

**ROGUE RIVER/SOUTH COAST  
BIOLOGICAL ASSESSMENT**

**FY 04 – 08  
for**

**Activities that may affect listed species in the  
Rogue River/South Coast Province**



**for  
MEDFORD DISTRICT,  
Bureau of Land Management,  
ROGUE RIVER and  
SISKIYOU  
National Forests**

**11 July 2003**

**BIOLOGICAL OPINION  
(FWS)**

**1-14-03-F-511**

**20 October 2003**

**(Terms and Conditions [PDCs] – Appendix A)**

United States Department of Agriculture, Forest Service	Siskiyou National Forest Rogue River National Forest	United States Department of Interior Bureau of Land Management    Medford District
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Reply To: 2670 (FS), 6840 (BLM)

Date: July 14, 2003

Subject: Biological Assessment for FY04-08 Programmatic Consultation  
(Med BLM, ROR & SIS NFs)

To: Craig Tuss  
Attn: David Clayton  
USDI Fish and Wildlife Service  
Roseburg Field Office  
2900 NW Stewart Parkway  
Roseburg, Oregon 97470

This letter and the enclosed Biological Assessment (BA) constitute a request for formal consultation with the USDI Fish and Wildlife Service (FWS) and meets our responsibilities on interagency cooperation (50 CFR 402) under Section 7 of the Endangered Species Act of 1973 (as amended) (Act). The enclosed Biological Assessment analyzes the effects to endangered and threatened species from activities by the Rogue River and Siskiyou National Forests, and the Medford District of the Bureau of Land Management, during Fiscal Years (FY) 04-08.

Species and habitats addressed include the threatened bald eagle (*Haliaeetus leucocephalus*), northern spotted owl (*Strix occidentalis caurina*), marbled murrelet (*Brachyramphus marmoratus*), vernal pool fairy shrimp (*Branchinecta lynchi*), and the endangered Cook's lomatium (*Lomatium cookii*), Gentner's fritillary (*Fritillaria gentneri*), large-flowered woolly meadowfoam (*Limnanthes floccosa* ssp. *grandiflora*), and McDonald's rockcress (*Arabis mcdonaldiana*), as well as effects to designated critical habitat for the spotted owl and marbled murrelet, and proposed critical habitat for the fairy shrimp. Listed and proposed anadromous fish species are not included in this BA. Programmatic consultation regarding these species occurs separately with the NOAA Fisheries.

We anticipate likely affects to listed species, related to both habitat modification and disturbance. Effects determinations are shown in Table 1. Effects of the FY04-08 projects on listed species vary; some projects are **MAY AFFECT LIKELY TO ADVERSELY AFFECT (LAA)** spotted owls, spotted owl critical habitat, and marbled murrelets, while other projects are **MAY AFFECT NOT LIKELY TO ADVERSELY AFFECT (NLAA)** for bald eagle, spotted owls, spotted owl critical habitat, marbled murrelets, marbled murrelet critical habitat, Cook's lomatium, and Gentner's fritillary and proposed critical habitat for fairy shrimp.

Table 1. Species Determinations by Activity Type. Where LAA is shown, No Effect, Not Likely to Adversely Affect, and Beneficial Effect determinations are also implied. MA = May Affect; CHU=Critical Habitat Unit; PCHU=Proposed Critical Habitat Unit											
Activity Type	Spotted Owl	Spotted Owl CHU	Marbled Murrelet	Marbled Murrelet CHU	Bald Eagle	Fairy Shrimp	Fairy Shrimp PCHU	Cook's Lomatium	Gentner's Fritillary	Large-flowered Woolly Meadowfoam	McDonald's Rockcress
Tree Harvest	LAA	MA	LAA	MA	NLAA	NE	NE	NE	NLAA	NE	NE
Vegetation Management	LAA	MA	LAA	MA	NLAA	NE	NE	NLAA	NLAA	NE	NE
Watershed Restoration	LAA	MA	LAA	MA	NLAA	NLAA	MA	NLAA	NLAA	NLAA	NLAA
Recreation	LAA	MA	LAA	MA	NLAA	LAA	MA	NLAA	NLAA	NLAA	NLAA
Fuels Management	NLAA	MA	NLAA	MA	NLAA	NE	NE	NLAA	NLAA	NE	NLAA
Grazing	NE	NE	NE	NE	NE	NLAA	MA	NE	NLAA	NE	NE
Special Forest Products	NLAA	MA	NLAA	NE	NE	NE	NE	NE	NLAA	NE	NE
Road Maintenance /Construction	LAA	MA	LAA	MA	NLAA	NE	NE	NLAA	NLAA	NLAA	NLAA
Road Use Permits	LAA	MA	LAA	MA	NLAA	NE	NE	NE	NE	NE	NE
Other Special Use Permits	NLAA	MA	NLAA	MA	NLAA	NE	NE	NLAA	NLAA	NLAA	NLAA
Mining And Quarry Operation	LAA	MA	LAA	MA	NLAA	NE	NE	NLAA	NLAA	NE	NLAA
Cultural	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Weed Control	NE	NE	NE	NE	NE	NE	NE	NLAA	NLAA	NLAA	NLAA

We request formal consultation on **Likely to Adversely Effect** determinations and concurrence on **Not Likely to Adversely Effect** determinations. All determinations of effects are made with mandatory Project Design Criterion (PDCs) (conservation measures), fully implemented as noted in the BA.

If you have any questions, please call Lee Webb (541-471-6536) or Carole Jorgensen (541-618-2320) for wildlife issues and Mark Mousseaux (541-618-2232) or Maria Ulloa (541-471-6528) for plant issues. We appreciate the work and comments of David Clayton and Sam Friedman during this consultation. As always, we look forward to further work with you to conserve endangered and threatened species and the habitats upon which they depend.

/s/ **Scott D. Conroy**

/s/ **Mary Smelcer**

**SCOTT D. CONROY**  
Forest Supervisor  
Rogue River and Siskiyou National Forests

**MARY SMELCER**  
Acting District Manager, Medford Dist.  
Bureau of Land Management

cc: Resource Area Managers, Medford District BLM  
Rogue River Siskiyou NFs District Rangers

Attachment: FY 2004-2008 Programmatic Biological Assessment

# **BIOLOGICAL ASSESSMENT**

## **FY 2004-2008 Programmatic Assessment for Activities that may affect listed species in the Rogue River/South Coast Province**

### **MEDFORD DISTRICT BUREAU OF LAND MANAGEMENT and ROGUE RIVER AND SISKIYOU NATIONAL FORESTS**

**11 July 2003**

**Prepared by: Carole Jorgensen, George Arnold, Mark Mousseaux, Linda Hale, and Heather Bernier, Bureau of Land Management, Medford District (BLM); Lee Webb, Maria Ulloa, and David Austin, Rogue River and Siskiyou National Forests (FS); in consultation with Sam Friedman and David Clayton, US Fish and Wildlife Service (FWS), Roseburg.**

[Adjustments made to Tables 1 and 5, and “listed” Critical Habitat for fairy shrimp, on *8 Aug 2003*. NRF and Dispersal acres in Environmental Baseline Tables (Chetco, Illinois, Summary) adjusted *12 Aug 03*. In Table 9, NLAA changed to LAA for marbled murrelet and spotted owl in the Vegetation Management row, *11 Sep 03*. Fixed a reference to PDCs for shrimp on page 23; in coordination with Dave Clayton, added additional columns to the top of Table 1, and in Table 1 and the text, revised the Disturbance acres for spotted owl and marbled murrelet, based on new direction for disturbance distances from FWS, *12 Sep 03*. Updates to PDCs for disturbance distances for spotted owl and marbled murrelet, *18 Sep 03*. Corrected acres of MM habitat in LSR, *22 Sep 03*. Corrected CHU acres on page 74, *17 Oct 03*. LW]

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## I. INTRODUCTION

This is a programmatic consultation of forest management activities on affected listed species, within lands managed by the Rogue River and Siskiyou National Forests, and the Medford District of the Bureau of Land Management. Resources on the three units are described in the Land and Resource Management Plan(s) (LRMP) for the Rogue River National Forest (USDA Forest Service 1990) and Siskiyou National Forest (USDA Forest Service 1989), and the Medford District Bureau of Land Management Resource Management Plan (RMP) (USDI Bureau of Land Management 1994). These three plans were amended by the Record of Decision (ROD) for Amendments to Planning Documents Within the Range of the Northern Spotted Owl (USDA Forest Service and USDI Bureau of Land Management 1994), hereafter known as the Northwest Forest Plan (NWFP). The area of consideration includes the Rogue River/South Coast and Smith River portions of the OR Klamath, and the Rogue River and Umpqua River portions of the OR Western Cascades Physiographic Provinces. Small portions of the Rogue River Basin are included in the CA Klamath Physiographic Provinces and a small portion of the Klamath River drainage is in the OR Eastern Cascades Physiographic Provinces. These federal lands are under the jurisdiction of the Medford District, Bureau of Land Management, hereafter referred to as Medford; and the Rogue River National Forest and the Siskiyou National Forest, hereafter referred to collectively as the Rogue River/Siskiyou. The combined agencies will hereafter be collectively referred to as the Action Agencies.

All ownerships encompass 5,052,000 in the Action Area. Medford manages approximately 890,000 acres of public land and the Rogue River manages approximately 560,000 acres in Jackson, Josephine, Douglas, and Siskiyou (California) Counties. The Siskiyou manages 1,090,000 acres in, Coos, Curry, and Josephine Counties, Oregon and Del Norte (California). Most of the BLM-managed land is distributed in a checkerboard pattern consisting of alternating sections of public and private land. National Forest land is more contiguous. Approximately 2,480,000 acres of private or other non-federal ownership exists within the action.

The purpose of this biological assessment, hereafter referred to as BA, is to describe and evaluate the effects of proposed federal land management activities from Fiscal Year (FY) 04 through FY 08 on listed Threatened (T) and Endangered (E) species and designated critical habitat to meet requirements of the Endangered Species Act of 1973, as amended (ESA). Species addressed in this BA are: bald eagle (T) (*Haliaeetus leucocephalus*), northern spotted owl (T) (*Strix occidentalis caurina*), marbled murrelet (T) (*Brachyramphus marmoratus*), vernal pool fairy shrimp (T) (*Branchinecta lynchi*), Gentner's fritillary (E) (*Fritillaria gentneri*), Cook's Lomatium (E) (*Lomatium cookii*), large-flowered woolly meadowfoam (E) (*Limnanthes floccosa* ssp. *grandiflora*), and McDonald's rockcress (E) (*Arabis mcdonaldiana*). Also included are effects to designated critical habitat units (CHU) for the spotted owl, marbled murrelet, and vernal pool fairy shrimp. Critical habitat has not been designated for the bald eagle or the listed plants.

This BA tiers to the biological assessment and resultant biological opinion on the NWFP and complies with the NWFP Record of Decision (ROD) and its Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the

Range of the Northern Spotted Owl (1994). All activities described herein are designed to comply with the NWFP and terms and conditions of the associated biological opinion.

The NWFP biological opinion addressed the American peregrine falcon (*Falco peregrinus*), which has subsequently been de-listed and will not be evaluated in this BA. Fish are not included in this BA.

This BA was compiled jointly by members of the Level 1 team: George Arnold, Carole Jorgensen, Mark Mousseaux from the BLM; Lee Webb, Maria Ulloa from the FS; Dave Clayton, Sam Friedman from the FWS, under the guidance of the Level 2 team: Scott Conroy from the FS; Mary Smelcer from the BLM; and Craig Tuss from the FWS) to comply with streamlining guidance (USDA Forest Service, USDI Bureau of Land Management, and USDI US Fish and Wildlife Service 1999). Specialists from both Action Agencies contributed to the content and analysis of this document, including sections contributed by Linda Hale and Heather Bernier, BLM and David Austin, FS. A complete administrative record of this consultation is on file at both the Supervisor's Office of the Rogue River/Siskiyou and District Office of Medford.

## **ACTION AREA**

The Action Area has been defined (50 CFR 402) as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. For the purposes of this BA, the Action Area includes all lands managed by the Medford District BLM, and the Rogue River and Siskiyou National Forests.

The proposed projects (actions) are located mostly within the Oregon Klamath and Oregon Western Cascades Physiographic Provinces. A small area on the Medford BLM lies within the Eastern Cascade Province. All federal forested lands in the Rogue and South Coast Basins are included in this Assessment, except for minor areas managed by the US Army Corps of Engineers, Bureau of Indian Affairs, Bureau of Reclamation, and National Park Service, and 27,132 acres managed by the Coos Bay District of the BLM. The Action Area includes some acreage outside the Rogue River Basin, including minor portions of the Smith, Klamath, and Umpqua River Basins. All management actions have been grouped and displayed within 14 Section 7 Watersheds (major sub-basins). These watersheds are Applegate, Bear, Chetco and South Coast, Coquille/Sixes, Cow Upper, Elk, Illinois, Klamath, Little Butte, Rogue-Lower-Lobster, Rogue-Lower-Wild Rogue, Rogue-Middle, Rogue-Upper, and Smith (see Map 1).

Natural plant community types within the Action Area are diverse. In the lower elevations Oregon white oak woodlands and grasslands, chaparral, scattered ponderosa pine, and Douglas-fir occur up to about 2,400 feet in the interior valleys. Above this on the Klamath mountain side of the valley is the mixed evergreen zone, dominated with Douglas-fir and madrone up to about 4,500 feet, and a mixed conifer zone on the Cascade side dominated by ponderosa pine, Douglas-fir, incense cedar, and white fir in more mesic sites. In both areas, dense, chaparral (sclerophyllous type) communities can occupy large patches of the landscape, composed primarily of wedge-leaf ceanothus (*Ceanothus cuneatus*) and manzanita (*Arctostaphylos* species). Above 4,500 feet is the white fir zone, grading into a Shasta red-fir zone up to about 6,500 feet. Above this, areas of mountain hemlock and whitebark pine can be found up to open rocky herbaceous grasslands on the highest peaks above timberline.

The ecological diversity of communities and species of the Medford district is attributed to its physiographic setting at confluence of the Klamath and the Cascade ecoregions. Many eastern Cascade and Great basin species are on the periphery of their range in the Klamath sub-basin and spill into the southern edge of the Rogue valley from the east. The juxtaposition of these regions has led to a diverse array of species including species whose distributions are centered south into the Sierra's of California, east into the Great Basin, or north up the Cascades and the Coast range.

The Action Agencies have allocated the lands under their jurisdiction several land use allocations (LUAs). Land use allocations common to both agencies include Late Successional Reserve (LSR), Riparian Reserves, Matrix, and Adaptive Management Areas (AMA). Other important allocations are Wilderness, Wilderness Study Areas, Botanical Areas, Back County Recreation Areas, Areas of Critical Environmental Concern (ACECs) and Research Natural Areas (RNAs).

**Private lands:** BLM-managed lands are generally intermingled with private lands, while the Rogue River and Siskiyou National Forests are in nearly complete blocks of federal ownership. Human populations are centered on the cities of Medford, Grants Pass, and Ashland. Private lands comprise approximately 50 percent of the total Action Area. Private forested lands managed for timber production will typically be harvested between 40 and 60 years of age, in accordance with State Forest Practices Act standards. These lands are typically not expected to provide spotted owl nesting, roosting and foraging habitat, or marbled murrelet nesting habitat. Bald eagles nest sites are usually protected on private lands, at least while occupied. The conversion of intact suitable habitat in the low elevation woodlands and grasslands into pastures, vineyards, orchards, and home sites is increasing throughout the Rogue Valley. No legal protection is given to listed plants on private lands. The exception is Nature Conservancy lands in the Agate Desert managed to benefit Cook's lomatium, large-flowered woolly meadowfoam, and fairy shrimp, under agreements with the Fish and Wildlife Service. Federally listed plants do have protection on State public lands, including County and City public lands, under Oregon State laws.

## II. PROPOSED ACTION

Proposed projects analyzed in this BA will occur during the fiscal years of 2004 through 2008. The fiscal year for the Action Agencies begins October 1 and ends September 30. For purposes of this BA, the implementation date of a project will define the fiscal year of that project (for Timber Sales, implementation date is the "sell" date). Harvest of timber sales often occurs several years after the sale date.

Project design criteria (PDCs) are conservation measures developed to reduce impacts to listed species. Mandatory PDCs will be incorporated into all activities as integral to the proposed action, unless exempted by Level 1 team consensus. The Level 1 team will evaluate any deviations in mandatory PDCs or proposed projects to ensure the deviations are consistent with the scope, extent, and effects of projects and PDCs analyzed in this BA. PDCs involving seasonal restrictions will be implemented unless surveys, following approved protocols, indicate

either non-occupancy or non-nesting of target species. Recommended PDCs will be incorporated during project implementation when practical. If recommended PDCs cannot be incorporated, the project will still be in compliance with this BA. Project design criteria help the Action Agencies comply with their responsibilities to conserve listed species under the ESA Section 7 (a) 1.

