]

Port Orford Cedar (POC) is an ecologically and economically valuable conifer that mainly grows in Riparian Reserves.[21] Logging and a virulent disease (*Phytopthoralateralis*) (PL) has caused high rates of mortality and reduced its ability to provide shade, streambank stability, and future large wood for

[20] Williams Watershed Analysis p.39
[21] Williams Watershed Analysis p.10

streams. Studies have shown that the disease follows the expansion of logging roads: more roads more disease spread.[22] Existing POC gates would be renovated and additional roads closed to public access either seasonally or permanently. Coordination with private land owners is needed because there are no prohibitions to protect POC in the Oregon Forest Practices Act. Sanitation techniques would remove small POC (<8" dbh) along roads in conjunction with strategic fuels reductions and larger trees (up to 20"dbh) could only be felled at stream crossings in Riparian Reserves/ high risk sites. Stewardship contracting and volunteers would underplant disease resistant trees in coho critical habitat and along other perennial streams and at springs.

Burn Piles

Soil damage, toxic fumes, and wildlife losses is minimized through several practices. The use of plastic in conjunction with burn piles is prohibited on all BLM lands and BLM contracts within the Williams Creek Watershed. Burn piles within units would be a maximum of 7 ft diameter. In areas with heavy activity fuels or fuels treatment, burn piles would be hand fed with adjacent ground fuels to reduce the number of piles and ensure that burn pile fires do not escape. Pile burned soils would be inoculated with adjacent unburned soil to encourage native species colonization.[23] At least 2 burn piles per acre on average would be marked for retention to benefit wildlife (e.g. a 80 acre unit would mark 160 piles for retention). No piles would be marked for retention within 200 ft of private property. Biochar techniques would be used experimentally with the goal of reducing soil damage.

No Treatment Areas

All potentially damaging vegetation treatment activities would include no treatment patches within management units. No treatment patches would be a minimum of 15% of treatment area. Citizens and citizen groups that use forest products (mushrooms, berries, herbs, boughs, needles, etc), hike recreational trails or have other nature based needs would be consulted during project development as to their desires for location of no treatment patches within treatment areas.

No Treatment Buffer Adjacent Private Clearcuts

Clear-cutting on private land would be managed as a "gap". Private land clearcuts would be buffered with a ¼ mile no veg treatment zone for ten years post private land clear-cutting to provide dense habitat for displaced animals. No treatment buffers would be instituted retrospectively.

Watershed Limits on Annual Cumulative Vegetative Disturbance

Cumulative watershed forest vegetative disturbance (natural and planned) would be limited to 3% per year. The base would include public and private forest lands. A GIS would compute 3 year rolling averages to forecast future percents and inform managers to reduce vegetative disturbance when the standard is exceeded.

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[22] Jules, E.S. , M.J. Kauffman, W.D. Ritts, and A. L. Carroll. 2002. Spread of an invasive pathogen over a variable landscape: A nonnative rot on Port Oxford cedar. Ecology 83(11) pp.3167-3181.

[23] Korb, J. E., N.C. Johnson, and W.W. Covington. Slash Pile Burning Effects on Soil Biotic and Chemical Properties and Plant Establishment; Recommendations for Amelioration. Restoration Ecology 12(1): 52-62

Integrated Vegetation Management

The anticipated programmatic Medford District decision regarding Integrated Vegetation Management would be incorporated by reference. When differing standards or restrictions are encountered due to multiple or overlapping plans, the most environmentally restrictive standard would apply.

