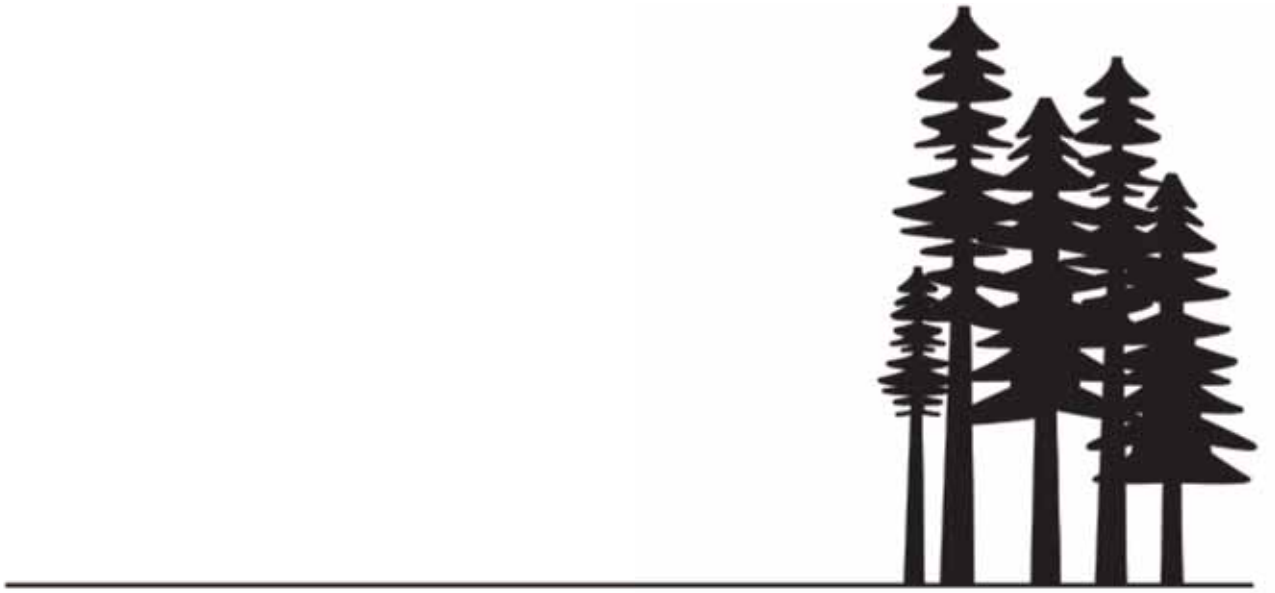


Appendix G. Wildlife

This appendix provides background on the analysis of wildlife including detailed data from recovery plans, critical habitat for the northern spotted owl and marbled murrelet, and special status animal species.

In this appendix:

Management Opportunities on BLM-Administered Lands in the Recovery Plans for the Columbia White-tailed Deer (Columbia River population), Marbled Murrelet, and Bald Eagle.

Columbia white-tailed deer (Columbia River population)

The focus of the recovery strategy is on the national wildlife refuge lands and surrounding privately owned lands. Nothing has been excerpted from the recovery plan.

Marbled Murrelet

Portions excerpted from *Recovery Plan For The Threatened Marbled Murrelet (Brachyramphus marmoratus) In Washington, Oregon, And California* (pages 125-160 in USFWS 1997).

D. Narrative Outline for Recovery Actions.

1. Implement management plans for each Marbled Murrelet Conservation Zone

1.3 Oregon Coast Range Zone (Zone 3).

The Oregon Coast Range Zone extends from the Columbia River, south toNorth Bend, Coos County, Oregon. This Zone includes waters within 2 kilometers (1.2 miles) of the Pacific Ocean shoreline and extends inland a distance of up to 56 kilometers *(35* miles) from the Pacific Ocean shoreline and coincides with the "Zone 1" boundary line described by the Forest Ecosystem Management Assessment Team, with minor adjustments (U.S. Department of Agriculture *et al.* 1993). The boundary encompasses all of the marbled murrelet critical habitat units designated (the boundary extends slightly beyond 56 kilometers (35 miles) in certain areas.

This Zone includes the majority of known marbled murrelet occupied sites in Oregon. Marbled murrelet occupied sites along the western portion of the Tillamook State Forest are especially important to maintaining well distributed marbled murrelet populations. Efforts should focus on maintaining these occupied sites, minimizing the loss of unoccupied but suitable habitat, and

decreasing the time for development of new habitat. Relatively few known occupied sites occur north of the Tillamook State Forest. Recovery efforts should be directed at restoring some of the north-south distribution of marbled murrelet populations and habitat in this Zone. Maintenance of suitable and occupied marbled murrelet nesting habitat in the Elliott State Forest, Tillamook State Forest, Siuslaw National Forest, and Bureau of Land Management-administered forests is an essential component for the stabilization and recovery of the marbled murrelet.

1.4 Siskiyou Coast Range Zone (Zone 4).

The Siskiyou Coast Range Zone extends from North Bend, Coos County, Oregon, south to the southern end of Humboldt County, California. It includes waters within 2 kilometers (1.2 miles) of the Pacific Ocean shoreline (including Humboldt and Arcata bays) and, in general, extends inland a distance of 56 kilometers (35 miles) from the Pacific Ocean shoreline and coincides with the "Zone 1" boundary line described by the Forest Ecosystem Management Assessment Team with minor adjustments (U.S. Department of Agriculture *et al.* 1993). The boundary encompasses all of the marbled murrelet critical habitat units designated (the boundary extends slightly beyond 56 kilometers *(35* miles) in certain areas.

This Zone includes the marbled murrelet population occupying sites in Redwood National Park and several state parks (Jedediah Smith, Del Norte, Prairie Creek, Grizzly Creek, and Humboldt) in California. In addition, this Zone includes nesting habitat on private lands in southern Humboldt County. Additional marbled murrelet nesting habitat occurs at lower elevations in western portions of the Smith River National Recreation Area. State policies regarding protection of marbled murrelet occupied sites on private lands differ in the Oregon and California portions of this Zone.

Recovery actions should be focused on preventing the loss of occupied nesting habitat, minimizing the loss of unoccupied but suitable habitat, and decreasing the time for development of new suitable habitat. Much marbled murrelet nesting habitat is found in state and national parks that receive considerable recreational use. The need to maintain high quality marbled murrelet terrestrial habitat should be considered in planning any modifications to state or national parks for recreational purposes. Both highway and campground construction, including picnic areas, parking lots, and visitors centers, could present threats to the marbled murrelet through loss of habitat, nest disturbance, and/or increasing potential predation from corvids associated with human activities such as Steller's jays and crows. Implementing appropriate garbage/trash disposal may help decrease potential predator populations in high human use areas such as county, state and national parks.

This Zone has large blocks of suitable habitat critical to the three-state marbled murrelet population recovery over the next 100 years. However, the amount of suitable habitat protected in parks is probably not sufficient by itself to guarantee long-term survival of marbled murrelets in this Zone. On the other hand, a considerable amount of habitat is preserved in parks such that survival may be more likely in this Zone than in several other Zones. Private lands at the southern end of this Zone are important for maintaining the current distribution of the species. There is already a considerable gap in distribution between this area and the central California population in Zone 6. Efforts should be implemented to, at a minimum, not expand the current distribution gap.

2. Delineate and protect areas of habitat within each Zone.

Areas within each Zone that are essential for marbled murrelet recovery should be delineated and protected, using a variety of means (e.g., designation as critical habitat, protection through Habitat Conservation Plans, management [as reserves] under the Forest Plan, other existing regulatory mechanisms, etc.).

2.1 Protect terrestrial habitat essential for marbled murrelet recovery.

There appears to be little opportunity for increases in marbled murrelet productivity as a result of forest maturation in the near future. Even under optimum conditions and with the successful use of various silvicultural techniques, it will take 50 to 100 years or more to develop new suitable nesting habitat within most reserve areas. Any further substantial reduction in occupied nesting habitat for the marbled murrelet would hamper efforts to stabilize the population and the recovery of the species.

Marbled murrelet population trends described above (also see Appendix B) have led the U.S. Fish and Wildlife Service to conclude that a number of areas, including nesting areas and feeding sites well-distributed throughout its terrestrial and marine range, are essential to the conservation of the species. Late-Successional Reserves, as described in the Forest Plan and the final rule designating critical habitat for marbled murrelets, will eventually contribute to recovery. However, these areas alone are insufficient to reverse the decline and maintain a well-distributed population. Thus, additional areas, including non-Federal lands and marine areas, should be protected using a variety of means including critical habitat, Habitat Conservation Plans, and other existing regulatory mechanisms as described below. If these areas are protected, there is a high likelihood that populations will stabilize.

A. Essential nesting habitats that occur on forest lands managed by the Federal government include:

(1) Any suitable habitat in Late-Successional Reserves located in the Forest Ecosystem Management Assessment Team Zone 1 (see pages IV-23 and IV-24 in U.S. Department of Agriculture *et al.* 1993 for a description of Zone 1);

(4) Other large areas of suitable nesting habitat outside of Late-Successional Reserves on Federal lands. For example, large areas of suitable nesting habitat occur on the Siskiyou National Forest, Oregon, the Six Rivers National Forest, California, and in Redwood National and State Park, California.

2.3 Develop and implement a landscape management strategy for each of the six Conservation Zones.

Although many of the factors that have contributed to the decline of marbled murrelet populations in the three-state area are common to all zones, each zone presents unique challenges to the recovery of the species. For example, mortality resulting from incidental capture in net fisheries is a major concern in Zone 1, mortality from oil spills is a major concern in Zones 2 and 6, and potential loss of key suitable nesting habitat on non-Federal lands is of major concern for all Zones. A landscape management plan that addresses the unique circumstances of each Zone should be developed, taking into consideration all affected parties (Federal, state, tribal, private, etc.).

2.3.1 Develop and implement management plans that incorporate the needs of the marbled murrelet for each protected habitat area on Federal lands.

Each protected habitat area within a particular Zone may have unique ecological features and exists in a unique spatial context with lands that may be managed for a variety of values. It is important that these unique characteristics be addressed in the context of a management plan for each of these areas, including the development of appropriate definitions of suitable marbled murrelet habitat for each Zone. In the development of these plans for each Zone, all managers should have an opportunity to be involved, regional issues must be considered, and recovery objectives must be addressed in a consistent manner throughout the range. In some cases, these management plans could be developed using information from the Late-Successional Reserve assessments called for in the Forest Plan Record of Decision.

Management plans should be based on the best available information on the biology and recovery needs of the marbled murrelet and should be able to adapt to new information as it becomes available. For example, a variety of management activities could decrease predation mortality at marbled murrelet nests (e.g., silvicultural practices designed to provide shelter to nest sites or to speed development of murrelet habitat; garbage removal from state and national parks). Efforts to reduce or eliminate these manmade food sources in state and national parks are currently being discussed. As successful strategies are developed to reduce predation at the nest, they should be incorporated into management plans for specific secured areas. An outline of specific management recommendations is provided in task 3.

3. Incorporate management recommendations for protected habitat areas.

Management recommendations for the marbled murrelet need to address two different biological time frames, which reflect (1) aspects o the murrelet's life history and demographic trends, and (2) the length of time required to develop the majority of new nesting habitat or improve current forest habitat conditions. Short-term actions must address the apparent rapid decline of current populations and the need for immediate stabilization. The ability of marbled murrelet populations to recover rapidly is low due to the low reproductive potential of the species. Long-term actions address the long time-frames required to cultivate or enhance mature forest habitat conditions or to improve marine habitat quality because of the nature and complexity of these ecosystems. Little additional older forest habitat will become available until after 2040.

3.1 Implement short-term actions to stabilize and increase the population.

3.1.1 Maintain/protect occupied nesting habitat and minimize loss of unoccupied but suitable nesting habitat.

3.1.1.1 Maintain occupied nesting habitat.

The loss of occupied nesting habitat appears to be the primary cause of marbled murrelet population declines in Washington, Oregon, and California. The low reproductive potential of this species, and lack of knowledge concerning its ability to locate and reestablish new nesting areas after elimination of nesting habitat, makes it imperative to maintain all occupied nesting habitat, as is being done, for the most part, through implementation of the Forest Plan on Forest Service and Bureau of Land Management lands.

On non-Federal lands the maintenance of all occupied sites also should be the goal. However, it is realized that through the Habitat Conservation Plan process, there may be some limited loss of occupied sites or unsurveyed suitable habitat. In the short-term (the next 5 - 10 years), until additional information is obtained, loss of any occupied sites or unsurveyed suitable habitat should be avoided or the potential impacts significantly reduced through a habitat evaluation and ranking process outlined in the Habitat Conservation Plan.

Short term trade-offs for long-term benefits should be evaluated very carefully at this early stage of marbled murrelet recovery and should be done on a case-by-case basis.

3.1.1.2 Maintain potential and suitable habitat in larger contiguous blocks while maintaining current north/south and east/west distribution of nesting habitat.

By maintaining occupied sites and suitable habitat in larger blocks with low levels of fragmentation, several objectives will be met. Larger stands will (1) have more nesting and hiding opportunities, (2) provide for multiple alternative nesting sites for individual pairs of birds over time, (3) facilitate nesting for multiple pairs of birds (and thus promote increased social contact), and (4) provide greater interior forest habitat conditions (to reduce potential nest and adult predation, increase protection of nests from windstorms and environmental changes, and reduce loss of habitat from windthrow and fire). Larger stands also may provide a core of birds to attract or develop sufficient activity and eventual nesting by subadults or nonbreeding adult birds to replace breeding adults lost from this habitat over time due to natural causes or human activities. The more contiguous the habitat distribution, the lower the likelihood of future large gaps in distribution of the species due to catastrophic events such as oil spills or large wildfires. Preventing further erosion of the already patchily-distributed nesting habitat is a key element in buffering the species against such catastrophic events. This is especially important in areas where gaps already occur. Furthermore, it is currently unknown how nesting success differs with distance from the coast, and far inland habitats may be as important to species survival as those nearer to shore. Therefore, it is important to maintain both north/south and east/west distribution of suitable habitat.