This BA addresses activities over the next five years (FY 2004-2008) that will be implemented under the Medford District RMP and the Rogue River and Siskiyou LRMPs. Projects are grouped into the general categories described below. These categories are not necessarily distinct and may have considerable overlap. Predicted scope and amount (acres, miles, number of projects, etc) of these activities are reported under only one category. For instance, although roads are sometimes part of tree harvest, all road miles from all activities are reported in H: Road engineering projects. This reporting of projects avoids duplication or overestimate miles of impact. Projects include, but are not limited to:

A. **Timber harvest** includes various levels of: regeneration harvest, commercial thinning, selective harvest, density management, commercial firewood, hazard tree removal, and opportunistic salvage

B. **Vegetation management** includes silvicultural activities consisting, but not limited to, stand density management, conversion, fertilization, pruning, pre-commercial thinning, Port-Orford-cedar sanitation, riparian thinning, animal damage control (gopher baiting), slash piling, and burning.

C. **Special forest products** includes personal use firewood, cedar bough harvest, Christmas trees, Port-Orford-cedar arrow wood sales, mushroom harvest, brush and bear grass cuttings, medicinal plants, pole-size timber, burl and rock removal.

D. **Watershed restoration** includes culvert repair/replacement, road restoration or decommissioning, slope stabilization, habitat improvement projects, stream improvement projects, including tree lining/felling, down wood, and snag creation.

E. **Fuels management and Wildfire Suppression** includes fuel breaks, piling and prescribed burning, thinning, and brush treatments.

F. **Recreation** includes trail construction and maintenance, campground maintenance and development, facilities maintenance and development.

G. **Livestock grazing** includes allotment renewals, fence construction and maintenance, spring improvements and maintenance.

H. **Road Maintenance/Construction** includes maintenance, restoration or decommissioning, culvert replacement and repair, bridge maintenance and repair, road re-alignment.

I. **Road Use Permits** for specific current applications for right-of-way agreements and road use permits across federal lands.

**J. Other Special Use Authorizations (permits)** include research collecting, commercial permits, group permits, cell towers, power-lines, utility corridors, and other utility facilities.

**K. Mining and Quarry Operations** include: casual use, notice and plan level permits and operations, and commercial quarries on BLM lands.

**L. Cultural resources** including: gathering, archeological digs.

**M. Weed Control** includes: mechanical, biological, and chemical controls.

The following activities will require separate consultation. Impacts resulting from these activities are too variable to predict, or impacts too broad:

1. New Road Use Permits (other than existing applications)
2. Off-highway vehicle authorizations
3. Land Exchange/Realty Actions
4. Research projects with LAA potential
5. Wildland fire
6. Sudden Oak Death (SOD)

The descriptions evaluate the significant impacts to listed species, habitat, and critical habitat over the 5-year period of the BA resulting from implementing the RMP and/or Forest Plans. The Action Agencies practice adaptive management as described in the NWFP. Adaptive management allows minor project variations to meet site-specific conditions or landscape objectives. Therefore, there may be minor deviations in the description of projects over the 5-year life span of this BA. This consultation will address these minor alterations in project activities if the following conditions are met:

- Project complies with the NWFP
- Project complies with the RMP or LRMP to which it is tiered.
- Impacts and extent of the project are within parameters of described activities in this BA.
- Minor deviations are reviewed by the Level 1 team to ensure impacts to listed species remain the same or less than those described within this BA
- Minimization measures proposed for the project are consistent with the intent and impacts of actions described in this BA
- Project impacts are reported to FWS in annual monitoring reports

Separate consultation will be required to meet ESA compliance if the project cannot be revised to comply with this consultation or if the Level 1 team cannot reach consensus that the project deviation meets the intent, extent and impacts addressed in the BA.

Project activities are described, as appropriate, in terms of type of activity, acres of impacts or changes to significant habitat(s), and acres of disturbance, extent, duration, timing (synopsis Table 1). Determination of effects of these projects is displayed in Section VI of this document. The combined acres of habitat impacts are summarized and evaluated in the Effects section of this BA, without further repeating individual project descriptions. Except where noted, the

following activities can occur in any land use allocation. Acres are shown for a five-year program.

<b>Table 1. Proposed Action</b>							
<b>Project category</b>		<b>Estimated scope (acres, etc)</b>					
A	Tree harvest (totals are sum of all five years of this BA)	Total Acres with disturbance to Spotted Owl	Acres NRF* Removed or Downgraded to Dispersal	Acres NRF* Degraded to Dispersal	Acres Dispersal Removed	Acres Dispersal Degraded	MAMU Suitable Acres Removed (Areas A and B)
	<i>All Land Allocations</i>	25,000 of which 8,500 may occur during sensitive periods	31,621	21,113	5,111	14,680	3,680
	<i>LSR Subset</i>	3,500	1,137	1,083	705	2,545	450
	* <i>NRF = Nesting, Roosting, Foraging habitat</i>	An estimated 25,000 acres of spotted owl habitat could be disturbed by timber sale activities during the life of this Opinion. Removal or downgrading of habitat in LSR is related to Meadow Restoration projects. 22,000 acres of salvage may occur in the Biscuit Fire area (7,000 acres in Matrix and 15,000 in LSR). Up to 3,000 acres of salvage may occur in the Timbered Rock Fire area, all in LSR. None of these salvage acres would be habitat for listed species. Salvage may also occur as the result of future fires, disease, wind, and other natural events. Up to 290 miles of fuel breaks may be created/maintained in the Biscuit Fire area. 2,070 acres and 1,610 acres of murrelet habitat would be removed in Area A and B respectively (150 and 300 acres in LSR, all related to meadow restoration projects). Up to 20 miles of Timber Sale-associated roads may be constructed per year. Suitable habitat removal associated with Roads is listed above, but effects are described under Road Maintenance/Construction. The small amount of suitable habitat removal due to commercial firewood, incidental thinning, hazard tree removal, and other tree harvest is included above.					
B	Vegetation management, including Silviculture	<p><i>Pre-commercial Thinning/brushing/site preparation:</i> BLM 12,700 acres/year. FS 4,000 acres/year. Up to 20 percent within LSRs.</p> <p><i>Planting:</i> BLM 6,150 acres/year, FS 5,000 acre/year</p> <p><i>Aerial Fertilization.</i> BLM No more than 55,500 acres of fertilizer applied over the life of the BA (11,100 acres/year). (There is currently a legal moratorium on aerial fertilization). FS does very little, if any, fertilization.</p> <p><i>Gopher control:</i> BLM 500 acres/yr, trapping; FS, 500 acres/yr, trapping &amp; poison</p> <p>Seed orchards involve treatments not used across all lands. They are covered under separate consultation. See (USDI Bureau of Land Management 2003-Draft EIS Integrated Pest Management, Provolt Seed Orchard, Charles A. Sprague Seed Orchard. Medford BLM. June 2003).</p>					
C	Special Forest products	<p>Boughs: BLM 30 tons/yr, FS 116 tons/yr</p> <p>Christmas trees: BLM 1,500 trees/yr, FS 8,700 trees/yr</p> <p>Burls: BLM 40 tons/yr, FS 5 tons/yr</p>					

		<p>Edibles and Medicinal plants: BLM 6 Tons per year, FS 12 tons/yr          Floral greenery: BLM 75 tons/yr, FS 33 tons/yr          Mushrooms (morels, matsutake, chanterelles): BLM 3 tons/yr, FS 8 tons/yr          Post/Poles: BLM 230mbf/yr, FS SIS 900 pieces/yr, FS ROR Poles 32,000 lf/yr          Mosses/Lichens: BLM 500 lbs/yr, FS 900 lbs/yr          Transplants 200 plants, FS 3000/yr          Seeds/Cones: BLM 40 bushels, FS 95 bushels/yr          Fire wood: 1000 cords/yr</p>
D	Watershed restoration	<p>BLM: Meadow / flood plain restoration 50 acres/yr          Stream structures 15/yr          Culvert replacement/repair: 12 large fish passage culverts/yr; 50 cross culverts/yr          Road obliteration 30 miles/yr ; Road closure 30 miles/yr          FS: Fish habitat restoration 60 acres/yr, 5 miles/yr          Road drainage improvement 320 acres/yr          Restore native plants 20 acres/yr          Riparian restoration 100 acres/yr          Wildlife habitat/meadow restoration 120 acres/yr (see also A = Tree Harvest)          Slide and riparian restoration 95 acres/yr          Fish habitat improvement 5 miles/yr, passage/culvert replacement 5/yr          BLM/FS: General wildlife habitat enhancement/yr – Tree top blasting (200 trees), underburn (500 acres), brushing (200 acres), road obliteration (see above), riparian thinning (see vegetation management).          See also H = Roads below.</p>
E	Fuels Management and Wildfire Suppression Activities	<p>BLM 15,000 acres of mechanical or hand fuels reduction/yr; FS 5,000 acres/yr          BLM 10,000 acres of prescribed burning/yr; FS 2,000 acres/yr (up to 7,000 salvage acres may be treated in the Biscuit Fire area). .          (Some acres are treated in steps, such as pile construction in year 1 and pile burning in year 2 – these same acres are counted in each year)</p>
F	Recreation	<p>Facility development – construction or reconstruction may impact 50 acres/year for BLM and 60 acres/year for FS. 10 projects total/yr          Permits (see Special Use Permits)          BLM maintenance 100 trail miles and 50 acres of campgrounds and other facilities/yr; FS 100 miles and 250 acres/year          BLM 30 recreation projects/yr with noise disturbance potential; FS 10 acres/yr          BLM 10 miles of new trail construction/year; FS 1 mile/yr</p>
G	Livestock Grazing	<p>BLM - 97 Cattle allotments on 339,362 acres with 14,659 AUMs (35 Allotments on 106,064 acres for 9,811 AUMs, are currently vacant). Siskiyou National Forest - 6 active cattle allotments on 13,882 acres with 593 AUMs; 5 vacant allotments on 169,683 acres. Rogue River - 20 active cattle allotments on 571, 211 acres with 13,766 AUMs; 1 vacant allotment on 23,160 acres.</p>
H	Road maintenance/construction	<p>BLM up to 500 miles of road maintenance/repair/yr.          FS up to 900 miles of road maintenance/repair/yr.          BLM and FS up to 20 miles road construction per year, including roads associated with timber harvest.</p>
I	Road Use	<p>One current application: Rough and Ready Co. R-O-W, T39S R6W, Section 29 SE</p>

	Permits	of the SE of the SE (Lost Canyon), Illinois Valley Ranger District, Siskiyou National Forest. 1.2 acres of late-successional habitat in LSR would be removed.  Any future applications for ROW permits that “may affect” listed species will require separate consultation with FWS.
J	Other Special Land Use Authorizations (permits)	Cell towers, power-lines, utility corridors, research collections, etc. Maintenance of existing utility right of ways. Up to 600 special use permits/yr for water lines, impoundments, trail use, site use (groups), fishing guides, recreation residences, one-time special events.
K	Mining and Quarry Operations	BLM: Notice-level operations, 10 per year involving less than 25 acres total Plan-level operations, 2 per year on no more than 50 acres total Permits for rock from quarries, 80 permits per year, 400 for the life of the BA New rock quarries, 1 per year, 5 for the life of the BA. Mine reclamations (1 per year). FS: Each year up to 250 small-scale suction dredge operations are conducted on the Siskiyou and Rogue River National Forests. Other, larger-scale operations are likely; two or three of these can be expected annually.
L	Cultural Resources	BLM: 2 excavations/year; Whiskey creek cabin restoration; Williams Creek bridge restoration (2 for the life of the plan), historic cemetery restoration (2 for the life of the plan). 20 acres total. FS: 2 excavations – 20 acres/yr
M	Weed control	BLM: treat up to 2,000 acres/year on average, using a combination of manual, biological, and chemical (spot) control methods, up to 10,000 acres for the life of the BA. FS: The Rogue River and Siskiyou are expected to treat up to 1,100 acres a year by biological, mechanical, manual, and chemical means. Up to 500 acres are chemically treated annually on the Rogue River and Siskiyou National Forests.

Detailed descriptions of these activities follow.

### A. Tree Harvest

Tree harvest includes usually commercial and occasionally non-commercial removal of mature overstory and/or understory trees and can include regeneration harvest, seed-tree cuts, selective harvest, salvage, density management, commercial thinning, and individual tree removal. Tree harvest also covers miscellaneous projects, including the removal of hazard trees for public safety, commercial firewood, and opportunistic salvage. Opportunistic salvage sales result from blowdown (other than hazard trees), disease, or small fires. Commercial timber is generally classified as trees 8" or greater in dbh. Typically, a blowdown salvage project may cover 500 acres or more along at least 50 miles of roadway. However, based on past experience, salvage can occur on as much as 10,000 acres in a given year. Normally, the basic structure of the stand will be retained. This type of salvage may occur within LSRs and Riparian Reserves; the standards and guidelines in the Northwest Forest Plan and LSR Assessments are met. Any projects in LSRs or Riparian Reserves that result in habitat loss or degradation for spotted owl or marbled murrelet will be reviewed by the Level 1 team; consultation with the FWS will be reinitiated where necessary.

Harvest can result in the removal of a few trees within a stand or can result in removal of the majority of trees within the project area. Openings may occur in an even or patchy distribution,

depending on objectives of the treatment and constraints of the land use allocation. Trees are harvested by individual sawyers, or crews of people with chain saws or machine-mounted saws. Harvest includes the layout, marking, falling, limbing, yarding, and decking the trees to be removed from the site. In all cases but biomass removal, the limbs and needles/branches remain within the project area, and the bole of the harvested tree is removed. Trees are hauled to landings by cable or heavy equipment. Trees are removed from decks or landings by logging trucks or helicopters. Access to the timber sale involves the use of existing roads (see road maintenance) in areas where roads already occur, and can also involve the design and development of new roads. New roads involve cutting trees from the road prism, occasional blasting, grading, hauling gravel, cutting into side banks, installing culverts and waterbars, stabilizing adjacent areas. Trees removed from road prisms are often decked for inclusion in the timber sale, or could be sold in unrelated sales, or could occasionally be used on-site or off-site for watershed restoration, down wood supplementation, or in-stream structures.

The size of the harvest Action Area is related to the intensity of activity. Regeneration harvest units, which remove the majority of trees from the Action Area, cover a smaller surface area than density management or selective harvest, which removes fewer trees, maintains more residual trees, but covers more surface area to obtain the same volume. Regeneration harvests could occur in the Adaptive Management Area (AMA) and Matrix Land Use Allocations (LUAs), but do not occur in Late Successional Reserves (LSRs) or Riparian Reserves (RR). Meadow Restoration projects in LSR will result in the removal of some suitable habitat (see Table 1). Timber sales within LSRs will comply with pre-approved LSR direction (*i.e.* completed LSR assessments, as per the NFP ROD).

Timber harvest is seasonally restricted around known spotted owl nest sites (see PDCs for details). Some harvest could occur in suitable Matrix and AMA habitat that has not been surveyed for northern spotted owls, as the action Agencies are not required to survey these lands. Matrix and AMA lands are not surveyed to protocol standards across the Action Area. All timber sale contracts will contain special provision E-4 (BLM) or C6.25 (FS). These are standard contract clauses which require purchasers to discontinue operations upon receiving written notice from the BLM or FS that listed species may be affected by the action; an example situation might be when a previously unknown spotted owl nest is discovered in an active timber sale.

Various types of thinning, density management, or selective harvest can occur in all land use allocations, if the harvest meets the objective of the land use allocation, as specified in the NWFP. Selective harvest techniques can result in project areas that often cover large acreages (several thousand acres), and contain stands with 120 – 140 feet of basal area per acre, 40 – 50 trees per acre, and average canopy coverage of 40-60 percent.

## **B. Vegetation Management - including Silvicultural Projects**

Silvicultural projects usually involve plantation maintenance and the removal of trees and shrubs to enhance growth, and can include maintenance brushing (release), precommercial thinning, prescribed burning for site preparation (see also fuels reduction), planting, Port-Orford-cedar clearing (sanitation) to control *Phytophthora lateralis*, animal damage control, fertilization, and pruning. Silvicultural activities are sometimes collectively referred to as TSI projects (Timber

Stand Improvement). Thinning work is usually done with hand crews, but mechanical thinning can occur. Strychnine alkaloid treated grain is in use on Forest Service lands to control gophers where they have been identified as a cause of plantation failure or unacceptable conifer stocking. The Action Agencies also use underground traps. Fertilizer is applied to accelerate growth of young trees or to improve native plant restoration. Fertilizer is applied at a rate of no more than 200 lbs of nitrogen per acre. Fertilizer is usually aerially applied, but is hand applied in some habitat improvement projects on small acres (*e.g.* grass seeding in meadow habitat improvement projects).

