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National Center for Conservation Science & Policy

84 Fourth Street, Ashland, Oregon 97520

Bureau of Land Management
Western Oregon Plan Revisions Office
333 SW 1st. Avenue Portland, OR 97204

January 11, 2008

Re: Comments on the Draft Environmental Impact Statement for the Revision of the Resource Management Plans of the Western Oregon Bureau of Land Management Districts.

Dear Madams and Sirs,

We are responding to your request for comments on the Draft Environmental Impact Statement for the Revision of the Resource Management Plans of the Western Oregon Bureau of Land Management Districts. We have review the Draft EIS and have serious concerns regarding the effects to native forests, particularly old-growth forests, oak woodlands and other important terrestrial habitats. We have reviewed relevant scientific literature and find the proposed changes to land management plans will negatively affect aquatic habitats and species. We are particularly concerned about the abandonment of the Northwest Forest Plan and find that the DEIS fails to consider the elimination of many important aspects of the plan including the Aquatic Conservation Strategy.

The DEIS analysis of the effects on biodiversity, Endangered Species Act listed species, special status species, big game, migratory birds, and survey and manage species is insufficient to inform the public and decision maker and provide for a reasoned comparison of the alternatives. Importantly, we are unable to reconcile the findings of the Northwest Forest Plan FSEIS, SAT, and FEMAT analyses and the various NEPA documents removing Survey and Manage and Annual Species Reviews conducted under the Survey and Manage Program with the conclusions in the WOPR DEIS analysis. The final EIS should incorporate and reconcile the conclusions of past analyses that have different results than the analyses presented in the WOPR. The final EIS should also consider information summarized in watershed analyses and LSR assessments.

The DEIS relies excessively on the draft northern spotted owl recovery plan and draft redesignation of critical habitat and the draft redesignation of marbled murrelet critical habitat. The spotted owl documents have been found deficient in multiple peer reviews and the redesignation of critical habitat appears flawed.

Due to the length of the document, the broad scale of the project area, the significance of the proposed changes to land management plans, and the number of resources affected by the changes we have been unable to prepare detailed comments on all subjects of interest to our organization. Issues that are of importance but not fully developed in our comments include: changes to ACEC designations, the impacts to northern spotted owls and marbled murrelets, and the effects on terrestrial habitats, soils, sedimentation, landslides, stream flow, invasive plants, the impacts of roads, and many of the species found on the BLM's special status lists.

We are concerned that the DEIS fails to consider the effects of the proposed activities on global carbon cycles and emerging threat posed by Sudden Oak Death. The DEIS fails to consider the effects of and relevant science relating to post-fire logging and other forms of "salvage" logging.

We commend the BLM for attempting to better manage off-highway vehicle use but find that the DEIS fails to consider the effects of proposed changes to OHV designations. We urge the BLM to consider a wider range of alternatives including alternatives that increase protection of endangered species, fish, and old-growth forests.

We are including a CD containing a number of scientific papers and other documents with our hard copy submission. If we can be of any assistance locating other references cited in our comments please contact me by email (rich@nccsp.org) or phone (541-482-4459 x307).

Sincerely,

Richard S. Nauman

Purpose and Need

The Purpose and Need unreasonably restricts the range of alternatives. By focusing on a narrow, unreasonable interpretation of the O&C Act, the BLM restricts the range of alternatives to actions that increase the extent and the impacts of timber harvest, road building, and other associated activities to old-growth forests, the Northern spotted owl, the marbled murrelet, ESA listed salmon and steelhead, other special status species, important recreational species including big game, fish, and birds. The EIS should provide a range of alternatives and consider the full legal history of the O&C act and consider the detailed history of the act presented in the attached article Scott and Brown (2007). The attached manuscript Staus (2007) provides an alternative created using an Ecosystem Management Support System that should be considered in the analysis.

The DEIS Page 4 states in the Reason to Revise section that the failure to meet expected harvest levels is largely due to "...court decisions regarding the survey and manage mitigation measure and Aquatic Conservation Strategy." How did these court decisions affect timber harvest? Which court decisions is the DEIS referring to? This section should also discuss the role of budget limitations and the BLMs failure to comply with provisions of Survey and Manage and the ACS that lead to the failure to meet the predicted harvest levels.

Alternatives

The No Action Alternative includes Survey and Manage as of the 2001 ROD. Does it also include the results of the annual species reviews?

The DEIS fails to describe the No Action Alternative. In chapter 2, DEIS Page 65 if refers the reader to the individual 1995 RMPs for the 5 BLM Districts and Klamath Falls RA. The EIS must describe the No Action Alternative in sufficient detail for the reader to make comparisons to the action alternatives and assess the validity of the environmental effects section.

The No Action Alternative should be the current RMPs as implemented and funded.
The DEIS states that a 17% budget increase would be necessary to implement the No Action Alternative (DEIS Page 549).

Statements in the DEIS regarding changes to ASQ and the extent of riparian reserves conflict with the 2004 Survey and Manage SEIS, 2007 Survey and Manage ROD, and internally within the DEIS. The DEIS (Page 566) states that the No Action alternative ASQ is 32% higher than under the 1995 RMPs because, in part, the Riparian Reserves are actually much smaller (~30% smaller) than estimated in 1995. The DEIS Page 482 states that riparian reserve areas were adjusted downward for the No Action Alternative to 15% of the landscape. These statements contradict numerous statements in the 2004 Survey and Manage SEIS and the July 2007 BLM ROD for the S&M SEIS that state that Riparian Reserves were larger than estimated in 1995 and that the take up roughly 50% of the landscape. For example:

“...reanalysis has show a 10% increase in Riparan reserves...”
2004 Survey and Manage SEIS Page 105

“On average, 40 to 50 percent of any watershed is reserved by the application of Riparian Reserves...”
2004 Survey and Manage SEIS Page 107

“The analysis in the Northwest Forest Plan Final SEIS underestimated the potential landscape level of protection provided by the Aquatic Conservation Strategy. The quantity of Riparian Reserve acres is higher than originally analyzed...”
2004 Survey and Manage SEIS Page 132

“Estimates from FEMAT on the percent of the land base within Riparian Reserves averaged 40 percent (USDA, USDI 1994b:B-12). Estimation done on individual administrative units has found that these initial estimates were conservative and, in most cases, Riparian Reserves are more extensive than originally estimated.”
2004 Survey and Manage SEIS Page 135

“Subsequent Watershed Analyses and project planning experience by the Agencies’ administrative units has shown that estimate to be 20 to 30 percent too low west of the Cascade crest where dense vegetation apparently kept photo-interpreters from seeing and mapping all intermittent streams, wet areas, and unstable soils.”
2004 Survey and Manage SEIS Page 136

“...resulted in a 15 percent decrease in PSQ “based primarily on increases...in Riparian Reserves”...”
2004 Survey and Manage SEIS Page 136

“Other west-side units also report actual Riparian Reserve acres to be considerably higher than estimated in the documentation of the FEMAT sampling (Johnson et al. 2003).”
2004 Survey and Manage SEIS Page 136

“PSQ has been adjusted downward by approximately 15 percent primarily to more accurately reflect the extent of Riparian Reserves.”
2004 Survey and Manage SEIS Page 139

“On average, about 50 percent of the federally managed area is in Riparian Reserves (Final Supplement:136).”
2007 S&M BLM ROD Page 19

“...it is important to note that there is no map layer for Riparian Reserves...”

While DEIS Page 482 states that 15% of the BLM lands within the planning area are currently classified as Riparian Reserve under the No Action alternative and that 22% were estimated to be riparian reserve in 1995. This conflicts with the text on Page 719 and Table 207 Page 719 that report that 37% of BLM lands in the planning area are riparian reserve under the No Action Alternative and Figure 1 on Page XLVIII reports 14%.

The EIS should reconcile these discrepancies. Specific documentation in the methods used to map riparian reserves should be included in the EIS. Sections of the analysis and conclusions in the wildlife section and other sections affected by this discrepancy should be reconsidered and the environmental effects of the proposed action with the correct value for riparian reserves should be discussed.

The EIS should discuss the differences between the LSRs under the No Action Alternative and the LSMAs under Alternative #1. From the GIS layers available on the WOPR webpage it appears that alternative #1 eliminates the 100 acre LSRs associated with Northern Spotted Owl Activity centers. Is this true? What are the effects of this change? Are the LSRs and Alternative #1 LSMAs otherwise the same? What are the effects of any other changes to the distribution of LSRs?

Which areas currently do not meet the Alternative #3 50% rule and where are they?

The DEIS uses the term "generally" in several places to describe actions under alternative #3. The EIS should be specific or describe when deviations from these standards will occur, how this affects the analysis, and any assumptions used in the analysis of this alternative. Specific examples include the length of rotations and "generally" no regeneration harvest south of Grants Pass in the Medford District and in the Klamath Falls Resource Area.

The EIS should analyze all resources for all alternatives including the subalternatives. The Council on Environmental Quality's document *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations* states:

"The degree of analysis devoted to each alternative in the EIS is to be substantially similar to that devoted to the "proposed action." Section 1502.14 is titled "Alternatives including the proposed action" to reflect such comparable treatment. Section 1502.14(b) specifically requires "substantial treatment" in the EIS of each alternative including the proposed action."

In particular, these subalternatives likely have significantly different effects on wildlife, riparian resources, water quality, and aquatic species.