3.1.1.3 Maintain and enhance buffer habitat surrounding occupied habitat.

Maintaining buffers around occupied habitat will mediate the effects of edge by helping to reduce environmental changes within the stand, reduce loss of habitat from windthrow and fire, reduce fragmentation levels, increase the amount of interior forest habitat available, and potentially help reduce predation at the nest. To have the greatest benefits, buffer widths should be a minimum of 300-600 feet and should consist of whatever age stand is present, including existing plantations (which should be managed to provide replacement.

3.1.3 Minimize nest disturbances to increase reproductive success.

Low juvenile:adult ratios have been documented throughout the three-state range of the marbled murrelet (Appendix B). Current evidence suggests that the cause of this low reproductive rate may be due to high rates of predation on eggs, young, and possibly adults at the nest site. Population modeling indicates that adjusted juvenile:adult ratios should be 15 - 22 percent at a minimum to result in stable or increasing

populations. Current best estimates of unadjusted ratios average 5 percent (range 0.1 - 13.8 percent) and it is unlikely that adjustment will result in 4 - 10 times larger ratios. Breeding adult alcids in general are sensitive to nest site disturbance during the incubation period and the first few days of chick rearing. Disturbances near marbled murrelet nest sites that flush incubating or brooding adults from the nest site may expose adults and young to increased predation or accidental loss of eggs or nestlings by falling or being knocked out of nests. Human activities near nesting areas that result in an increase in the number of predators also could lead to a greater likelihood of nest predation. The timing of disturbances should be adjusted to avoid disruption of marbled murrelet activities, such as courtship, mating, and nesting. Human activities should be modified to reduce attraction of predators to specific forest areas although this action may not reduce actual predator numbers over wider areas. Higher-than normal predation levels are likely to occur in nesting habitat due to forest fragmentation and other causes in many cases.

3.2 Implement long-term actions to stop population decline and increase population growth.

3.2.1 Increase the amount and quality of suitable nesting habitat.

An increase in amount and quality of suitable nesting habitat is important in all zones. However, it is especially important in the western Washington Coast Range and the northern portions of the Oregon Coast Range Zones. In these areas, remaining patches of suitable nesting habitat are relatively small and fragmented, involve private and state lands, and are vitally important for maintaining the current small populations in these areas; thus, blocking up habitat is needed to increase patch size. It also would be desirable to increase and block up suitable nesting habitat in the Mendocino and Santa Cruz Mountains Zones. Little habitat remains outside parks in these two zones, such that an increase in the short term does not appear feasible.

3.2.1.1 Decrease fragmentation by increasing the size of suitable stands to provide a larger area of interior forest conditions.

The majority of suitable nest stands currently exist as small islands within a matrix of younger forests. Although these fragments will provide critically important habitat during the several decades required for younger stands to develop structural characteristics suitable for marbled murrelet nesting, they cannot be considered high quality habitat because of vulnerability to wildfire and windthrow, and perhaps a higher abundance of avian predators. Research is needed to develop judicious ways to use silvicultural techniques such as thinning in young (nonhabitat) stands to hasten development of large trees and decrease vulnerability of habitat fragments to fire, wind, and perhaps predators. Consistent with the Forest Plan Record

of Decision, thinning within Late-Successional Reserves should be restricted to stands younger than 80 years. However, the Record of Decision also permits thinning within Late-Successional Reserves up to age 110 in Coast Range lands administered by the Bureau of Land Management (Nestucca block) and in the Oregon and California Klamath Provinces (U.S. Department of Agriculture and U.S. Fish and Wildlife Service 1994b). Unthinned buffers should be left around any occupied stands. Precautions should be taken to reduce fire hazard from thinning slash and avoid soil compaction.

3.2.1.2 Protect "recruitment" nesting habitat to buffer and enlarge existing stands, reduce fragmentation, and provide replacement habitat for current suitable nesting habitat lost to disturbance events.

Stands (currently 80 years old or older) that will produce suitable habitat within the next few decades are the most immediate source of new habitat and may be the only replacement for existing habitat lost to disturbance (e.g., timber harvest, fires, etc.) over the next century. Such stands are particularly important because of the vulnerability of many existing habitat fragments to fire and wind and the possibility that climate change will increase the effects of the frequency and severity of natural disturbances. Such stands should not be subjected to any silvicultural treatment that diminishes their capacity to provide quality nesting habitat in the future. Within secured areas, these "recruitment" stands should not be harvested or thinned. In the matrix (on Federal lands), harvest in younger-aged stands should adhere to the techniques discussed in the following task (3.2.1.3) to more quickly develop into marbled murrelet habitat.

3.2.1.3 Use silvicultural techniques to increase speed of development of new habitat.

Nesting marbled murrelets select stands with large trees that provide suitable nesting platforms (large, protected branches, preferably with moss). When available, large stands appear to be preferred over small ones. Nests have been located in stands with a wide range of stocking densities, however the low rate of nesting success raises considerable uncertainty regarding what constitutes quality habitat. It is expected that since marbled murrelets require very specific structures in order to successfully nest, silvicultural techniques may be available to speed the development of these structures in stands of younger forest.

Several silvicultural techniques may be appropriate to increase the area of suitable nesting stands and the rate at which they develop (e.g., thinning, long rotations, etc.). Thinning accelerates tree growth and can be used as a tool to produce large trees more quickly than in normal stand development. However, simply growing large trees is not

sufficient to obtain suitable marbled murrelet habitat. Trees must have large moss-covered, or mistletoed branches that provide nest platforms, something that is likely to be achieved only by growing at least some trees on long rotations. There are two alternatives for doing that (1) "Green-tree retention" designates approximately 20 - 40 trees per hectare to be retained at harvest, with a new crop of younger trees established beneath the older tree canopy. Leaving trees on site and allowing them to grow to an older age will likely produce marbled murrelet nest trees and eventually produce coarse woody debris (important habitat for numerous other species). As younger trees mature, a multilayered canopy develops, which is also an important structural attribute of older forest habitat; and (2) evidence available at this time indicates that growing whole stands on long rotations will produce higher quality habitat in the long-term than green tree retention, which may create sink habitat for a number of bird species. Long rotations have other ecological and economic benefits as well. Landscapes with a higher proportion of older stands should be less susceptible to catastrophic wildfire (providing reduced hazard from thinning slash). Because thinned Douglas-fir maintains good growth well into its second century, silviculturists now conclude that long rotations are economically viable in the Douglas-fir region.

3.2.2 Improve Distribution of Nesting Habitat.

3.2.2.1 Improve and develop north/south distribution of nesting habitat.

Improving the distribution of nesting habitat helps to buffer existing populations against poor breeding success and catastrophic loss and probably facilitates gene flow among separated populations. Three major gaps in existing habitat are particularly apparent: (1) from the southern Olympic Peninsula in Washington to Tillamook in northwestern Oregon; (2) between Patrick's Point and southern Humboldt Bay in northern California (see Figure 1); and (3) throughout most of the Mendocino Zone and the northern part of the Santa Cruz Mountains Zone (between southern Humboldt County and central San Mateo County). These three geographic gaps represent probable partial barriers to gene flow across them. They include large areas of second-growth forests that originated after logging, from fire (parts of northwestern Oregon), or from natural discontinuities of nesting habitat (especially parts of northern and central California). Gap areas often have a high proportion of private lands and little or no Federal land. State lands cover significant portions of northwest Oregon (the Tillamook and Clatsop State Forests) and southwest Washington. Silvicultural techniques to create suitable habitat at both the stand and landscape level (discussed in task 3.2.1.3) may be particularly beneficial to marbled murrelet recovery in the long term if applied in these areas.

Portions of the Mendocino Zone and Santa Cruz Mountains Zone also contain blocks of unsuitable habitat that probably naturally created small gaps in the murrelet's terrestrial range. Again, loss of suitable habitat around these small natural gaps has greatly widened them. These gaps have probably grown together and eliminated suitable nesting habitat over a large section of their range. The existence of small natural gaps in suitable habitat must be recognized when designing ways to improve and develop north/south distribution of nesting habitat.

3.2.2.2 Improve and develop east/west distribution of nesting habitat.

Improving east-west distribution means filling in habitat gaps within the Conservation Zone boundaries described earlier. Many portions of the species range no longer have large amounts of suitable nesting habitat close to the coast and marbled murrelets must fly considerable distances inland to nest. In addition to the north-south gaps discussed above, opportunities exist on the Olympic Peninsula, Puget trough, and along virtually the entire California coast within the murrelet's range to improve the current east/west distribution of habitat. An important step in developing methods to improve this distribution will be the complete identification of the inland boundary of suitable nesting habitat for the three-state area and identification of factors determining these boundaries in different regions.

Bald Eagle

Portions excerpted from *Recovery Plan for the Pacific Bald Eagle* (pages 73-83 in USFWS 1985).

1. Provide Secure Habitat

Providing secure habitat for eagles involves identifying important habitat, arranging for its long-term protection, and managing it to ensure that its components (e.g., food, nest sties, roost trees) are maintained and enhanced.

1.2 Secure Breeding and Nonbreeding Habitat

Much of the bald eagle habitat in the Pacific recovery area is threatened by development and is not adequate protected by legal statutes. Land use and zoning policies can provide protection in some situations. In others, transfer from private to public ownership must be considered. Habitats in public ownership should be recognized and give priority consideration by agencies. Local working teams (see step 1.26) should play a strong role in all efforts to secure habitat.

1.2.2 Establish Reserves and Management Areas Where Necessary

This approach may be most suitable where human disturbance is a limiting factor for eagles; where intensive, long-term management activities are needed; or where eagle management is being featured over other land management options.

1.2.3 Incorporate Eagle Habitat Guidelines in Agency Land Use Plans

The Bureau of Land Management (BLM) should retain and manage habitat on BLM-administered public lands to benefit bald eagles and compatible uses in accordance with the Federal Land Policy and Management Act (FLPMA). These lands should be identified as important eagle habitat in the Resource Management Planning (RMP) process. The BLM should seriously consider designating all or parts of these areas as "Areas of Critical Environmental Concern".

1.2.5 Design and Implement Plans to Secure Individual Nest Sites, Roosts, and Foraging Areas

Plans must be developed on a site-specific basis throughout the recovery area. Plans should describe the human activities that can be permitted as well as those that must be prohibited. They should also describe the steps needed to protect and secure hey habitat such as nests, roosting trees and food resources. Each plan should include a map outlining the important eagle use areas and a list of appropriate methods for protecting suitable nesting, foraging, and roosting habitat over time.

1.3.2 Maintain and Improve Forested Habitat in Bothe the Breeding and Wintering Range

Timber stands should be managed to promote habitat characteristics required by eagles for long-term nesting and roosting. In most cases, this requires management for old-growth stands. Silvicultural techniques, such as thinning or selective harvest, can help to create proper tree species composition and stand structure. The important element of any silvicultural plan should be to maintain an old growth overstory in the vicinity of nest sties and communal roosts. Development and maintenance of potential eagle habitat is as important as protection and maintenance of habitat currently used by eagles.

1.3.2.1 Maintain Forested Habitat that is Presently Used by Eagles

Habitat loss is currently the most significant threat to bald eagle populations in the 7-state recovery area. The increasing disappearance of old growth stands makes it imperative that existing habitat be protected. In some cases special actions must be taken to maintain existing habitat.

1.3.2.1.1 Prohibit Logging of Known Nest Trees, Perch Trees, and Winter Roost Trees

Trees used by eagles should be clearly identified and protected from logging. In addition, trees that provide wind breaks, that visually shield eagles from disturbances, or that are needed for long-term viability of eagle sue areas must be maintained. Trees with unoccupied nests in suitable habitat and trees which formerly had nests should also be protected because these sites are sometimes used after several years of abandonment and will be important in providing habitat for expanding populations.

1.3.3 Restrict Human Disturbance at Eagle Use Areas

Human activities are known to disrupt eagle activity patterns and in some cases cause reproductive failure. In spite of this, any eagles nest and winter near human population centers. Many types of human disturbances at the right distances are compatible with eagles. Regulation of human activity is a critical part of eagle habitat management.

1.3.3.1 Establish Buffer Zones Around Nest Sites

Buffer zones should be established for individual nest territories based on the location of nest trees, perch trees, and flight paths, as well as stand characteristics, known individual tolerances, and weather patterns.

Until site specific plans are available or until guidelines can be developed by local groups or agencies, guidelines prepared by the U.S. Fish and Wildlife Service Region 1 should serve as minimum protective measures.

1.3.3.2 Exclude Logging, Construction, Habitat Improvement, and Other Activities During Critical Periods of Eagle Use

Picnicking, camping, blasting, firearm use, timber harvest, and low level aircraft operations should not be allowed within 400 meters of nests and roosts during periods of eagle use. These activities should also be regulated up to 800 meters from nests and roosts where eagles have line-of-sight vision. Critical nesting periods vary throughout the recover area but generally fall between 1 January an 31 August. Key wintering areas need protection from disturbance from approximately 15 November to 15 March.

Data in Support of Northern Spotted Owl Analysis

The following section contains background information regarding the northern spotted owl analysis found in Chapter 4. It includes a description of the suitable habitat addressed in section 7 consultations from 1994 to April 12, 2004; available nesting, roosting, and foraging habitat on BLM-administered lands, a description of how the alternatives affect individual critical habitat units; and how lands were classified as owl habitat under Alternative 3.

Suitable habitat addressed in Section 7 Consultation from 1994 – April 12, 2004

Table 245. Aggregate results of all adjusted, suitable habitat (NRF1) acres addressed in section 7 consultation (both formal and informal) for the northern spotted owl; baseline and summary of effects by State, physiographic province and land use function from 1994 to April 12, 2004 (the first decade of the Northwest Forest Plan) (USFWS pers com. 2006).