### **C. Special Forest Products**

Special forest products consist of, but are not limited to: personal use firewood (see also commercial firewood in tree harvest), cedar bough harvest, Christmas trees, Port-Orford-cedar arrow wood sales, mushroom harvest, brush and bear grass cuttings, medicinal plants, pole-size timber, burl removal. These types of activities usually occur in a relatively small (less than 10 acres) area and may, in some cases, affect suitable habitat for listed or proposed species (such as mushroom harvesting). These activities require personal and commercial use permits through the Action Agencies. For activities designated as concentrated use (such as designated firewood cutting areas), plant and wildlife surveys or habitat evaluations would be required. Commercial mushroom harvests are dispersed across the landscape.

### **D. Watershed Restoration**

Watershed restoration projects anticipated in the Action Area include: road decommissioning, storm proofing of roads (see road maintenance/decommissioning below), upslope erosion rehabilitation, riparian silviculture, in-stream habitat improvement, large wood restoration, wildlife tree development, wildlife habitat restoration and enhancement (such as meadows), and prescribed burning (see fuels management). Some blasting (such as snag creation) may occur with watershed restoration projects.

Roads no longer essential for forest management may be gated, closed or decommissioned (put back to natural contours). Roads with the potential to fail or deliver large amounts of sediment to stream segments may be decommissioned or closed or may be improved. Improvements include repairing road drainage facilities (culverts, drain dips, etc.) and surfacing (to reduce sediment). Restoration activities could include snag creation. Down wood development or placement could occur. Effects are similar to tree harvest or silviculture projects. Meadow restoration, fencing, native plant seeding and planting, and weed removal may occur to restore or repair healthy ecosystems. Most watershed restoration projects will take place in Key Watersheds identified in the Forest Plans. Other restoration work may be required as the result of future wind, snowstorms, rain, and flooding. Expected activities and effects specific to roads are evaluated under road construction and maintenance (below), although road construction, restoration, maintenance, and drainage work is interdependent and interrelated to most Action Agency activities. No ground disturbance will occur without plant and wildlife surveys or an evaluation for habitat of listed species.

### **E. Fuels Management and Wildfire Suppression Activities**

The Action Area has short natural fire return intervals, but years of fire suppression have resulted in habitat conditions much brushier and denser than would occur under natural burn regimes. Fuels management has three primary purposes: fuels reduction to reduce wildfire hazard, site preparation/slash reduction for improving conifer planting (covered in silviculture above), and restoration of ecosystem function where wildfire has been suppressed.

Fuels management includes manual and/or mechanical treatments using chainsaws or mechanical equipment such as slash busters, followed up with prescribed fire (pile burning or under-burns. Broadcast burning without pre-treatment (brush fields) can also occur. Mechanical treatment is designed to convert abnormally high amounts of shrubs and ladder fuels so that subsequent prescribed burning or wildfire won't be as severe. The material (piled) with manual treatment is usually burned once that material dries out. A small portion of the acres treated by mechanical equipment may also be later burned to remove treated material.

Prescribed fire use is dependent upon management objectives. The primary role of prescribed fire has traditionally been for site preparation and fuels reduction. Recently, natural fuels reduction and ecological "improvement" have become end goals of prescribed fire. The effects of prescribed natural fire, when limited to the prescription, can usually be controlled or manipulated. Currently prescribed natural fire is limited to the Kalmiopsis Wilderness of the Siskiyou National Forest.

Prescribed burning is generally restricted to spring or a small window in the fall, due to risks of escapes, smoke concerns, and the weather. When successful understory treatments have been completed, and risks of escape are reduced, more burning during late summer or fall could be anticipated. Mechanical treatments can occur at any time of the year.

Natural and created fuel breaks across the landscape may be developed to help with the suppression of large-scale wildfires. In this case, treatment of fuels along a ridge or topographic break would occur to reduce the fuels and facilitate suppression activities. Fire line construction and blasting may occur as a tool to help create fire lines. No treatments will occur without plant and wildlife surveys or evaluation for habitat of listed species.

## **F. Recreation**

Recreation management includes trail construction and maintenance, campground and physical facilities maintenance, boat landing maintenance, observation decks and guard rails, signing, foot bridges, and permits for rafting and boating (see special use permits). Ground or habitat disturbing actions will not occur without plant and wildlife surveys or an evaluation for habitat of listed species. Occasional heavy equipment use could cause short-term (less than one week) high noise levels, and occasional groups of people may be concentrated along short sections of a trail or river for various periods of time. Trees may be felled in developed areas or along trails where public safety is a concern (this is generally an annual activity).

## **G. Livestock Grazing**

The BLM has 97 free-range allotments identified in the RMP covering 339,362 acres, of which 35 are currently vacant (106,064 acres). The total Animal Unit Months (AUMs) currently

preferred (Medford BLM, Range Program Summary, 2001) is 14,659, however of these, 1,494 AUMs are in the 35 vacant allotments. The preferred total AUM identified in the Medford RMP was 16,466. Allotments occur in all land use designations, including ACECs/RNAs, BLM wilderness study areas, AMA, Matrix, and LSRs. Two small allotments totaling 164 acres and 185 AUMs are administered by the Bureau of Reclamation at Emigrant Lake.

The Siskiyou National Forest has six active cattle allotments on 13,882 acres, with 593 AUMs; five allotments are vacant (169,683 acres). The Rogue River National Forest has 20 active cattle allotments on 571, 211 acres, with 13,766 AUMs; one allotment is vacant (23,160 acres).

Vacant allotments are still valid allotments that could be applied for and utilized within the next five years, although this is unlikely (T. Westfall, 2003, personal communication). In any given year an allotment can be in "non-use," depending on the permittees needs, the market, or cooperative agreements between the BLM and the permittee on rangeland health issues and forage recovery. Allotments range in size from 40 acres, with 3 AUMs to 35, 471 acres with 2,694 AUMs authorized.

Actions to improve allotments can occur in any year and could include fence building (barbed wire, high tensile lay-down, pole) and fence repair, cattle-guards, water impoundments (spring boxes, stock tanks, ditching, pipes) and repairs, swing gates across riparian zones, and riparian and forage enhancement (*e.g.* grass seeding, shrub plantings). No more than a dozen improvement projects are likely in any year given current funding trends. Most of those involve the maintenance of existing improvements (fences, cattle guards and spring boxes). No ground disturbance or surface vegetation removal would occur without plant and wildlife surveys or evaluation for habitat of listed species. Prior to the 10 year permit renewal of allotments, evaluations for listed species will occur. Apply appropriate PDCs as necessary.

## **H. Road Maintenance/construction**

Road construction involves ground disturbance, removal of vegetation, heavy equipment, occasional blasting, and periods of high noise and activity, and would be tied to tree harvest, recreation, and several other project categories. Road maintenance consists of grading, brushing, culvert maintenance and repair, installing and repairing waterbars, minor resurfacing, and occasional hazard tree removal or minor re-routing. The Action Agencies maintain roads on a schedule, but also respond to unanticipated repairs due to weather, accident, or landslide. Most activity is limited to short periods of time (*i.e.*, one or two passes with a grader). Road grading generally affects the ditch and a foot or so of the cut-slope; some loose material is spilled over the fill-slope. Maintenance brushing generally entails mechanically cutting brush down to less than a foot high within four feet of the edge of road tread. Brush more than four feet from the edge of the road tread is not treated. Heavy trucks and heavy equipment such as graders, gravel trucks, backhoes, and chainsaws and/or brush removal machinery, can increase noise in the area of activity for short, but intense, periods of time, and can occur for up to one week in time. Most activities would require a few hours of work or less within any 0.25-mile road segment in a 24-hour period. Some blasting may be required with road projects removing unstable portions of the cut-slope, often at rockfaces.

Road decommissioning is tied to Watershed Restoration and covers activities that reduce or

eliminate traffic use on the road by installing gates, barriers, rocks, ripping the tread, pulling culverts, and seeding grass and herbs. Full obliteration of the road returns the road back to natural contour levels using excavators. The more intensive road obliteration could impact 0.25 mile sections of road for up to a week with intense, loud equipment activity. Full obliteration also can remove vegetation along the top of the cut slope to create a stable slope.

## I. Road Use Permits

Landowners or their agents are required to obtain Road Use Permits to build roads across BLM/FS managed land for commercial purposes and/or to haul commercial products on BLM/FS maintained road systems if these permits are not already in place. Federal discretion to influence the implementation of recovery efforts for threatened or endangered species may be limited where certain pre-existing Road Use or Reciprocal Right-of-Way agreements exist between private landowners and the Action Agencies. Reciprocal rights of ways already cover most existing road activities in the Action Area with private parties and the Action Agencies no longer have discretion. Section 9 prohibitions (ESA) are the responsibility of the applicant in situations when federal discretion is not retained. This BA does not address non-discretionary activities. For the purpose of this BA, private lands refer to privately-owned or other government non-federal) parcels located as inholdings or adjoining property through which access is traditionally granted across federally managed lands.

On 30 January 2003, a new multi-agency Road Use Permit policy (*Application of the Endangered Species Act to proposals for access to non-federal lands across lands administered by the Bureau of Land Management and the Forest Service*) was instituted. The Bureau of Land Management, Forest Service, Fish and Wildlife Service, and NOAA (National Oceanic and Atmospheric Administration) Fisheries are signatories to this policy. The provisions of this agreement apply only when a Forest Service special use authorization or a BLM right-of-way grant is required for the reconstruction or construction of a road, for either private or commercial purposes, to secure access to a parcel of non-federal land. The key components of the interagency agreement are:

- The agreement applies to grants of rights-of-way across National Forest System and/or public lands administered by the BLM, under their respective authorities, for purposes of access to non-federal lands.
- The “proposed federal action” to which the agreement applies is the authorization for access across federal land and subsequent activities on federal land – it does not include any actions on non-federal lands.
- The agreement clarifies that the FS and BLM will not include terms and conditions in access authorizations that will regulate activities on non-federal land.
- At the applicant’s discretion, the agreement provides applicants an option to include the effects of those activities that will be facilitated by the proposed access and conducted on the applicant’s non-federal lands as part of a federal agency ESA consultation on the access application.
- The agreement does not apply to use of National Forest System roads for access to non-federal lands in situations where the use is already authorized. Such use is governed by the authorization in 36 CFR 212.6(c) and implementing procedures in Forest Service Manual (FSM) 7730 (*i.e.*, Road Use Permits).
- ESA sections 9 and 10 still applies to all activities on non-federal land.

- The agreement applies to applications for new authorizations for access that are processed by the FS and BLM after January 30, 2003.

For the Forest Service, Interim Directive Number 7709.59-2003-1 (22 May 2003) covers those Road Use Permits (RUPs) requested for use of existing roads open to the public (expires November 22, 2004). In these situations, "NEPA and ESA procedures are not applicable when a road permit is issued for commercial use of an existing road that is generally available to public use and suitable for planned commercial use without reconstruction."

Road building (construction or reconstruction) will be authorized on federally managed land under the terms of individual road use permits. Road construction, maintenance, and restoration activities were described under road maintenance/construction above. Use of National Forest roads to haul timber from private land (inholdings and adjoining property) will be the greatest part of this proposed action. Harvest of private lands normally consists of clear-cut or salvage operations, or removal of individual large diameter trees in young stands.

Each right of way road activity has distinct characteristics and effects that cannot be adequately anticipated in a programmatic analysis. RUP proposals which require consultation are included in this programmatic BA only if we have specific information to assess impacts: In this BA, only one RUP application meets this test. The Lost Canyon RUP application from Rough and Ready Company involves construction of an access road on National Forest land. The company has no way of accessing their 160 acre property through existing roads, and their entire parcel is surrounded by NF land. The project is located in T39S R6W, Section 29 SE of the SE of the SE (Lost Canyon), on the Illinois Valley Ranger District, Siskiyou National Forest. The planned road crosses NE to SW at the "4-corner intersection" of two National Forest and two Private sections (minimized impact to federal land). This minimizes the impact on federal lands; it is feasible to access the private parcel from the west, but the impact to NF land would be much greater (.05 miles of road construction on NF land). The National Forest portion of the new road would be 800' long by 66' wide; 1.2 acres of late-successional habitat in the East IV LSR would be removed. The site is currently being surveyed for presence of spotted owls. If owls are found, PDCs for tree harvest in the roadway will be followed. If a spotted owl activity center were found, the proposed road location would be modified to protect the nest site. NWFP Standards and Guidelines for ROWs (ROD C-19) are being followed).

Subsequent applications during the life of the programmatic within the discretionary authority of the Action Agencies will be analyzed under separate consultations.

## **J. Other Special Land use authorizations, special use permits, rights-of-way grants**

The Action Agencies authorize various uses of federal land for utilities, public works, non-profit and commercial gatherings, water lines, National Guard training exercises, etc. Special Use Permits include requests for activities such as a water line for a private home, cell or radio towers, power-line right of ways; group gatherings, sponsored events, commercial tours, outfitter guides, field institutes, 4WD club outings, etc. These permits are discretionary and the Action Agencies can re-route activity locations or stipulate PDCs to reduce impacts. Occasionally

construction or maintenance of power lines or cellular towers result in the removal of trees or vegetation (see tree harvest). No surface vegetation would be removed without plant and wildlife surveys or evaluation for habitat of listed species.

## **K. Mining and Quarry Operations**

For all mining activities on BLM-managed land, operators must submit a Notice of Intent and get approval, if causing surface disturbance on 5 acres or less. Operators only have to file a plan of operations for activities that remove more than 1,000 tons of material, which is generally on more than 5 acres. A few special exceptions apply, for instance, mining activities within Areas of Critical Environmental Concern (ACECs), or areas known to contain proposed or listed species are required to have a plan of operations (BLM Manual Section 3809.11 part C(6)).

Plans of operations are required to comply with the ESA, and the operator must take such action as necessary to prevent adverse impacts to listed species. Habitat evaluation or surveys for new notice-level and plan-level operations will be done prior to commencement of operations.

Each year many small-scale suction dredge operations are conducted on the Siskiyou and Rogue River National Forests. Few miners are likely to notify District Rangers of their intent to operate, since regulations authorize most small-scale, low impact operations such as these, and do not require notification or approval. Field inspection, however, will be conducted and where actions are likely to significantly affect surface resources, a Plan of Operations will be required and site-specific NEPA and consultation will result. In many of these cases, the miner will choose to simply minimize or cease their operations to protect the resource and avoid the paperwork. Other, larger-scale operations are likely and the operator will provide a Notice of Intent or a Plan of Operations. Where actions are likely to significantly affect surface resources, a Plan of Operations will be required and site-specific NEPA and consultation will result.

Most mining operations presently operating on federal lands use suction dredges to sort streambed materials in search of gold. Much of the suction dredge mining is in key watersheds, e.g., Palmer Creek, Little Applegate River, Taylor Creek, Dunn Creek, East Fork Illinois River, Sucker Creek, Silver Creek, Elk River and South Fork Coquille River. Other watersheds with suction dredge activities on Federal lands include Briggs Creek, Evans Creek, and the Chetco River. Except for a few large dredge operations, most suction dredging is performed with small (intake hose of less than four inches) portable dredge equipment. Suction dredging is widespread throughout the summer operating season - June 15th to September 15th – but operations vary from an occasional weekend to two weeks.

Most rock crushing operations take place in existing quarries. We often authorize a increase in quarry boundaries for timber sales. All actions take place within the developed quarry limits. Standard operations include drilling which takes approximately 2-3 weeks, blasting which is quick (less than one minute) but may extend over several days, and crushing which takes 2-3 weeks. All operations are well above ambient noise levels.

## **L. Cultural Resources**

Cultural activities could involve one several-person crew digging and excavating historical and

archeological areas. Generally, this is handwork, and has low noise associations. Occasional heavy equipment might be used to restore artifacts or historic places or to install protective barriers or fences around sensitive items. Such activities would be evaluated by biologists and botanists to ensure such activity would not impact T&E species.

### **M. Weed control**

Weed control treatments include manual methods like mechanical brushing or mowing, sawing, hand-pulling, mulching, digging, grubbing, steaming, burning, seeding, or the introduction of biological control insects. Increased vehicle and ground crew activity could be present for short periods of time in any local (less than 2 weeks). Noxious weeds, as defined by the State of Oregon are the primary targets for treatment, but other invasives that are contrary to healthy ecological function could also be targeted for treatment (e.g. Himalayan blackberry). Weed control can involve the use of select herbicides sprayed from truck or ATV-mounted sprayers, or more often backpack sprayers. The selected herbicides that the BLM is authorized to use are: Glyphosate (Round-up), 2-4-D, Pichloram (Tordon), and Dicamba (Banvil). Most herbicide treatments for noxious weeds use Glyphosate. The BLM is expected to treat no more than 2000 acres per year using all methods. The Forest Service is authorized to hand-spray Glyphosate, Pilloram, and Tryclopypyr (Garlon); up to 500 acres are treated annually on the Rogue River and Siskiyou National Forests. The Rogue River and Siskiyou are expected to treat no more than 1,100 acres a year by biological, mechanical, manual, and chemical means.