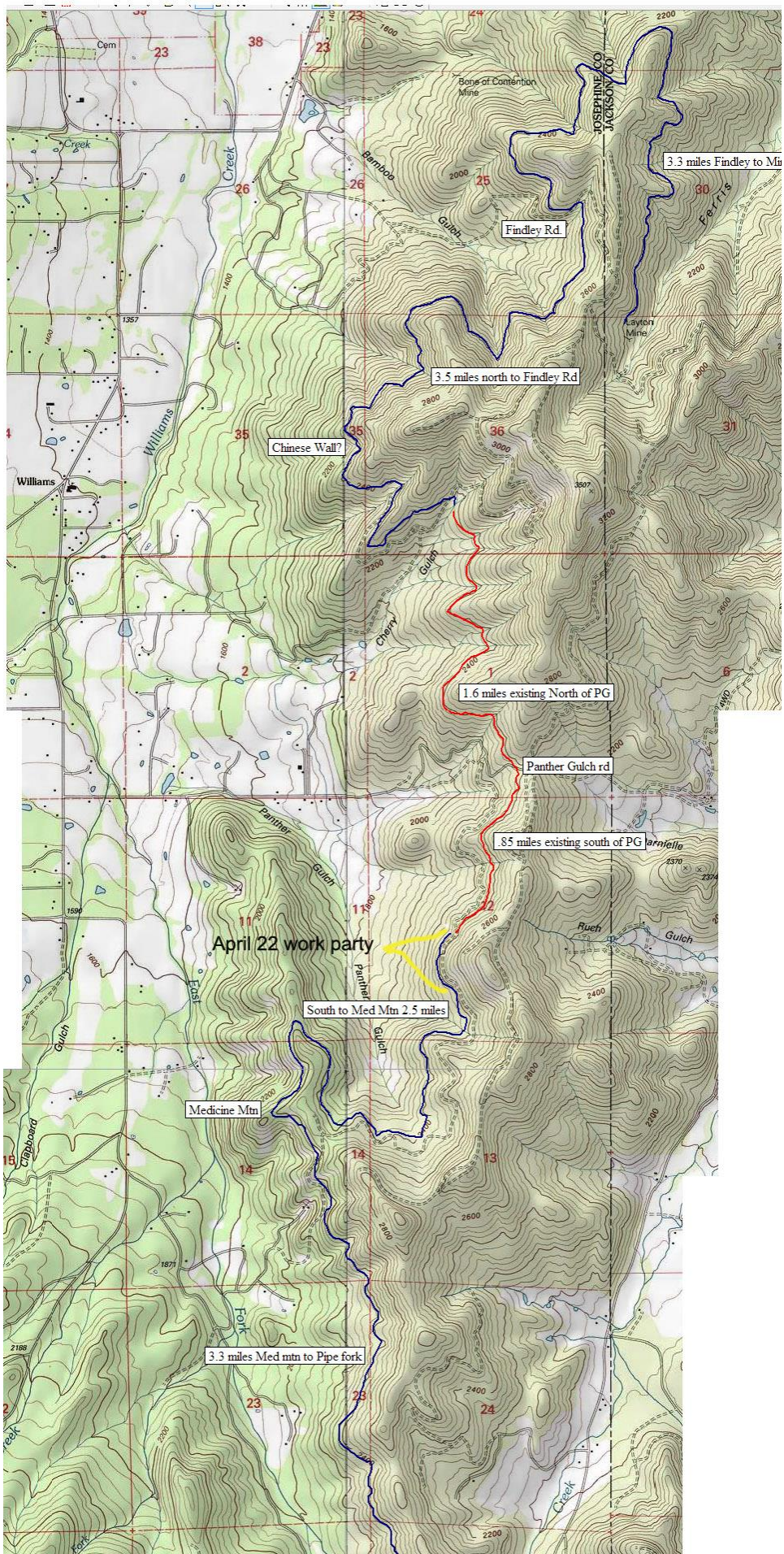
Stewardship Contracting

Stewardship contracting will be pursued annually in the Williams Watershed through collaboration with local citizen groups and will emphasize ecological forestry techniques, road remediation, solid waste cleanup, fuels treatment, Port Orford cedar restoration, and invasive weed control.

Monitoring

Each year the BLM would invite citizen groups and individuals to be involved with monitoring. Citizen monitoring would be supplemental to required monitoring that would be accomplished through standard budgeting or stewardship contracting. Streams, water quality, fish, wildlife, forests would be priorities for monitoring. Annual data collected from the Williams Watershed would be made available to the public via a website. An annual monitoring protocol would be developed with other agencies and groups active within the watershed to identify specific monitoring sites and frequency of monitoring. An annual report would summarize all data, especially plot data and tree growth trends from treated units.

Adult coho salmon would be counted annually in previously identified ODFW spawner stream reaches. Additional adult coho counts would be in selected 7th field BLM watershed. Pacific Lamprey juveniles would be monitored. Water quality parameters temperature, turbidity, fine sediment and flow would be monitored annually. Beaver dam locations and activity would be mapped annually. Suspected fish migration barriers would be monitored with juvenile counts. Data would be collected at existing Firemon plots and new ones established in oak woodlands and other under represented plant association groups. Tree size, species, numbers, growth rate, and survival data would be reported. Snag counts would be established with 1 acre plots at Firemon plots. Chanterelle and matsutake plots would be monitored. Barred owls, spotted owls, great grey owls, and goshawks would be monitored annually. Bird point counts would be established in treatment areas and along streams with gallinaceous and migratory birds being focal species (California quail, mountain quail, sooty grouse, roughed grouse, warblers). Remote motion cameras and track plates would detect rare animals such as fishers, martens and wolverin**es.**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April 22 work party
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Medicine Mtn
3.3 miles Med mtn to Pipe fork
Bone of Contention Mine
Layton Mine
Williams
JOSEPHINE CO
JACKSON CO
Bamboo Gulch
Cherry Gulch
Panther Gulch
East Fork
Ferris
Williams Creek
Ruch Gulch
Clapboard Gulch

Can Portable Pyrolysis Units Make Biomass Utilization Affordable While Using Bio-Char to Enhance Soil Productivity and Sequester Carbon?

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Abstract—We describe a portable pyrolysis system for bioenergy production from forest biomass that minimizes long-distance transport costs and provides for nutrient return and long-term soil carbon storage. The cost for transporting biomass to conversion facilities is a major impediment to utilizing forest biomass. If forest biomass could be converted into bio-oil in the field, it may be more profitable to utilize forest biomass for bioenergy. Bio-oil can substitute for fuel oil, or be used as a crude oil and further refined into additional products. Transporting energy-dense bio-oil is more cost effective than transporting bulky, low-value biomass. In-woods pyrolysis can also address concerns over removing nutrients and carbon from forest sites through reapplication of bio-char, a pyrolysis byproduct, which is equivalent to the charcoal found in all fire ecosystems. Bio-char is 70-80 percent carbon and retains most nutrients contained in biomass. It can be used as a soil amendment to enhance soil productivity through a liming effect, which improves cation exchange capacity and base saturation, increasing anion availability, improving water holding capacity and decreasing bulk density. Charcoal is known to remain stable in soils for hundreds to thousands of years. Long charcoal residence times provide a way to quickly sequester atmospheric carbon by assimilating it into a recalcitrant form that can be applied to soils. In total the portable pyrolysis approach has the potential to improve the economic efficiency of biomass removal from overstocked forests through the in-woods conversion of biomass to bio-oil that avoids the costs and emissions of transportation to central facilities. Bio-char can be returned to the forest economically if pyrolysis occurs at or near the site of biomass removal. Reapplication of bio-char will sequester carbon in soil and may enhance site productivity.

Keywords: bioenergy, bio-oil, carbon sequestration, fuels reduction, soil productivity

In: Jain, Theresa B.; Graham, Russell T.; and Sandquist, Jonathan, tech. eds. 2010. Integrated management of carbon sequestration and biomass utilization opportunities in a changing climate: Proceedings of the 2009 National Silviculture Workshop; 2009 June 15-18; Boise, ID. Proceedings RMRS-P-61. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 351 p.

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Introduction

Forest biomass accumulation is both a problem and an opportunity. Increasing forest biomass is a consequence of continuous forest growth, effective fire suppression tactics, lack of harvest activities, and other management practices. Young growing forest stands quickly become overstocked with numerous small diameter tree stems, slowing individual tree growth and causing stem exclusion processes to initiate (Oliver and Larson 1990). Prior to implementing effective fire suppression tactics, some fire-adapted ecosystems (i.e. low-elevation, frequent fire regime forests), burned regularly, often as cooler understory fires or moderate severity fires that served to limit biomass accumulation, release nutrients

and improve stand vigor (Agee 1996; Stanturf and others 2002). Pre-commercial thinning is also used to restore ecological function (Thibodeau and others 2000). Without frequent burning or thinning such overstocked forests contain abundant ground level biomass and experience considerable mortality of subordinate trees as dominant stems emerge. This fuel buildup has resulted in high-severity stand replacing fires, which captures the attention of those living in developments at the wild land interface. As a consequence of increasing wildfire occurrence and intensity, public land managers in fire-prone areas have once again begun to thin overstocked stands with a focus on fuels reduction, even though the area actually being treated is small relative to that in need of treatment.