The analysis unreasonably constrains alternative #1 subalternative #3 and fails to consider the potential for ecologically appropriate thinning to provide for a predictable

supply of timber. The analysis is unreasonable because rather than calculating and disclosing potential volume directly, it limits the analysis and disclosure to estimating the number of years that harvest near the level of alternative #1 could be sustained with thinning volume. The EIS must thoroughly explore the option of producing timber from thinning in plantations and in stands with significant deviation from natural conditions due to fire suppression. According to the Settlement Agreement that led to the WOPR DEIS:

“The agencies estimate that with appropriate funding, thinning sales in the LSRs could produce approximately 4-6 billion board feet of timber over 20 to 30 years, after a start-up period.”

See also DellaSala et al (2005) attached for a conservative estimate of thinning volume.

By failing to fully analyze this subalternative for its effects on recreation, water quantity and quality, soils, invasive plants, fish, wildlife, and other resources the DEIS fails to disclose the significant benefits of this approach and the significant impacts of the preferred alternative. In particular, this subalternative could provide for stable communities and a predictable level of production.

DEIS Page XLVII – missing “acres” from statement that 6 to 9 green trees retained depending on vegetation series.

Alternatives Not Considered

Alternatives not considered include:

- Use historic variability, retention of all mature and old-growth stands, and small tree harvesting.
- Protect all forests that are over 80 years of age.
- Two-phased management approach that recovers threatened and endangered species first then harvesting timber.
- No Old-growth harvesting

The DEIS (Pages 104-109) states that these alternatives were not considered because they fail to meet the stated Purpose and Need of complying with the BLMs interpretation of the O&C Act. It is unreasonable to exclude these alternatives and the EIS should fully explore them. The Council on Environmental Quality’s document *Forty Most Asked Questions Concerning CEQ’s National Environmental Policy Act Regulations* states:

“An alternative that is outside the legal jurisdiction of the lead agency must still be analyzed in the EIS if it is reasonable. A potential conflict with local or federal law does not necessarily render an alternative unreasonable...”

and

“Alternatives that are outside the scope of what Congress has approved or funded must still be evaluated in the EIS if they are reasonable, because the EIS may serve as the basis for modifying the Congressional approval or funding in light of NEPA's goals and policies.”

The EIS should also consider the effects of transferring management of BLM's forested land to the US Forest Service, an alternative that was eliminated from consideration because it would require an act of congress. NEPA requires the analysis of reasonable alternatives even if they are outside the jurisdiction of the lead agency. See the quote in the previous comment from the The Council on Environmental Quality's document *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations*. This alternative fits the purpose and need to increase timber harvest. Several National Forests in the Pacific Northwest have had much greater success in preparing controversy free timber sales even though they are under more restrictive regulations than the BLM (e.g. NFMA) and in general have been provided with much more limited staffs and budgets.

The EIS should consider a full range of alternatives that includes alternatives with greater levels of protection for fish, wildlife, and old forests than the No action alternative. The EIS should consider a full range of alternatives that present a range of effects so that the public and decision maker can fully understand the trade-offs and impacts of the proposed actions.

Environmentally Preferred Alternative

We recommend that the BLM select the No Action or an alternative with greater protection of old forests, streams, fish, and wildlife as the Environmentally Preferred Alternative.

Elimination of the Northwest Forest Plan

The DEIS fails to consider the impacts of the elimination of the Northwest Forest Plan Standards and Guidelines. In addition to land allocations, the Northwest provides a wide variety of Standards and Guidelines that protect resources and comply with federal laws. The DEIS fails to consider and disclose the effects of the elimination of all aspects of the Northwest Forest Plan. The EIS should consider and disclose the direct, indirect, and cumulative impacts of the elimination of the Northwest Forest Plan on resources on BLM lands, other federal lands including USFS lands, state, and other non-federal lands including privately owned lands. Specific examples of provisions eliminated by the WOPR action alternatives include but are not limited to:

- Coordinated management of UFSF and BLM lands
- Regional Ecosystem oversight of activities in LSRs
- LSR assessments
- The watershed analysis process
- Coordinated terrestrial, riparian and watershed monitoring
- Managed Late-Successional Areas

- Adaptive Management Areas
- Riparian Reserves in unstable and potentially unstable areas
- Key watersheds and other aspects of the Aquatic Conservation Strategy
- Matrix Standards and Guidelines

The EIS should consider and disclose the direct, indirect, and cumulative effects of the WOPR Action Alternatives, particularly the elimination of the Northwest Forest Plan, on US Forest Service programs. The US Fish and Wildlife Service's Biological Opinion for Option 9 (the Northwest Forest Plan) specifically states in the assumptions section "Alternative 9 applies to Forest Service and BLM lands; all future actions on these lands would be consistent with Alternative 9..." How will BLM's withdrawal from the Northwest Forest Plan affect the USFS?

The settlement agreement with AFRC that led to the WOPR acknowledges the integrated nature of USFS and BLM management under the Northwest Forest Plan:

"Although neither the Secretary of Agriculture nor the Forest Service are defendants in the AFRC O & C case, or were defendants in the Counties O & C case, they are undertaking the obligations herein in the recognition that the NWFP is an integrated plan for management of BLM and Forest Service lands within the range of the Northern Spotted Owl, and that were AFRC to succeed in their O & C Act claims, or were the Counties to succeed in a new action raising a similar challenge to the management of O & C lands, a larger burden would fall on the Forest Service to meet the ecological objectives of the NWFP."

How will the WOPR action alternatives affect USFS budgets, timber sales, revenues to counties, and jobs in the region? The potential effects of the BLM's withdrawal from the Northwest Forest Plan may extend outside of Oregon and impact activities on USFS and non-federal lands throughout the range of the Northern spotted owl.

How will BLM's withdrawal from the Northwest Forest Plan affect Habitat Conservation Plans and other related plans including plans affecting species management on private land, state forests and other non-federal lands?

How will BLM's withdrawal from the Northwest Forest Plan affect the Oregon Plan for Salmon and Steelhead and other conservation plans and programs that protect species and water quality?

How will BLM's withdrawal from the Northwest Forest Plan affect Water Quality Management Plans, TMDL documents, and other Clean Water Act documents that assume implementation of or are based on the Aquatic Conservation Strategy of the Northwest Forest Plan?

Because the action alternatives do not include continued implementation of Survey and Manage the EIS must analyze the effects of the elimination of this provision of the

Northwest Forest Plan. Simply stating that the effects of this provisions removal on these species are the same as the effects of the alternatives on the northern spotted owl is not sufficient. The Survey and Manage standards and guidelines were included in the Northwest Forest Plan because the effects of the proposed actions were not the same as for northern spotted owls and that the plan's provisions for spotted owl conservation were not sufficient to protect these species.

The WOPR DEIS fails to consider information presented in numerous watershed analyses that have been written as part of the implementation of the Northwest Forest Plan. This information provides an assessment of current conditions and is useful for understanding cumulative impacts.

The WOPR DEIS fails to analyze the elimination of Northwest Forest Plan mandated watershed analyses.

Methods

The DEIS analysis uses a deterministic approach to modeling forest habitats that does not consider stochastic processes important to the development and distribution of habitats across the landscape including fire, wind, and insects. The forest development modeling that underlies most the analyses in the WOPR DEIS overestimates future habitat for old-forest associated species like the northern spotted owl and marbled murrelet. Given the frequency of wind disturbance in coastal areas and fire especially in Southern Oregon, these factors should be incorporated into the analysis.

The DEIS analysis relies on proprietary software (OPTIONS). Documentation and the software are not readily available to the public. Proprietary data that are unavailable to the public for review may not be incorporated by reference in NEPA documents (40CFR 1502.21). The EIS should choose a modeling system and method that is well documented, available, transparent, and has been subject to peer review and publication in peer-reviewed journals.

An example of a successful program that was developed by federal agencies, is available to the public, incorporates fire, wind and other stochastic disturbance, and would provide a suitable, tested, and documented alternative to the OPTIONS model is Landis-II. We recommend that the BLM consider using this model for the WORP EIS analysis. For more information see:

Scheller RM, Domingo JB, Sturtevant BR, Williams JS, Rudy A, Gustafson EJ, Mladenoff DJ. 2007. Design, development, and application of LANDIS-II, a spatial landscape simulation model with flexible temporal and spatial resolution. Ecological modelling 201:409–419.

and the web site: <http://www.landis-ii.org/>

Extensive scientific literature, much of it produced by federal agency personnel, regarding fire and disturbance modeling is available and should be considered. Relevant publications regarding the modeling of fire and landscape dynamics and processes include:

Keane RE, Parsons R, Hessburg P. 2002. Estimating historical range and variation of landscape patch dynamics: limitations of the simulation approach. *Ecological Modeling* 151:29-49.

Keane RE, Cary GJ, Parsons R. 2003. Using simulation to map fire regimes: an evaluation of approaches, strategies, and limitations. *International Journal of Wildland Fire* 12:309-322.

Keane RE, Holsinger L, Pratt S. 2006. Simulating historical landscape dynamics using the landscape fire succession model LANDSUM version 4.0. USDA Forest Service, Rocky Mountain Research Station, Missoula Fire Sciences Laboratory. RMRS-GTR-171CD.

Pratt SD, Holsinger L, Keane RE. 2005. Modeling historical reference conditions for vegetation and fire regimes using simulation modeling. Chapter 10 in: *The LANDFIRE Prototype Project: nationally consistent and locally relevant geospatial data and tools for wildland fire management*. M.G. Rollins, Technical Editor. USDA Forest Service, Rocky Mountain Research Station, Missoula Fire Sciences Laboratory.