Treatments occur during the period of the year the targeted weeds are most susceptible to a particular treatment. The listed noxious weeds that are of most concern in the basin are: yellow starthistle, Canada thistle, meadow and spotted knapweed, puncture vine, Dalmatian toadflax, purple loosestrife, Dyer's woad, leafy spurge, and rush skeletonweed. New non-native weed species are being discovered in the sub-basin every year, and it is conceivable that new noxious weeds would be targeted for treatment within the life of this BA.

### **Tracking and Monitoring**

Tracking and monitoring of activities covered by the Northwest Forest Plan *is* critical to determine if the plan is being properly implemented. Existing monitoring efforts include: 1) annually, approximately ten percent of timber sales across the region are randomly reviewed by the Research and Monitoring Committee (File code 1900, 14 May 96, from Mike Hupp, USDA Forest Service), 2) use of a consistency check-list for decision notices, by the Siskiyou National Forest, 3) on-site analysis of project completion by Federal personnel, and 4) annual monitoring program for timber sales by BLM.

This consultation incorporates annual monitoring of Action Agency projects that have adverse effects to listed species. The Level 1 team has agreed to use a Project Implementation and Monitoring Form developed by FWS, most recently updated in October 2002, for use throughout western Oregon (Appendix D) to report FY04-08 projects. Changes to the form will be agreed to by Level 1 team agreement. Action Agencies will report all "Likely to Adversely Affect" projects (LAA) for the proceeding fiscal year to the FWS by October 31, unless otherwise scheduled by Level 1 team agreement.

### III. PROJECT DESIGN CRITERIA

Project Design Criteria (**PDCs**) are conservation measures incorporated into a project to minimize or avoid effects to endangered or threatened species. PDCs usually include seasonal restrictions and may also include clumping of retention trees around nest trees, establishment of buffers, dropping the unit(s)/portions, or dropping the entire project.

Should new information arise that significantly changes impacts to listed threatened or endangered species, the Action Agencies retain discretion to halt and modify all projects, anywhere in the process. Modifications could include an appropriate seasonal restriction; clumping of retention trees around the nest trees, establishment of buffers, dropping the unit(s)/portions, or dropping the entire project.

PDCs may be waived at the discretion of the decision-maker, if necessary to protect public safety (as in the case of emergency road repairs). The FWS will be notified of all such occurrences to determine if emergency consultation is required and to adjust environmental baselines if necessary. The Action Agencies will be prudent in evaluating public safety deviations. They will attempt to predict potential problems (such as road failures) such that remedies can occur during times and using methods that minimize impacts to the extent possible. In the event emergency consultation is initiated, the Action Agencies will act prudently and efficiently to complete or close consultation in a timely manner, preferably within 6 months or less of the emergency action.

There are two types of PDCs:

**Mandatory:** must be incorporated in all projects to reduce adverse affects (LAA) to listed species – required unless a specific exemption is mentioned in a “recommended” PDC and

Mandatory PDCs are incorporated in all appropriate planned actions. The effects determination reflects their implementation. Projects unable to incorporate mandatory PDCs will be analyzed under separate consultation.

**Recommended:** discretionary; incorporated in projects where appropriate to further reduce adverse affects (LAA)

In some cases, application of PDCs may reduce the impact of the projects to listed species and may change the effects determinations (from LAA to NLAA, or from LAA or NLAA to NE). In all cases, effects determinations for projects have been made using applicable PDCs. The goal is to reduce the detrimental effects of any projects which “may affect” any endangered or threatened species. Some PDCs apply to multiple species although most PDCs apply to specific species. PDCs are described by project type. The Plant PDCs apply to all listed plants unless specifically mentioned.

This consultation effort updates some PDCs that were used on projects covered by previous consultation efforts. These updated PDCs will be incorporated into actions covered under previous consultations that have not yet been implemented, unless incorporating new PDCs is

not practical. In those cases, PDCs in place under the previous consultation will apply.

The PDCs in this consultation will be incorporated into those projects that will be implemented, in FY04-08. "Sell date" is considered to be "implementation date" (sales which were "sold but not awarded" in FY01/02/03 **are** covered by BO 1-7-01-F-032). Any timber sale scheduled to "sell" in FY 03 which actually "sells" after 30 September 03, will be covered in the FY04-08 BO, not the FY01-03 BO.

## PDCs

### Tree Harvest

#### 1. *Bald Eagle (threatened)*

##### a. **Mandatory**

(I) Meet **direction** in individual **draft or final site management plans** for eagle nest or roost sites. In the absence of an individual plan, management guidelines will reflect maximum nesting restriction periods and corresponding spatial protection (as listed in III above), until additional site-specific information can be collected. Individual site management plans that incorporate site-specific parameters for bald eagle protection supercede the general PDC guidance in I through IV above.

(II) **No known bald eagle nest trees, perch trees, or roost trees will be cut, or modified to preclude function.** Including habitat at alternate nest sites.

(III) **Bald eagle habitat will not be removed within 0.25 mile (approximately 400 m) of nests or roost sites.** Including alternate nest or roost sites.

(IV) **Potential eagle perches (large snags, dead top trees, or other suitable sites) within 0.5 mile (800 m) of nests or roosts will not be cut.** Eagles forage from these sites. Perch trees along shorelines are especially important. The intent is to protect those potential perches that "stand out." Human safety is an exception; discuss these situations with the Level 1 team.

(V) **Work or other activities above ambient noise levels that cause disturbance, including helicopter use, logging, and construction would not take place within 0.25 mile (approximately 400 m) of active nests/roosts (not line of site) or within 0.5 mile (approximately 800 m) (line-of-sight) from nests/roosts during periods of eagle use,** unless surveys demonstrate that the nest or roost is not being used, or use of the site has ended for the year. Critical nesting periods generally fall between 1 January and 31 August. However, the work restriction window can be ended two weeks after chicks have fledged, if known. Active winter roosts need protection from disturbance from approximately 15 November to 15 March. Work restriction windows may be modified by local action agency biologists, based on site-specific information.

“Active Nest/Roost” means in use by eagles.

(VI) **Blasting** projects will incorporate a **1-mile buffer** around any active nest site. This distance may be shortened if significant topographical breaks or blast blankets (or other devices) muffle sound traveling between the blast and nest sites. This modification must be approved by the District or Area wildlife biologist. If needed, contact Level 1 team for guidance.

## **2. Northern Spotted Owl** (*threatened*)

Any of the following Mandatory PDCs may be waived in a particular year if nesting or reproductive success surveys conducted according to the FWS-endorsed survey guidelines reveal that spotted owls are non-nesting or that no young are present that year. Waivers are valid only until March 1 of the following year. Previously known sites/activity centers are assumed occupied unless protocol surveys indicate otherwise.

### **a. Mandatory**

(I) **Work activities** (such as tree felling, yarding, road construction, hauling on roads not generally used by the public, blasting) that produce loud noises above ambient levels, **will not occur within specified distances (see table below) of any nest site or activity center of known pairs and resident singles between 1 March and 30 June (or until two weeks after the fledging period)** – unless protocol surveys have determined the activity center to be not occupied, non-nesting, or failed in their nesting attempt. March 1 – June 30 is considered the critical early nesting period. **The action agency biologist has the option to extend the restricted season to as late as 30 September during the year of harvest**, based on site-specific knowledge (such as a late or recycle nesting attempt). The restricted area is calculated as a radius from the assumed nest site (point). See Appendix F for a discussion of the rationale for the 30 June restriction date. See Fuels management PDCs for direction regarding site preparation and prescribed fire.

Type of Activity – for Spotted Owl	Zone of Restricted Operation
Blast of more than 2 pounds of explosive	1 mile
Blast of 2 pounds or less of explosive	360 feet
Impact pile driver, jackhammer, or rock drill	180 feet
Helicopter or single-engine airplane	360 feet
Chainsaws (hazard trees, tree harvest, etc.)	195 feet
Heavy equipment	105 feet

### 3. *Marbled Murrelet* (threatened)

PDCs apply to two different inland “belts.” Appendix H shows these two Areas. PDCs deal with *removal/degradation* of habitat and *disturbance* of nesting murrelets.

Occasionally individual hazard trees are found which have not been surveyed for murrelet use and which have the potential to support a murrelet nest. If these trees are an immediate threat to human safety, they will be cut. Otherwise, these trees will be removed during the non-nesting season (16 September to March 31).

*What is the minimum site (size/quality) where survey protocol will be applied? Guidance:* Field assessments conducted to make the determination of habitat suitability are of vital importance to the conservation and protection of marbled murrelet breeding sites. Any stand with a residual tree component or small patches of suitable habitat should be considered potential nesting habitat, and surveyed to protocol. Any assessment of habitat must include a walk-through of every acre of the area that will be impacted by a project. For further information, see Appendix I: Assessment of Marbled Murrelet Nesting habitat.

*Brief Description of the two Areas (“bands”) (Appendix H):* **Area A** = Area west of the line between the coastal Western Hemlock/Tanoak Zone and inland Mixed Conifer/Mixed Evergreen Zone; this area is the known range for marbled murrelet in SW Oregon. **Area B** = Area 6.5 miles (10 km) east of Area A (although Area B is outside the known range for this species, potential nesting habitat will continue to be surveyed in this “buffer” area, where projects may affect this potential habitat). No surveys for marbled murrelets are required on land outside of (east of) Areas A and B.

## Survey Areas A and B

### a. Mandatory

(I) For Survey Areas **A and B**, **if the project removes or degrades suitable habitat, the project must be surveyed to protocol** (current Pacific Seabird Group two year protocol – to document presence/absence of murrelet). If it is not feasible to complete the two-year protocol, the FWS will be contacted on a case-by-case basis to discuss other means of insuring that potential nest trees are not impacted. The action agency has the option of not surveying suitable habitat and classifying these stands as “Occupied.” A “new” LSR must be established for

any timber stand in Areas A or B that is determined to be or assumed to be occupied by marbled murrelet (per NWFP ROD, page C-10).

(II) For **Survey Areas A and B work activities** (such as tree felling, yarding, road and other construction activities, hauling on roads not generally used by the public, muffled blasting) which produce noises above ambient levels **will not occur within specified distances (see table below) of any occupied stand or unsurveyed suitable habitat between April 1 – August 5. For the period between August 6 – September 15, work activities will be confined to between 2 hours after sunrise to 2 hours before sunset.** See Fuels management PDCs for direction regarding site preparation and prescribed fire.

Type of Activity – For Marbled Murrelet	Zone of Restricted Operation
Blast of more than 2 pounds of explosive	1 mile
Blast of 2 pounds or less of explosive	360 feet
Impact pile driver, jackhammer, or rock drill	300 feet
Helicopter or single-engine airplane	360 feet
Chainsaws (hazard trees, tree harvest, etc.)	300 feet
Heavy equipment	300 feet

(III) **Clean up trash and garbage daily** at all construction and logging sites. Keep food out of sight so as to not attract crows and ravens (predators on eggs or young murrelets).

#### b. Recommended

(I) Delay project implementation until after September 15 where possible.

(II) Between 1 April and 15 September, concentrate disturbance activities spatially and temporally as much as possible (*e.g.*, get in and get out, in as small an area as possible; avoid spreading the impacts over time and space).

#### 4. *Vernal Pool Fairy Shrimp (threatened)*

Vernal pool fairy shrimp are known to be present on BLM lands on Upper Table Rock and Lower Table Rock. These are the only known suitable vernal pool habitat sites in the Medford BLM district. The areas where the pools occur are within an Area of Critical Environmental Concern (ACEC). Three hundred forty four acres of BLM-managed lands on the top of Upper and Lower Table Rock were designated as critical habitat by FWS in August 2003.

No Timber PDCs. See PDCs for Fuels Management.

#### 5. *Botanical Species (all endangered)*

In general, unless otherwise noted below, for activities in suitable habitat, qualified botany personnel must survey for the listed endangered plant species during the appropriate season, prior to signing of the decision notice or memo. Suitable habitat and dormancy periods for the four species are defined in Section IV. See Appendix J for maps that show the range of each species (projects within these ranges, if they would affect any listed plant species, must be surveyed). Certain activities are allowed within occupied habitat during the dormancy period, if the resulting habitat is deemed beneficial for the species. If the project area does not contain suitable habitat (as determined by the project botanist) for any of the Endangered plants, then surveys are not required. Surveys of suitable habitat are valid for five years.

Plant sites (occurrences) must be identified on the ground using standard location protocols utilized by the agencies (GPS coordinates, ribbon, paint, signs etc.). In project areas, the occupied site (polygon) is usually buffered to reduce or negate effects from habitat and ground-disturbing activities. Other design features that reduce effects (seasonal restrictions, method of activity, etc.) are listed below.

Buffer sizes can vary by project type. Listed below are *minimum* distances used to protect the occupied site from various activities. For certain activities buffers can be larger, depending on site-specific recommendations made to the Line officer from the project Botanist. Buffers are a set distance that extends from the perimeter or the hypothetical polygon boundary of a "population." For example, for a single plant, a buffer would extend a certain distance from that point. For a cluster of plants in a defined population, the buffer would extend from a polygon that delineates the colony.

Annually, as new populations are documented, occurrence information will be reported to the FWS.

**a. Mandatory**

**(I) Buffer sizes: a minimum of 25 feet from the population boundary** (a site, or the outer edge of a polygon encompassing the population). **No activity within the buffer.**

**(II) No heavy equipment, skidders, yarders, etc., within 75 feet** of a buffer (100 feet from the occurrence).

**(III) No tree falling into or yarding through buffered sites.**

**(IV) No tree planting within 75 feet of the edge of the buffer** (100 feet from occurrence), so as to maintain edge and more open habitat.

**(V) Do not locate anchor trees within known sites.** This includes anchor trees on Federal land requested by private landowners.

**(VI) Construction of new landings should be at least 300 feet from known sites.** Use of a previously existing landing is allowed if the location of the plant(s) is more than 100 feet away (see fuels section). Logging use of existing landings within 100 feet of an occurrence is not allowed (*i.e.*, landings sometimes grow through a sale, and are a source for new noxious weed populations, and

burning of landing slash piles often kill surrounding vegetation).

(VII) Proposed **logging road locations**, including temporary haul roads, must be surveyed and populations **protected by a minimum 100-foot buffer**. Use of existing roads within 100 feet of an occurrence is allowed (see road maintenance section).

(VIII) **Hazard trees. No surveys are required for hazard trees** that threaten life and property in campsites, trailheads, roadsides, property lines, powerline corridors, etc. For known plant sites, when possible, coordinate with the local botanists to develop any site-specific measures to reduce effects (e.g. directional falling).

(IX) **Firewood Permits: No firewood permits are allowed within known occurrences.** Road segments close to known occurrences may need to be closed to prevent incidental impacts. No surveys required.

(X) **Commercial thinning, oak woodland and riparian thinning. Buffer sizes for thinning: a minimum of 25 feet from the population boundary.** Buffers can be treated manually during the dormancy period. For *Fritillaria gentneri*, a minimum 40 percent canopy is retained from trees and shrubs (plant level canopy cover). If the existing canopy cover is below 40 percent, no treatment allowed in buffered occurrences. There is no canopy minimum for *Lomatium cookii*. No vehicles or heavy equipment in buffered occurrences.

## **Vegetation Management (includes Silvicultural Projects)**

Use the same mandatory and recommended PDCs listed under Timber section, except as noted below; specific criteria are listed for strychnine baiting for gopher control. See separate heading for PDCs related to **prescribed burning**.

### ***1. Bald Eagle***

#### **a. Mandatory – Gopher Baiting** (occurs only on Rogue River National Forest)

(I) Strychnine baiting would not take place within 400 meters (0.25 miles) of bald eagle nest or roost sites. Work activities would not be permitted within 800 (0.5 miles) meters of active bald eagle nest sites between 1 January and 31 August if the project area is line-of-site from the nest.

### ***2. Spotted Owl***

#### **a. Mandatory – Gopher Baiting** (occurs only on Rogue River National Forest)

(I) Strychnine baiting will not occur within 0.25 mile a of known spotted owl activity center.

### ***3. Gopher Baiting - General PDCs***

The following general criteria will be used with Gopher Baiting

- a. Experienced contractors will conduct field training of workers as needed in the identification and location of gopher burrows, application of bait, and safety procedures.
- b. The baiting projects will be supervised and administered by experienced personnel.
- c. All baiting will be underground.
- d. Any spilled bait will be completely removed from the ground surface and buried.