Physiographic Province[4]		Evaluation Baseline[2]			Habitat Removed/Downgraded[3]			% Provincial Baseline Affected	% Range-wide Affected
		Reserves[5]	Non-Reserves6	Total	Reserves[5]	Non-Reserves[6]	Total		
WA	Olympic Peninsula	548,483	11,734	560,217	67	24	91	-0.02	0.05
	Eastern Cascades	506,340	200,509	706,849	1,746	4,222	5,968	-0.84	3.13
	Western Cascades	864,683	247,797	1,112,480	249	10,952	11,201	-1.01	5.88
	Western Lowlands	0	0	0	0	0	0	0	0
OR	Coast Range	422,387	94,190	516,577	399	4,145	4,544	-0.88	2.39
	Klamath Mountains	448,509	337,789	786,298	2,434	80,394	82,828	-10.53	43.5
	Cascades East	247,624	196,035	443,659	1,813	12,216	14,029	-3.16	7.37
	Cascades West	1,012,426	1,033,337	2,045,763	2,926	52,514	55,440	-2.71	29.11
	Willamette Valley	593	5,065	5,658	0	0	0	0	0
CA	Coast	47,566	3,928	51,494	181	69	250	-0.49	0.13
	Cascades	61,852	2,6385	88,237	0	4,808	4,808	-5.45	2.52
	Klamath	734,103	345,763	1,079,866	1,470	9,800	11,270	-1.04	5.92
Total		4,894,566	2,502,532	7,397,098	11,285	179,144	190,429	-2.57	100

[1] Nesting, roosting, foraging habitat. In California, suitable habitat is divided into two components; nesting – roosting (NR) habitat, and foraging (F) habitat. The NR component most closely resembles NRF habitat in Oregon and Washington. Due to differences in reporting methods, effects to suitable habitat compiled in this, and all subsequent tables include effects for nesting, roosting, and foraging (NRF) for 1994-6/26/2001. After 6/26/2001, suitable habitat includes NRF for Washington and Oregon but only nesting and roosting (NR) for California.

[2] 1994 FSEIS baseline (USDA and USDI 1994).

[3] Includes both effects reported by USDI FWS (2001) and subsequent effects compiled in the Northern Spotted Owl Consultation Effects Tracking System (web application and database).

[4] Defined by the NWFP as the twelve physiographic provinces, as presented in Figure 3&4-1 on page 3&4-16 of the FSEIS.

[5] Land-use allocations intended to provide large blocks of habitat to support clusters of breeding pairs.

[6] Land-use allocations intended to provide habitat to support movement of spotted owls among reserves.

Table 246. Change in suitable spotted owl habitat from 1994 to April 12, 2004, resulting from Federal management actions (Mgmt) and natural events by physiographic province (USFWS pers. com. 2006).

Physiographic Province	Range of Northwest Forest Plan (Acres)	Causes of Habitat Loss		Total Change in Acres	Percent change by Province	Percent of Total Effects[3]
		Mgmt[1]	Natural Events[2]			
Olympic Peninsula	560,217	-91	-299	-390	-0.07	0.10
WA East Cascades	706,849	-5,968	-5,754	-11,722	-1.66	3.14
WA West Cascades	1,112,480	-11201	0	-11,201	-1.01	3.00
Western Lowlands	0	0	0	0	0.00	0.00
OR Coast	516,577	-4,544	-66	-4,610	-0.89	1.23
OR Klamath Mountains	786,298	-82,828	-117,622	-200,450	-25.49	53.61
OR Cascades East	443,659	-10,595	-22,638	-33,233	-7.49	8.89
OR Cascades West	2,045,763	-55,440	-24,583	-80,023	-3.91	21.40
Willamette Valley	5,658	0	0	0	0.00	0.00
CA Coast	51,494	-250	-100	-350	-0.68	0.09
CA Cascades	88,237	-4,808	0	-4,808	-5.45	1.29
CA Klamath	1,079,866	-11,270	-15,869	-27,139	-2.51	7.26
TOTAL	7,397,098	-186,995	-186,931	-373,926	-4.85	100.00

[1] Estimates from the NSO consultation effects tracker (Service 2005).
[2] Data compiled by the USDI Fish and Wildlife Service, Northern Spotted Owl Coordination Group.
[3] Provincial effect expressed as percentage of total range-wide effects.

Table 247. Aggregate results of all adjusted, suitable critical habitat acres affected by Section 7 Consultation for the Northern spotted owl; baseline and summary of effects by state, Physiographic Province and land use function from 1994 to July 19, 2005 (USFWS pers. comm. 2006).

Physiographic Province[3]		Evaluation Baseline[1]			Habitat Removed/Downgraded[2]			% Provincial Baseline Affected	% Range-wide Affected
		Reserves[4]	Non-Reserves[5]	Total	Reserves[4]	Non-Reserves[5]	Total		
WA	Olympic Peninsula	193,081	3,928	197,009	-12	-59	-71	-0.04	0.15
	Eastern Cascades	225,855	100,737	326,592	-87	-4,549	-4,636	-1.42	9.88
	Western Cascades	424,273	90,305	514,578	-3	-4,991	-4,994	-0.97	10.64
	Western Lowlands	0	0	0	0	0	0	0	0
OR	Coast Range	332,562	16,155	348,717	-50	-1,200	-1,250	-0.36	2.66
	Klamath Mountains	228,112	85,157	313,269	-4	-12,923	-12,927	-4.13	27.54
	Cascades East	86,882	51,802	138,684	-334	-1,372	-1,706	-1.23	3.63
	Cascades West	532,571	361,563	894,134	-122	-19,959	-20,081	-2.25	42.78
	Willamette Valley	0	0	0	0	0	0	0	0
CA	Coast	2,589	27	2,616	0	0	0	0	0
	Cascades	47,947	2,740	50,687	0	-472	-472	-0.93	1.01
	Klamath	322,372	33,329	355,701	0	-808	-808	-0.23	1.72
Total		2,396,244	745,743	3,141,987	-612	-46,333	-46,945	-1.49	100

1 1994 FSEIS baseline (USDA and USDI 1994).

2 Includes both effects reported in USDI FWS 2001 and subsequent effects reported in the Northern Spotted Owl Consultation Effects Tracking System (web application and database.)

3 Defined by the Northwest Forest Plan as the twelve physiographic provinces, as presented in Figure 3&4-1 on page 3&4-16 of the FSEIS.

4 Land-use allocations intended to provide large blocks of habitat to support clusters of breeding pairs.

5 Land-use allocations intended to provide habitat to support movement of spotted owls among reserves.

Table 248. Change in northern spotted owl suitable critical habitat from 1994 to December 10, 2004, resulting from Federal management actions and natural events by physiographic province. (USFWS pers. comm. 2006)

Physiographic Province	1994 FSEIS Provincial Critical Habitat Baseline	Critical Habitat (acres) Removed/Downgraded, 1994-2004				Percent of 1994 FSEIS Provincial Critical Habitat Baseline	Percent of all Rangewide Habitat Effects
		Management	Fire	Insect/ Disease	Total		
WA:							
Olympic Peninsula	197,009	71	0	0	71	0.04	0.08
East Cascades	326,592	1,035	6,925[1,2]	532	8,492	2.60	9.67
West Cascades	514,578	4,994	0	0	4,994	0.97	5.69
Western Lowlands	0	0	0	0	0	0.00	0.00
OR:							
Coast Range	348,717	1,224	0	0	1,224	0.35	1.39
Klamath Mountains	313,269	13,912	17,453	0	31,365	10.01	35.72
Cascades East	138,684	1,706	6,878[2]	0	8,584	6.18	9.78
Cascades West	894,134	21,003	1,216	0	22,219	2.48	25.31
Willamette Valley	0	0	0	0	0	0.00	0.00
CA:							
Coast Range	2,616	0	0	0	0	0.00	0.00
Cascades	50,687	365	0	0	365	0.72	0.41
Klamath	355,701	808	9,675	0	10,483	2.95	11.95
Total	3,141,987	45,118	42,147	532	87,797	2.79	100.00

[1] Habitat effects from some 1994 fires were included in the 2001 update, and thus, appear as consulted-on effects in the NSO Consultation Effects Tracking Database. For the purpose of this critical habitat update, habitat effects associated with those fires are included in the fire effects column.

[2] Includes fires in 2003.

Northern Spotted Owl Critical Habitat Units

The Endangered Species Act requires the U.S. Fish and Wildlife Service to designate critical habitat to the maximum extent prudent and determinable concurrently with listing a species as endangered or threatened. The U.S. Fish and Wildlife Service listed the northern spotted owl as a threatened species on June 28, 1990, primarily due to concern over widespread habitat loss and modification, and inadequacy of existing regulatory mechanisms. The U.S. Fish and Wildlife Service designated as critical habitat for the northern spotted owl 3,257,000 acres of federal lands in Oregon, including 1,009,000 acres of BLM-administered land (Federal Register. 1992a).

Critical habitat is defined in the Endangered Species Act as: "(i) the specific areas within the geographic area occupied by a species … on which are found those physical and biological features (I) essential to the conservation of the species, and (II) that may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by a species … upon determination by the Secretary that such areas are essential for the conservation of the species" (Endangered Species Act of 1973, as amended, Sec. 3(5)(A)).

The Endangered Species Act directs Federal agencies to insure that their actions are not likely to result in the "destruction or adverse modification" of designated critical habitat (Endangered Species Act of 1973, as amended, Sec. 7(a)(2)).

None of the alternatives align land use allocations with designated critical habitat units or include management direction specific to designated critical habitat units. Therefore, the amount of suitable habitat within the critical habitat units would result from the land use allocations and management direction in each alternative as it overlays the designated critical habitat units. . As a result, the development of suitable habitat within critical habitat units would not show consistent patterns for any of the alternatives.

Currently, critical habitat units average suitable habitat on 55% of the habitat-capable acres on BLM-administered lands. The only critical habitat units that have more than 90% suitable habitat are two units which have less than 5 acres of BLM-administered lands each.

Under the No Action alternative, the average suitable habitat on BLM-administered lands in critical habitat units would steadily increase to an average of 82% of the habitat-capable acres on BLM-administered lands by 2106. 25 of the 51 critical habitat units would have more than 90% suitable habitat by 2106. On 10 of the 51 critical habitat units, the amount of suitable habitat would decrease from current amounts at some time over the next 100 years.

Under Alternative 1, the average suitable habitat on BLM-administered lands in critical habitat units would decline to 54% in 2016, and then steadily increase to 72% of the habitat-capable acres on BLM-administered lands by 2106. 22 of the 51 critical habitat units would have more than 90% suitable habitat by 2106. On 20 of the 51 critical habitat units, the amount of suitable habitat would decrease from current amounts at some time over the next 100 years.

Under Alternative 2, the average suitable habitat on BLM-administered lands in critical habitat units would decline to 51% in 2016, and then fluctuate until reaching an average of 54% of the habitat-capable acres on BLM-administered lands by 2106. 12 of the 51 critical habitat units would have more than 90% suitable habitat by 2106. On 30 of the 51 critical habitat units, the amount of suitable habitat would decrease from current amounts at some time over the next 100 years.

Under Alternative 3, the average suitable habitat on BLM-administered lands in critical habitat units would decline to 54% in 2016, and then fluctuate until reaching an average of 53% of the habitat-capable acres on BLM-administered lands by 2106. 3 of the 51 critical habitat units would have more than 90% suitable habitat by 2106. On 33 of the 51 critical habitat units, the amount of suitable habitat would decrease from current amounts at some time over the next 100 years.

Table 249. Suitable Habitat within Critical Habitat Units OR-9 – OR-23, by alternative

Critical Habitat Unit	Habitat-capable acres		% of habitat-capable				
			2006	2016	2026	2056	2106
OR-9	18	No Action	11	17	17	72	94
		Alt 1	11	22	22	72	94
		Alt 2	11	22	22	67	94
		Alt 3	11	22	22	72	94
OR-10	201	No Action	69	57	57	37	49
		Alt 1	69	53	27	20	23
		Alt 2	69	64	55	37	17
		Alt 3	69	51	32	19	35
OR-12	22,988	No Action	66	67	67	83	95
		Alt 1	66	66	67	80	94
		Alt 2	66	56	54	62	56
		Alt 3	66	60	52	66	63
OR-14	35,522	No Action	60	60	62	83	92
		Alt 1	60	56	58	78	85
		Alt 2	60	49	41	46	32
		Alt 3	60	47	43	51	46
OR-16	4,339	No Action	70	76	73	73	74
		Alt 1	70	57	47	49	42
		Alt 2	70	43	18	24	39
		Alt 3	70	76	68	40	78
OR-18	2	No Action	100	50	50	50	100
		Alt 1	100	50	50	50	100
		Alt 2	100	50	50	50	50
		Alt 3	100	100	50	50	100
OR-20	9,572	No Action	31	43	53	72	71
		Alt 1	31	37	45	57	37
		Alt 2	31	42	44	39	29
		Alt 3	31	44	53	79	53
OR-21	1,894	No Action	43	47	48	80	66
		Alt 1	43	26	25	49	39
		Alt 2	43	37	34	45	22
		Alt 3	43	51	51	71	48
OR-22	5,050	No Action	30	47	54	75	59
		Alt 1	30	40	40	50	28
		Alt 2	30	40	40	47	22
		Alt 3	30	49	58	73	47
OR-23	8,310	No Action	26	34	52	68	54
		Alt 1	26	29	46	38	30
		Alt 2	26	36	56	82	96
		Alt 3	26	36	54	65	39

Table 250. Suitable Habitat within Critical Habitat Units OR-24 – OR-38, by alternative

Critical Habitat Unit	Habitat-capable acres	Alternative	% of habitat-capable				
			2006	2016	2026	2056	2106
OR-24	6,436	No Action	32	34	40	51	49
		Alt 1	32	30	32	48	42
		Alt 2	32	36	35	44	28
		Alt 3	32	33	37	51	61
OR-25	53,731	No Action	62	62	63	79	95
		Alt 1	62	60	61	75	92
		Alt 2	62	57	54	64	70
		Alt 3	62	53	45	47	53
OR-27	12,903	No Action	58	51	57	60	52
		Alt 1	58	46	47	50	48
		Alt 2	58	56	44	47	36
		Alt 3	58	55	61	51	51
OR-29	11,122	No Action	71	64	62	57	49
		Alt 1	71	66	63	40	37
		Alt 2	71	65	57	22	23
		Alt 3	71	56	47	20	21
OR-31	1,608	No Action	65	61	56	59	55
		Alt 1	65	45	44	36	44
		Alt 2	65	60	60	14	29
		Alt 3	65	58	56	51	59
OR-32	64,955	No Action	53	56	57	69	86
		Alt 1	53	56	57	66	82
		Alt 2	53	53	50	55	60
		Alt 3	53	51	46	53	47
OR-34	35,982	No Action	57	66	64	71	89
		Alt 1	57	60	57	61	81
		Alt 2	57	53	38	23	37
		Alt 3	57	55	53	62	44
OR-36	7,093	No Action	61	60	52	44	47
		Alt 1	61	52	46	41	18
		Alt 2	61	58	49	24	11
		Alt 3	61	60	49	46	29
OR-37	27,864	No Action	71	74	70	60	61
		Alt 1	71	70	63	42	32
		Alt 2	71	69	63	47	31
		Alt 3	71	60	47	40	41
OR-38	34,740	No Action	61	70	72	76	78
		Alt 1	61	66	65	67	72
		Alt 2	61	65	64	65	70
		Alt 3	61	66	66	72	87