The EIS should include a discussion of the reliability of the modeling processes used and any peer review, validation, and sensitivity testing conducted on the models and data used. Scheller et al (2007) summarize the scientific process for testing and validating a model and building an estimate of the confidence intervals associated with model outputs:

“Scientific rigor within a simulation model is enforced through the process of peer-review, during which the model must meet certain requirements including conceptual validity, model verification, validation with empirical data, and testing with sensitivity analysis (Aber, 1997; Aber et al., 2003). Following peer-review of the model, users can focus on model output as it pertains to the question at hand.”

Without peer review, verification, validation, and sensitivity analysis the public and decision maker are unable to judge the reliability, accuracy, and precision of the model results.

Aquatics Modeling

The methods used in the fish analysis fail to consider the current distribution and health of fish populations and the current condition of aquatic habitats.

Intrinsic Potential

Nearly all the text on pages H-1082-1083 and Figure 301 on page H-1083 are taken directly from a publication in the journal *Ecological Applications* (Burnett et al. 2007). Because this passage was taken from another publication, the references to Morrison et al. (1998) and Vadas and Orth (2001) do not appear in the references section of the WOPR DEIS. A citation for "Burnett et al, *in press*" appears at the end of the section but traditionally, citations are used for supporting reference and not for long multi-page quotes. Quotation marks and appropriate references should be used to indicate previously published work. In this section, it is impossible for the reader to identify what work was conducted by the CLAMS project and what was done by the BLM DEIS team. Did the CLAMS team or BLM expand the model to chinook salmon juveniles? Where can we find information regarding the chinook model?

Scope and Limitations - In the Burnett et al (2007) publication the authors include a section titled "*Scope and Limitations*". Because the calculation of intrinsic potential underlies the analysis of effects on fish, the EIS should discuss both the advantages and limitations of using this method including but not limited to the two following statements:

"Intrinsic potential models may be limited by incorporating landform controls but not other abiotic or biotic factors. These can affect the suitability of freshwater habitat for salmonids, and *thus the accuracy of our landscape characterizations.*" Burnett et al 2007 Page 76 emphasis added.

"The approach taken in this study is most reliably applied and interpreted at broader spatial scales. The resolution and accuracy of spatial data undoubtedly reduced the accuracy of sub-province- and province scale characterizations." Burnett et al 2007 Page 76.

The DEIS Page H-1091 states that the fish productivity index, calculated using the intrinsic potential value, "...is used to assess potential fish habitat within a basin." How does this difference in scale affect the interpretation of the results of the fish analysis?

Wood Model

The EIS must disclose the details of the methods used in sufficient detail to allow the reader to understand the assumptions, limitations, inputs, processes, and outputs of the models. Appendix H in the DEIS provides information on the wood models. This discussion is difficult to follow and the description of the model is insufficient to replicate the process used. We provide specific questions and comments below but find it difficult to adequately assess these models without further information.

To clarify the results of the wood modeling and the relative importance of each process, we request that the results of each of the three wood models be presented individually in addition to the total result.

Appendix H does not refer to the figures in the text making it difficult to associate what parts of the models are being illustrated with the figures.

The DEIS fails to provide sufficient detail or reference to the scientific literature to allow the reader to adequately assess the relevance and limitations of the models. In particular, while the DEIS provides some documentation in Appendix H it fails to disclose the methods used in a specific enough manner to recreate the process used or to compare the method to other methods or reconcile the results with published empirical data.

The development and application of scientific models is a multi-step task that includes model development, peer review, empirical validation testing, and sensitivity analysis. Scheller et al 2007 summarize the basic process and emphasize the importance of peer review and model validity testing:

“Scientific rigor within a simulation model is enforced through the process of peer-review, during which the model must meet certain requirements including conceptual validity, model verification, validation with empirical data, and testing with sensitivity analysis (Aber, 1997; Aber et al., 2003). Following peer-review of the model, users can focus on model output as it pertains to the question at hand.

Because the three wood recruitment models were developed for this analysis (DEIS Page H-1084) the EIS should disclose all peer review, validation, and sensitivity analysis conducted. The wood models provide the foundation for the fish analysis and therefore the EIS should provide information regarding the scientific confidence in the model results, the statistical confidence in the inputs and the sensitivity of the model to the uncertainty of the inputs. Because the wood models use data from the OPTIONS and growth and yield models the EIS should disclose all peer review, validation, and sensitivity analysis conducted for these models. Because even small errors can accumulate and affect the outcome of this type of multi-step modeling effort, understanding the model’s sensitivity to changes in input values and violations of assumptions is critical to assign the magnitude and reliability of predicted outcomes.

In a recent review of wood and sediment transport in headwater streams, May (2007) states: “At the present time there is limited ability to infer patterns and processes of wood delivery to streams from terrain-based mapping.” The EIS should disclose the limitations of the methods used and the level of certainty in the science behind the analysis.

DEIS Page H-1084 states “A simplified set of stand types were used...” What is the source of these stand types and how were they simplified?

We disagree with the statement that “...Stand Establishment and Young stand types have few or no large trees, so excluding these stand types did not affect the overall

spatial and temporal patterns predicted by the models.” (DEIS Page H-1084). Stand Establishment and Young stands often provide massive inputs of large wood to streams. In the absence of logging, early successional stands developing from natural disturbance, typically wind or fire in Western Oregon, retain significant numbers of standing green trees, snags, and down wood. Given the limited (or no) retention of snags and down wood coupled with provisions for post-fire logging under the WOPR action alternatives young managed stands will provide little to no wood input to streams. Given the standards and guidelines of the Northwest Forest Plan this assumption is likely not valid in many areas for the no action alternative. The implications of making this assumption and the consequences for all alternatives should be examined and disclosed in the EIS.

Given the variability in the distribution of tree species, differences in growth rate between species, differences within species between sites, and the average and maximum size of trees given site specific differences in growing conditions, disturbance patterns, and genetic variation in life-history traits why was “a single average tree height used” (DEIS Page H-1084)? The EIS should disclose all relevant factors used in the analysis including the value of tree height used in this model. Given the modeling method used, the selection of this height directly affects the predicted effects of the narrow stream buffers proposed under the WOPR action alternatives on wood recruitment.

Figure 302 appears to indicate that 40 meters was used for the tree height input into the wood models. Figure 102 on DEIS Page 370 indicates that the minimum range of site potential trees in the East Cascades is 118 feet or 36 meters. The maximum potential tree height in figure 102 is 225 feet or 69 meters. Coastal Douglas Fir and other species are known to grow much taller than 225 feet in Coastal Oregon. For example, the Brummit Fir in Coos County Oregon is 326 feet (99 meters) tall.

McDade et al. (1990) found that “Stands with taller trees (old-growth conifers) contributed coarse woody debris to streams from greater distances than did stands with shorter (mature) trees.” By selecting an unreasonably low tree height as an input, the model will underestimate the impacts of narrow riparian buffers on wood recruitment to streams.

Wood plays many important roles in creating and maintaining stream habitat in non-fish-bearing streams. The DEIS analysis unreasonably restricts the wood models to streams with fish or areas that can deliver wood to streams with fish. Wood plays an important role in sediment, gravel, and nutrient transport and storage. It can affect bank erosion and down cutting influencing channel development and fluvial processes. In small streams, large pieces of wood can provide a significant source of shade and helps maintain cool water temperatures through several mechanisms. Wood provides habitat for amphibians and other species and provides numerous other functions in stream environments that have both local and downstream impacts.

The wood models should consider the full extent of debris flow and landslide prone areas that may deliver wood to all streams.

Riparian Tree Fall Model

The section beginning at the top of DEIS Page H-1085 and continuing through Page H-1088 while titled "Methods" appears to refer to the Riparian Tree Fall Model. This section lacks sufficient detail for us to adequately review the methods used. Based on the limited information available we have the following questions and comments but are unable to completely review the appropriateness of the methods used or assess the validity the outputs and conclusions drawn from them because we lack the most basic information regarding the methodology.

What mortality causes does OPTIONS consider when determining mortality rate?

Was wind throw of single or groups of trees considered?

How were the stream fish distribution and the ground transportation road network GIS layers developed? What quality control checks if any have been done on it? What GIS data were used to represent streams? Were stream layers single line or double line?

DEIS Page H-1084 states that the model estimates "average annual wood inputs". What units are the wood model outputs in?

The caption for Figure 302 (DEIS Page H-1085) appears to indicate that wood inputs were constrained to one tree height. The scientific literature (McDade et al 1990) reports that wood from greater distances including falling trees that knock down other trees contribute wood to streams. Was slope or horizontal distance used in this and the other wood models? Was the valley floor extent in the channel migration model incorporated into this distance?

How was the active channel width displayed in Figure 302 and Figure 303 determined? What role does it play in determining wood inputs to streams?

At the bottom of DEIS Page H-1085 the document says "For each stream-edge segment, the probability that a tree at the Digital Elevation Model point hits the segment when it falls was determined." How is stream edge defined? What is a stream-edge segment? Are they part of the stream fish distribution GIS layer? How was the probability of a tree hitting the stream-edge segment calculated? Please provide the mathematical function or procedure used to calculate this probability. The caption of figure 303 (DEIS Page H-1086) says "Determining tree fall using DEMs." Figure 303 is not referred to in the text and its relationship with the discussion is unclear. Is this part of the calculation of the tree-fall-hitting-stream probability? What is subtended by the angle in the figure?

Four inputs are listed for the tree-fall-hitting-stream probability calculation at the bottom of DEIS Page H-1085 but no mention of the method used is made. A discussion of the method would likely bring clarity to the meaning of the four inputs but without it we have the following questions:

- How was fall direction calculated? The bullet has “closest edge segment” in parenthesis. Is fall direct assumed to be towards the closest point on a stream? Figure 303 appears to indicate that this direction is the “Most likely fall direction”. Is this true?
- What is meant by “angle subtended”? How is it used in the calculation?
- What role does distance to stream edge play in the calculation?
- How was slope at the DEM point calculated? At what scale was it calculated? What role does slope play in the probability calculation?