#### **4. Listed Plants - General**

- a. **Mandatory** (if documented plant surveys occurred for the species within five years for a previous treatment [*i.e.* timbersale], no additional surveys needed).

(I) Buffer sizes for Silvicultural treatments are a minimum of 25 feet from the occurrence boundary unless otherwise stated.

(II) Precommercial thinning (chainsaws) and hand brushing through buffered occurrences are allowed if during the dormancy period. For *Fritillaria gentneri*, 40 percent combined canopy coverage of trees and shrubs must be retained. If the canopy cover is less than 40 percent, then treatment of the buffer is not needed. There is no canopy minimum for *Lomatium cookii*.

(III) Cut material must be piled outside of the buffers.

(IV) **Mechanical thinning/brushing** (e.g. slashbuster). 100-foot buffers required, no vehicles or heavy equipment within buffered occurrence (hand treatment allowed within the buffer, as previously described).

(V) **Tree planting**, hand scalping, mulching, shade cards, netting: Most areas to be planted have been previously surveyed. If a documented plant survey has not occurred within 10 years, (e.g. wildfire planting), surveys and 25-foot buffers of sites required. No tree planting in or within 75 feet of the buffer edge, (100 feet from occurrence) so as to maintain more open habitat. No mechanical scalping within 100 feet of an occurrence.

(VI) **Hand Pruning**: allowed through buffered sites, material must be piled outside of buffer.

(VII) **Gopher trapping**: No trapping within buffered occurrences.

(VIII) All activities in existing Tree Improvement test plantations: No surveys necessary.

(IX) **Fertilizer** application: No fertilization within 50 feet of buffered occurrences.

(X) **Open meadow, grassland restoration/enhancement** (for *Lomatium cookii* and *Limnanthes flocossa* var. *grandiflora* only). Known occurrences can be

treated (burning, hand brush/tree removal, sowing adapted native grass etc.) during the dormancy period if the net result improves habitat for the species (a long term beneficial effect identified in NEPA). No heavy equipment (dozers, slashbuster, excavators etc.) within known sites. Known sites will be protected by 100-foot buffers from heavy equipment.

#### (XI) **Port-Orford-cedar Root Disease (POCRD) Disease Sanitation**

**Treatments.** Surveys of suitable habitat prior to the decision, and documentation of sites is required. If occurrences found, site-specific mitigation may be developed by the project Botanist (*i.e.* directional falling, change in prescription, burning mitigation, buffers) to minimize effects, but is not required. It is unknown if bulblets could be infected with POCRD that would prevent “rescue” and transplanting into adjacent suitable habitat.

## Special Forest Products

Use PDCs listed below, as well as the mandatory and recommended PDCs listed under Timber section.

### 1. *Listed Plants*

#### a. **Mandatory**

(I) Native plant collections (medicinal, floral, shrubs, roots, etc.) will not occur within known sites for listed species, except under special circumstances (see research below). When possible, in unsurveyed or undesignated areas, permit holders will be provided information on what the listed species looks like (pictures), and written instructions will be given to avoid collection. Permitted activities must conform to the Cites agreement. Where possible, send collectors to areas that already have negative clearance surveys for listed plants. Surveys of collection areas for listed species are not required.

(II) **Burls (Madrone, oak).** No harvest of madrone burls from within 100 feet of known occurrences. Where possible, send collectors to areas that already have negative clearance surveys for listed plants. Where possible, provide the permit holder with information on the habitat, and a picture of the plant and bulbs. For *Fritillaria gentneri*, if bulbs are found while excavating burls, they must be replanted. Surveys of collection areas for listed species are not required.

## Watershed Restoration Projects

Use mandatory and recommended PDCs listed under Timber section, plus the following.

### 1. *Bald Eagle*

#### a. **Mandatory**

(I). Exclude habitat improvement, and other activities during critical periods of eagle use. Blasting and low level aircraft operations should not be allowed within 800 m (0.5 mile) of active nests and roosts. These activities should also be

regulated, up to 800 m (0.5 mile) from nests and roosts where eagles have line-of-sight vision. Critical nesting periods vary throughout the recovery area but generally fall between 1 January and 31 August. Key wintering areas, need protection from disturbance from approximately 15 November to 15 March (see Bald Eagle Recovery Plan — USDI Fish and Wildlife Service, 1986).

## **2. Spotted Owl/Marbled Murrelet**

a. **Mandatory.** To minimize the number of potential spotted owl or murrelet nest trees used for instream structures, only the following sources shall be used:

(I) Trees already on the ground in areas where large woody material is adequate;

(II) Trees lacking suitable nesting structure for spotted owls or murrelets or contributing to trees with suitable nesting structure, as determined by an action agency wildlife biologist.

## **3. Listed Plants**

a. **Mandatory.**

(I) Culverts: If within suitable habitat, and if intact, native habitat is disturbed, these areas must be surveyed, and populations protected by site-specific mitigation. If the footprint of disturbance is not new, then no survey is required.

(II) If equipment corridors for instream work pass through suitable habitat, surveys and buffering of occurrences by 100 foot buffer required. No heavy equipment in known populations.

# **Fuels Management, Prescribed Fire, Wildland Fire, Wildland Fire Use**

National Fire Plan projects on private lands are not covered in this BA.

Fire firefighter safety must be taken into account at all times when using the **PDCs**. If implementation of PDCs might cause human safety risks, the Action Agencies will respond to the human safety threat and will determine if that response is grounds for reconsultation.

## **Prescribed Fire - Species Specific PDCs**

### **1. Bald Eagle**

a. **Mandatory**

(I) Burning or helicopter operations will not take place within 800 (0.5 miles) meters of active bald eagle nests between 1 January and 31 August. Any burning within 1 mile of an active nest should make sure prescription will allow for smoke management.

### **2. Northern Spotted Owl (includes critical habitat)**

a. **Mandatory**

(I) Broadcast burning (for site preparation) will not take place within 0.25 mile of known active northern spotted owl nests between 1 March and 30 June (or until two weeks after the fledging period). The 0.25 miles is calculated as a radius from the assumed nest site (point).

(II) During helicopter operations, flights over suitable habitat will be restricted (helicopter should be a least 120 yards above ground level).

### **3. Marbled Murrelet** (includes critical habitat).

#### **a. Mandatory**

(I) Burning would not take place within 0.25 mile of known occupied marbled murrelet sites, or unsurveyed marbled murrelet habitat between April 1 and August 6.

(II) All broadcast and under-burning operations (except for residual “smokes”) will be completed in the period from two hours after sunrise to two hours before sunset.

(III) If any habitat suitable for marbled murrelet is within 0.25 miles of a burn unit, and the burn is scheduled to occur after March 31, the suitable habitat will be surveyed for presence of marbled murrelet.

(IV) During helicopter operations, flights over suitable habitat will be restricted (helicopter should be a least 120 yards above ground level).

### **4. Fairy Shrimp** (includes critical habitat)

#### **a. Mandatory**

(I) Fire lines for prescribed fire would not be constructed through vernal pools.

### **5. Listed Plants** (Includes fuels treatment within commercial timber sales, fuel density reductions in woodlands, brush fields, and meadow edges.)

**a. Mandatory** (If treatments are within an area that was surveyed within five years, no additional surveys needed; buffering known sites is required).

(I) Buffer sizes for fuels treatments are a minimum of 25 feet from the occurrence boundary.

(II) Hand slashing (Chain saw, brush saw) through buffers allowed if done during the dormancy period. For *Fritillaria gentneri*, a minimum canopy coverage of 40 percent of trees and shrubs is retained. If the canopy is already less than 40 percent, no treatment in the buffer is needed. There is no canopy minimum for *Lomatium cookii*.

(III) Cut material must be removed and piled outside the buffered occurrence.

(IV) Hand pile and burn, no hand piles in the buffer and piles must be 25ft from the buffer edge.

(V) Broadcast burning: allowed to burn through buffered occurrences during the dormancy period following fuel reduction treatments. No ignition within the buffers.

(VI) Burning of commercial harvest landing slash piles cannot occur within 100 feet of an occurrence.

(VII)- Mechanical Slashing (slashbuster). 100-foot buffers required, no vehicles or heavy equipment within buffered occurrence (hand treatment allowed within the buffer as previously described).

### **Prescribed Fire – General PDCs**

- a. Whenever possible, protect known nest sites of any listed species from high intensity fire. Update Resource Information Book annually; incorporate new nests or sites as soon as possible.

### **Wildland Fire - Species-specific PDCs**

#### ***1. Bald Eagle***

##### **a. Mandatory**

(I) From 1 January - 15 August noise disturbance should be minimized within 1 mile of nest sites. In order to accomplish this objective, minimize repeated aircraft flights that are less than 1,500 feet Above Ground Level (AGL). Do not fly directly over nest sites with buckets (although may want to make water drop on nest site in danger of burning). Also, minimize the use of fire line explosives within 1 air mile of occupied stands during the protection period. Camp and staging areas set up before 15 August should be located beyond 1 mile.

#### ***2. Spotted Owl***

##### **a. Mandatory**

(I) From 1 March – 30 June noise disturbance should be minimized inside occupied stands and within 120 yards of the edge of these stands. In order to accomplish this objective, minimize repeated aircraft flights that are less than 120 yards feet Above Ground Level (AGL). Also, minimize the use of fire line explosives within 1 air mile of occupied stands during the protection period.

#### ***3. Marbled Murrelet***

##### **a. Mandatory**

(I) From 1 April - 5 August noise disturbance should be minimized inside occupied stands and within 120 yards of the edge of these stands. In order to accomplish this objective, minimize repeated aircraft flights that are less than 120 yards Above Ground Level (AGL). Also, minimize the use of fire line explosives within 1 air mile of occupied stands during the protection period.

Light Hand Tactics or Minimize Impact Suppression Tactics (MIST) should receive consideration for use within the protection zones for the above two species.

## **Wildland Fire - General PDCs – All Species**

- a. Resource Advisors/Environmental Specialists will advise Line Officers and Incident Commanders to minimize impact to listed species and their habitat during suppression activities.
- b. Information on species and habitat location will be available to fire staff through pre-suppression briefings, through maps showing areas of concerns (readily accessible through GIS), and pertinent species management plans, *i.e.*, bald eagle site management plans. With this information, fire staff can determine possible needs during initial attack, if the behavior of the fire dictates the need for emergency fire suppression action.
- c. Resource specialists, resource advisers, advisors/environmental specialists will give biological input to personnel in charge of fire suppression activities. The resource advisor/environmental specialist will work for the Line Officer and with the Incident Commander to relay biological concerns.
- d. Whenever possible, protect known nest sites of any listed species from high intensity fire.

## **Wildland Fire Use in the Kalmiopsis Wilderness**

The following general PDCs for wildland fire use in the Kalmiopsis Wilderness are measures and recommendations to minimize impacts on listed species and their habitat.

- a. Whenever possible, fire will be allowed to burn with a full range of “natural” intensities.
- b. Decisions on fire suppression/management will be based on seasonal and annual severity of climate conditions, and will include consideration of daily weather severity.

## **Recreation Management Projects**

Use mandatory and recommended PDCs listed under Timber section, plus the following.

### ***1. Bald Eagle***

#### **a. Mandatory**

(I) Exclude recreation construction projects and other activities around active eagle nests and roosts. Picnicking, camping, blasting, firearm use, and low level aircraft operations should not be allowed within 800 m (0.5 mile) of nests and roosts during periods of eagle use. These activities should also be regulated, up to 800 (0.5 mile) m from nests and roosts where eagles have line-of-sight vision. Critical nesting periods vary throughout the recovery area but generally fall between 1 January and 15 August. Key wintering areas, need protection from disturbance from approximately 15 November to 15 March (see Bald Eagle Recovery Plan – USDI Fish and Wildlife Service, 1986).

### ***2. Listed Plants***

#### **a. Mandatory.**

(I) For new trails, new campgrounds including campground expansion, new recreation facilities (buildings, toilets, parking lots) – survey suitable habitat prior to the decision, identify sites, and protect occupied habitat using 100 foot buffers.

(II) For recreation maintenance activities, trail maintenance, hand-brushing, as well as signing and post-holes: site specific measures to protect known occurrences will be developed by the project botanist. No surveys required.

## **Livestock Grazing**

Use PDCs listed below, as well as the mandatory and recommended PDCs listed under Timber section.

**1. Listed Plants.** If grazing utilization is not evident at plant sites, then no protection is needed, but periodic monitoring is required. Protection measures may include: changing the timing of release or the grazing system, fencing small populations, or modifying the allotment boundaries. Reinitiation of consultation may be needed if protection measures are not implemented.

### **a. Mandatory**

(I) **Existing grazing:** protect known occurrences if utilization is occurring within the site. Monitoring is required.

(II) **New allotments and allotment renewals:** Allotments can be renewed on a single year basis until requirements are met (like existing). Survey suitable habitat prior to the ten-year allotment renewals, and identify sites, and implement protection measures. Protection measures may include: changing the timing of release or the grazing system, fencing small populations, or modifying the allotment boundaries.

## **Road/Engineering Projects including maintenance, construction, etc**

Use PDCs listed below, as well as the mandatory and recommended PDCs listed under Timber section.

### **1. Listed Plants**

#### **a. Mandatory**

(I) **Road Construction.** For new road construction, survey suitable habitat along the proposed corridor prior to the decision, identify sites, and protect occurrences using 100 foot minimum buffers.

(II) **Maintenance.** Road maintenance of open existing roads: blading, rocking, ditching, mowing, culvert replacement, brushing etc. Protect known sites from maintenance activities that could affect populations, using site-specific mitigation such as no treatment zones. No surveys required.

(III) **Decommissioning.** Road decommissionings, ripping & seeding, pulling culverts, within the road prism. No surveys required. For road obliteration, (involving disturbance outside the road prism in intact habitat), surveys of suitable habitat required, and buffering of any occurrences.

## Road Use Permits and Other Special Use Permits

Reinitiate consultation for each “may affect” permit.

Non-discretionary Road-Use-Permits do not require consultation or NEPA. For the Forest Service, follow Interim Directive 7709.59-2003-1 (“NEPA and ESA procedures are not applicable when a road permit is issued for commercial use of an existing road that is generally available to public use and suitable for the planned commercial use without reconstruction”).

The following General guidelines for listed plants may be applied to Special Use Permits.

For ROWs on existing roads, no surveys of the existing road prism are necessary. Road maintenance activities will not affect known sites on federal lands (see roads). The issuance of a ROW permit on an existing road is not an interconnected and interdependent action requiring consultation for any action on private lands. See 10 March 2003 2670 memo *Endangered Species Act and Access to Nonfederal Lands Across National Forest System Land* and 30 March 2003 interagency agreement *Application of the Endangered Species Act to proposals for access to non-federal lands across lands administered by the Bureau of Land Management and the Forest Service*.

**Special Uses – Construction:** For any new facilities, power line construction, towers, dams, irrigation canals or improvements, etc., that disturb intact native habitat: survey suitable habitat on federal lands, and protect occurrences. Buffers for such activities will be a minimum of 100 feet. Interrelated and interdependent effects to listed plants from construction activities occurring across federal lands will be addressed in the specific NEPA document.

**Special Uses facility maintenance** (including power lines): known populations must be protected from maintenance actions, and habitat disturbing actions, including vehicles and OHVs. No surveys required.

**Research collections:** the collection of listed plants is allowed on Federal lands if the holder has obtained a collection permit from the FWS. Permit holders must still coordinate with and obtain a collection permit from the BLM or the Forest Service.

## Mining Operations and Quarry Development

Use PDCs listed below, as well as the mandatory and recommended PDCs listed under Timber section.

### 1. Listed Plants

#### a. Mandatory

(I) For new mining operations or rock quarries, surveys of suitable habitat prior to active disturbance, and protect occurrences is required. When notices or plans of operations are submitted, a habitat assessment, surveys of suitable habitat, and the development of measures to protect occurrences are required. The action and

regulatory agencies will work together with the applicant to insure the protection of occurrences.

### ***Quarry Development:***

#### ***1. Spotted Owl***

##### **a. Mandatory**

(I) For active nest sites or unsurveyed suitable habitat within 0.25 mile of the quarry operation (1.0 mile for blasting), restrict operation of the quarry from March 1 through June 30 (unless protocol surveys demonstrate non-nesting).

##### **b. Recommended**

(I) For active nest sites or unsurveyed suitable habitat within 0.25 mile of the quarry operation, restrict operation of the quarry from March 1 through September 30 (unless protocol surveys demonstrate non-nesting).