Removed biomass adds to the equally large volume of biomass that is commonly found at landings of logging operations where whole-tree yarding is practiced (Perlack and others 2005). This accumulated biomass from thinning and harvesting practices is typically flared to avoid continued risk of fire as the slash piles dry. Onsite flaring releases greenhouse gases, energy and carbon captured by natural forest processes, and concentrates nutrients at burn pile locations.

Opportunity for Bioenergy

Utilization of biomass offers a potential solution to the problem of hazard fuel accumulation. Developing markets for biomass may provide managers and land owners a way to achieve management objectives if forest operators have a viable opportunity to sell biomass and land managers have the ability to contract for product removal. Potential markets for biomass utilization include products such as small-wood furniture and structures, garden mulch, bioenergy, chemicals, and other products (Hakkila 1989; LeVan-Green and Livingston 2003). Of particular interest at this time is abundant energy contained in biomass that can be tapped as an alternative to fossil fuels and avoid greenhouse gas emissions. Bioenergy production is most attractive when fossil fuel energy prices increase, but as greenhouse gas emissions become an increasing concern it also causes us to look for alternative, renewable and low emissions energy sources. Bioenergy production from forests may meet that need. It is particularly interesting with the coincident occurrence of enhanced energy security needs, requirements to reduce emissions of carbon, and the requirement to remove biomass from forest stands.

Biomass utilization for bioenergy has a long history. Much of the nation's energy needs were met by wood fuel prior to widespread use of coal and petroleum. Even now it is common to find combined heat and power production operations where there are abundant biomass supplies such as in pulp mills and lumber yards. Recent interest has also been spurred by government programs promoting alternatives such as heat for schools, prisons, hospitals, etc. (Richter and others 2009). Even with this level of utilization, there is still over 300 million tons of unused biomass coming available annually nationwide (Perlack and others 2005). However, adoption of bioenergy production practices typically occurs only where there is a ready biomass supply on site, such as forest product facilities, or where modest feedstock requirements are met within close proximity to the energy conversion facility, such as a low-demand educational heating facility in a forested region.

The importance of the biomass supply being localized to minimize transport costs cannot be overstated. While there are significant costs for biomass removal, those costs may be exceeded by revenue gained through the sale of that material to a local conversion facility (Evans 2008). However, delivery to distant conversion facilities frequently causes the delivered cost to exceed revenues making the biomass utilization process economically unviable (Stokes and others 1993).

Consequently, despite abundant supply, biomass is commonly not removed for utilization due to expenditures exceeding potential revenues and instead is cut, piled and burned at significant expense and with important consequences to consider.

Biomass Disposal Concerns

Both off- and on-site consequences occur from pile-burning biomass. Dried biomass is about 50 percent carbon and when biomass slash piles are flared that carbon is oxidized and released back to the atmosphere as carbon dioxide or other organic compounds. Such disposal is questionable in light of efforts to reduce greenhouse gas emissions and sequester carbon. In addition to volatilizing carbon, other essential plant nutrients are also lost from the site by burning. These losses include several processes such as oxidation, vaporization, convective ash losses, leaching and erosion (Fisher and Binkley 2000). The two main inorganic nutrients lost to oxidation are nitrogen and sulfur, which are typically released as air pollutants in the smoke produced by open-air burning. Phosphorous can also be lost, but in lower quantities than nitrogen and sulfur. In hot fires, such as in well seasoned slash piles, oxidative losses of nitrogen can be 25-65 percent and for sulfur they can be 25-90 percent. These nutrients are frequently growth limiting in forest environments (Fox and others 2007; Kishchuk and Brockley 2002), so it is equally unwise to cause such losses rather than conserving onsite stores. Nutrients are also lost from site in smoke emissions. Convective losses of particulates occur during burning that contain the full range of mineral nutrients found in biomass, many of which are concentrated in ash (Fisher and Binkley 2000). Finally, other pollutants including particulates, carbon monoxide, and a variety of volatile aromatic carbon compounds are also released in smoke (U.S. National Research Council 2004). These pollutants are typically regulated in urban and agricultural areas requiring permits to release. Smoke management procedures are also in place to limit forest biomass pile burning to favorable atmospheric conditions (e.g. http://www.smokemu.org/).

Piling and burning slash concentrates nutrients in the fire ring, which may lead to lower average site productivity. The site preparation practice of shearing, piling and burning was discontinued in southern pine plantations after it was recognized that the redistribution of nutrients resulted in productivity declines (Carter and Foster 2006). Similar results were observed in other regions (Binkley 1986), some of which may be explained by topsoil displacement as well as biomass redistribution. Regardless, the concentration of biomass into piles and release of nutrients localizes nutrients and can potentially saturate nutrient exchange capacity in the burned area, leading to greater leaching loss.

While utilization of abundant forest biomass for bioenergy is appealing, it too may result in removal of nutrients from sites. Environmental critics of forest bioenergy production systems frequently cite the concern of nutrient removal and over-exploitation of the resource as an expected negative consequence of biomass harvesting for energy production (Kimmins 1997). We know from timber harvesting that bole-only removal has an undetectable impact on the regrowth of subsequent forest stands; however, if we remove whole trees from nutrient poor sites, impacts on growth of the next forest rotation have been detected (Kimmins 2004). More certainly we know that removing litter and displacing soil will have significant impact on the next rotation (Fleming and others 2006; Van Miegroet and Johnson 2009). But we have little or no information on the impacts of removing small diameter biomass material, such as tops, branches and needles that contain high concentrations of nutrients (Evans 2008; Palviainen and others 2004). We do not know if those removals will impact subsequent forest

productivity, but it will likely depend on the inherent site quality, the frequency and intensity of harvest and the ability of the site to replenish nutrients removed (Kimmins 2004). The forest system is resilient and maintains large stocks of nutrients that, given adequate time, can meet the requirements of forest growth, but an accelerated frequency of removal may exceed the replenishment capacity. Consequently, there is an urgent need to understand the implications of biomass removal. A sustained bioenergy production system might include removing the energy and not the nutrients, or returning the nutrients after energy is extracted from the biomass.