Figure 304, while not referenced in the text, appears to present the results of the tree-fall-hitting-stream probability. It appears from this graph that only two probability functions, one for steep and one for flat slopes, were calculated. Were these two functions used to determine the tree-fall-hitting-stream probability? Were these relationships developed for each DEM point? The Y-axis is labeled “probability density”. Is this the likelihood that a falling tree from a given point will hit the stream? If so it seems that the values are low with a maximum of 1% (= 0.01 on axis label).

The top 1/2 of DEIS Page H-1087 repeats a block of text and the bullet after the repeated block repeats information from the bottom of DEIS Page H-1087.

The last paragraph on DEIS Page H-1087 is confusing and difficult to follow:

“With this information, for each corner of the pixel, the probability that a tree falls and that it hits a stream-edge segment is calculated. This probability is integrated over the area of the pixel to calculate the annual probability that a tree within the pixel falls and hits a stream-edge segment and is repeated for every segment potentially hit by a falling tree from within the pixel.”

This paragraph is confusing. It appears to indicate that the information immediately above it (variables from the stand table) was used to calculate the probability of a tree falling and hitting a stream edge segment. This would disagree with the previous page that indicated that fall direction, angle subtended, distance to stream edge, and slope were used to calculate this value. How was the probability from the four points “integrated”? Please show the formula and a sample calculation of how this calculation is made.

The riparian tree fall model appears to assume that trees that don't fall directly in a stream don't contribute to large wood. What about trees that later move and trees that knock down other trees?

Channel Migration

The caption of Figure 306 (DEIS Page H-1089) provides the only indication of how valley floor extent is determined. The description is general. Specific detail is necessary for the reader to assess the validity and implications of assumptions in the model. Specifically, the caption says “...within a specified elevation of the channel; within a

specified slope relative to the channel slope...” What is the value of the specified elevation? How is the “specified slope” calculated and what is its relationship to the channel slope? Please reference any scientific literature that supports these determinations.

How was the 100 year floodplain occupation probability calculated or estimated? Is there scientific literature that supports this rate? Does OPTIONS use this rate in the growth calculations? If so, what affect does resetting succession every 100 years have on wood recruitment and stand development? Is this information incorporated into the riparian tree fall model?

Debris Flow

Are areas classified as unstable or potentially unstable in the TPCC used in this model?

The graph in Figure 86 appears to contradict the text that refers to it:

“Headwater streams differ in susceptibility to debris flows. See Figure 86 (*Probability of debris flow from intermittent streams*) for an illustration of intermittent channels that are more likely to deliver large wood to fish-bearing stream channels.”

and

“Analysis from the Coastal Landscape Analysis and Modeling Study indicates that a small portion of the headwater stream network is important in producing landslides and debris flows that can provide large wood to streams (Miller and Burnett, in press).” DEIS Page 345

The graph shows that almost all streams have a high probability of debris flow. Interpolating from the graph 75% of streams have a >97% probability and nearly 100% of streams have a >60% probability. Where did this graph come from? How was this relationship established?

At the beginning of the wood modeling section (DEIS Page H-1084) the DEIS states that the wood recruitment models were “...developed for this analysis...”. However the beginning of this section appears to indicate that the method published in Miller and Burnett 2007 was used. Was the model published in Miller and Burnett 2007 used to model wood delivery by debris flow or was a similar or modified model used? If it was modified or similar to the Miller and Burnett model how were inputs, model assumptions, and outputs different?

There is no listing in the reference section for “Miller and Burnett, in review” does this reference refer to the Miller and Burnett publication in the March 2007 issue of Water Resources research? If this work is remains unpublished and unavailable the DEIS must disclose the methods used for the debris flow modeling.

The DEIS Page H-1089 states: "Each conditional probability that each Digital Elevation Model pixel was traversed by a debris flow was determined." How was this probability calculated?

The statement "All relative probabilities were multiplied to give a specified mean recurrence interval for all 3rd and higher-order channels (350 years)." (DEIS Page H-1089) is difficult to understand. Please explain and be specific. What relative probabilities? What are they relative to? Are the relative probabilities the same as the conditional probabilities mentioned in the preceding sentence? Why was a mean recurrence interval specified for all 3rd and higher order channels? What about lower order channels? Why was 350 years chosen? What affect does this have on the results?

Are land slides from slopes surrounding streams modeled? How does wood that is transported down stream bottoms in debris torrents get to the stream in the first place?

Were road crossings considered barriers to wood movement? What is the effect of making this assumption? Road crossings of streams are frequent initiation points of debris flows.

The EIS should provide a reference for the Oregon Department of Forestry data used to calculate mean debris flow track width. If the information is unpublished please provide the details of how the data was collected and any assumptions and limitations of the methods used to collect, summarize, and analyze it. What is the value of the mean debris flow track width that was used? Is it appropriate to use a single mean value for all streams and regions in the WOPR analysis?

How are the debris-flow source pixels determined? Is only the 10-meter DEM used?

What is the method used to calculate the potential wood accumulation along each pixel of the debris flow track?

How is the probability of debris-flow deposition calculated?

How is the relative down slope decrease in debris-flow traversal probability calculated?

What is meant by "calculated as per riparian" in the "Sources for debris flow wood" bullet list on DEIS Page H-1090.

How is wood deposited by previous debris flows initiated? Does the original value start at zero?

The logic of the passage on DEIS Page H-1090 is difficult to follow:

"The amount of deposited wood that gets picked up by the next debris flow is determined by the probability that the wood is still in the channel when the next debris flow comes along $(1 - (1 - \text{PDF})^R)$; where PDF is

annual probability of debris flow traversal and R is (1/PDF), the recurrence interval. This is equal to ~0.63 for all values of PDF.”

What is equal to 0.63? The EIS should clarify this calculation.

The passage that follows is also unclear:

“The assumption is that only buried wood survives (surface wood decays) and that 30% of the wood is buried. That gives ~20% of previously deposited wood available for future debris flow scour. This amount was multiplied by the probability of scour to estimate the amount of previously deposited wood picked up by debris flows.”

Is there empirical support for the assumption that only buried wood survives? What is the rate of decay of large wood in streams? If 30% of the wood does not decay, why is only 20% (and not 30%) available for future events? How was the probability of scour estimated? How is the amount of deposited wood calculated?

Miller and Burnett (2007) found that when measured over large scales (hundreds of square kilometers) that older forests “...always exhibited the lowest densities [of landslides], averaging 30% of that in recently harvested areas and 79% of that in younger, managed forests.” The authors (Miller and Burnett 2007) also state, “Debris flows through recently harvested forests tend to travel further, and entrain more material, than those through older stands containing large trees (Robison et al., 1999; May, 2002; Ishikawa et al., 2003; Lancaster et al., 2003).” The direct, indirect, and cumulative effects of timber harvest and road building on debris flows and landslides should be included in the models and the DEIS analysis.

The EIS should use the Debris flow model to assess threats to human safety, structures, public roads, and developed areas and estimate the economic costs of increases in landslides and debris flows caused by activities proposed in the DEIS.

Wood Modeling Conclusions

While insufficient detail is presented to allow complete review of the methods used we offer the following comments:

What is the relationship of the three models - are they summed? What are the final units of output? The DEIS refers to the output as “average annual wood input to stream” what units are these results expressed in?

What happens to wood when it enters a stream under these models? Is down stream movement by means other than debris flow considered?

The models do not appear to incorporate tree species or successional processes. Climax species such as western red cedar are successional to Douglas fir and are rot resistant making them long-lived in streams. The relatively short rotations proposed in the

WOPR alternatives will favor Douglas fir over late successional tree species. How will this affect wood recruitment rates and the size and quality of woody material in streams?

Why wasn't one of the published, peer reviewed large wood models used?

DEIS Page 726 states: "In the short term (within the next 10 years), the differences in effects between the alternatives are no greater than in the long term." These data are not disclosed in the DEIS. Given the importance of large wood to fish and stream function, the currently degraded condition of streams, and the critical state of many fish populations in the analysis area these short-term data are particularly relevant.

DEIS Page 343 states: "The amount of large wood in stream channels is dependant on the amount of trees available on the landscape that can be delivered to a stream channel." The amount of wood in streams is dependent on a number of factors that include the number of trees in source areas. Other factors controlling the amount of wood in streams include processes that deliver wood and the rate that they deliver it and processes that remove wood from streams including downstream transport, decay, and movement to flood plains during high water events.

The Wood analysis should incorporate the findings of the following papers:

Benda L, Hassan M, Church M, May C. 2005. Geomorphology of steepland headwaters: The transitions from hillslopes to channels. *Journal of the American Water Resources Association, Special Issue on Headwater Streams* 41:835-851.

Faustini JM, Jones JA. 2003. Influence of Large Woody Debris on Channel Morphology and Dynamics on Steep, Boulder-Rich Mountain Streams, Western Cascade, Oregon. *Geomorphology* 51:187-206.

Hassan MA, Hogan DL, Bird SA, May CL, Gomi T, Campbell D. 2005 Spatial and Temporal Dynamics of Wood in Headwater Streams of the Pacific Northwest. *Journal of the American Water Resources Association* 41:899-919.

McClure JM, Kolka RK, White A. 2004. Effect of forest harvesting best management practices on coarse woody debris distribution in stream and riparian zones in three Appalachian watersheds. *Water, Air, & Soil Pollution: Focus* 4:245-261.