Table 251. Suitable Habitat within Critical Habitat Units OR-39 – OR-50, by alternative

Critical Habitat Unit	Habitat-capable acres	Alternative	% of habitat-capable				
			2006	2016	2026	2056	2106
OR-39	7,207	No Action	57	64	70	94	100
		Alt 1	57	64	70	90	99
		Alt 2	57	56	56	62	53
		Alt 3	57	62	64	69	60
OR-40	34	No Action	0	0	0	100	100
		Alt 1	0	0	0	100	100
		Alt 2	0	0	0	100	35
		Alt 3	0	0	0	100	35
OR-41	36,989	No Action	50	53	56	88	100
		Alt 1	50	53	56	87	100
		Alt 2	50	52	55	91	100
		Alt 3	50	50	48	65	57
OR-43	224	No Action	12	31	92	99	100
		Alt 1	12	31	92	99	61
		Alt 2	12	33	90	67	68
		Alt 3	12	33	88	74	36
OR-44	26,418	No Action	22	33	63	92	98
		Alt 1	22	30	52	89	98
		Alt 2	22	32	55	90	98
		Alt 3	22	34	60	84	46
OR-45	6,651	No Action	41	50	61	91	100
		Alt 1	41	49	58	90	100
		Alt 2	41	49	60	94	99
		Alt 3	41	48	63	83	54
OR-46	226	No Action	80	83	83	83	100
		Alt 1	80	83	83	83	100
		Alt 2	80	66	41	26	31
		Alt 3	80	63	63	26	66
OR-47	25,518	No Action	58	65	72	88	99
		Alt 1	58	64	71	86	98
		Alt 2	58	63	71	89	97
		Alt 3	58	63	65	60	56
OR-48	40,555	No Action	54	65	73	91	99
		Alt 1	54	64	71	89	98
		Alt 2	54	57	64	74	69
		Alt 3	54	60	62	63	56
OR-50	17,657	No Action	54	57	61	89	100
		Alt 1	54	57	61	87	100
		Alt 2	54	56	61	88	97
		Alt 3	54	52	53	67	59

Table 252. Suitable Habitat within Critical Habitat Units OR-51 – OR-60, by alternative

Critical Habitat Unit	Habitat-capable acres	Alternative	% of habitat-capable				
			2006	2016	2026	2056	2106
OR-51	3,640	No Action	35	35	37	67	77
		Alt 1	35	35	37	60	77
		Alt 2	35	32	37	61	50
		Alt 3	35	35	36	73	65
OR-52	33,768	No Action	40	48	59	86	98
		Alt 1	40	48	58	85	98
		Alt 2	40	40	45	59	61
		Alt 3	40	45	49	64	63
OR-53	49,004	No Action	47	51	58	82	91
		Alt 1	47	50	57	77	87
		Alt 2	47	50	58	81	93
		Alt 3	47	46	49	54	52
OR-54	8,183	No Action	49	49	56	84	95
		Alt 1	49	48	57	82	96
		Alt 2	49	47	50	36	29
		Alt 3	49	41	40	57	41
OR-55	15,799	No Action	61	64	71	90	99
		Alt 1	61	64	69	88	99
		Alt 2	61	44	43	40	33
		Alt 3	61	64	71	91	59
OR-56	6,031	No Action	56	55	58	70	79
		Alt 1	56	54	57	63	78
		Alt 2	56	51	36	22	22
		Alt 3	56	49	41	30	39
OR-57	9,848	No Action	59	60	61	71	82
		Alt 1	59	60	61	71	79
		Alt 2	59	41	29	19	20
		Alt 3	59	52	41	26	32
OR-58	48,334	No Action	54	57	60	87	96
		Alt 1	54	57	61	85	95
		Alt 2	54	56	59	85	94
		Alt 3	54	53	49	59	40
OR-59	4,728	No Action	59	61	63	79	86
		Alt 1	59	61	63	76	90
		Alt 2	59	56	56	26	20
		Alt 3	59	56	44	27	40
OR-60	68,751	No Action	52	57	65	86	93
		Alt 1	52	56	62	84	92
		Alt 2	52	55	60	72	76
		Alt 3	52	56	61	76	52

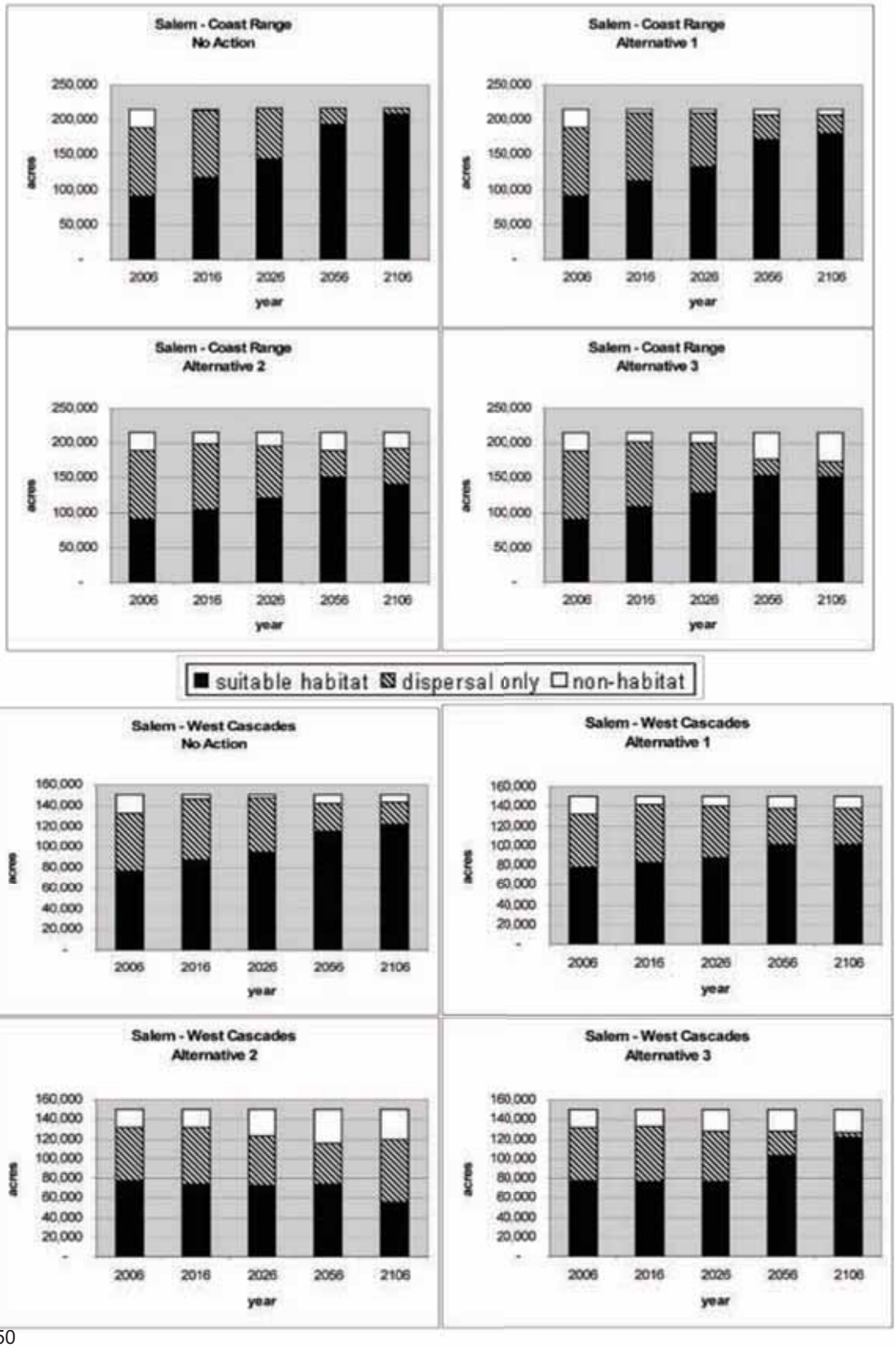
Table 253. Suitable Habitat within Critical Habitat Units OR-61 – OR-76, by alternative

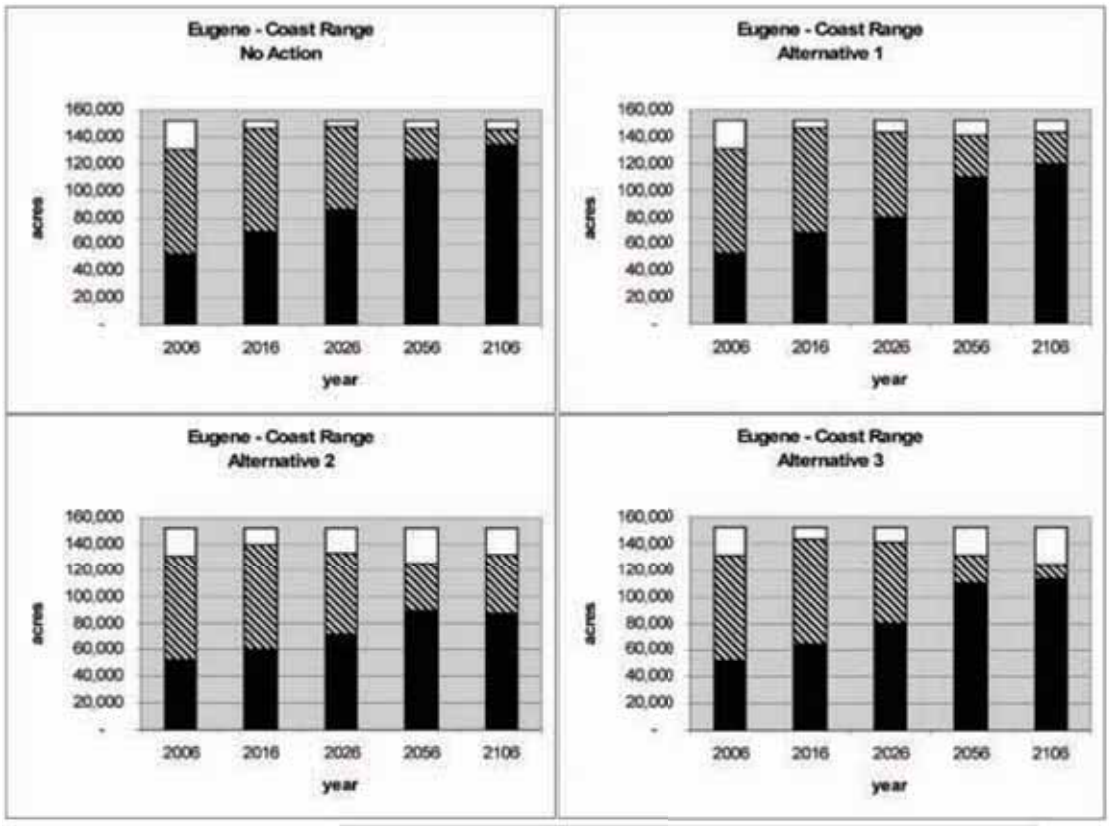
Critical Habitat Unit	Habitat-capable acres	Alternative	% of habitat-capable				
			2006	2016	2026	2056	2106
OR-61	2,462	No Action	71	72	77	83	96
		Alt 1	71	72	78	84	100
		Alt 2	71	60	57	20	13
		Alt 3	71	59	55	14	10
OR-62	45,760	No Action	59	61	61	71	89
		Alt 1	59	61	62	69	87
		Alt 2	59	60	62	71	91
		Alt 3	59	54	51	57	41
OR-63	8,004	No Action	66	64	65	61	59
		Alt 1	66	64	61	46	50
		Alt 2	66	51	39	30	37
		Alt 3	66	66	65	76	61
OR-64	5,338	No Action	60	56	59	63	70
		Alt 1	60	57	53	45	39
		Alt 2	60	43	35	34	41
		Alt 3	60	57	58	57	42
OR-65	82,184	No Action	74	77	78	83	90
		Alt 1	74	77	77	83	89
		Alt 2	74	75	76	80	84
		Alt 3	74	71	70	72	62
OR-66	4	No Action	100	100	100	100	100
		Alt 1	100	100	100	100	100
		Alt 2	100	100	100	100	100
		Alt 3	100	100	100	100	100
OR-67	18,555	No Action	61	60	70	77	75
		Alt 1	61	59	68	73	58
		Alt 2	61	54	56	56	41
		Alt 3	61	56	64	66	55
OR-72	48,573	No Action	70	76	78	86	93
		Alt 1	70	74	76	81	91
		Alt 2	70	74	75	77	79
		Alt 3	70	61	55	53	62
OR-74	26,891	No Action	55	63	64	57	59
		Alt 1	55	57	58	51	48
		Alt 2	55	58	62	52	39
		Alt 3	55	52	52	42	57
OR-75	16,985	No Action	47	56	55	43	57
		Alt 1	47	48	50	37	41
		Alt 2	47	48	52	43	40
		Alt 3	47	48	46	38	60
OR-76	418	No Action	86	91	94	94	100
		Alt 1	86	83	82	23	11
		Alt 2	86	48	82	86	95
		Alt 3	86	89	85	40	62