Pyrolytic Biomass Conversion Solution

Both profit and sustainability are essential where financial analysis controls the viability of alternative energy projects and the feedstock derives from venerated forested ecosystems. The mobile fast pyrolysis bioenergy production system (Badger and Fransham 2006) may be one approach to profitable and sustainable biomass utilization. The mobile pyrolysis unit has potential to cover the cost of biomass removal through the production of a crude oil product known as "bio-oil" that has higher density and energy content than biomass. In addition to the bio-oil, there is also a "bio-char" byproduct that has market value of its own, but might best be used by returning it to the site of energy extraction as a soil amendment and as a means of soil carbon sequestration. Such an approach has recently been advocated for agricultural systems (Laird 2008; Lehmann and others 2006), but it makes even greater sense for forest ecosystems when the bio-char is produced at and immediately returned to the site of energy extraction.

Table 1 shows value comparisons for fast-pyrolysis products. The pyrolysis actually has three product phases: gas, liquid and solid (Bridgwater 2004). The flammable gas is used to fuel the pyrolysis process in a self sustaining combustion. So although in some situations the heating value of the gas can be quantified as a product, in this case it provides the energy for producing the other products. The gas amounts to ~48 percent of the energy in dry wood (Raveendran and Ganesh 1996). The bio-oil is the liquid phase product and fast pyrolysis will produce more than 120 gallons per dry ton of biomass (Mohan and others 2006). We determined the value of bio-oil by comparing it to substitute market products. Bio-oil is discounted by 60 percent in this analysis to account for the lower heating value relative to the petroleum products. Minor furnace or boiler modifications are also

Table 1—Value of pyrolysis products from one air dry ton of biomass.

1. Syngas (fuel for Pyrolysis)
2. Bio-oil = 120 gal of bio-oil
   - $64 ($0.89 / gal[1] Bunker Fuel Houston, TX, Bunkerworld.com)
   - $94 ($1.30 / gal[1] Wholesale fuel oil, tonto.eia.doe.gov)
3. Bio-char = 500 lbs of bio-char
   - $65 ($260/ton, author market survey)
   - $9-$18 ($35-$70 / ton[1] EU carbon trading EU ETS, www.pointcarbon.com)

One ton Forest Biomass = $73-$159 (sum of bio-oil and bio-char products

[1] Prices as of 20 April 2009

required in handling and burner/boiler design to allow for unique chemical and physical bio-oil properties (Mohan and others 2006). This comparison gives a value of $64 - $78 of bio-oil produced per dry ton of biomass. The third product of pyrolysis is the solid bio-char and it is similarly valued by substitute market products. Bio-char can be sold for horticulture or barbeque charcoal at a value of ~$65 of bio-char per dry ton of biomass. Although bio-char does have this wholesale market, the real benefit of the bio-char produced from forest biomass using a portable pyrolyis unit might be in leaving it on the site from where the biomass was extracted and using it for soil conditioning and carbon sequestration. As with biomass, the bio-char is a low-density, bulky material (0.35 specific gravity, (Antal and Gronli 2003)) and transport cost may overcome the value and favor leaving it on site. Carbon sequestration might provide a value of $9 and $18 per air dry ton. If ten air dry tons of biomass can be removed from an acre, the potential market value of bio-oil plus bio-char might result in revenue of $730 to $1430 per acre. In comparison to the median cost of biomass removal of $625 per acre (Evans 2008), there appears to be a reasonable potential for profit considering production, relocation, and transport costs must still be accounted.

One of the key features of the mobile pyrolysis approach is the ability to take the conversion unit to the biomass source and avoid biomass transport. In-woods pyrolysis operations allows us to convert biomass into an energy rich high-density bio oil. Transporting a value-added high-density product not only decreases transportation costs, but also decreases fossil fuel emissions required for transport. Therefore, life-cycle analysis is another aspect of the portable vs. centralized pyrolysis plant for which accounting should occur.

The capital and operating costs of small scale conversion units are high relative to larger units (Bridgwater 2004). Greater efficiencies are created by using higher capacity pre-processing and handling equipment: relatively fewer personnel requirements, lower maintenance and greater operating hours per year. For instance, moving the mobile pyrolysis unit into the woods, conducting startup procedures, consuming available biomass, shutting down and relocating may have a significant impact on operating efficiency. It is likely that the portable pyrolysis unit will be located at a single central location within one or more project area(s) and operated at that one location for considerable time, requiring minimal transport of biomass, but still incurring some short-distance biomass transport costs. Consequently, mobile pyrolysis units have both the advantage of limiting transport distance over that of the centralized fixed-location conversion facility and the disadvantage of having greater capital, operating, and relocation costs. Our research is evaluating these operational and economic tradeoffs.

Figure 1 demonstrates the hypothetical operating range of mobile pyrolysis units within the Umpqua and Willamette National Forest woodshed. Biomass from the Umpqua would otherwise be transported to a centralized plant located in Roseberg, OR. The central plant draws from a broader region beyond the indicated National Forests, including surrounding Bureau of Land Management ground as well as other public and private lands in and beyond the area illustrated. Travel routes affect the efficiency with which biomass can be moved to Roseburg and road networks are being used to calculate transportation requirements. Operational efficiency of fixed and mobile pyrolysis units is being evaluated. Capital costs and operational requirements of fixed location units are known through commercial applications (Bridgwater 2004) and are being compared to information from development-stage mobile units.