Nakamura F, Swanson FJ. 1994. Distribution of Coarse Woody Debris in a Mountain Stream, Western Cascade Range, Oregon. *Canadian Journal of Forest Research* 24:2395-2403.

Wing MG, Skaugset A. 2002. Relationships of Channel Characteristics, Land Ownership, and Land Use Patterns of Large Woody Debris in Western Oregon Streams. *Canadian Journal of Fisheries and Aquatic Science* 59:796-807.

Wood-Smith RD, Buffington JM. 1996. Multivariate geomorphic analysis of forest streams: Implications for assessment of land use impacts on channel condition. *Earth Surface Processes and Landforms* 21:277-393.

Fish Productivity Index

The DEIS Page 351 states “This analysis uses the mean annual large wood contribution to determine fish productivity using a population model developed for coho salmon by Lawson et al (2004).” In the Appendix H section on the fish productivity model, the DEIS (Page H-1091) states that “A similar approach was used by Lawson et al. (Lawson et al. 2004)...” It is unclear from these statements what method was used.

While the basic method used by Lawson et al (2004) appears to be generally sound we are concerned that it lacks peer review and testing. The Lawson et al (2004) document is a draft document and the model appears in appendix III of this draft. Given the apparently preliminary nature of this model, the EIS should disclose any peer review or validation of this model.

Lawson et al (2004) developed this model “...to estimate historical abundance of coho salmon in the Oregon Coast Coho Salmon ESU for the purpose of modeling the independence of individual populations.” Given the stated purpose of this model is different than the purpose of its use in the WOPR DEIS (to “assess the effects of wood recruitment on fish habitat” DEIS Page H-1091) the EIS should provide information regarding the appropriateness of this model and any limitations or constraints on the interpretation of the results produced by it.

For stream reaches with a gradient $\leq 0.5\%$, the Lawson et al 2004 model calculates the area of a stream reach and multiplies it by 0.0741 smolts per square meter. This smolt density is based on data from NMFS et al. (1983) – a report from a workshop on Northern Washington rivers held in 1982. Is this an appropriate estimate of smolt density to use for Western Oregon? Are there other more recent data available? Stream reaches with gradients $> 0.5\%$ used a much higher number for smolt density (0.3405/m²) based on data from Nickelson (1998).

The high gradient calculation in Lawson et al (2004) assumes a 50:50 pool:riffle ratio. Does the extensive stream survey data collected by state and federal agencies support this? What affect do deviations for a 50:50 ratio of pools to riffles have on the final calculation of fish productivity?

The DEIS Page 351 states: “For this analysis, the fish population model is modified to be dependant on large wood contribution.” How was the model modified? Since the fish model is dependent on large wood what is the purpose of the fish population model?

The DEIS Page 351 describes the Fish Productivity Index as the surface area of stream habitat weighted by the intrinsic habitat value. How is surface area of the stream

calculated and how is it weighted by the intrinsic habitat value? The EIS should be explicit when describing these methods.

The DEIS Page H-1091 states that the fish productivity index "...is based on the assumption that available habitat is proportional to available channel area...". Is there available science to support this assumption? How will violations of the assumption affect the results?

The DEIS Page H-1091 states that channel width is determined from 10-m Digital Elevation Models. Specifically, how is channel width calculated from DEMs?

How is the surface area of the channel modified using species-specific intrinsic potential (DEIS Page H-1091)?

It is unclear how the maximum rate of wood recruitment is calculated (DEIS Page H-1092). Is it the result of the three wood models assuming that the entire watershed is mature or structurally complex stands? If so, how are the OPTIONS stand tables calculated for the maximum rate? What density of trees is used? What are the values of the other input variables into the wood models?

On DEIS Page H-1092 the paragraph near the middle of the page that begins "A minimum spacing of two pools..." appears to indicate that the analysis assumes that mature and structurally complex forests contain 0.4 pieces of wood/meter and/or 2 pools/channel width. Was this assumption made? Did this relationship come from Beechie and Sibley (1997)? The EIS should refer to any science that supports this assumption.

On DEIS Page H-1092, we find it difficult to follow the logical step between the ratio of wood recruitment and maximum wood recruitment to the discussion that follows, the number of pools, or the fish productivity index. The information on this page should be edited for clarity and better presented in the EIS.

Why was the relationship between large wood and pool frequency from second growth forests in Northwestern Washington from Beechie and Sibley (1997) used to calculate pool spacing? Extensive stream survey data is available from Western Oregon that includes pool frequency, channel width, and large wood counts. Was validation of the regression equation (DEIS Page H-1092) conducted using these data? The EIS should provide the level of certainty in the regression relationship for the forests and streams analyzed in the EIS. Other publications provide estimates of large woody debris in undisturbed streams. Wood-Smith and Buffington (1996) found an average of approximately 3 pool related large wood obstructions per channel width in undisturbed streams and 1 per channel width in disturbed streams. The authors found values as high as 5 pieces of large wood per channel width and 3.35 pools per channel width in undisturbed streams. Undisturbed streams had significantly higher numbers of pools and pieces of large wood than disturbed streams.

Do the models limit the maximum number of pieces of wood in a stream or is a constraint placed on the maximum value? If so this should be stated explicitly and because wood has many other functions in streams besides creating pools the consequences of this assumption should be discussed.

The last paragraph on DEIS Page H-1092 is particularly difficult to understand and the logic is difficult to follow. Is there any precedent for using this index to modify fish population models? The DEIS should provide reference any science supporting this approach. This section should be edited and rewritten for clarity. There appear to be significant untested, unsupported assumptions buried in this section. For instance, the assumption that the relationship between habitat quality and the ratio of modeled wood values is linear. Because the preceding sections are not clear it is impossible to evaluate the validity of this method or the relevance and reliability of the results.

Representative Watersheds

The analysis of impacts to fish species (ESA Listed, Special Status, and other species) is limited to five “representative” watersheds. In a scientific context the term “representative” has a specific meaning. A representative sample is a subset of a larger population that is selected to allow inferences to be made about the larger population. In this case, we assume that the larger population is all the watersheds in the WOPR area or all the watersheds with BLM lands in the WOPR area.

Are these watersheds representative in a statistical sense (e.g. where they selected randomly or in a systematic fashion)?

The DEIS states:

“To show the typical large wood contribution from BLM and non-BLM-administered lands, fifth-field watersheds were selected that represent a range of BLM ownership patterns and physiographic provinces.” DEIS Page 347

This passage suggests that they are not representative. Table 107 DEIS Page 348 provides further indication that the selected watersheds are not representative samples of watersheds in the plan area. For example, while 81% of watersheds in the plan area have <1/3 BLM ownership only one of the five watersheds was selected from this strata. Watersheds with 1/3-2/3 of the area under BLM management represent 18% of all watersheds but three of the five (60%) were selected and while watersheds with >2/3 BLM ownership represent <2% of all watersheds one of the five selected for analysis came from this watershed. Three of the five selected watersheds are on the Medford District (the other two are on the Salem and Coos Bay Districts).

Because it appears that the five watersheds were not selected as a representative sample in the statistical sampling sense of the term it is inappropriate to use the results of the analysis to infer the effects of the proposed activities on other watersheds. We request

that the BLM conduct an analysis of the effects of the proposed activities on all fish species including ESA listed and special status species.

The EIS should address the following questions:

- How were the five watersheds selected?
- Were other watersheds analyzed with either a complete or partial run of the models?
- What is the current condition of streams in the representative watersheds?
- What is the proportion of LSR/LSMA and other allocations in each watershed?

The OPTIONS timber harvest disturbance is random – was only a single run of the model performed? Did any harvest end up in these five watersheds? How much harvest occurred in the simulations and where was it located?

Biodiversity

The action alternatives proposed in the DEIS will have significant impacts to biodiversity. The DEIS unreasonably minimizes or fails to analyze and disclose these impacts. We are particularly concerned that the emphasis on timber production to the exclusion of other values will result in significant impacts to biodiversity.

The DEIS fails to consider the effects of the proposed activities on species populations. The DEIS relies on estimates of habitat abundance and fails to consider changes to populations of ESA listed, special status, game, fish, and other relevant species. The EIS should consider populations at scales relevant to the individual species.

The extensive and intensive management throughout the WOPR plan area, with no provision for the retention of down wood, green trees, or snags will result in a reduction in biodiversity over the plan areas and at local sites. The failure to retain legacy structures in harvested areas will negatively affect many species. Commercial thinning to remove density based mortality and relatively short rotations (compared to natural disturbance regimes) will ensure that TMAs will not contain these important wildlife habitats.

Elimination of the Northwest Forest Plan will result in significant impacts to a wide variety of species. In addition to late-successional reserves, the Northwest Forest Plan provides multiple levels of protection for species at both landscape and local scales. The WOPR DEIS fails to consider the impacts to biodiversity and individual species of the elimination of Northwest Forest Plan riparian reserves, survey and manage standards and guidelines, matrix standards and guidelines, 100-acre spotted owl LSRs, and other provisions that protect species and biodiversity.

According to the DEIS, the action alternatives may result in the extinction of species. The DEIS Page LVII states:

“The habitat needs of forest-floor-associated species that are highly endemic to one or several locations would be at risk of decline in abundance and distribution under the three action alternatives.”

Species that are endemic to one location that suffer a decline in distribution are by definition extinct.

The previously quoted statement from DEIS Page LVII needs further explanation. Why would only highly endemic species be at risk of decline under the action alternatives? What analysis is this conclusion drawn from? Why does the DEIS not conclude that all forest-floor-associated species are at risk of decline?