#### ***2. Marbled Murrelet***

##### **a. Mandatory**

(I) For any occupied stands or unsurveyed suitable habitat within 0.5 mile of the quarry operation, restrict operation of the quarry from April 1 to September 15. Agency biologists also have the discretion to modify the 0.5-mile zone depending on topography and the level of noise - what equipment will be present (crusher or dozer/ripper or only loading of existing stockpiled rock).

#### ***3. Listed Plants***

##### **a. Mandatory**

(I). For expansion of existing or development of new rock quarries, surveys of suitable habitat prior to the decision, identification of sites, and protection of occurrences using 100 foot minimum buffers is required. For new decisions using existing rock quarries, surveys for *Arabis mcdonaldiana* must occur within its range (Illinois Valley).

## **Cultural Resources Projects**

Use PDCs listed below, as well as the mandatory and recommended PDCs listed under Timber section.

#### ***1. Listed Plants***

##### **a. Mandatory**

(I) **Cultural and Archeology:** Areas to be explored/excavated/cataloged that will result in disturbance of suitable habitat must be surveyed, and occurrences identified. Avoid digging at sites where listed plants known to occur.

## **Weed Control**

Use PDCs listed below, as well as the mandatory and recommended PDCs listed under Timber

section.

### ***1. Listed Plants***

#### **a. Mandatory**

(I) **Roadside weed control:** protect known sites from direct chemical application. Hand pulling, hot foaming, controlled spot spray, or wicking within occurrences allowed only on individual weeds. Provide contractors with information (pictures, descriptions) so as to identify the plants. No pre-disturbance surveys required within the already disturbed road prisms.

(II) **Non-roadside weed control:** Surveys of suitable habitat, identification of occurrences, and 25-foot buffers required. Provide contractors with information (pictures, descriptions) so as to identify the plants. Hand pulling or wicking with herbicides is allowed within occurrences, but only on individual weeds. Reseed buffers with Native forbs/grasses appropriate for the location, and in amounts that mimic the specific plant community. Herbicide spot spraying or hot foaming only allowed outside the 25-foot occurrence buffer.

### **Exceptions to PDCs**

Exceptions to PDCs are occasionally necessary. The most likely exceptions include removal of hazard trees, the clearing of blown down trees from roads, sites where spring burning will occur, where fish structures must be installed during the low flows of summer, and where Port-Orford-cedar (POC) needs to be protected from the spread of *Phytophthora lateralis*. Exceptions for other reasons will require reinitiation of consultation.

Two main types of seasonal restrictions for other than Endangered, Threatened or Proposed species can affect project scheduling. One restriction is for *Phytophthora lateralis*, commonly known as Port-Orford-cedar root disease. This restriction is usually applied as follows: no vehicle travel from October 1 to June 1, or during wet periods. The second restriction is for Industrial Fire Precautions during times of high fire danger periods: usually August, September, or October.

With the additional two seasonal restrictions for *P. lateralis* and fire, combined with the murrelet and owl restrictions, there is a potential for year-round restriction on use of all equipment operations in some project areas. This would make it impossible to conduct any treatment actions at these sites.

One solution to these problems (where they occur) is to reduce the length of the seasonal restrictions for both northern spotted owl and marbled murrelet. The risk of disturbance to nesting spotted owls is lower during the months of July, August, and September; for marbled murrelets, the risk is lower in August and September. Most fledging should have occurred by June 30 for spotted owls and August 5 for marbled murrelet; thus, there would be a low risk of disturbance to incubating murrelets or owls.

Most of the exceptions needed for FY04-08 relate to POC concerns. Several projects may need

to be implemented earlier than PDCs for spotted owl and marbled murrelet allow. Depending on predicted fire and/or wet season conditions, some projects may need to begin by July 1 in any given year (this could be as much as five weeks earlier than allowed by the PDCs, in the case of disturbance to unsurveyed habitat for marbled murrelet). Specific projects where exceptions to PDCs would be applied are listed below (Table 2). If additional exceptions are needed at a later date, the Level 1 team will evaluate the need for consultation, which will be reinitiated as necessary. Exceptions should be infrequent.

During FY04 through FY08, ten “excepted” projects may be active before 30 June for spotted owls or August 6 for marbled murrelet. For this consultation, the “excepted projects” would cover an estimated 863 acres (of ten projects shown in the table below for FY04-08, seven may be affected by POC closures). In some years, severe wind or snowstorms may cause extensive blockage of road systems; these roads may be cleared in the early part of the nesting season (*e.g.* 200 miles of roads in the Prospect/Butte Falls area of the Rogue River National Forest were in this situation as the result of a January 1996 snowstorm). Those projects not listed here and which require an exception to PDCs will be forwarded to the Level 1 team for review and approval. For projects Likely to Adversely Affect, exceptions to PDCs will be rare. In all cases, daily restrictions for marbled murrelet should be applied (where called for in the PDCs).

Table 2. Projects where exceptions to PDCs would be applied (only where necessary, depending on predicted severity of wet and/or fire seasons).		
PROJECT NAME	RANGER DISTRICT/RA	ACRES IN PROJECT – Reason for exception to PDCs
Four Does	Powers	40 - POC seasonal restrictions
POC Road Sanitization LSR	Powers	10 - POC seasonal restrictions
Corridor	Powers	700 - safety/roads generally used by the public, and hazard trees. POC restrictions
Milther Thin	Powers	10 - POC seasonal restrictions
Olaf	Powers	106 - POC seasonal restrictions
Deladdle	Powers	50 - POC seasonal restrictions
ER Thin	Powers	500 - POC seasonal restrictions
Coal Creek Pipes	Powers	Fish structure – Fish seasonal restriction
Black Berry Creek Pipes	Powers	Fish structure – Fish seasonal restriction
Bridge Replacement at Silver Creek (Helicopter use)	Gold Beach	Logistics and other restrictions on project activities require a start date for helicopter transport by 1 July. This area is at the eastern edge of Marbled Murrelet Area B (not in known range)

#### IV. ENVIRONMENTAL BASELINE

The NWFP identified habitat considered necessary for the long-term recovery of owls and murrelets. Late-successional reserves, riparian reserves, and other protected habitat will be managed for long-term recovery. The baseline information (Environmental Baseline Tables) shows that not all reserved habitat is currently functioning as suitable late-successional habitat. The NWFP guides the Action Agencies to develop lands capable of producing old growth characteristics into those conditions over time. Projects in the late successional reserves are

limited to those activities neutral or beneficial (C-16 ROD) to the objectives of late- successional reserves. Listed plant habitat was not addressed in the NWFP; the habitat for the four listed plants is not associated with late successional forests.

### **A. BALD EAGLE - Threatened**

The bald eagle was listed as a threatened species in Oregon and California in 1978. The listing was triggered by population declines associated with organochlorine pesticides. Other factors that threaten the population include habitat loss, harassment, a declining food base, shooting, electrocution, and poisoning. The Pacific Bald Eagle Recovery Plan (USDI Fish and Wildlife Service 1986) describes situations affecting eagles at that time and is incorporated by reference.

DDT was banned in the United States, but derivatives are still widely used in South and Central America, where migratory birds (also the occasional prey of bald eagles) spend the winter. Residual chemicals occur in migratory birds and some resident waterfowl, and likely also remain in aquatic systems. Eggshell thinning, one of the more significant impacts of DDT type chemicals, has lessened somewhat since the ban. Bald eagles were considered predators and “varmints” in the early 1900’s and direct harassment and mortality eliminated bald eagles from many historic areas of the United States. More recently, timber management and urban and rural development has reduced the amount and quality of bald eagle nesting and wintering habitat. The Action Agencies have actively managed and protected bald eagle habitat since bald eagles were listed, but private lands continue to be susceptible to habitat loss and disturbance.

Bald eagles nest in large trees, usually within a mile of large water bodies that support their primary prey of fish. They tend to choose nesting and roosting trees with a clear view of the water and good thermal conduction. Eagles often re-use and build on old nests. Resultant nests can be up to 9 feet across and several feet thick. Big old nests can be dislodged during heavy late snows and nest trees or nests are occasionally lost during windstorms.

Young birds of prey have a high natural mortality rate, both through the fledging stage and into the first few years of hunting on their own. Fledgling success is often related to food supply, weather conditions during the sensitive nesting period, and parental experience. In 2002, for Oregon the five-year nest-fledging outcome was 1.01 young per occupied site (Isaacs and Anthony 2002), and exceeded the five-year productivity Recovery Goal for the first time since 1980. Nesting success for 2002 was 66 percent in Oregon, and past five-year nesting success rate was 64 percent.

Most eagles don’t mate until at least 3 years of age, and generally form strong pair bonds. Many eagle pairs maintain alternate nest sites within their nesting territory, and on rare occasions, the alternate nests may be substituted as a successful re-nest site, if the primary nest is lost very early in the season. The pair will usually occupy the nest stand periodically, even if the nest fails.

There were 77 documented bald eagle sites in Zone 22 and 9 in Zone 23 (the Action Area is included in these two zones) when the Pacific Bald Eagle Recovery Plan was written in 1986. Federal, state and private partners have coordinated annual bald eagle nest monitoring for over 25 years (Isaacs and Anthony 2002). In Oregon 401 of 427 known bald eagle sites were

occupied in 2002. Most target territories in the Klamath Zone 22 and California/Oregon Coast Zone 23 are now occupied and recovery goals have been met overall in this portion of the recovery zone.

Bald eagles are fairly tolerant of human activity, but high level noise or disturbance can dissuade them from important breeding areas or winter roost sites, particularly during the early nesting season. Individual pairs have widely variable responses to disturbance. Some eagles choose to nest in areas of high recreational use or urban development and consistently and successfully reproduce, while other pairs are more sensitive to disturbance, and would be adversely impacted by the same type of activity. Seasonal and distance protection are generally effective in reducing adverse impacts of human disturbance activity to bald eagles. Habitat protection is generally effective if large trees that support nesting and roosting are maintained within the nesting or wintering stand (as determined by specific stand Site Plans), and any disruptive activity is scheduled outside of the sensitive periods.

For the Action Area, the sensitive nesting period is generally January 1 to August 31, and nests on federal lands are protected by seasonal restrictions or distance buffers to avoid adversely impacting bald eagles. There may be seasonal variation due to weather. Incubation, according to the Pacific bald eagle plan, lasts approximately 35 days. Young generally fledge at 11 to 12 weeks, and adults remain near the young for another 4 to 11 weeks (USDI Fish and Wildlife Service, 1986). Dates in site-specific plans may supercede standard PDC dates to address individual pair behavior and site conditions. There are no known specific winter roosts or concentration areas in the Action Area, although many of the pairs remain in the area year around. Nests on private lands are well known, and usually close enough to federal lands to be surveyed along with federal inventories.

The Action Area contains 24 documented bald eagle sites, including several on non-federal land (Table 3). The Pacific Bald Eagle Recovery Plan recommends the development of bald eagle Site Plans for each nesting territory. Site Plans evaluate habitat conditions, disturbance and develop management strategies in support of bald eagle recovery. BLM has prioritized the development of these plans for nest sites most vulnerable to disturbance. Brushy Chutes (in the Grants Pass Resource Area) is scheduled for completion in 2003/04. Site Plans address the individual behavior variability of bald eagles, and the specific habitat and risk conditions at each site to provide focused management recommendations. These Site Plans are designed to protect existing bald eagle nests and manage the area for bald eagle recovery.

The Action Agencies will continue to participate in coordinated bald eagle monitoring and Recovery Plan implementation. Site Plans will be developed on a priority basis for sites where standard PDCs may not be appropriate. In all cases, Site Plans will provide for protection and recovery implementation equal or greater than the PDCs in this document. Site Plans developed during the life of this programmatic will be reviewed to ensure their impacts are compatible with the intent and effects described in this programmatic, and will not need further consultation. In the event that a site-specific situation may result in adverse impacts that PDCs cannot eliminate, separate consultation may be required, as determined by the Level 1 team.

The agencies periodically survey some nest sites by helicopter during the sensitive nesting season to check for occupancy and productivity. Helicopter flights can get within a few hundred

feet of active nests for short periods of time (less than a minute per nest). All flights are conducted by experienced biologists familiar with the area and nest locations. Biologists visit each site for the minimum amount of time necessary to observe nesting status. No birds are intentionally flushed from the nest to check for productivity. In the rare event that the adults inadvertently flush from the nest, the survey attempt of that particular nest is aborted to allow the adult to return to the nest as soon as possible. Biologists plan the best approach routes and observation areas prior to the flight, to avoid unnecessary disturbance to nesting birds. Disturbance is kept to a minimum, and no adverse impairment of breeding is tolerated.

Agency	District/RA	County	Site Name	Site Plan
BLM	Ashland	Jackson	Lake Creek	
BLM	Ashland	Jackson	Howard Prairie Reservoir N (Doe Island)	
BLM	Ashland	Jackson	Howard Prairie Reservoir S	
BLM	Ashland	Jackson	Howard Prairie Reservoir W	
BLM	Ashland	Jackson	Hyatt Res.	
BLM	Ashland	Jackson	Slide Creek (Emigrant)	
Pvt	Butte Falls	Jackson	Lost Creek Reservoir	
BLM	Butte Falls	Jackson	Big Butte Ck	
BLM	Butte Falls	Jackson	Parsnip Ck	
Pvt	Butte Falls	Jackson	Little Slough Island	
ODOT	Butte Falls	Jackson	Salmon Rock	
BLM	Butte Falls	Jackson	Rogue Elk	
BLM	Glendale	Josephine	Alder Creek	
BLM	Glendale	Douglas	Galesville Reservoir	
BLM	Grants Pass	Josephine	Maple Gulch	
BLM	Grants Pass	Josephine	Brushy Chutes	2004
BLM	Grants Pass	Josephine	Finley Bend (Sloan Mtn/Rogue Madam)	
BLM	Grants Pass	Josephine	Pennington Mtn	
BLM	Grants Pass	Josephine	Selmac Lake (Celtic Resort)	
BLM	Grants Pass	Curry	Battle Bar	
Rogue River NF	Butte Falls	Jackson	Fish Lake	
Rogue River NF	Applegate	Jackson	Applegate Lake	Draft
Rogue River NF	Butte Falls	Jackson	Willow Lake	
Siskiyou NF	Gold Beach	Curry	Watson Creek	

## B. NORTHERN SPOTTED OWL - Threatened

A detailed account of the taxonomy, ecology, and reproductive characteristics of the spotted owl is found in the 1987 and 1990 U.S. Fish and Wildlife Service Status Reviews (USDI FWS 1987, 1990a); the 1989 Status Review Supplement (USDI 1989); the Inter-Agency Scientific Committee (ISC) Report (Thomas and others 1990); and the final rule designating the spotted owl as a threatened species (USDI Fish and Wildlife Service 1990b). Early demographic studies (Burnham and others 1994, Lande 1988) suggest the population is declining. Demographic analysis completed in 1999 indicates that the northern spotted owl population (range wide) is declining by approximately 4 percent per year, although reproducing age females appear to not exhibit a negative trend (Forsman and Anthony 1999, Franklin and others 1999).

The NWFP is expected to limit the extent of this trend by protecting all spotted owl sites within LSRs and by providing spotted owl dispersal habitat through the matrix and AMA.

Conservation of the species will also be provided by allowing currently unsuitable habitat to develop within the LSRs. Active management designed to advance forest conditions in LSRs includes density management, precommercial thinning, and fertilization. As habitat develops within the LSRs, spotted owl populations are expected to stabilize across its range. The range expansion of barred owl into spotted owl territories is a complicating factor. The ultimate outcome of barred owl/spotted owl interactions is uncertain. Outside the LSR system, spotted owl sites known as of January 1994 have been designated as Known Spotted Owl Activity Centers and are also managed as LSR.

**Spotted owl suitable habitat.** Owl nesting, roosting or foraging habitat (referred to as NRF) is identified as forest with older forest structure, multiple canopies, canopy closure of 60 percent or greater and having conifers at least 24 inches diameter. Bart and Forsman (1992) generalized that the greater the amount of forest over 80 years old, the greater the probability of finding spotted owls within these forests. The environmental baseline for suitable habitat at the time of the NWFP has been periodically updated in programmatic biological assessments. There are minor differences in the calculations used for FWS baseline information in the Alternative 9 biological opinion for the NWFP and the Action Agencies' information calculated since then. The Action Agencies have improved their mapping and plotting ability and refined some estimates that were used in the original Alternative 9 analysis. Better information has been incorporated into the data layers.