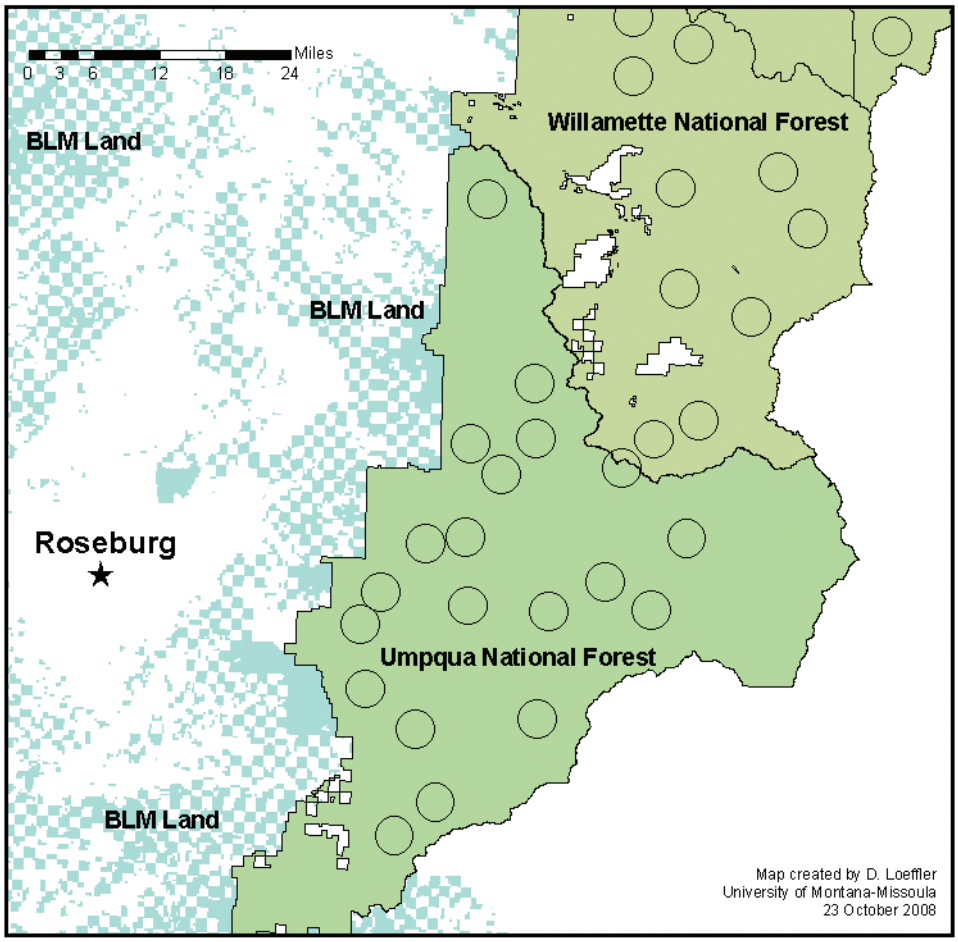

Figure 1—Map of biomass supply area with circles representing portable pyrolyzer supply areas within the Willamette and Umpqua National Forests and a centralized processing facility located in Roseburg, OR with a supply area extending beyond the map area.

Bio-Char Advantage

The bio-char produced through these mobile units is equivalent to charcoal that is manufactured for numerous other purposes through traditional and modern pyrolysis techniques. Charcoal manufacture has been used throughout human history including fuel for iron and bronze metallurgy starting 4,000 years ago and lasting until the use of fossil fuel became widespread during the 19th century (Rackham 1980). Modern charcoal uses include air and water filtration, cooking charcoal, horticultural media, bioremediation, medicinal purposes, among others. As an equivalent to charcoal, bio-char is also an artificially produced analog to charcoal found in many fire ecosystems. This black carbon has been defined as a natural component of fire ecosystems that lends favorable properties to soils and enhances soil productivity (DeLuca and others 2008; Pietikainen and others 2000; Zackrisson and others 1996). Therefore, it can be applied to native ecosystems without concerns of contamination. Bio-char presents an opportunity to return nutrients removed in the biomass from project locations, and as mentioned above, reapplication of bio-char to project sites also has potential value in carbon

sequestration. Both the nutrient return and carbon sequestration values of bio-char reapplication to project sites may outweigh other potential uses. Segments of the public are increasing demands for limits on forest product utilization from public land, which may prompt requirements for nutrient conservation. Geopolitical decisions are expected to expand limits on carbon emissions and reward carbon sequestration. On-site retention may be the best option in light of these social pressures.

Charcoal also has important horticultural values and soil enhancement characteristics. It can be used in greenhouses as a plant growth media. Figure 2 compares poplar trees growing in potting soil blends with increasing bio-char proportions. Poplar was used as a bioassay because of its responsiveness to variable growing conditions and sensitivity to soil growth media. In this case, each is growing equally well regardless of the amount of char included. Bio-char can be used as an effective soil media in the greenhouse and at forest sites because of the favorable properties provided to the soil.

Bio-char contains the majority of nutrients found in biomass feedstock (Gaskin and others 2008). Nutrients such as nitrogen and sulfur can be volatilized during the pyrolysis process, but the bio-char produced may also contain significant amounts of these nutrients. This means that the bio-char resulting from extracting energy in bio-oil production can be returned to the site to replenish soil nutrient stocks.

Returning the bio-char to the site can also enhance soil organic matter. Bio-char is mainly carbon held in aromatic form, which results in it being inert when added as an amendment. As a consequence, it quickly builds the recalcitrant soil carbon fraction of soil. We know from research on wildfire occurrence and the development of anthrosols that charcoal-derived carbon can remain in the soil for hundreds to thousands of years (Agee 1996; Lehmann and Rondon 2006). Enhancement of the soil organic matter pool with charcoal provides the numerous benefits of other organic matter including large surface area for exchange of water and nutrients; however bio-char also has other characteristics that create additional soil improvements.

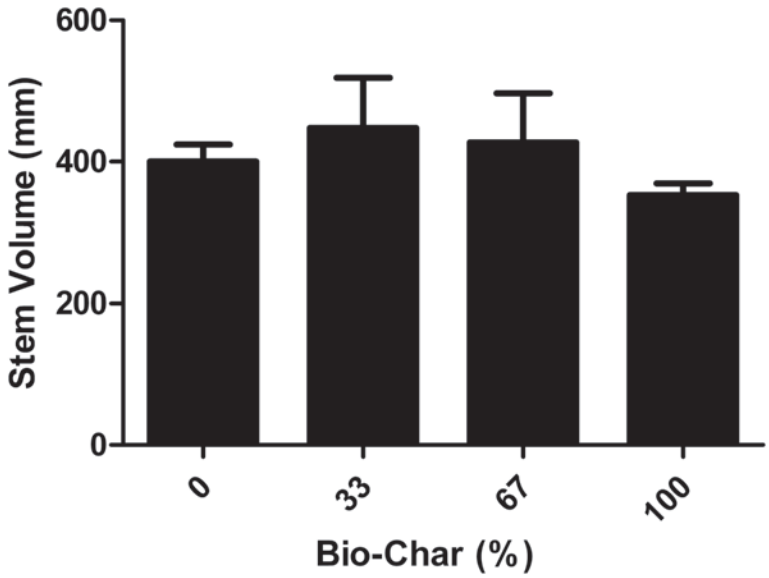

Figure 2—Poplar trees growing for 12 weeks in potting soil with different proportions of bio-char. Each pot received 1.5 g slow release fertilizer (18-6-12). Differences between treatment were not significant ($P = 0.63$). Error bars are standard errors.