The DEIS analysis fails to consider the needs of species adapted to infrequent disturbance and impacts to species with limited dispersal ability. The frequency of disturbance plays a large roll in the distribution of species. Many species such as woodland salamanders (*Plethodon*) and Oregon slender salamanders (*Batrachoseps wrighti*) are associated with older forests and are sensitive to disturbance. Under the action alternatives (particularly alternatives #1 and 2) timber harvest will occur at a frequency that may not allow stands to remain in late-seral condition long enough for organisms extirpated by timber harvest to recolonize the stand and rebuild populations. The EIS must analyze and disclose the effects on old-forest dependent species with limited dispersal ability. In addition, many species exist in patchy populations that are not evenly distributed on the landscape. Specific aspects of the Northwest Forest Plan were included to protect species intolerant of disturbance, with limited mobility, and patchy populations (e.g Riparian Reserves, Matrix Standards and Guideline, snag and green tree retention, and others). The EIS should fully consider the elimination of all of the aspects of the Northwest Forest Plan.

The EIS should consider and incorporate the work of Richards et al (2002) on habitat fragmentation in Western Oregon and its effects on species with limited dispersal ability particularly their finding that:

“...the reserve system [the Northwest Forest Plan Reserve System] will not maintain habitat connectivity throughout the landscape for species with relatively short dispersal distances. Patches showing the greatest decrease in dispersal activity following the systematic removal of late-seral forest habitat were identified as important areas of connectivity.”

Consideration of this important work is key to understanding the impacts to many species in the WOPR plan area. Because the WOPR action alternatives reduce both the reserve system and further fragment the landscape the consequences for low mobility species should be considered and disclosed.

The analysis in the DEIS fails to consider the effects of altered fire regimes and increases in disturbance by fire will have on forest associated species. The DEIS discloses the changes to fire regimes under the action alternatives including significant

increases in fire hazard and severity and reductions in the amount of fire resilient forest. However, the DEIS fails to analyze the impact on biodiversity and Endangered Species Act listed, Special Status, Big Game, and other species.

Under the Northwest Forest Plan Riparian Reserves were designed, in part, to provide refugia for old-forest associated wildlife. The RMA widths proposed in the WOPR action alternatives are insufficient to maintain interior forest conditions and provide refugia for forest associated species.

Big Game Species

The DEIS fails to analyze the effects of Off-Highway Vehicle use on big game and other wildlife. Do proposed off-highway vehicle areas overlap or are they near important deer and elk habitats or migration corridors? Will OHV use impact calving or other important parts of big game life cycles? A full range of OHV alternatives should be considered including an alternative that minimizes impacts to big game and wildlife. How will disturbance sensitive species (e.g. Bald Eagles, Northern Spotted Owls, Elk) be impacted by OHV use.

The DEIS unreasonably gives timber production priority over the management of big game herds. DEIS Page 61 in the management objective section states:

“Assist the Oregon Department of Fish and Wildlife in meeting big game management goals on public domain lands and on O&C lands where the goals are consistent with the O&C Act”

The O&C act specifically mentions recreation. The EIS should consider the important role that big game provides in providing recreational opportunities, the impacts of the proposed actions. The economics section should include an analysis of the value of big game and sport fish populations and the importance of this value to providing stability to communities.

The DEIS Page 61 under Management Actions provides an exemption for “administrative use” to road closures for the protection of big game. What actions are considered administrative use? Do they include log hauling? Will activities considered administrative use impact game species or other wildlife?

Migratory Birds

The land birds analysis lacks sufficient detail and resolution to allow for a reasoned decision. The use of the 4 seral stages is insufficient and the analysis should consider specific habitat features including snags, hardwoods, riparian areas, large trees and other important features and the lack of (or limited) retention of legacy structures in TMAs and the impacts of post-fire logging proposed under the action alternatives.

The DEIS fails to implement Executive Order 13186 – “Responsibilities of Federal Agencies to Protect Migratory Birds.” The EIS should discuss how the proposed

changes to resource management plans relate to this order and how the BLM will comply with it (the order is available at: <http://ceq.eh.doe.gov/nepa/regis/eos/eo13186.html>).

Survey and Manage Species

Table 86 DEIS Page 265 does not include mollusks or vertebrate species protected by Survey and Manage. It would be useful to clarify in the heading and text that this section only refers to non-animal Survey and Manage Species.

The DEIS fails to consider, analyze, and disclose the effects of the proposed changes to land management on species protected by the Survey and Manage provisions of the Northwest Forest Plan. The DEIS fails to consider the affected environment and environmental consequences for non-animal Survey and Manage species. The discussion of non-animal Survey and Manage Species on DEIS Page 265 refers the reader to the 2004 Survey and Manage FSEIS for “comprehensive information” regarding Survey and Manage species. The 2004 Survey and Manage FSEIS provides an overview of Survey and Manage Species and presents a summary of the results of the outcomes analysis conducted for the FSEIS. The species-specific discussion of the current condition and environmental consequences in this FSEIS is limited to species that are predicted to have insufficient habitat to support stable populations in all or part of the NWFP area.

The DEIS presents no discussion of the affected environment for vertebrate and invertebrate animal Survey and Manage species. The DEIS states that under the No Action alternative that effects on these species will be similar to the effects on the Northern Spotted Owl and does not analyze the effects on these species under the action alternatives.

The DEIS must analyze the removal of the Survey and Manage Standards and Guidelines for all alternatives. The DEIS Page 716 Table 205 in the Environmental Consequences section states that Survey and Manage Species are “Included under the No Action Alternative only.”

The DEIS does not analyze the effect of removing the Survey and Manage Standards and Guidelines. The DEIS Page 716 Table 205 in the Environmental Consequences section states: “Assume similar effects as those for the northern spotted owl.” This assumption is flawed. Species were included in the Survey and Manage Standards and Guidelines because the Northwest Forest Plan system of reserves, designed to conserve the Northern spotted owl, failed to protect these species adequately. The primary consideration that placed species on the Survey and Manage list was that the effects of land management on these species were not the same as on Northern spotted owls. Significant differences in distribution, life history, mobility, and ecology exist between survey and manage species. Most survey and manage species complete their entire life cycle at a scale that is far smaller than the Northern spotted owl.

The DEIS fails to analyze the effects of the proposed changes to land management on Survey and Manage and instead relies on a simple assertion that the effects are similar to the Northern spotted owl. The 9th Circuit Court has found that this type of assertion does not meet the requirement of NEPA to analyze and disclose the effects of proposed actions:

“We have repeatedly explained that generalized, conclusory assertions from agency experts are not sufficient; the agency must provide the underlying data supporting the assertion in language intelligible to the public. See *Ocean Advocates v. U.S. Army Corps of Eng’rs*, 402 F.3d 846, 864 (9th Cir. 2005); *Klamath-Siskiyou Wildlands Ctr. v. Bureau of Land Mgmt.*, 387 F.3d 989, 996 (9th Cir. 2004). “[W]hile the conclusions of agency experts are surely entitled to deference, NEPA documents are inadequate if they contain only narratives of expert opinions.” *Klamath-Siskiyou Wildlands Ctr.*, 387 F.3d at 996.” (See attached document MT_Ashland_Opinion.pdf)

Furthermore, since 53 species analyzed in the 2004 Survey and Manage SFEIS “...would have insufficient habitat (including known sites) to support stable populations in all or part of the Northwest Forest Plan area” assuming that the WOPR alternatives have similar effects on these species and Northern spotted owls a logical conclusion might be that Northern spotted owls will not have sufficient habitat to support stable populations in all or part of the Northwest Forest Plan Area.

No analysis of the effects on Survey and Manage plant, lichen and fungi species is presented in Chapter 4, the Environmental Consequences section of the DEIS.

The cumulative effects of the 2004 SFEIS, the 2007 Final Supplement to the 2004 SFEIS, and the 2007 Record of Decision To Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines and the WOPR alternatives should be analyzed and disclosed. Currently, implementation of the 2004 and 2007 Survey and Manage Documents are under a court injunction. If the US Forest Service and BLM are successful in correcting the deficiencies in these documents identified by the courts and/or one of the WOPR action alternatives is selected Survey and Manage will be eliminated. In either case, the WOPR EIS must consider and disclose the cumulative effects of eliminating the Survey and Manage Standards and Guidelines and the WOPR alternatives.

It is difficult to reconcile the results of the Survey and Manage documents and the conclusions presented in the WOPR DEIS. The analysis presented in the Survey and Manage documents assumed the continued implementation of the Northwest Forest Plan and found that “...for 133 species there would be insufficient habitat (including known sites) to support stable populations in all or part of the Northwest Forest Plan area under all alternatives due to factors beyond the control of the Forest Service and BLM.” and 53 species “...would have insufficient habitat (including known sites) to support stable populations in all or part of the Northwest Forest Plan area”. Assuming the elimination of Survey and Manage either through the Survey and Manage NEPA documents or through the WOPR EIS it is reasonable to expect worse outcomes given the elimination of the Northwest Forest Plan under the WOPR action alternatives.

The EIS should incorporate existing species information compiled for Survey and Manage and Special Status/Sensitive Species Programs. Extensive information has been compiled for many Survey and Manage Species including Management Recommendations and Conservation Assessments written by agency experts that would provide a convenient accessible source for the analysis of effects to these species.
<http://www.blm.gov/or/plans/surveyandmanage/mr.htm>
<http://www.fs.fed.us/r6/sfpnw/issssp/planning-documents/assessments.shtml>
Other important documents and analyses to consider include the Annual Species Reviews and information contained in the Survey Protocols.

Special Status Species / BLM Manual 6840

The DEIS action alternatives fail to follow the policy outlined in BLM Manual 6840.
The DEIS Page 61 states that BLM sensitive or assessment listed species

“...will be managed on public domain and on O&C lands where protection does not conflict with sustained yield forest management in areas dedicated to timber production.”