In 2001, the provincial baseline update for the Rogue/South Coast basin was conducted by FWS. For FY1995, the BLM estimated that 16,975 acres of spotted owl habitat would be removed or downgraded; actual habitat reduction was 3,218 acres, and 13,757 acres were returned to the baseline. For FY1996, the BLM and Forest Service estimated that 1,648 acres of spotted owl habitat would be removed or downgraded; actual habitat reduction was 489 acres, and 1,159 acres were returned to the baseline. For FY1997-1998, the BLM and Forest Service estimate was 29,805; the actual habitat reduction was 11,737 acres, and 18,068 acres were returned to the baseline. For FYs 1999-2000, the BLM and Forest Service estimate was 27,977; the actual habitat reduction was 2,983 acres, and 24,994 acres were returned to the baseline. To summarize, from FY 1996 through FY2000, the composite BLM and Forest Service estimate of habitat removal and downgrading was 76,405 acres; the actual habitat reduction was 18,427 acres, and 57,978 acres were returned to the baseline.

For FYs 2001 – 2003, the BLM and Forest Service estimated habitat reduction is 22,277 acres; the actual habitat reduction in FY2002 was 4,335 acres. The Action Agencies expect 9,772 acres of habitat will be removed or downgraded by the end of FY2003. Therefore, the total habitat removal for FY2001 through FY2003 is estimated at 14,107 acres; an expected 8,120 acres will be returned to the baseline.

Tree harvest, vegetation management and wildfire changes to suitable habitat that have occurred since the 2001-2003 BA was written were calculated from annual monitoring reports and the updated information is depicted by Section 7 watersheds in the Environmental Baseline Tables. The Environmental Baseline Tables depict the status of owl habitat as of the end of FY 2003 (30 September 2003). By the end of FY03, timber sales in the Action Area will have resulted in the

removal of 32,485 acres of suitable habitat (since April 1994). We anticipate no more than 3,000 acres of additional suitable habitat will be removed as the result of timber sales sold in the first two quarters of FY04. Therefore, by the end of the first decade since the inception of the NWFP (13 April 2004), the Action Agencies will have sold approximately 35,485 acres of suitable habitat in the Action Area.

Changes in suitable habitat are summarized and reported to the FWS in one of the following categories: Suitable degraded, suitable downgraded to dispersal, suitable removed. Suitable habitat downgraded to dispersal is added to the current dispersal category. Suitable habitat is considered degraded if it retains 60 percent canopy post-treatment. Suitable habitat is considered downgraded to dispersal if it maintains between 40 and 59 percent canopy post-treatment, and is considered removed if canopy coverage drops below 40 percent, as in the case of regeneration harvest.

Wildfire changes in habitat since 1994 are also reported in the Environmental Baseline Tables. The Action Agencies calculated wildfire changes through a combination of satellite evaluation, photo interpretation, and field exam. Although intensity and severity are different evaluation methods, for purposes of owl habitat, moderate to high fire intensity (and soil severity) was considered hot enough to kill overstory trees. Habitat that burned with moderate to high intensity/severity was classified as removed. Light intensity (severity) was considered an understory burn with no habitat loss. Fire estimates did not attempt to break out intermittent fire behavior (a few trees burned and some green trees retained). Fire acres reported in the Environmental Baseline Tables erred on the side of habitat lost, for analysis of impacts to owls in this BA.

Timber harvest (and related projects that removed or degraded suitable or dispersal habitat) across all watersheds in the Action Area by the Action Agencies since the NWFP was signed reduced suitable habitat by 32,485 acres and increased dispersal-only habitat by over 16,000 acres (Environmental Baseline Tables). Some gains of dispersal-only resulted from suitable habitat that was thinned and downgraded to dispersal-only. Wildfires removed 117,447 acres of suitable habitat since 1996 (11 percent reduction in NRF in the Action Area). When combined with impacts of wildfire, suitable habitat in the entire Action Area declined 14 percent and dispersal-only declined 10 percent as compared to 1996 baseline information (which is the first year baseline information was calculated for the Action Area under the NWFP. Because of sale implementation delays, the 1996 baseline is essentially the conditions as of 1994. The percent change was widely variable among watersheds, with some basins changing up to 39 percent, including fire and timber harvest (Illinois), and others not changing at all. Most of the change resulted from wildfires.

**LSR.** The intent of LSRs is to protect and enhance conditions of old-growth forest ecosystems, which serve as habitat for old-growth related species including the northern spotted owl (USDA 1994b). The federal management strategy for the conservation of the spotted owl was planned to provide a system of large, interconnected reserves that support sustainable, intermixing populations of owls. This strategy was identified by the ISC (Thomas *et al.* 1990) and then adopted and refined by the Draft Recovery Plan for spotted owl, FEMAT, and the ROD for the Northwest Forest Plan. The action agencies manage all or part of 25 LSRs as a portion of the network of reserves designed for the conservation of the spotted owl within the action area.

These reserves theoretically either currently provide sufficient amounts of habitat and numbers of spotted owls to maintain local populations, or, if deficient in habitat or owls, should provide sufficient habitat and owls in the future. All LSRs are to be managed to improve late-successional forest conditions, and habitat for northern spotted owls should improve accordingly over time.

The Late-successional Reserve Network in the Pacific Northwest roughly covers three major mountain ranges: the Cascades, the Klamaths, and the Coast Ranges of California and Oregon. Together they roughly form an "H." One "leg" joins the Sierras in California to the Siskiyou, and north to the Cascades. The other "leg" joins the California and Oregon coastal mountains, and the Siskiyou. The Cascade crest, except for the Klamath and Columbia River gorges, forms a continuous north-south "backbone," and the Siskiyou form the "cross-bar." Seventeen LSRs are wholly or partially within the Action Area. Appendix C contains a descriptive narrative of each LSR; Table C-1 shows 482,101 of suitable habitat for spotted owl in LSRs, as of June, 2003. Wildfires since 1996 have reduced the suitable habitat for spotted owls by almost 52,000 acres in LSRs in the Action Area (10%) (Table C-1); habitat removal through timber sales in LSRs is inconsequential.

**Spotted owl dispersal habitat** consists of those stands capable of providing for the safe movement of spotted owls across the landscape. The NWFP identifies several habitats that serve as dispersal, in addition to matrix, AMA and LSR lands that meet canopy conditions: riparian reserves, 15 percent leave trees in harvest units, 100 acre LSRs (known spotted owl activity centers), and 15 percent LS/OG retention guideline. Dispersing owls use habitats classified as suitable and dispersal-only habitat. Dispersal-only habitat provides some forage and roosting habitat, AND some protection from predators, but lacks the structure of suitable roosting/nesting habitat. Thomas and others (1990) described dispersal habitat as stands averaging at least 11 inches DBH with a 40 percent canopy cover. Thomas and others (1990) also described a landscape (quarter-townships) with at least 50 percent dispersal habitat (suitable PLUS the dispersal only habitat) as being adequate for the movement of dispersing NSO across the landscape. These dispersal parameters are often referred to as "50-11-40". Only lands ecologically capable of producing owl habitat are considered in the 50 percent calculation. Incapable Lands, such as talus, serpentine, or natural shallow-soil meadows, are not included in the calculation.

Owl dispersal between LSRs is necessary to provide for the interchange and replacement of individuals due to death or the loss of habitat within a specific LSR. The more closely the dispersal vegetation resembles suitable habitat, the more likely spotted owls will successfully complete the journey (Thomas and others 1990). An estimated 424,384 acres of dispersal-only habitat is currently available on federal lands within the Action Area (Environmental Baseline Tables, All Basins).

The Action Agencies report dispersal habitat by Section 7 watershed (see Map 1). Map G-1 depicts current dispersal habitat (including suitable habitat depicted in green) for each public land section in the Action Area. Each section (approximately 640 acres, although they vary) is rated by the percent of that section that meets dispersal criteria. Each section and watershed were evaluated by 1) suitable, 2) dispersal-only, and 3) capable but too young to provide dispersal or suitable habitat, and 4) non-forest. Total dispersal includes suitable and dispersal-

only combined. The dispersal map incorporates habitat removed due to timber sales or fires since the listing of the northern spotted. All data used to generate these tables is based upon GIS information available through July 2002. Acreage figures represented by the dispersal map are depicted in Table G-1).

Neither Action Agency tracks canopy cover and structural characteristics in their forest or timber stand data, and field evaluation of these characteristics is subjective and widely variable. Biologists estimate dispersal habitat from timber stand conditions, photo interpretation, field experience, and post-treatment modeling. Actual dispersal habitat may vary considerably depending on the methodology. The Dispersal map (Map G-1) was developed as a GIS map, using interpretation of satellite data and stand information. The Dispersal information in the Environmental Baseline Tables was obtained through actual tree harvest monitoring reports. The Dispersal map incorporated updated watershed boundaries and improved mapping information. The Environmental Baseline Table shows actual field acres subtracted from 1994 baseline information

On BLM administered lands, the most recent Forest Operations Inventory (FOI) data were overlaid with post-fire and post-timbersale data to depict the current dispersal habitat condition (Map G-1). On FS - administered lands, the current dispersal habitat was evaluated with landsat photography to depict post-fire information. Landsat analysis was unable to discern all lands incapable of developing into owl habitat to the same degree as BLM FOI data. FS-administered lands are generally higher in elevation than BLM-administered lands. In general, FS-administered lands in the Action Area have a higher percentage of owl-capable lands; minor differences in calculations of dispersal between the Action Areas are not significant.

Dispersal of owls across areas of sparse or poor habitat is a concern. The Kalmiopsis Wilderness has large areas of serpentine soils that do not support conifer stands dense enough for spotted owl dispersal. The low elevation area along Interstate Highway 5 is predominantly private residential ownership and lacks the type of forest cover conducive to owl dispersal. Dispersal habitat is generally not a limiting factor to spotted owls, but the draft Recovery Plan for spotted owl identified two areas in the Action Area for special scrutiny. One is the forested area that joins the Siskiyou, Cascades, and the Coast Range across the Interstate 5 corridor (Klamath, Bear, Applegate Section 7 watersheds). The other is the Galesville area of concern. The draft Recovery Plan for the Northern Spotted Owl (Thomas and others 1990) recommended that non-Federal lands in the Galesville area of dispersal concern, and areas to the west, be managed to provide spotted owl dispersal habitat to facilitate movement between the Klamath and adjacent provinces. Spotted owls have been documented to traverse both these areas (Forsman 2002), but the prospect for long-term viability of movement in these areas is unclear. The map of dispersal habitat (Appendix G, Map G-1) reflects the wildfires since 1994 that have further reduced the dispersal habitat availability across the southern range of the northern spotted owl.

The Level 1 team identified a specific area of dispersal concern in the lower portion of the Applegate Section 7 Watershed. The FWS indicated the Slate-Cheney area in the Applegate drainage was a specific area where spotted owl dispersal might be at risk. The Biscuit Fire of 2002 had an effect on the approach to the habitat "bridge" across Slate-Cheney, but the Fire did not affect the "bridge" itself. The approach to the "bridge" from the north, thru unburned area, is still functioning.

Dispersal-only habitat has increased in the Action Area by three percent due to downgrading of suitable (NRF) habitat. Suitable habitat that was thinned and downgraded to is shown on the Environmental Baseline Tables as dispersal increased. However, due to fires, dispersal-only habitat has decreased overall by ten percent in the Action Area. Ten of the seventy-five fifth field watersheds in the Action Area do not meet the 50-11-40 standard, as measured for the entire watershed. Three of the ten watersheds that fail to meet 50-11-40 have less than one percent federal ownership in the Action Area. The seven fifth-field watersheds with significant federal ownership in the Action Area, and less than 50 percent dispersal, are: West Fork Cow Creek, Evans Creek, Illinois River/Josephine, Illinois River/Klondike Creek, West Fork Illinois River, Silver Creek, and North Fork Smith River (the latter five all lost important dispersal acreage in the Biscuit Fire of 2002. See Appendix G, Table G-1

**Wildfire and Spotted Owl Habitat.** The spotted owl is the most widespread of all the listed species described in this document. Therefore, wildfire has the most potential to affect spotted owls. This discussion does pertain to other listed species, where they occur. Southwest Oregon ecosystems are largely fire-dependent. Within the “Mediterranean” climate of the Klamath/Siskiyou Province, forests are easily ignited, and fires of widely varying intensities have been frequent. Before organized fire suppression began for the Action Area, fires within ponderosa pine vegetation communities were described as frequent, low-intensity ground/surface fires that spread over periods of weeks or months in Siskiyou/Klamath Mountain Forests (Agee 1993). Fire intensities also vary within the “maritime” climate of the Western Cascades and High Cascades Provinces. The number and frequency of fires vary based upon local climate and amount of “ladder” fuel available.

Natural wildfires occur annually and stochastically within the Action Area in SW Oregon. Wildfire size, intensity, and location under the current scenario of fire suppression and fuel buildup are unpredictable. Fires today in the Action Area are generally described as: infrequent/inconsequential or extreme and not easily extinguished. Fire occurrence and size on federally managed lands in SW Oregon from 1987 - 2002 has been atypical in relation to historic occurrence.

Over the past 42 years (1960 - 2002) the variability in number of fire starts and acres burned reinforces the difficulty in forecasting the number of starts, acres involved, location, and intensity of burn (Table 4). For example, on the Siskiyou National Forest, 1963 was the low year for acres and starts with only 10 fires and 7 acres burned (although 1993 was not far behind with 11 fires and 8 acres burned). In 1987, 49 starts occurred, with 112,125 acres burned; in 1994, 68 starts occurred, with 7,800 acres burned. In 2002, the Biscuit Fire burned nearly 500,000 acres, mostly on the Siskiyou National Forest, but also on Medford BLM and Six Rivers National Forest. During this same period, 1978 and 1979 were the low years for starts on the Rogue River National Forest, with only 20 per year; 1983 was the low year for acres, with a total of four. In addition to the Quartz Fire in 2001, which burned over 6,000 acres (the majority of the acres on the Rogue River National Forest), the high years for the Rogue River National Forest were 1987 and 1994 (1,719 acres burned and 144 starts, respectively).

Table 4. Fire Starts in Action Area 1960-2002.
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<b>Administrative Unit</b>	<b>Fire/Lightning starts (1960 - 2002)</b>	<b>Acres burned (Federal/Private)</b>
Bureau of Land Management, Medford District	455/327	9,390/7,048
Rogue River National Forest (1970-1995)	1,655/1,230	3,888/NA
(1996-2002)	377/311	6,351/NA
Siskiyou National Forest (1960-1995)	1,302/579	131,442/NA
(1996-2002)	151/82	503,001/NA

Within the Biscuit Fire, within the Siskiyou National Forest, 95,500 acres of suitable habitat for spotted owls was lost (62 percent of total NRF within the fire area) and 172,000 acres of Dispersal habitat was lost (59 percent of the total Dispersal habitat within the fire area) (*i.e.*, 95,500 acres of suitable, and another 61,500 acres of Dispersal-only habitat). Table 5 shows the habitat changes produced within owl habitat, by various land classification schemes. Habitat connections through the Biscuit Fire area have been reduced. However, dispersal habitat is still intact surrounding the Fire area and neither the Fire nor our proposed actions would preclude dispersal of spotted owls throughout the Action Area.

Table 5. Effects of the Biscuit Fire on habitat for Spotted Owl (adjacent BLM lands included). Suitable (Nesting, Roosting, Foraging) and Dispersal habitats. By various Land Classification Schemes. 8Aug03

**Summary:** 95,500 acres of suitable (NRF) habitat was lost (62%) in the Biscuit Fire, on federal land on the Siskiyou NF and adjacent BLM land, and 157,000 acres of Dispersal habitat was lost (59%) (i.e., 95,500 acres of suitable, and another 61,500 acres of Dispersal-only habitat).