Bio-char acts as a liming agent resulting in increased soil pH and nutrient availability for a number of different soil types (Glaser and others 2002; Lehmann and Rondon 2006). Soil liming results in pH increases of one-half to one pH units. The liming of acidic soils decreases Al saturation, while increasing cation exchange capacity and base saturation. These responses following bio-char additions are common soils responses to lime additions (Tisdale and Nelson 1975) indicating that the effects of bio-char are similar to those of other liming agents. Nutrient availability may actually increase beyond the amount expected by cation exchange sites due to soluble salts available in the char. Anion availability may also increase suggesting that anion exchange may be enhanced by bio-char additions to soils (Glaser and others 2002). Microbial biomass and diversity is also known to increase with greater bio-char including more abundant mycorrhizal associations and enhanced biological nitrogen fixation (Lehmann and Rondon 2006). Therefore, when bio-char is added to soil it "sweetens" the soil by raising the pH, improving the fertility level through additions of nutrient ions commonly associated with ash additions, and enhances symbiotic soil microbe populations.

Bio-char may also increase the water holding capacity of forest soils. This is especially important on western soils where the growing season is determined by the length of time into seasonal summer droughts where soil moisture remains favorable to growth. It may become more important in other forest ecosystems where extended summer drought can significantly decrease growth and the frequency and amount of summer rain events are expected to decrease with predicted climate change. Improved water holding capacity through char additions is most commonly observed in coarse textured or sandy soils (Gaskin and others 2007; Glaser and others 2002). Just as increased surface area improves water holding capacity of ash deposits (Dahlgren and others 2004; McDaniel and Wilson 2007), the impact of bio-char additions on moisture content may be due to increased surface area relative to that found in coarse textured soils (Glaser and others 2002).

The residence time of bio-char in soils may be in excess of 1000 years making it a potential tool for carbon sequestration. Bio-char consists of highly aromatic organic material having carbon concentrations of 70 to 80 percent (Lehmann and others 2006), and it is highly resistant to decay by common soil saprophytes. Evidence for the residence time of bio-char comes from several lines of research. Fire ecology typically makes use of the long residence times of bio-char in dating fire events through the latest interglacial period (Agee 1996). Archeologists similarly have demonstrated the use of coppiced woodlands for prehistoric metallurgy by dating the charcoal remains of historic operations back some four millennium (Rackham 1980). Furthermore, the rich Terra Preta soils produced through charcoal additions by a poorly understood Amazonian society occur in a matrix of highly weathered tropical Oxisols (Mann 2008). These soils were developed over 2000 years ago as the agricultural basis of this sophisticated society and are still regarded today as high quality top-soils with charcoal as the vital component (Glaser and others 2001).

The potential to sequester carbon by char additions to soils creates an important possibility to mitigate greenhouse gas emissions. This idea is not new (Seifritz 1993), but has recently gained interest with greater public awareness of the effect of greenhouse gas emissions on climate. The portable pyrolysis units at scattered locations throughout the forest may create greater opportunity to sequester carbon than pyrolysis conversion at a centralized plant. For large fixed-location pyrolysis plants, the economic incentive to return bio-char back to the woods is low because of high transport costs and alternative uses for filtration, clean energy, cooking, horticulture, etc. Furthermore, biomass moved from the woods is just as likely to be used by any number of other processes in addition to pyrolysis including fueling industrial boilers where char would not be a significant byproduct. From

a forest management perspective, the preferred use for bio-char may not be for transport to alternative use markets, but as an on-site soil amendment. Bio-char reapplication represents the middle ground that might make biomass utilization a reality.

Conclusion

The portable pyrolysis system offers a solution to biomass accumulation in forest ecosystems. By utilizing the abundant forest biomass that is annually produced through forest harvest residues and hazard fuel reduction projects it may be possible to produce a liquid fuel that will reduce dependence on foreign energy sources. If biomass conversion can occur in the woods it will improve the economic and environmental impact of biomass utilization for energy production. In addition, the bio-char byproduct can be redistributed to the site of energy extraction and thereby return nutrients to the site to maintain site quality. The additional properties of char additions, including liming, microbial enhancement and improved water holding capacity, create the opportunity to maintain or improve soil quality. Furthermore, bio-char's recalcitrance can sequester carbon for centuries. Such an approach is advocated for agricultural systems (Laird 2008; Lehmann and others 2006), but the arguments are even stronger for portable pyrolysis units used in forestry systems where long distances make onsite reapplication a better option than long-distance transport of biomass to and return of char from a centralized processing facility.

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The content of this paper reflects the views of the authors, who are responsible for the facts and accuracy of the information presented herein.

Jasmine Benjamin

From: m1allen@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Thursday, August 20, 2015 8:24 AM
To: RMP-Comments@heg-inc.com
Subject: Fwd: Comments BLM Resource Management Plan and DEIS for W. OR 2015 08 21
Attachments: Comments on BLM RMP DEIS for WOR 2015 08 21.docx

---------- Forwarded message ----------
From: **psydneyh** <psydneyh1@msn.com>
Date: Tue, Aug 18, 2015 at 4:57 PM
Subject: Comments BLM Resource Management Plan and DEIS for W. OR 2015 08 21
To: blm_or_rmpwo_comments@blm.gov

dear State Director Jerry Perez,

attached are comments from P. Sydney Herbert
Conservation Chair Trails club of Oregon
(for identification)

5125 SW Dosch Rd
Portland,OR 97239-1252

2015 08 21 BLM Resource Management Plan DEIS Western Oregon v2 Comments

The "No Action" Alternative lists the annual timber harvest as 399 mmbf. As I understand it, that figure was the amount anticipated during the planning, not the actual harvest amount, which was an average of 173 mmbf/yr (DEIS p. 270). Therefore, the timber harvest in Alternative B, the preferred Alternative,is a vast increase over the "No Action" or National Forest Plan amount. The 331 mmbf harvest is obtained by greatly reducing the riparian zones, eliminating the Aquatics Conservation Strategy, eliminating Survey and Manage, and allowing tree cutting in so-called reserves. All this is done because it is assumed that increased timber cutting is a benefit to all: to labor, to the economy, to the counties, and to the forest which must be "managed".