And continues on DEIS Page 61:

“This is so that special status designation would no longer be warranted and so that actions will not contribute to the need to list the species under the Endangered Species Act.”

On the same page:

“Where conflicts with sustained yield management occur, protections on O&C lands will only be applied to prevent extinction of a species even if it is not yet listed under the Endangered Species Act.”

The species-specific effects of eliminating Special Status Protection on O&C lands and how BLM Manual 6840 direction will be reconciled with this decision. How will the BLM prevent species declines and trends towards ESA listing while eliminating protection across approximately 2 million acres.

Elimination of the Northwest Forest Plan will result in a trend towards Endangered Species Act listing or listing of many species. For specific examples, see discussion of Siskiyou Mountains salamander and southern torrent salamander. The analysis should provide a discussion of the species outcomes from the FEMAT report and other Northwest Forest Plan documents and reviews.

The EIS should consider and disclose the changes to Special Status Policy under the proposed action alternatives. The DEIS Page 596 states:

“Under the No Action Alternative, conservation measures would be applied to all habitat groups under the BLM Special Status Species Policy

and Survey and Manage on all BLM-administered lands in the planning area.”

“Under the action alternatives, conservation measures from the BLM Special Status Species Policy would be applied on Public Domain lands and O&C land that are not in the harvest land base.”

and again on page 719:

“On all BLM-administered lands under the No Action Alternative, and on public domain lands and on the non-harvest land base on O&C lands under the action alternatives, special status species would be managed to avoid contributing to the need to list as threatened or endangered under the Endangered Species Act.”

The consequences of this change in management should be discussed and species-specific impacts disclosed in the EIS. Additionally, will Special Status Policy apply on Administratively Withdrawn areas (TPCC unstable lands) that are adjacent to TMA and are on O&C lands?

The following statement from DEIS Page LVI is unsupported in the DEIS and conflicts with past assessments and species reviews conducted by the BLM and USFS:

“Under the No Action Alternative and on the public domain lands under the three action alternatives, there would be little risk of loss of populations and extirpation or extinction of bureau sensitive species or bureau assessment species.”

The 20-population rule is not supported by science. The statements and conclusions in the DEIS regarding the relative conservation status of species with more or fewer than 20 populations is unsupported in the DEIS and in the conservation literature. A trend towards ESA listing starts well before a species declines to 21 populations.

The DEIS does not consider the size, extent, or distribution of populations and only applies a threshold number (20) to determine if species receive any protection on O&C lands. An old-forest associated species with many more than 20 populations may be at risk of extinction if all populations are on TMA lands.

How is “population” defined in the context of the 20 populations statements. Table 255 page 1065 includes an “*” to denote species with >20 populations. How was this determined? How was population defined? Are all populations considered extant? Are all populations verified recently? Are the records old and of uncertain status?

The DEIS fails to consider important factors such as species abundance, distribution, and range in the effects analysis. Basic information regarding such factors as species range and distribution is both widely available for most species and critical to assessing the impacts of the proposed changes to land management. Species associated with old forests whose range is not coincident with LSMAs under the proposed management plans

will be negatively impacted. The analysis in the DEIS only considers the amount of predicted older forest and fails to consider their geographic distribution and relevancy of LSMAs to individual species. The analysis assumes that stands in a particular seral stage all have the same value to species and does not consider factors such as patch size, frequency of disturbance, aspect, and connectivity at scales appropriate to the species.

The DEIS Page 61 states: "Management would be consistent with approved conservation plans. See appendix G. Wildlife." Appendix G provides no indication of conservation plans. Which species is the DEIS referring to? Where can the reader find these conservation plans?

Siskiyou Mountains Salamander

The DEIS fails to consider, analyze, and disclose the effects of the proposed changes to land management plans on the Siskiyou Mountains salamander. The DEIS only mentions this species in 2 places, in Tables 100 and 255. No discussion of biology, habitat, conservation status, or existing conservation plans is presented.

The analysis of effects on species grouped under the designation "forest floor species" is not useful in assessing the Siskiyou Mountains salamander and fails to incorporate relevant information on species biology and distribution. The analysis provides limited detail and lacks basic information regarding needed to judge the validity of the method used. The DEIS Page 721 states that 20 watersheds were analyzed but provides no information regarding which watersheds were analyzed, what scale watersheds were used, and how they were selected. Were any watersheds selected from within the range of the Siskiyou Mountains salamanders?

Consideration of the landscape context is important in the assessment of the impacts to species. The entire range of Siskiyou Mountains salamanders on BLM lands is TMA under all three action alternatives. How relevant are the 20 watersheds analyzed to the Siskiyou Mountains salamander? Species ranges and reserved lands are not randomly distributed across the landscape. The effects to species with small ranges relative to the overall planning area may be quite different from an average condition of watersheds in the planning area.

The analysis assumes that all portions of the landscape are of equal value to species. However, Siskiyou Mountains salamanders occupy very specific habitat composed of rocky soils under closed canopy forests. They are restricted to low to moderate elevations and are primarily found on north facing aspects. Their range in Oregon is limited to the Applegate River Watershed south of the town of Ruch.

Many of these comments are relevant to other species and the EIS should consider unique aspects of biology and distribution in the effects analysis.

The DEIS fails to incorporate information and conclusions from Annual Species Reviews and other previous analyses. The EIS should reconcile the findings of these assessments and the conclusions presented in the WOPR EIS for Siskiyou Mountains salamanders and all other relevant species.

The proposed changes to land management plans may lead to Endangered Species Act listing of the Siskiyou Mountains salamander. The US Fish and Wildlife Service issued a 90-day finding on a petition to list the Siskiyou Mountains salamander (March 29, 2007) that found that the petition presented substantial information indicating that the listing of this species may be warranted due to the destruction or modification of habitat. The USFWS found that the petition did not present significant information indicating that the species warranted listing due to the inadequacy of existing regulations, citing the Survey and Manage Standards and Guidelines of the Northwest Forest Plan as an adequate existing regulation on federal lands.

In July 2007, the BLM published the *Record of Decision To Remove the Survey and Manage Mitigation Measure Standards and Guidelines from Bureau of Land Management Resource Management Plans within the Range of the Northern Spotted Owl*. While implementation of the series of NEPA documents eliminating Survey and Manage is currently enjoined by the courts the WOPR EIS must discuss the direct and cumulative effects of the Elimination of Survey and Manage via either the 2007 Survey and Manage ROD or the WOPR FEIS on Siskiyou Mountains salamanders and other affected species. This analysis should include the increased risk of ESA listing due to the loss of regulatory mechanisms to protect the species and loss of other Northwest Forest Plan provisions that protect these species including riparian reserves, 100-acre owl LSRs, and matrix Standards and Guidelines.

The DEIS fails to consider the Candidate Conservation Agreement, Conservation Strategy, and Conservation Assessment for the Siskiyou Mountains salamander. The DEIS does not reference these documents. The EIS must discuss the relationship of these agreements to the WOPR alternatives and the effects of the WOPR on these agreements.

The Conservation Strategy (Page 6) states that an immediate review of the plan would be triggered by a number of factors including "...a significant management direction change on Federal lands within the area of the conservation strategy." The EIS should discuss the implications of the change of management of BLM lands proposed by the WOPR DEIS and the potential trend towards ESA listing by the loss of the Candidate Conservation Agreement. The Conservation Strategy is based on the assumption that all aspects of the Northwest Forest Plan would be continued to be implemented:

"The Siskiyou Mountains salamander conservation strategy builds upon the existing reserve systems and the Standards and Guidelines established under the Rogue River NF Land and Resource Management Plan, the Medford BLM Resource Management Plan and the Northwest Forest Plan. In this area, the reserve system includes congressionally withdrawn areas, riparian reserves, owl habitat areas, botanical reserves, late-successional reserves, and special emphasis areas (Figure 2)."

The selection of high-priority sites for protection of salamander populations purposely selected populations on or adjacent to 100-acre owl LSRs, large riparian reserves, and other areas assumed to be protected under the Northwest Forest Plan. Other aspects of the Northwest Forest Plan incorporated into the Conservation Strategy included down wood retention, green tree retention, and 15% retention in harvest units.

Tailed Frog

*The DEIS fails to consider and disclose the effects of the proposed changes to land management plans on the Inland tailed frog (= Rocky Mountain tailed frog, *Ascaphus montanus*). A search of the DEIS only finds this species listed in Table 255 Page 1065. No information or analysis of the effects of the proposed actions on this BLM sensitive species is presented in the DEIS.*

Larch Mountain Salamander

The DEIS fails to consider and disclose the effects of the proposed changes to land management plans on the Larch Mountain salamander and contains factual errors regarding the habitat and distribution of this species. DEIS Table 205 Page 714 states:

“New data showing it restricted to Columbia Gorge and talus-skree habitat. The BLM does not have this habitat. Based on extensive surveys on Mt Hood NF. WA habitat data not seem to apply to OR.”

The EIS should provide a source and description of the “new data” that this passage mentions. This statement is contradicted by information contained in Survey and Manage Annual Species reviews and other Survey and Manage documents, the GeoBob database, published peer-reviewed literature, and a recently published field guide chapter.

The species is not restricted to the Columbia River Gorge and talus-scrub habitat. South of the Columbia River Gorge, the species has been observed within 2 miles of BLM managed lands (designated TMA under WOPR alternative #2), the type locality on Larch Mountain is approximately 3.5 miles northeast of BLM managed lands, the species has been observed as far as 15 miles south of the gorge in the Bull Run Watershed on USFS lands and 18 miles south of the Columbia River Gorge in the Hood River drainage. Records for all these observations are in the GeoBob database and were entered in the ISMS database prior to the creation of the GeoBob database.