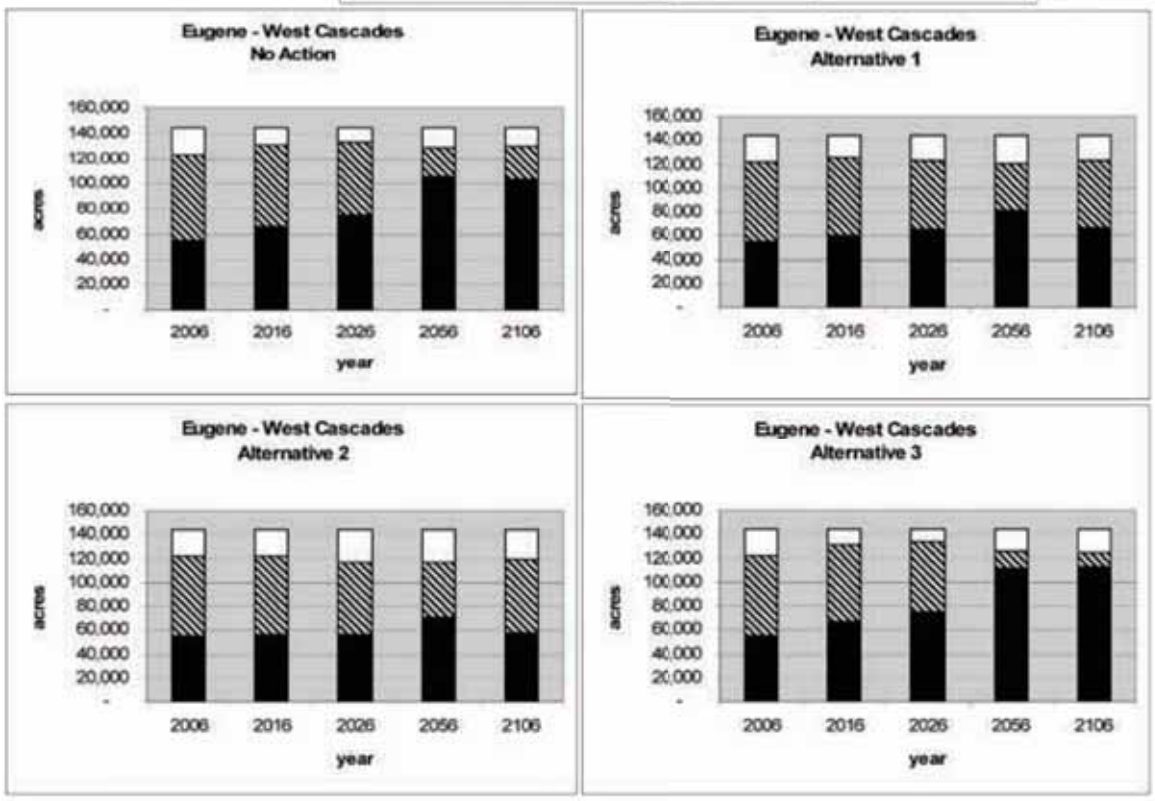
Northern Spotted Owl Dispersal Habitat by District/Province Divisions

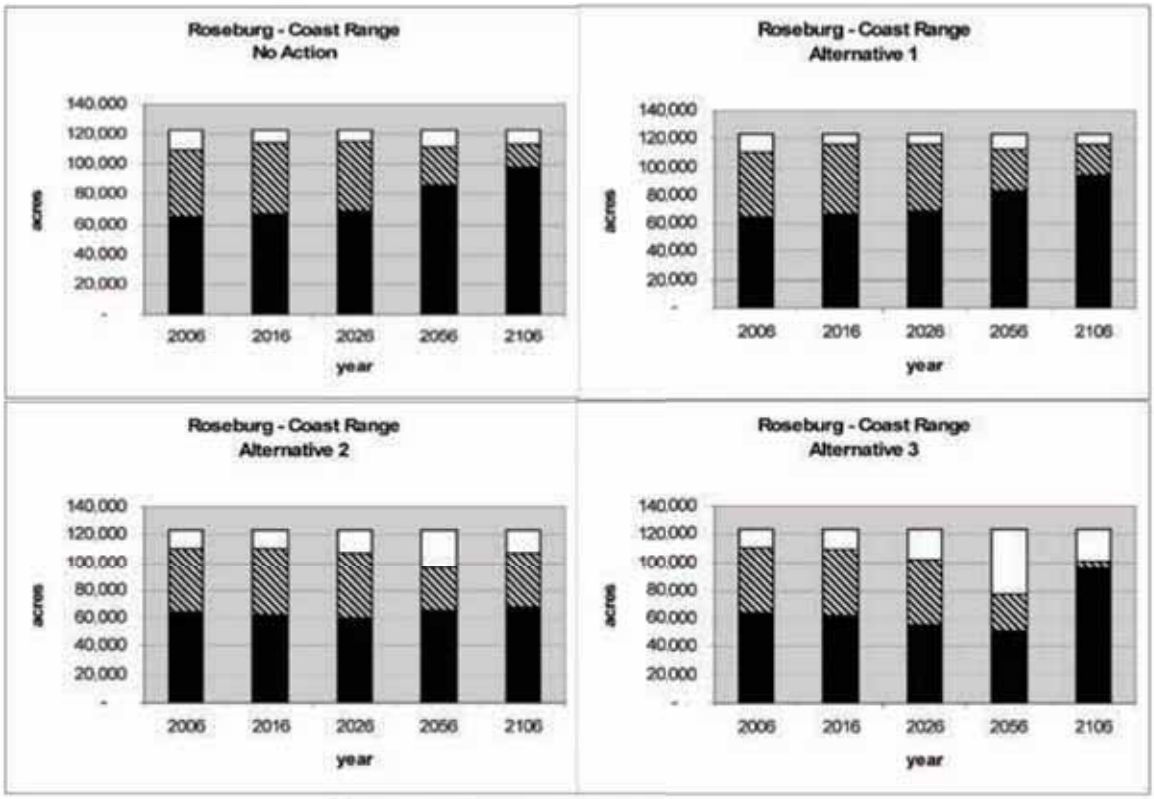
The following graphs display the quantity and quality of dispersal habitat by District/Province Divisions over time for each alternative. The quantity of dispersal habitat is the total amount of suitable habitat and dispersal habitat only. The quality of dispersal habitat is the portion of total dispersal habitat that is suitable habitat.

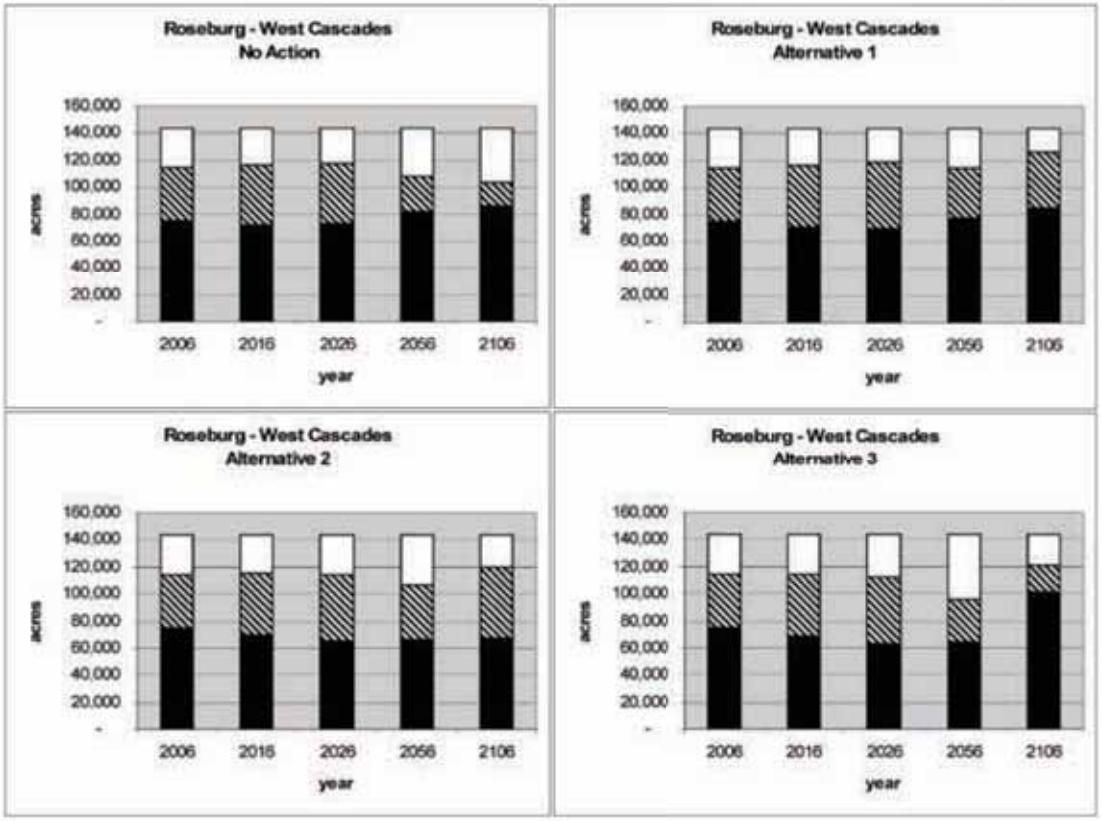
Figure 290. Northern spotted habitat by District and Province.