I am suggesting that the cost-benefit analysis is inadequate. I had some trouble reading the document online, as I frequently got the message "this page is unavailable" I looked in vain for references to such studied by economists as:

1. The Economic Importance of Federal forests to the Pacific Northwest's Economy. http://www.dbeyondtoxics.org/wp-content/uploads/2013/09 Economicimportance Fed Forests2PNW_Economy-2012-05-21
2. Logging expansion won't help rural communities-The Oregonian http://www.oregonlive.com/opinion/index.ssf2014/06/logging_expansion_work_wont_help_ru.html
3. Economic value of goods.services Produced by the O & C Lands http://pacificrivers.org-c-economic-analysis
4. Assessing Economic Tradeoffs in Forest Management (USDA Forest Service PNW Research Station)Gen'l technical report PNW-GTR-403 July 1999 Ernie Niemi and Ed Whitelaw

The BLM assumed that the quantity and quality of the supply of water available for drinking would not change from current conditions and necessarily would meets (sic) all State and Federal drinking water standards. I find this hard to believe, considering the narrowing of the riparian reserves. When you combine this with the State Board of Forestry's refusal to set higher standards for the private lands, we have a steadily deteriorating water quantity and quality condition. With the present drought likely to continue because of climate change, the maintenance of the water conservation function of the forest is critical. We know that the older forest condenses rain and fog and stores it in the ground as opposed to the runoff from clearcuts. Cold, clean water for the fishery is money in the bank, too.

There are two other water quality issues that the DEIS should address:p. 845 Description of indicators used for analysis. For decades, salt has been poured on the glaciers of Mt Hood to extend the skiing season, the salty melt goes into Salmon River, a Wild and Scenic River under BLM's jurisdiction. Salmon River is designated for its entire length, from its headwaters in the snowfields on Mt Hood to its confluence with the Sandy River very important and productive anadromous fish spawning and rearing habitat. The Forest Service ES never considered the effect on fish and wetland plants. The other is gold dredging on the Rogue River. California has declared a moratorium on dredging and the mining enthusiasts are coming to Oregon in greater numbers. Not only do they create water quality problems, but they invade the public lands and defend them as private.

I had difficulty accessing Vol. 3 Appendix G climate change, getting the message that the webpage was unavailable. This was disappointing because I believe that climate change is an important issue which needs to be fully understood in the context of increased logging. The economic damage caused by a ton of carbon dioxide emissions—often referred to as the "social cost" of carbon—could actually be six times higher than the value the United States now uses to guide current energy regulations and possibly future mitigation policies, Stanford scientists say. A new study, published online in the journal *Nature Climate Change* claims the social cost of carbon is not $37 per ton, as previously estimated, but $220 per ton. (Frances C. Moore, Delavane B. Diz. Temperature Impacts on economic growth warrant stringent mitigation policy. *Nature Climate Change,*2015; DOI: 10.1038/nclimate2481 The authors are PhD candidates in the Emmett Interdisciplinary Program in environment and resources in Stanford's School of Earth Sciences and in the Department of Management Science and Engineering ,at Stanford's School of engineering. The study was released January 13, 2015. Carbon sequestration needs to be taken much more seriously as a product of the forest. We need to be adding to the forest, not diminishing it.

The DEIS states that BLM will withdraw 5000+ acres from entry under the mining laws of the US to put a hold on a nickel mine proposed for the headwaters of southwestern Oregon wild rivers pending legislative protection. This is welcome news, but if the legislation should fail, the protections should be administrative.

Recreational benefits are underestimated in the DEIS because it is user-days and the benefits to the individual recreationist that are estimated, whereas the contrast should be between logging and recreational industry, the latter is growing and is a major force in itself and as a recruitment tool for newer type industries. We must face the fact that timber jobs are not going to come back, and that they will never have the high wages again that they had before the unions were broken, before automation, and before logs were shipped abroad from private lands.

Jasmine Benjamin

From: m1allen@blm.gov on behalf of RMPWO_Comments, BLM_OR <blm_or_rmpwo_comments@blm.gov>
Sent: Thursday, August 20, 2015 8:40 AM
To: RMP-Comments@heg-inc.com
Subject: Fwd: Comments on BLM Western Oregon Resource Management Plan
Attachments: PSG Comments on the BLM Resource Mgt Plan 2015.pdf

---------- Forwarded message ----------
From: <conservation@pacificseabirdgroup.org>
Date: Wed, Aug 19, 2015 at 8:27 PM
Subject: Comments on BLM Western Oregon Resource Management Plan
To: blm_or_rmpwo_comments@blm.gov
Cc: ssenner@audubon.org

To Whom It May Concern:

Please accept the attached letter of public comment from the Pacific Seabird Group.

Thank you,

Stan Senner
Vice-Chair for Conservation

Pacific Seabird Group

DEDICATED TO THE STUDY AND CONSERVATION OF PACIFIC SEABIRDS AND THEIR ENVIRONMENT

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21 August 2015

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RE: Comments on the Draft EIS for the BLM Western Oregon Resource Management Plan

To Whom It May Concern:

On behalf of the Pacific Seabird Group (PSG), I am writing to express strong concern about the Draft Western Oregon Resource Management Plan with respect to the Marbled Murrelet (*Brachyramphus marmoratus*), which is listed as threatened under the federal Endangered Species Act (ESA). This proposed new management plan would circumvent management direction established under the 1994 Northwest Forest Plan (NWFP) Record of Decision, specifically eliminating designated late-successional reserves (LSRs) and allowing increased logging and fragmentation of older-aged forests (mature, old-growth, late successional). The proposed plan would also contravene recovery strategies developed by the US Fish and Wildlife Service for the Marbled Murrelet (USFWS 1992). The USFWS (1996, 1997, 2006) clearly states that the NWFP--especially the LSRs--is the backbone of the murrelet recovery plan.

Our concern is that the LSRs and all remaining older-aged forests are critical for the survival and recovery of the Marbled Murrelet. We oppose the preferred alternative and the other alternatives in the draft plan and suggest that the Bureau of Land Management (BLM) should maintain all of the existing LSRs, older-aged forests, riparian reserves, and other habitat features that are critical to the survival and recovery of this threatened species. In addition, minimizing fragmentation near or adjacent to suitable and occupied habitat is essential the continued existence of murrelets in Oregon.

PSG is an international, non-profit organization that was founded in 1972 to promote the knowledge, study, and conservation of Pacific seabirds. It has a membership drawn from the entire

Pacific basin, including Canada, Mexico, Russia, Japan, China, Korea, Australia, New Zealand, and the USA. Among PSG's members are biologists and scientists who have research interests in Pacific seabirds, government officials who manage seabird refuges and populations, and individuals who are interested in marine conservation. For two decades, PSG has taken an active lead in resolving many scientific aspects of the biology and conservation of Marbled Murrelets. The PSG has served as an unbiased forum for government, university, and private sector biologists to discuss and resolve such issues.