While historically associated with rocky soils under forest canopy, the species has been found several habitat types including old-growth forest with loamy soils (Jones et al 2005). Inclusion in the Survey and Manage program was contingent on a strong association with late-seral forests and agency documents relating to Survey and Manage document the association of this species to late-seral forested habitats.

As noted elsewhere in these comments, unsupported assertions are not adequate to comply with NEPA (See attached document MT_Ashland_Opinion.pdf). The assertion that Larch Mountain salamander habitat is not found on BLM land should be documented to meet this standard. The meaning of the last two sentences of the statement are somewhat unclear but appear to indicate that extensive surveys on the Mt. Hood NF have somehow demonstrated that the species uses different habitat in Washington and Oregon. We have reviewed the survey data in the GeoBob database and find few surveys have been conducted for this species in Oregon under the Survey and Manage program. The EIS should document the surveys referred to in this statement and how differences in habitat use between Oregon and Washington were established from these surveys.

The EIS should consider and disclose the cumulative impacts of the elimination of the Survey and Manage Standards and Guidelines and all other aspects of the Northwest

Forest Plan on Larch Mountain salamanders. The analysis should incorporate past work including Survey and Manage Annual Species Review documents and reconcile the environmental effects predicted by the WOPR analysis with past analyses and documents.

The DEIS on Table 100, Page 321 includes Larch Mountain salamander under the category “Species effects that are common to all alternatives. Includes species that are associated with special habitats or features. Also includes accidental or occasional migrants where impacts are unlikely.” How were the effects to Larch Mountain salamanders and the other species in this category determined? As mentioned above “Generalized, conclusory assertions from agency experts are not sufficient...”. The EIS must discuss the underlying analysis and information that supports this conclusion.

Oregon Slender Salamander

The DEIS fails to adequately consider the effects of the proposed changes in land use on the Oregon slender salamander. This species is strongly associated with old-growth, is not resilient to disturbance, occurs in a limited band of elevation, has a small range in the Northern Oregon Cascades, and is strongly associated with large down wood of specific decay classes. Alternative #2 removes all BLM LSR from this species range. The BLM/USFS Special Status Program has written a Conservation Assessment for this species and it was proposed for inclusion in the Survey and Manage Program and an Annual Species Review was conducted. The EIS should consider the biology and distribution of this species and incorporate the reviews already conducted by the BLM and USFS.

State Listed Species

The DEIS fails to disclose the effects of the proposed actions on species listed as threatened or endangered by the State of Oregon. The DEIS Page 60 states that species listed by the State of Oregon will be “...managed in accordance with cooperative management agreements.” Which species in the project area are state listed? Which ones have cooperative management agreements? Where can the reader find these agreements? In the absence of a cooperative management agreement, the DEIS Page 61 states that these species “...will be managed on public domain and on O&C lands where protection does not conflict with sustained yield forest management in areas dedicated to timber production.” Because of this significant difference in management, the EIS must disclose which species have cooperative management plans, what the current status and distribution of these species is and analyze the direct, indirect, and cumulative impact of the alternatives.

Northern Spotted Owl

The DEIS relies on the Draft recovery Plan for the Northern Spotted Owl and the Purpose and Need statement includes the need to coordinate the WOPR with the Draft Recovery Plan and Critical Habitat. The Draft Recovery Plan has failed peer review, is mired in controversy, and has an uncertain future. Rather than write a lengthy critique of the WOPR DEIS analysis we are attaching and submitting as comments the following attached documents:

Carroll C and Johnson DS. In Press. The importance of being spatial (and reserved): Assessing northern spotted owl habitat relationships with hierarchical Bayesian models. Conservation Biology. (CarrollJohnson_CB_inpress.pdf)

DellaSala DA, Cullinan TP. August 17, 2007. Comments on Draft Recovery Plan for the Northern Spotted Owl. (NCCSPAudubonowldraftplancomments8-17-07.doc)

Dugger KD. No Date. Review of 2007 Northern Spotted Owl Draft Recovery Plan. (Dugger_NS0_comments.pdf)

Dunk JR. September 24, 2007 Comments on the Proposed Critical Habitat for the Northern Spotted Owl. Dr. Jeffrey R. (JRD comments on proposed critical habitat for NSO.pdf)

Environmental Protection Agency. August 29, 2007. EPA Comments on the Draft Recovery Plan for the Northern Spotted Owl. (spotted owl epa letter.pdf)

Franklin AB. June 25, 2007. Comments on Draft Recovery Plan for the Northern Spotted Owl. (Franklin_Comments_NS0_Plan_25june2007.pdf)

Olson GS. August 20, 2007. Comments on Draft Recovery Plan for the Northern Spotted Owl. (olson_comments_NS0_plan_20august2007.pdf)

The Society for Conservation Biology (North American Section). August 24, 2007. Comments on Draft Recovery Plan for the Northern Spotted Owl. (SCB recovery plan comments to FWS.pdf)

The Society for Conservation Biology (North American Section) and The American Ornithologists' Union. July 5, 2007. Peer review of Draft Recovery Plan for the Northern Spotted Owl. (SCB_AOU_NS0_comments_5july2007.doc)

The Wildlife Society. August 9, 2007. Peer review of Draft Recovery Plan for the Northern Spotted Owl. (TWS comments on NSO plan 8 9 07.pdf)

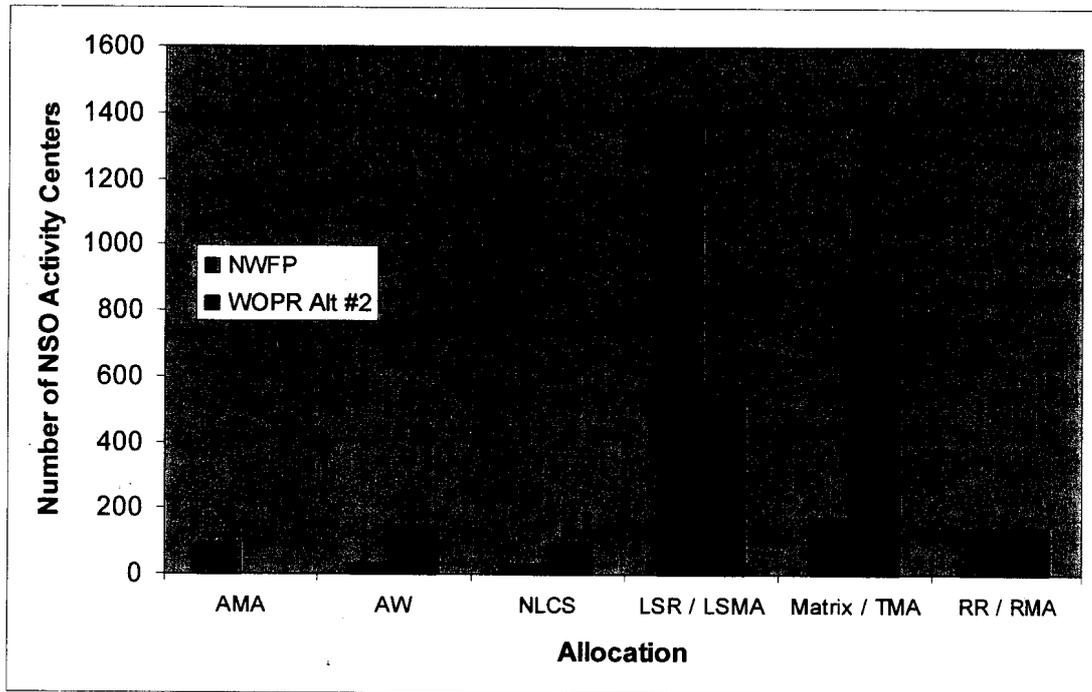
We recommend that the Final EIS consider an alternative or alternatives that provide a greater level of protection for the Northern spotted owl and other species associated with older forests. The Northern spotted owl continues to decline and the further loss of habitat will only further limit future options for recovering the species.

The EIS should consider and disclose the current status of Northern spotted owl populations (and all other ESA listed and special status species) and the effects of the proposed changes to land management. Using GIS data from the BLM's webpage we conducted the following simple analysis. Northern spotted owl activity centers were plotted on a map of land use allocations under the no action alternative and alternative #2. The number of activity centers was summarized by allocation for each alternative resulting in the following (Table 1, Figure 1):

Table 1. Number of spotted owl activity centers found in each land allocation class under WOPR alternatives NA and Alternative #2.

Allocation	NA	Alt #2
AMA	93	0
AW	32	151
NLCS	33	94
LSR / LSMA	1371	541
Matrix / TMA	178	914
RR / RMA	140	147
Total	1847	1847

Figure 1. Number of spotted owl activity centers found in each land allocation class under WOPR alternatives NA and Alternative #2.



Our results found 830 fewer owl activity centers protected in LSRs under the no action alternative than under alternative #2. These activity centers represent 45% of the total known activity centers on BLM lands in Oregon. Almost all of these activity centers lost from LSRs end up in TMAs under alternative #2. The increase in matrix/TMA activity centers is 736 and administratively withdrawn activity centers increases by 119. Because the DEIS states that administratively withdrawn activity lands may be managed like surrounding allocations we are concerned that a large portion of the administratively withdrawn activity centers will also be lost.

The EISs must discuss effects to populations and discuss how the potential elimination of over 50% of the remaining owl activity centers complies with the Endangered Species Act and the BLM's mandate to recover Endangered Species.