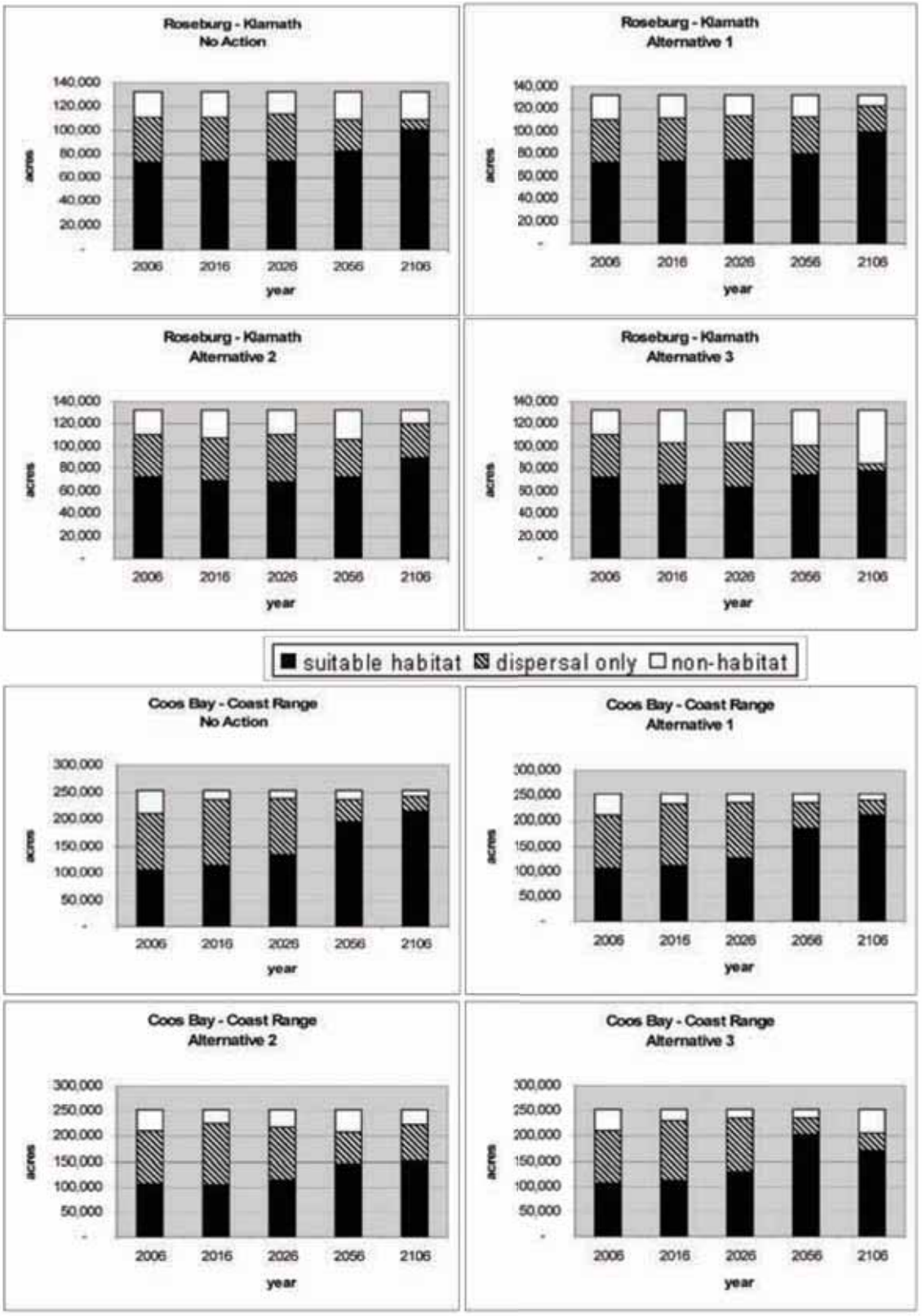


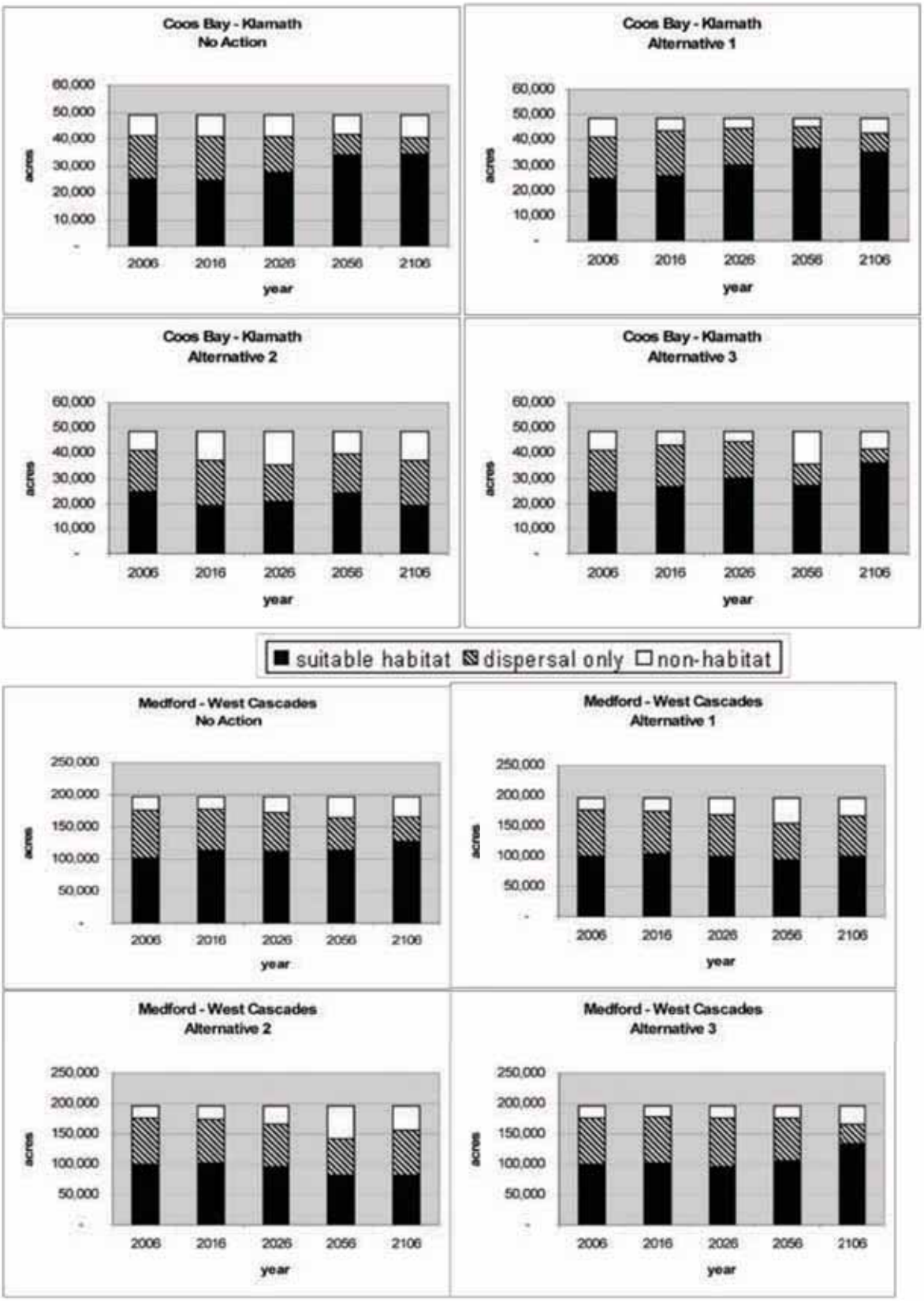

Eugene - Coast Range
No Action
Eugene - Coast Range
Alternative 1
Eugene - Coast Range
Alternative 2
Eugene - Coast Range
Alternative 3
acres
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
-
2006
2016
2026
2056
2106
year
suitable habitat
dispersal only
non-habitat

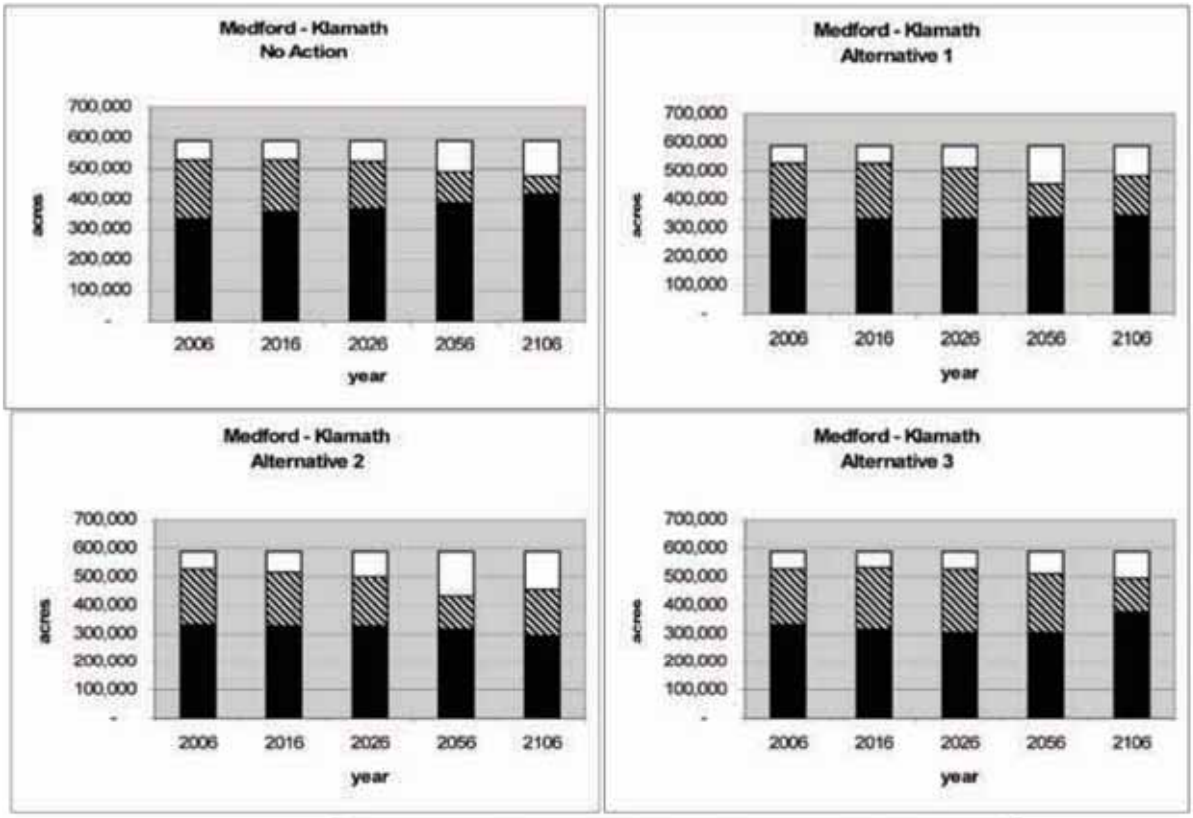

Eugene - West Cascades
No Action
Eugene - West Cascades
Alternative 1
Eugene - West Cascades
Alternative 2
Eugene - West Cascades
Alternative 3
acres
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
-
2006
2016
2026
2056
2106
year

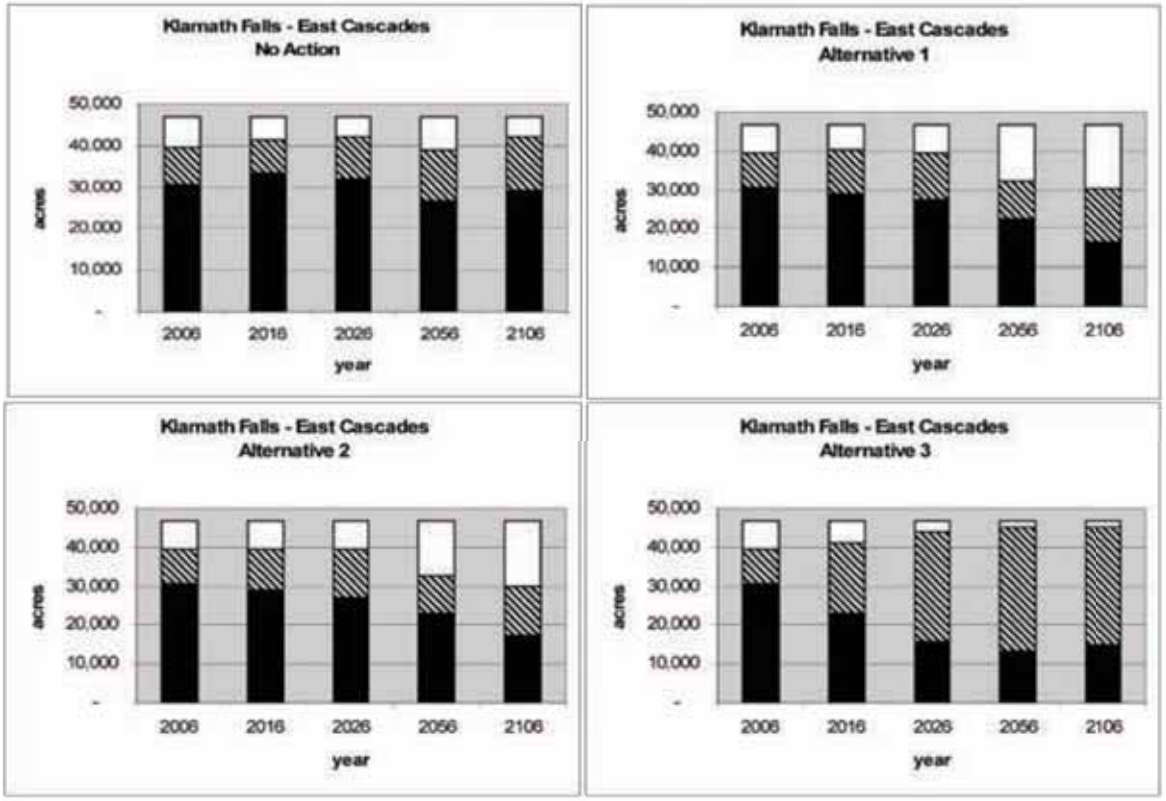

Roseburg - Coast Range
No Action
Roseburg - Coast Range
Alternative 1
Roseburg - Coast Range
Alternative 2
Roseburg - Coast Range
Alternative 3
acres
140,000
120,000
100,000
80,000
60,000
40,000
20,000
-
2006
2016
2026
2056
2106
year
suitable habitat
dispersal only
non-habitat


Roseburg - West Cascades
No Action
Roseburg - West Cascades
Alternative 1
Roseburg - West Cascades
Alternative 2
Roseburg - West Cascades
Alternative 3
acres
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
-
2006
2016
2026
2056
2106
year


Roseburg - Klamath
No Action
Roseburg - Klamath
Alternative 1
Roseburg - Klamath
Alternative 2
Roseburg - Klamath
Alternative 3
suitable habitat
dispersal only
non-habitat
Coos Bay - Coast Range
No Action
Coos Bay - Coast Range
Alternative 1
Coos Bay - Coast Range
Alternative 2
Coos Bay - Coast Range
Alternative 3
acres
year
2006
2016
2026
2056
2106


Coos Bay - Klamath
No Action
Coos Bay - Klamath
Alternative 1
Coos Bay - Klamath
Alternative 2
Coos Bay - Klamath
Alternative 3
suitable habitat
dispersal only
non-habitat
Medford - West Cascades
No Action
Medford - West Cascades
Alternative 1
Medford - West Cascades
Alternative 2
Medford - West Cascades
Alternative 3
acres
year
2006
2016
2026
2056
2106


Medford - Klamath
No Action
Medford - Klamath
Alternative 1
Medford - Klamath
Alternative 2
Medford - Klamath
Alternative 3
acres
700,000
600,000
500,000
400,000
300,000
200,000
100,000
-
2006
2016
2026
2056
2106
year
suitable habitat
dispersal only
non-habitat


Klamath Falls - East Cascades
No Action
Klamath Falls - East Cascades
Alternative 1
Klamath Falls - East Cascades
Alternative 2
Klamath Falls - East Cascades
Alternative 3
acres
50,000
40,000
30,000
20,000
10,000
-
2006
2016
2026
2056
2106
year

Northern Spotted Owl Habitat Classification for Alternative 3

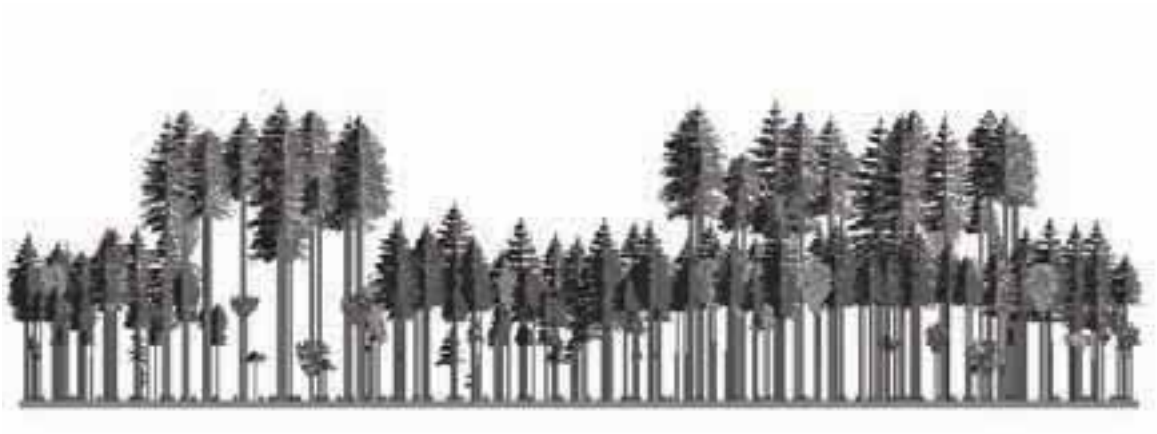
For Alternative 3 in 2056 and 2106, stands are classified as northern spotted owl suitable habitat if they either are classified as such by the habitat classification or are classified as dispersal habitat and are also classified as Mature with Multiple Canopies or Structurally Complex forest by the structural stage classification.

The habitat classification used alone would underestimate the suitable habitat in Alternative 3, because the habitat classification depends in part on measurement of the average diameter of trees in the stand. In Alternative 3, partial harvest would create multi-cohort stands, and the resultant large number of understory trees would depress the average tree diameter of the stand as a whole, causing these partially harvested stands to be classified as dispersal habitat only (Figure 291 - Stand Conditions Resulting from Partial Harvests in Alternative 3 Compared to Regeneration Harvest in No Action). These partially harvested stands would continue to be classified only as dispersal habitat until the understory would grow large enough to no longer depress the average tree diameter of the stand as a whole, which would typically take at least 50 years. The structural stage classification does not use average diameter of trees in the stand, but instead uses the density of trees above a certain diameter (see Ecology Appendix – Structural Stage Classification). As a result, the understory trees do not cause misclassification of stands, as long as the stand retains enough large trees. The structural stage classification automatically reclassifies partially harvested stands to Stand Establishment forest until the understory would grow tall enough to pass out of the Stand Establishment stage (usually 20 – 30 years), after which the partially harvested stand is classified based on the overall stand characteristics. Therefore, even using this combing classification scheme for Alternative 3, stands that had been partially harvested in Alternative 3 would not be classified as suitable habitat for several decades after partial harvest.

This combined classification is only used for results from the years 2056 and 2106; in the earlier years the results of the two different classification approaches are similar because the difference in classification is not apparent for several decades after the partial harvesting applied in Alternative 3. For example, in 2026, using the combined classification would increase the total amount of suitable habitat by 3.3%, which would represent 1.7% of habitat-capable acres.