The Marbled Murrelet was listed under the federal Endangered Species Act in 1992 primarily because of significant losses of nesting habitat through logging and development in coastal forests of Washington, Oregon, and California (USFWS 1992). An objective of the Marbled Murrelet Recovery Plan (USFWS 1997) is to stabilize the population at or near current levels by maintaining and/or increasing productivity and removing and/or minimizing threats to survivorship. According to the USFWS, long-term recovery of this species requires: protecting terrestrial habitat, including maintaining essential nesting habitat on Federal lands (LSRs and occupied sites), minimizing the loss of suitable but unoccupied habitat, creating and maintaining large blocks of contiguous forest cover, and maintaining and enhancing buffer habitat (USFWS 1997; 131-146). Without the LSRs, the demise of the murrelet population in Oregon will likely be accelerated (USFWS 1996: 26262):

> Within the range of the marbled murrelet, the Northwest Forest Plan designates a system of Late-Successional Reserves, which provides large areas expected to eventually develop into contiguous, unfragmented forest.… The Service recognizes the value of the Northwest Forest Plan and acknowledges its integral role in marbled murrelet conservation. The Northwest Forest Plan complements this critical habitat designation by stressing the need for protection of large, unfragmented areas of suitable nesting habitat that are well distributed throughout the species' range, with special emphasis on areas close to the marine environment.

Marbled Murrelet Habitat Continues to Decline

Despite the listing of the Marbled Murrelet as threatened in 1992 and implementation of the NWFP in 1993, the amount of suitable murrelet habitat has continued to decline throughout this species' range. The loss and degradation of habitat has resulted from: (1) harvesting on private and state lands; (2) federal/private land exchanges; (3) thinning in suitable and occupied habitat, and buffers to suitable habitat; (4) lack of or inadequate Habitat Conservation Plans (HCP); (5) fragmentation effects from adjacent harvests and thinning; and (6) a variety of natural and anthropogenic disturbances, including fire and wind-throw. The total loss of suitable nesting habitat between 1993 and 2013 was estimated to be about 12 percent, or 307,957 acres of the estimated 2.2 million acres of suitable habitat available (Raphael et al. 2011; Falxa and Raphael in press). Nearly all of this 12 percent was lost on nonfederal land. Thousands more acres of suitable habitat on both federal and nonfederal lands, which were not surveyed, likely contained murrelets. Under the NWFP, HCPs and other habitat management plans, new murrelet habitat will not be suitable for 50-200 years. The inability to create new murrelet habitat in the short term combined with the continued harvesting of occupied and suitable habitat ensures a downward trend in suitable murrelet habitat into the future and limited options to recover the species.

The amount of mature and old-growth habitat suitable for murrelet nesting in coastal areas is significantly below historic minimums. For example, using a model based on historic fire size and historic fire frequency, Wimberly et al. (2000) estimated the mean percentage of old growth and late successional forest in the Oregon Coast Range during the last 3000 years. At the province scale, the mean percentage of old growth and late successional forest in the Oregon Coast Range was estimated at 39-55 percent and 66-76 percent, respectively. Currently, the entire Coast Range province contains only approximately 5 percent old growth and 11 percent late successional forests.

At the time it was adopted, the NWFP was considered to be an unprecedented decision to sustainably manage the remaining older-aged forests and take an ecosystem-based approach to forestry. These forests today are essential or critical for nesting Marbled Murrelets and other forest-dependent species. Given the time needed to create this unique forest type, substitutes are-- for all practical purposes--impossible to find. The Draft EIS proposes to circumvent the NWFP and allow what would amount to an unsustainable increase in harvest levels of older-aged forests throughout western Oregon. In PSG's opinion, the preferred alternative and other alternatives in the Draft EIS are flatly incompatible with the recovery of the Marbled Murrelet in Oregon.

Marbled Murrelet Populations Continue to Decline

The Washington, Oregon, and California murrelet population is estimated to be about 16,600 to 22,800 birds (data though 2013; Miller et al. 2012, Falxa and Raphael, *in press*). Population modeling indicates that this population is declining and will be extinct in Oregon and California within 100 years without changes in the amount and quality of nesting habitat, and in demographic trends (McShane et al. 2004, Miller et al. 2012). Low reproduction rates across Washington, Oregon, and California, as measured by nest success, indicate a population that cannot currently maintain itself (McShane et al. 2004, Beissinger and Peery 2003). Low nest success is caused primarily by nest predation, a function of increased forest fragmentation and proximity to human developments or recreation opportunities (Raphael et al. 2002, Peery et al. 2006). Thus, in order to diminish the threat of nest predation and increase murrelet reproduction, the ecosystem must be conserved to provide large, contiguous blocks of suitable nesting habitat and communities need to be involved in stewardship of these resources for all forest-dependent species.

In Summary

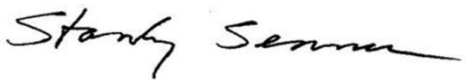
(1) The Marbled Murrelet was listed in 1992 and populations continue to decline due to low reproduction success and high predation rates;
(2) Despite the current system of forest reserves (LSRs) and critical habitat units on federal lands, occupied and suitable murrelet habitat is declining primarily due to harvest on private and state lands;
(3) Murrelet habitat declines will accelerate in the future with the proposed changes to the LSRs and the NWFP;
(4) Land uses that are contrary to murrelet recovery objectives (see also USFWS 2006) must be avoided within and adjacent to suitable habitats, especially ones significant to the stability and recovery of regional populations of this imperiled species; and
(5) Continued habitat loss and the continued fragmentation of murrelet habitat will increase the risk of extinction of this unique seabird.

We agree with a published Evaluation Report on the 5-Year Status Review for the murrelet (McShane et al. 2004: 6-34), which states:

> It is unrealistic to expect that the species will recover before there is significant improvement in the amount and distribution of suitable nesting habitat.

In conclusion, the PSG's opinion is that the proposal from BLM to eliminate some of the LSRs and permit harvesting in older-aged forests is not appropriate given the direction provided by the NFWP, the USFWS Recovery Plan for the Marbled Murrelet, threats to this species on non-federal lands, and the current status and environmental threats posed to the population throughout its range. To provide for the survival and recovery of the Marbled Murrelet, it is critical that BLM reconsider and design an alternative that prevents any further loss of murrelet suitable habitat and creates additional suitable habitat in the shortest time frame possible.

Sincerely,



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