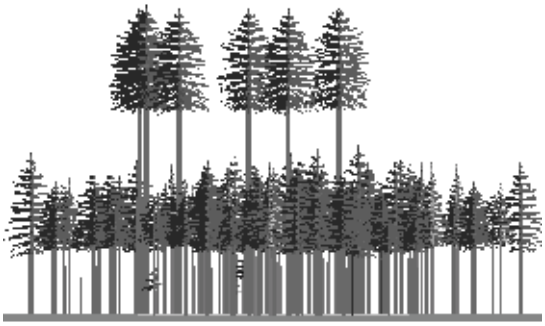
Figure 291. Stand Conditions Resulting from Partial Harvests in Alternative 3 Compared to Regeneration Harvest in No Action

A. Alternative 3 Partial Harvest



Spotted owl habitat rating = Dispersal habitat (according to standard classification)
Structural stage = Mature with multiple canopies

B. No Action - Regeneration Harvest with Green Tree Retention

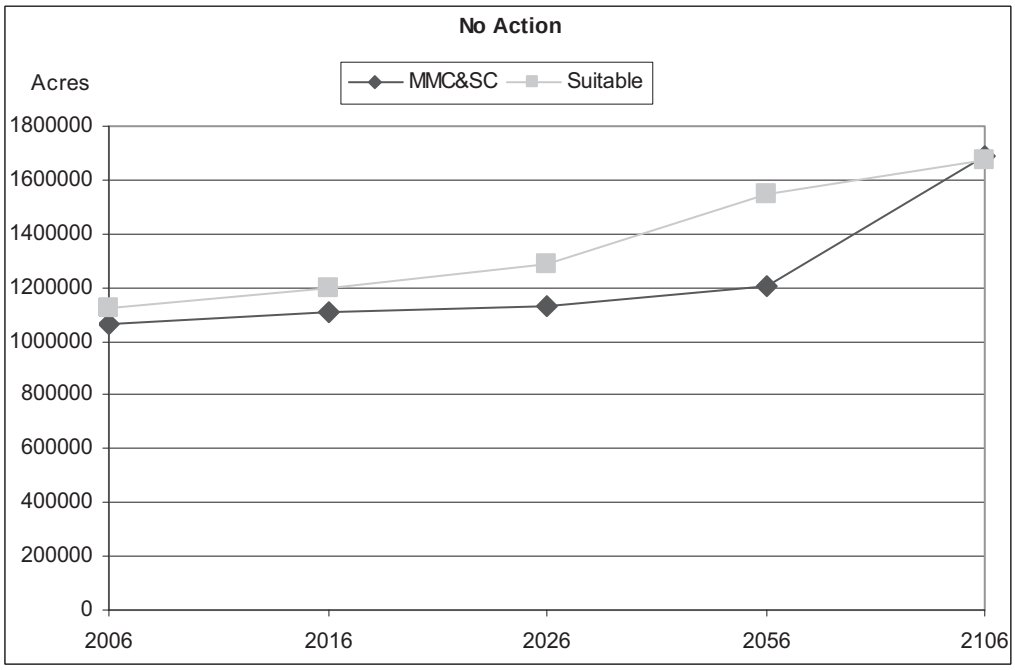


Spotted owl habitat rating = Dispersal habitat
Structural stage = Young with Structural Legacy

The combined classification might be expected to overestimate the amount of suitable habitat compared to other alternatives, because it expands the definition of suitable habitat wider than the other alternatives. However, in No Action, Alternative 1, and Alternative 2, Mature with Multiple Canopies and Structurally Complex forest is generally a subset of suitable habitat: the amount of Mature with Multiple Canopies and Structurally Complex forest is always lower than the amount of suitable habitat. Therefore, it is unlikely that the combined classification for Alternative 3 substantially overestimates the amount of suitable habitat compared to the other alternatives, and does not overestimate it enough to alter the overall trends and relative results of the alternatives.

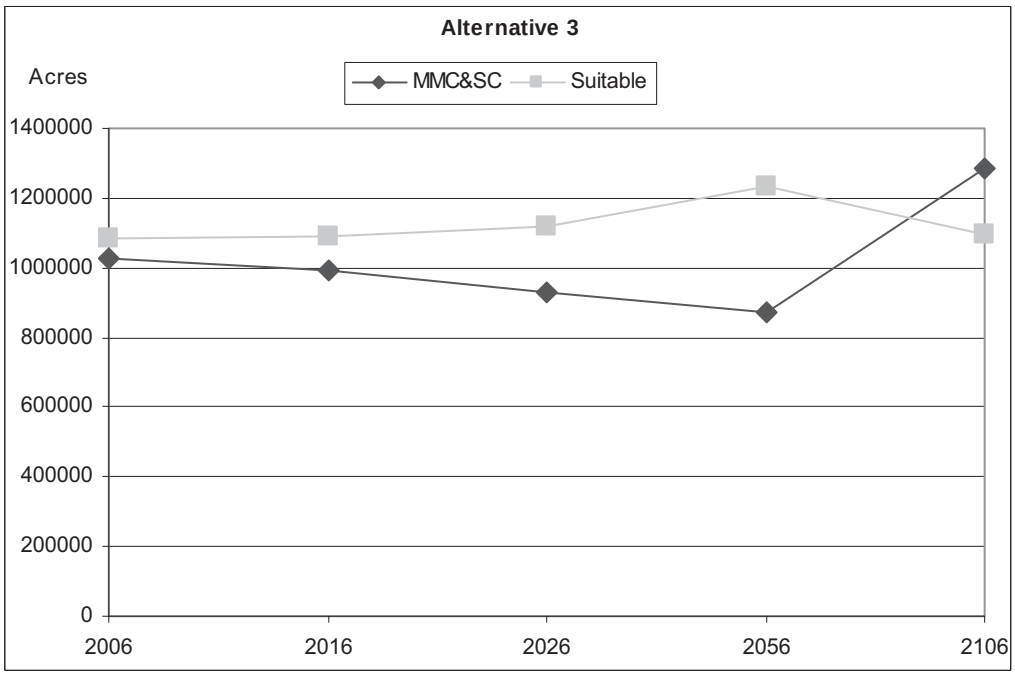
No Action provides the best comparison to Alternative 3 for classification of suitable habitat, because No Action includes green tree retention which complicated the classification. Under No Action, the amount of Mature with Multiple Canopies and Structurally Complex forest is very similar to, but always lower, than the amount of suitable habitat in the first decades. In 2056, the amount of Mature with Multiple Canopies and Structurally Complex forest is more substantially lower than the amount of suitable habitat. But in 2056, Mature with Multiple Canopies and Structurally Complex forest is very strongly a subset of suitable habitat: 93% of Mature with Multiple Canopies forest and 94% of Structurally Complex forest in 2056 under No Action is also classified as suitable habitat.

Figure 292. Comparison of Classification of Mature with Multiple Canopies and Structurally Complex Forest with Classification of Suitable Habitat – No Action



This close correlation between Mature with Multiple Canopies and Structurally Complex forest and suitable habitat in No Action, Alternative 1, and Alternative 2, is in contrast to the poor correlation between the two classifications in Alternative 3. Note that the two classifications have a different trend over time under Alternative 3.

Figure 293. Comparison of Classification of Mature with Multiple Canopies and Structurally Complex Forest with Classification of Suitable Habitat – Alternative 3



Marbled Murrelet Critical Habitat.

There are 29 marbled murrelet critical habitat units that include BLM administered lands. Critical habitat was designated by the U.S. Fish and Wildlife Service in 1996 to encompass existing Late-successional Reserves, as defined in the Northwest Forest Plan. Critical habitat units would be managed as late-successional reserves under the no action alternative and as late-successional management areas under alternative 1. By 2106 under the no action alternative and alternative 1, BLM administered lands in 14 and 19 of 29 critical habitat units would be comprised of more than 90 percent murrelet nesting habitat. All except one of these units would have increasing amounts of murrelet nesting habitat. The one exception to this upward trend would be unit CA-01-e, in which the BLM administers 14 acres. It is assumed in this analysis that the marbled murrelet critical habitat which is designated as late-successional reserves on U.S. Forest Service lands would follow similar trends to those exhibited by habitat on BLM administered lands under the no action alternative and Alternative 1.

Marbled murrelet nesting habitat would increase under alternative 2 from 218,000 acres to 287,000 acres, or from 47 to 63 percent of habitat capable forest in critical habitat units. The late-successional management areas under alternative 2 would not completely encompass marbled murrelet critical habitat and as a result 6 of 29 critical habitat units would contain greater than 90 percent nesting habitat by 2106, compared to 14 critical habitat units under the no action alternative. Marbled murrelet nesting habitat would increase 10 percent, or more, in one critical habitat unit from 2006 to 2016 while 20 critical habitat units would decrease in habitat during this time period. Nine of these 20 units would decrease in habitat more than 10 percent. Nesting habitat would decrease between 2016 and 2026 in 20 critical habitat units. Two of these 20 critical habitat units would decrease more than 10 percent. From 2006 to 2106, marbled murrelet nesting habitat would increase in 14 critical habitat units. Thirteen of these 14 critical habitat units would increase in habitat more than 10 percent. Murrelet nesting habitat would decrease in 15 critical habitat units, 10 of these units would decrease more than 10 percent.

Marbled murrelet nesting habitat would increase under alternative 3 from 217,000 acres to 269,000 acres, or from 47 to 59 percent of habitat-capable forest on BLM administered lands.

Under alternative 3, with the exception of Congressionally-withdrawn lands and riparian management areas, almost all marbled murrelet critical habitat units would be subject to regeneration harvests and partial harvests that would remove marbled murrelet nesting habitat. Under alternative 3, there would be 3 of 29 critical habitat units which would contain greater than 90 percent nesting habitat by 2106, compared to 14 units under the no action alternative and 19 units under alternative 1 and 6 units under alternative 2. Under alternative 3, marbled murrelet nesting habitat would increase more than 10 percent in one critical habitat unit from 2006 to 2106 while habitat would decrease in 14 critical habitat units in the first decade. Three of these 14 units would decrease more than 10 percent. Nesting habitat would decrease between 2016 and 2026 in 23 critical habitat units. One of these 23 units would decrease more than 10 percent. From 2006 to 2106, marbled murrelet nesting habitat would increase in 20 critical habitat units, in 10 of these units habitat would increase more than 10 percent, while habitat would decrease in 9 critical habitat units, habitat would decrease more than 10 percent in two of those nine units. Although alternative 3 opens almost all of the critical habitat units to vegetative management compared

to alternative 2, retention tree requirements in both the partial and regeneration harvests provide for much more rapid redevelopment of murrelet nesting habitat. Murrelet nesting habitat would develop up to 70 years sooner in alternative 3 compared to alternative 2, because of the role of retention trees in habitat development.

Table 254. Marbled murrelet nesting habitat summarized by critical habitat unit and alternative.

Critical Habitat Unit	Alternative	Habitat-capable (ac)	Marbled murrelet nesting habitat (ac)				
			2006	2016	2026	2056	2106
CA-01-e	Alt 1	14	10	7	6	10	8
	Alt 2	14	10	3	3	9	7
	Alt 3	14	10	10	10	8	12
	No Action	14	10	14	14	14	9
OR-01-b	Alt 1	1	1	1	1	1	1
	Alt 2	1	1	1	1	1	1
	Alt 3	1	1	1	1	1	1
	No Action	1	1	1	1	1	1
OR-01-c	Alt 1	7217	4472	4874	4903	5089	5680
	Alt 2	7217	4472	4340	3973	2991	3076
	Alt 3	7217	4472	4792	4465	3081	4497
	No Action	7217	4472	4873	4903	5089	5297
OR-02-a	Alt 1	0	0	0	0	0	0
	Alt 2	0	0	0	0	0	0
	Alt 3	0	0	0	0	0	0
	No Action	0	0	0	0	0	0
OR-02-b	Alt 1	11	1	1	1	1	4
	Alt 2	11	1	1	1	1	1
	Alt 3	11	1	1	1	1	1
	No Action	11	1	1	1	1	1
OR-02-c	Alt 1	3139	969	1332	1557	1910	2742
	Alt 2	3139	969	985	1206	1355	2148
	Alt 3	3139	969	1027	963	557	1077
	No Action	3139	969	1332	1557	1910	2114
OR-02-d	Alt 1	25584	4948	6082	6700	9143	23955
	Alt 2	25584	4948	6579	7391	11258	23667
	Alt 3	25584	4948	7041	7414	10653	17785
	No Action	25584	4948	6874	8201	14458	23688
OR-02-e	Alt 1	37256	13750	16475	17692	20158	34639
	Alt 2	37256	13750	15532	16625	18578	31857
	Alt 3	37256	13750	14709	13997	9737	18669
	No Action	37256	13750	16613	17883	20232	30462

Critical Habitat Unit	Alternative	Habitat-capable (ac)	Marbled murrelet nesting habitat (ac)				
			2006	2016	2026	2056	2106
OR-03-a	Alt 1	39	39	41	41	41	41
	Alt 2	39	39	39	39	39	39
	Alt 3	39	39	39	39	15	15
	No Action	39	39	41	41	41	41
OR-03-c	Alt 1	8087	3158	3992	3819	4165	7892
	Alt 2	8087	3158	3593	3521	4100	6786
	Alt 3	8087	3158	3624	3652	3188	5207
	No Action	8087	3158	3988	4051	5047	7542
OR-04-a	Alt 1	1283	711	729	736	803	1165
	Alt 2	1283	711	658	661	612	694
	Alt 3	1283	711	628	605	294	537
	No Action	1283	711	728	736	803	1039
OR-04-b	Alt 1	1083	893	964	1076	1076	1080
	Alt 2	1083	893	960	1072	1072	1072
	Alt 3	1083	893	959	1071	721	1068
	No Action	1083	893	964	1076	1076	1076
OR-04-c	Alt 1	13378	7560	7575	7575	7701	12059
	Alt 2	13378	7560	7452	7450	7432	10999
	Alt 3	13378	7560	6755	6465	5458	6851
	No Action	13378	7560	7582	7580	7724	11177
OR-04-d	Alt 1	20059	10832	10945	11251	11340	17555
	Alt 2	20059	10832	7755	6723	4092	5535
	Alt 3	20059	10832	10834	11156	11069	10642
	No Action	20059	10832	10945	11283	11407	16553
OR-04-e	Alt 1	50508	26602	27244	27615	29639	46806
	Alt 2	50508	26602	26780	26336	27211	42963
	Alt 3	50508	26602	24887	21442	17695	30230
	No Action	50508	26602	27429	27968	29840	46945
OR-04-f	Alt 1	20099	12133	12220	13014	13512	17531
	Alt 2	20099	12133	9482	7901	3248	3423
	Alt 3	20099	12133	11148	9212	5219	13302
	No Action	20099	12133	12220	13040	13743	18431
OR-04-g	Alt 1	15352	7374	7280	7287	7405	12759
	Alt 2	15352	7374	7034	6437	3319	4064
	Alt 3	15352	7374	6294	4901	3355	8483
	No Action	15352	7374	7082	7146	7912	12618

Critical Habitat Unit	Alternative	Habitat-capable (ac)	Marbled murrelet nesting habitat (ac)				
			2006	2016	2026	2056	2106
OR-04-i	Alt 1	79203	34727	38319	41145	46096	71373
	Alt 2	79203	34727	33995	34037	32619	47235
	Alt 3	79203	34727	34184	32490	29996	51010
	No Action	79203	34727	38410	41538	49490	70351
OR-04-j	Alt 1	55887	25062	27390	29112	32083	51859
	Alt 2	55887	25062	23712	23768	21026	25494
	Alt 3	55887	25062	25354	24338	20163	33843
	No Action	55887	25062	27740	30180	33584	50827
OR-04-k	Alt 1	25526	13379	14524	15283	16322	23694
	Alt 2	25526	13379	14234	14956	15706	21771
	Alt 3	25526	13379	13701	13541	8513	14137
	No Action	25526	13379	14637	15656	16724	22211
OR-06-a	Alt 1	39	26	26	26	26	36
	Alt 2	39	26	7	7	7	7
	Alt 3	39	26	4	4	4	26
	No Action	39	26	26	26	26	36
OR-06-b	Alt 1	49888	26052	27344	28484	29942	43864
	Alt 2	49888	26052	27034	28113	27242	38638
	Alt 3	49888	26052	26873	26206	25836	22602
	No Action	49888	26052	27509	28719	30299	42247
OR-06-c	Alt 1	4608	3508	3406	3444	3543	4447
	Alt 2	4608	3508	1526	1238	1189	1543
	Alt 3	4608	3508	2932	2461	1896	3652
	No Action	4608	3508	3486	3523	3543	4389
OR-06-d	Alt 1	16177	8407	8445	8494	9627	15545
	Alt 2	16177	8407	6551	5041	3045	3569
	Alt 3	16177	8407	6347	4959	3961	8965
	No Action	16177	8407	8405	8611	9843	15324
OR-07-a	Alt 1	2364	1466	1227	1227	1752	2127
	Alt 2	2364	1466	998	749	719	750
	Alt 3	2364	1466	1534	1580	918	1289
	No Action	2364	1466	1218	1289	1801	2114
OR-07-b	Alt 1	2168	1073	1304	1304	2047	2047
	Alt 2	2168	1073	1300	1300	2166	2167
	Alt 3	2168	1073	1302	1302	2167	2167
	No Action	2168	1073	1428	1428	2171	2171

Critical Habitat Unit	Alternative	Habitat-capable (ac)	Marbled murrelet nesting habitat (ac)				
			2006	2016	2026	2056	2106
OR-07-d	Alt 1	1839	836	836	868	1194	1723
	Alt 2	1839	836	509	442	1021	1469
	Alt 3	1839	836	837	868	1086	1565
	No Action	1839	836	836	876	1231	1752
OR-07-f	Alt 1	15595	8577	9459	9706	11030	14908
	Alt 2	15595	8577	6635	5982	6803	7271
	Alt 3	15595	8577	8589	7816	7344	10621
	No Action	15595	8577	11472	11711	13467	15016
OR-07-g	Alt 1	2078	984	1085	1085	1097	1469
	Alt 2	2078	984	829	450	367	394
	Alt 3	2078	984	1034	999	1248	835
	No Action	2078	984	1085	1085	1085	1514

Special Status Animal Species

The following table shows the Bureau Special Status Animal Species in the planning area by their habitat group and location.

Table 255. Documented and suspected occurrence of Bureau special status animal species (as of March 14, 2005) within the planning area of the Western Oregon Plan Revision.

Scientific Name	Common Name	District						
		Status [1]	Coos Bay	Eugene	Klamath Falls	Medford	Roseburg	Salem
Amphibians and Reptiles								
*Rana pretiosa**	Oregon spotted frog	FC			D	D		
*Batrachoseps wrighti**	Oregon slender salamander	BS		D				D
Chrysemys picta	Painted turtle	BS		S				S
Clemmys marmorata marmorata	Northwestern pond turtle	BS	D	D	D	D	D	S
*Plethodon stormi**	Siskiyou mountains salamander	BS				D		
Rhyacotriton kezeri	Columbia torrent salamander	BS						D
Aneides flavipunctatus	Black salamander	BA				D		
Ascaphus montanus	Inland tailed frog	BA			S			
Batrachoseps attenuatus	California slender salamander	BA	D					
Dicamptodon copei	Cope's giant salamander	BA						D
Plethodon larselli	Larch mountain salamander	BA						S
*Rana boylii**	Foothill yellow-legged frog	BA	D	D		D	D	S
*Rhyacotriton cascadae**	Cascade torrent salamander	BA		D				D
Birds								
Pelecanus occidentalis californicus	California brown pelican	FE	D	S		S		
*Brachyramphus marmoratus maroratum**	Marbled murrelet	FT	D	D		S	D	D
Charadrius alexandrinus nivosus	Western snowy plover (coastal population)	FT	D					
*Haliaeetus leucocephalus**	Bald eagle	FT	D	D	D	D	D	D
*Strix occidentalis caurina**	Northern spotted owl	FT	D	D	D	D	D	D
Eremophila alpestris strigata	Streaked horned lark (oregon cr , wv, km)	FC	D	S		D		
*Accipiter gentilis**	Northern goshawk	BS	D	D	D	D	D	D
Anser albifrons elgasi	Tule goose	BS	S		S			
Athene cunicularia hypugaea	Burrowing owl (wv, km, hp, cb, bm)	BS	D			S		

Bartramia longicauda	Upland sandpiper	BS	D					
Branta canadensis leucopareia	Aleutian canada goose (wintering)	BS	D	S				
Branta canadensis occidentalis	Dusky canada goose	BS	S	D				
Buteo regalis	Ferruginous hawk	BS			D	D		
Centrocercus urophasianus	Greater sage-grouse	BS			S			
Chordeiles minor	Common nighthawk (wv)	BS	D	D				D
Coturnicops noveboracensis	Yellow rail	BS			D			
*Falco peregrinus anatum**	American peregrine falcon	BS	D	D	D	D	D	D
Falco peregrinus tundrius	Arctic peregrine falcon	BS	D	S		S		S
Glaucidium gnoma	Northern pygmy-owl (Blue Mtns)	BS	D					
Icteria virens	Yellow-breasted chat (wv)	BS	D	D				D
Melanerpes lewis	Lewis' woodpecker (wv, km, wc, ec, cb)	BS	D	D	D	D	D	D
*Otus flammeolus**	Flammulated owl (ec, bm, br, wc, km)	BS			D	D		
Picoides albolarvatus	White-headed woodpecker (km, wc, ec, bm)	BS			D	D		
Picoides arcticus	Black-backed woodpecker (km, wc, ec, bm)	BS				D		D
Picoides tridactylus	Three-toed woodpecker (wc, ec, bm)	BS				D		D
Podiceps grisegena	Red-necked grebe (breeding pops: wc, ec)	BS			D	D		
Pooecetes gramineus affinis	Oregon vesper sparrow (wv, km, cr)	BS	D	D			D	S
*Progne subis**	Purple martin (cr, wv, km, wc, ec)	BS	D	D		S	D	D
Sturnella neglecta	Western meadowlark (wv)	BS		D				
Agelaius tricolor	Tricolored blackbird (breeding pop: wv, km, ec, hp, cb)	BA			D	D		
Ammodramus savannarum	Grasshopper sparrow (wv)	BA		D				
Cerorhinca monocerata	Rhinoceros auklet	BA	S					S
Cygnus buccinator	Trumpeter swan	BA	S		D	D		
Dolichonyx oryzivorus	Bobolink	BA	D					
Elanus leucurus	White-tailed kite	BA	D	D		D	D	
Falco columbarius	Merlin (possible breeding pop: ec, cb, br)	BA			S			
Fratercula cirrhata	Tufted puffin	BA	S					D
Histrionicus histrionicus	Harlequin duck (breeding pops: wc, ec, bm)	BA		D			D	D
Melanerpes lewis	Lewis' woodpecker	BA	D	S	D	D	D	S
Oceanodroma furcata	Fork-tailed storm petrel (breeding population)	BA	S					
Pelecanus erythrorhynchos	American white pelican (breeding pops: ec, br)	BA			D			
Ptychoramphus aleuticus	Cassin's auklet	BA	S					

Invertebrates								
Icaricia icarioides fenderi	Fender's blue butterfly	FE		D				S
Branchinecta lynchi	Vernal pool fairy shrimp	FT				D		
Speyeria zerene hippolyta	Oregon silverspot butterfly	FT						S
Euphydryas editha taylori	Whulge checkerspot (butterfly)	FC		S				S
*Polites mardon**	Mardon skipper (butterfly)	FC	S	S		D		
Acetropis americana	American grass bug	BS		S				S
Algamorda newcombiana	Newcomb's littorine snail	BS	D					
Allomyia scotti	Scott's apatanian caddisfly	BS					S	
Anodonta wahlametensis	Willamette floater (mussel)	BS						S
Chloealtis aspasma	Siskiyou short-horned grasshopper	BS		S		D		S
Cryptomastix devia	Puget oregonian (snail)	BS						D
Cryptomastix populi	Hells canyon land snail	BS						
Deroceras hesperium	Evening fieldslug	BS		S	D	D		S
Driloleirus macelfreshi	Oregon giant earthworm	BS	S					S
Fluminicola sp. nov.	Fall creek pebblesnail	BS				D		
Fluminicola sp nov.	Keene creek pebblesnail	BS				D		
Fluminicola sp nov.	Toothed pebblesnail	BS				D		
*Fluminicola sp. nov. 1**	Klamath pebblesnail	BS			D	S		
Fluminicola sp. nov. 11	Nerite pebblesnail	BS			S	D		
Fluminicola sp. nov. 3	Diminutive pebblesnail	BS			D			
Gliabates oregonius	Salamander slug	BS	D	S				D
Helisoma newberryi newberryi	Great basin ramshorn (snail)	BS			D			
*Helminthoglypta hertleini**	Oregon shoulderband (snail)	BS	S			D	D	
*Hesperarion mariae**	Tillamook westernslug	BS	S [2]	D				D
Hochbergellus hirsutus	Sisters hesperian (snail)	BS	S					
Incisalia polia maritima	Hoary elfin (butterfly)	BS	S	S				S
Lanx klamathensis	Scale lanx (snail)	BS			D	S		
Lanx subrotunda	Rotund lanx (snail)	BS	S				D	
Mitoura johnsoni	Johnson's hairstreak (butterfly)	BS						S
*Monadenia chaceana**	Chase sideband (snail)	BS			S	D	D	
Monadenia fidelis beryllica	Green sideband (snail)	BS	S				D	
Monadenia fidelis celeuthia	Travelling sideband (snail)	BS				D		
Monadenia fidelis ssp. nov.	Modoc sideband (snail)	BS			D			
Pisidium ultramontanum	Montane peaclam	BS	S			S		
Plebejus saepiolus littoralis	Insular blue butterfly	BS	D					S
Pomatiopsis binneyi	Robust walker	BS	S					
Pomatiopsis californica	Pacific walker	BS	S					S
*Pristiloma articum crateris**	Crater lake tightcoil (snail)	BS		S	S	S	D	S
Pristiloma pilsbryi	Crowned tightcoil (snail)	BS						S
Prophysaon sp. nov.	Klamath tail-dropper	BS	S				S	

Prophysaon vanattae pardalis	Spotted tail-dropper	BS	D	S			S	D
Pterostichus rothi	Roth's blind ground beetle	BS		S				S
Rhyacophila haddocki	Haddock's rhyacophilan caddisfly	BS		S				D
Vespericola sierrana	Siskiyou hesperian	BS				D		
Vespericola sp. nov.	Bald hesperian	BS		D				
Vespericola sp. nov.	Oak springs hesperian	BS		D				
	Mammals							
Balaenoptera musculus	Blue whale	FE	S					
Eschrichtius robustus	Gray whale	FE	S					
Megaptera novaeangliae	Humpback whale	FE	S					
Odocoileus virginianus leucurus	Columbian white-tailed deer	FE						S
Eumetopias jubatus	Steller sea lion	FT	S					
*Martes pennanti pacifica**	Fisher	FC	S	D	S	D		
Arborimus longicaudus silvicola	Oregon red tree vole (nw or coast)	BS						D
Corynorhinus townsendii	Townsend's big-eared bat	BS	D	D	D	D	D	D
Odocoileus virginianus leucurus	Columbian white-tailed deer (Douglas County only)	BS					D	
Antrozous pallidus	Pallid bat	BA	S	S	D	D	D	S
Antrozous pallidus pacificus	Pacific pallid bat	BA	S	S		D	D	
Brachylagus idahoensis	Pygmy rabbit	BA			S			
Euderma maculatum	Spotted bat	BA			S			
Myotis thysanodes	Fringed myotis	BA	D	S	D	D	D	S
Thomomys bottae detumidus	Pistol river pocket gopher	BA	S					
Thomomys mazama helleri	Gold beach pocket gopher	BA	S					

* Species known from more than 20 sites

[1] Status Codes: FE - Federally listed as endangered; FT - Federally listed as threatened; FC -- Candidate for federal listing; BS - Bureau Sensitive; BA - Bureau Assessment.

[2] Occurrence Codes: D - Documented to occur within the district; S - Suspected to occur in the district