<i>Land Classification Scheme</i>	Suitable Habitat Acres			Dispersal Habitat Acres		
	Pre-fire	Post-Fire	Lost (%)	Pre-fire	Post-Fire	Lost (%)
<i>By 5<sup>th</sup> Field Watershed (Code 1710031---, except Smith 1801010--)</i>						
101 North Fork Smith River	12,220	5,723	6,497 (53)	31,414	15,763	15,651 (50)
102 Middle Fork Smith River	8	8	0 (0)	49	43	6 (12)
104 Lower Smith River	264	264	0 (0)	449	449	0 ( 0)
104 West Fork Illinois River	6,518	5,730	788 (12)	14,303	10,973	3,330 (23)
105 Deer Creek	2,398	2,062	336 (14)	4,084	3,507	577 (14)
106 Illinois River/Josephine Creek	17,834	4,203	13,631 (76)	32,730	11,850	20,880 (64)
107 Briggs Creek	18,749	17,436	1,313 ( 7)	27,562	25,728	1,834 ( 7)
108 Illinois River/Klondike Creek	25,532	10,529	15,003 (59)	39,886	17,320	22,566 (57)
109 Silver Creek	17,660	3,788	13,872 (79)	21,920	1,149	20,771 (95)
110 Indigo Creek	23,651	11,862	11,789 (50)	31,730	15,992	15,738 (50)
111 Illinois River/Lawson Creek	16,263	7,599	8,684 (53)	26,134	12,951	13,183 (50)
201 Chetco River	56,946	34,832	22,114 (39)	107,962	67,645	40,317 (37)
204 Pistol River	13,838	12,452	1,386 (10)	22,723	20,638	2,085 (.9)
<b>TOTAL</b>	211,881	116,488	95,413 (45)	360,946	204,008	156,938 (43)
<i>By Section 7 Watershed (ESA Consultation)</i>						
Chetco and South Coast (201, 204)	70,784	47,284	23,500 (33)	130,685	88,283	42,402 (32)
Illinois (104, 105, 106, 107, 108, 109, 110, 111)	128,605	63,209	65,416 (51)	198,349	99,470	98,879 (50)
Smith (101, 102, 104)	12,492	5,995	6,497 (52)	31,912	16,255	15,657 (49)
<b>TOTAL</b>	211,881	116,488	95,413 (45)	360,946	204,008	172,545 (48)
<i>By all Wildernesses (Forest-Wide) or Individual LSR</i>						
All Wildernesses	86,137	51,435	34,702 (40)	145,300	78,954	59,858 (41)
Briggs LSR	23,563	11,191	12,372 (53)	37,302	19,009	18,293 (49)
Fishhook [NF]/Galice [BLM] LSR	117,252	92,380	24,872 (21)	*100,498	*65,423	*35,075 (n/a)
North Chetco LSR	9,910	7,452	2,458 (25)	18,302	13,766	4,536 (25)
South Chetco LSR	30,542	29,787	755 ( 2)	49,271	47,903	1,368 ( 3)
West IV LSR	7,240	2,146	5,094 (70)	22,251	9,543	12,708 (57)
<b>TOTAL</b>	274,644	194,391	80,253 (29)	372,824	234,598	131,838 (35)
<b>Other Land Allocations – Forest-Wide</b>						
Matrix (MA-12, 13, 14, 15)	60,970	53,603	7,367 (12)	103,253	90,729	12,524 (12)
Protected other than LSR (MA-8) and Wilderness (MA-1) = (MA-2, 3, 4, 5, 6, 7, 9, 10, 11)	Cannot calculate Pre and Post NRF because of LSR Overlap with MA3 thru 7		7,793 (n/a)	Cannot calculate Pre and Post Dispersal because of LSR Overlap with MA3 to 7		12,576 (n/a)
<b>TOTAL</b>			15,150 (n/a)			25,100 (n/a)
<b>Within Fire Area Only</b>						
<b>TOTAL</b>	153,193	57,780	95,413 (62)	266,023	109,085	156,938 (59)
Acre figures on each line include the entire area (for each watershed, LSR, etc.), both inside and outside of the fire line, but only within the boundary of the Siskiyou National Forest or adjacent land Managed by the Medford District of the Bureau of Land Management. Existing Suitable (NRF) habitat is considered to be all Medium, Large, and Giant conifer stands with a canopy closure of $\geq 40$ . The "breaks" for canopy cover in the Siskiyou's Vegetation GIS layer are at 40 and 70 percent, but suitable habitat for spotted owl is classified as older stands which have a canopy closure of $\geq 60$ . Because most natural non-serpentine stands between 40% and 70% are actually 60%+, we classify Suitable habitat as $\geq 40$ %. However, regardless of canopy closure %, serpentine areas of Low or Moderate productivity are not considered Capable of becoming Suitable habitat (High productivity areas are considered Capable); these Low and Moderate serpentine areas have been removed from the calculation of Suitable habitat within the Fire perimeter. Dispersal acre columns also include Suitable Habitat acres, and serpentine habitat can serve as dispersal habitat. Dispersal habitat = all Sapling, Small, Medium, Large, and Giant conifer stands with a canopy closure of $\geq 40$ %. * = BLM dispersal in Galice LSR not included in Pre and Post figures; however, dispersal lost does include BLM.						

As part of suppression activities, some areas of vegetation are typically “burned out.” “Burnout” reduces fuels between the wildfire and a defensible fire line. For Biscuit, we calculated the “burnout” effects on a ¾ mile interior buffer inside the perimeter of that portion of the Biscuit Fire on the Siskiyou National Forest. In some edge areas of the fire, no “burnout” actually occurred; in other areas, the “burnout” may have been several miles wide. The consensus of the Siskiyou’s fire managers was that the ¾ mile buffer would provide a reasonable estimate of the suppression effects. These suppression activities therefore resulted in approximately 67,707 acres of “burnout;” loss of Suitable habitat in the “buffer” amounted to approximately 8,900 acres, and the loss of Dispersal-only habitat was approximately 5,700 acres (Table 6).

Spotted Owl Habitat Type	¾ mile “buffer” <b>Pre-Fire</b>	¾ mile “buffer” <b>Post-Fire</b>	Approximate Habitat reduction in ¾ mile “buffer” due to suppression.
Suitable	24,075	15,215	8,860
Dispersal-only	14,899	9,224	5,675

In recent years fire acreage on lands managed by the BLM have been concentrated at lower elevations and associated with the “rural/urban” interface. The urban interface with forested lands is an increasing concern near Federal lands, for reasons of liability, safety, and “starts.” Although numerous starts have occurred on the Rogue River National Forest in recent years, most fires have been at higher elevation; this has made suppression efforts easier, and minimized the affected acreage. The frequency of starts is lower on the Siskiyou National Forest, but the number of acres affected is comparatively higher than the Rogue River National Forest. Rough inaccessible terrain and a drier climate inland help to account for this difference in fire acreage.

It is difficult to predict future fire starts, locations, and acres impacted. We anticipate a range of fire starts and areas that might be most affected. Project design criteria have been developed to protect listed species from discretionary fire suppression activities by the Action Agencies. (PDCs are listed as specific fire suppression methods and techniques). Fire suppression has the potential of high risk to human safety. The Action Agencies may choose to disregard PDCs in the event that their implementation can increase human risks. The Action Agencies will initiate emergency consultation to address impacts of not applying the PDCs, if the Level 1 team determines that deviation causes a greater impact on listed species than predicted under this BA.

Fire suppression has been addressed for different land allocations in the ROD for the NWFP, and in subsequent LSR and Watershed Assessments. In Riparian Reserves and Late-Successional Reserves, the goal of wildfire suppression is to limit the size of all fires. Some natural fires may be allowed to burn under prescribed conditions

At the onset of wildfire suppression activities, fire managers consult with resource specialists (e.g., botanists, fisheries and wildlife biologists, hydrologists) who are familiar with ecological relationships. This is done to make sure that listed species (and others) are managed according to applicable standards and guidelines relevant to the area, to assure that habitat damage is minimized (ROD pgs C-17 and C-18).

Refer to the specific Standards and Guidelines from the ROD for “Fire/Fuels Management” in Riparian Reserves (pgs C-35 and C-36) for further information.

The Forest Service maintains sets of guidelines for “Light Hand” tactics, and Minimum Impact Suppression Tactics (MIST). Both sets of guidelines are the result from an increased awareness and concern when dealing with resource sensitivity during fire suppression. These guidelines reduce the impact of suppression efforts, and potentially the effects of the wildfire, to listed species and their habitat.

When wildfires escape initial attack, an Escaped Fire Situation Analysis (EFSA) process lays the groundwork for subsequent suppression activities. Concerning wildlife and habitat protection, Resource Advisors/Environmental Specialists are contacted and used in an advisory capacity. In most cases, they are involved in initial attack efforts, either as fire fighters or advising fire staff officials. See PDC section of this document.

### **C. NORTHERN SPOTTED OWL CRITICAL HABITAT**

Designation of critical habitat serves to identify lands necessary for the conservation and recovery of listed species. Primary constituent elements of spotted owl critical habitat are those physical and biological habitat features that support nesting, roosting, foraging, and dispersal. The final designation of critical habitat was completed in 1992. In all, 190 critical habitat units (CHUs) were designated across portions of Washington, Oregon, and California. The CHUs were delineated as areas large enough to protect clusters of spotted owls (consistent with the ISC conservation strategy). CHUs were distributed in such a manner as to allow for individuals to disperse and move between them. Critical habitat occurs across all land use allocations in the Action Area. Harvest in critical habitat in Matrix or AMA is allowed under the NWFP.

CHU changes are depicted in two ways. In Appendix B Table B-1, changes are displayed by CHU. Table B-1 of Appendix B shows 811,193 acres designated as critical habitat for the spotted owl in 22 CHUs, of which 319,224 acres are suitable nesting, roosting or foraging as of June, 2003. CHUs on the boundary of the Action Area may include overlap onto other Federal lands not actually within the Action Area, which explains the difference in the acreage of CHU in Table B-1 and the other baseline information (in EBTs). Changes to critical habitat resulting from fires and timber sales, depicted in the CHU Appendix B Table B-1, reflect changes within the Action Area only (timber harvest we expect to be sold in 2003, but has not yet sold, has been projected into the baseline update – Fires are updated as of June 30, 2003). See Appendix B narrative.

Over 63 percent (528,737 acres) of all CHU acres are LSR. In addition, 349,670 acres of LSR exist outside of the CHUs, and also provide for owl recovery over time. Three percent, or 9,005 acres, of the suitable habitat in CHUs has been removed due to Timber Harvest since 1996. In CHU-36, 25 percent of the suitable habitat has been removed since 1996; this small CHU includes no LSR land use allocation. In Table B-1, CHU-62 shows a drop of 23 percent in suitable habitat in that portion of the CHU in the Action Area (only 1/3 of the suitable habitat in this CHU lies within the Action Area – BO 1-7-01-F-032, Table 4). As shown in Table B-1, most of the change to suitable habitat in CHU since 1996 was due to wildfire.

The Environmental Baseline Tables (EBTs) also depict changes to CHU acres by Section 7 Watersheds. The EBT summary table shows 772,722 acres of CHU in the Action Area, of which 356,651 is suitable nesting, roosting, or foraging for spotted owls as of June, 2003. The numbers shown in the EBTs are “cut” to watershed boundaries, and may have a different boundary than the Table B boundaries. The same harvest and fire information is depicted in both the EBT and CHU Table B-1. As depicted in the EBT tables, tree harvest since 1996 impacted three percent of the suitable CHU habitat, and fires reduced suitable CHU acres in the Action Area by six percent. Total reduction in critical habitat in the action area, calculated by Section 7 watershed, is nine percent (34,334 acres). Individual impacts to CHUs varied widely. The Biscuit fire in the Illinois Section 7 watershed converted 40 percent of suitable owl habitat in critical habitat to younger seral conditions. However, timber harvest and fires impacted most CHUs by very small percentages, if at all. As depicted in Appendix B, Table B-1, averaged over all watersheds, fire reduced CHU by seven percent and tree harvest reduced fire by three percent.

CHUs were established prior to the development of the NWFP. The range-wide network of CHUs covered 6.9 million acres, of which approximately 2.6 million acres were considered suitable habitat. With the creation of the LSR network under the NWFP, 7.4 million acres were designated as LSR, of which approximately 3.2 million acres have been identified as suitable habitat.

*Alternative 9, with its combination of LSRs, MLSAs, RRs, and matrix (and AMA\*) prescriptions, should enable critical habitat to perform the biological function for which it was designated. There is considerable overlap between LSRs and CHUs. The intent of Alternative 9, viewed as a whole, is similar in function to critical habitat as described in the designation (i.e., maintenance of large interconnected blocks), and the LSR network, as described in the preferred alternative, seems a reasonable match with the spotted owl critical habitat units in most areas. any site specific considerations of critical habitat in the matrix are considered minimal and will be evaluated through watershed analysis and addressed in area-specific plans, as appropriate. (p. 22, Appendix G in USDA Forest Service and USDA Bureau of Land Management 1994). \* AMA is another land use allocation under Alternative 9 not mentioned in this quotation).*

Late successional habitat reserves were developed in Alternative 9 to function with other land use allocations to recover listed species and to prevent the listing of other late successional-related species, and still allow forest management activities. LSRs cover 878,407 acres within the 2,539,760 acres of Federal Land within the Action Area, not including the 100-acre cores and unmapped LSRs. LSRs make up 35 percent of the Federal Lands within the Action Area (information from Environmental Baseline Table – Summary). The LSR Table in Appendix C shows 1,171,024 LSR acres; in acres of LSR overlapping outside of the Action Area are included.

Not all LSR is suitable habitat, nor is all LSR capable of developing into suitable habitat. The NWFP proposed the management of capable LSRs into functional late successional habitat over time. There has been some minor tree harvest (light thinning) within LSRs since 1994, designed to improve late successional habitat by expediting large tree establishment and structure over the long term. Thinning did not remove or downgrade

suitable habitat. Wildfires reduced the suitable habitat to a greater degree. Post-fire, for LSRs affected by the Biscuit Fire, 168,630 acres of capable land could develop into suitable habitat.

#### **D. MARBLED MURRELET - Threatened**

The marbled murrelet is a small seabird (*Alcidae*) that nests along the Pacific coast from Alaska to central California, and winter as far south as Baja California, Mexico. Murrelets forage at sea, but nest on large limbs in old-growth coniferous forests, sometimes up to 50 miles from the coast. Murrelets require large trees with nesting platforms at least four inches in diameter, which are usually formed on large branches and may incorporate moss or debris piles. Murrelets are associated with late-successional and old-growth conifer forests for reproduction in this area (USDI Fish and Wildlife Service 1996).

Range-wide Habitat loss is by far the greatest terrestrial threat to murrelets. Timber harvest has reduced the amount of old-growth forested habitat within western Oregon and Washington by greater than 80 percent and it is likely that disproportionate harvesting has occurred within the range of the murrelet compared with further inland forests (USDI Fish and Wildlife Service 1992b). The NWFP establishes all murrelet occupied stands on Federal lands as LSRs, which greatly restricts the habitat modification activities that can occur. In 1996, the USDI Fish and Wildlife Service (1996) designated murrelet critical habitat, which largely overlaps mapped LSRs within the murrelet range on Federal lands.

Of primary concern in the Action Area is the potential for disturbance to breeding murrelets. The majority of information on disturbance to nesting marbled murrelets has been from anecdotal observations and inferred from studies on other seabird species (Long and Ralph 1997). Professional opinions vary on the subject but it is the FWS's position to approach the issue cautiously until such data exist to support a less restrictive approach to disturbance issues. The sensitivity of an individual to disturbance is likely related to the baseline level of disturbance the bird is accustomed to, the level and proximity of disturbance (Hamer and Nelson 1998), and the timing of the disturbance within the nesting cycle and daily activity periods. Many bird species, including murrelets, can habituate to relatively high levels of disturbance over time (Long and Ralph, 1997; Hamer and Nelson 1998). However, for murrelets, the adverse effects of disturbance may also lead to nest abandonment by adults, reduced nest attentiveness (leading to increased vulnerability of predation), aborted feeding visits, premature fledging, and avoidance of otherwise suitable habitat (Hamer and Nelson 1998).

An account of the taxonomy, ecology, and reproductive characteristics of the marbled murrelet can be found in the 1988 species status review (Marshall 1988), the final rule designating the species as threatened (USDI Fish and Wildlife Service 1992b), the final rule designating critical habitat for the species (USDI Fish and Wildlife Service 1996), the Ecology and Conservation of the Marbled Murrelet (Ralph and others 1995) the Recovery plan for the marbled murrelet (USDI Fish and Wildlife Service 1997) and the FWS biological opinion for Alternative 9 (USDI 1994b) of the Final Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl (USDA Forest Service/USDA Bureau of Land Management 1994a) (FSEIS). For a detailed discussion of the life history of the marbled murrelet, see the *Rogue River/South Coast*

*Biological Assessment 18 July/27 September 2001, FY 01/02/03 Timber Sale Projects for the Medford District, Bureau Of Land Management Rogue River And Siskiyou National Forests.*

In 1995, it was estimated that approximately 1,077 occupied murrelet sites occurred within Washington, Oregon, and California. In 1995, suitable habitat for the murrelet was estimated at 2,561,500 acres of Federal lands in the listed range of this species (Ralph and others 1995). Murrelet habitat is protected on Federal land under the NWFP. No new timber sales will be planned in forested stands known to be occupied by murrelets regardless of whether these stands occur in reserves, AMAs, or matrix areas (USDA & USDI 1994). The system of LSRs on Federal land will not only protect habitat currently suitable to murrelets and also develop future habitat in larger blocks.

Survey data collected by the FS and BLM in southwestern Oregon (9,795 survey visits for murrelets between 1988 and 2001) indicate that murrelets inhabit forested areas relatively close to the ocean. Approximately 82,400 acres of suitable habitat are located in Area A, which is the known range for the species in the Action Area (90 percent of the suitable habitat in Area A is in the NWFP LSRs and other reserved areas, and any stands of suitable habitat in Matrix subsequently found to be occupied are designated as additional "Murrelet" LSR). Occupied behaviors have been observed on the Siskiyou National Forest during 221 surveys from 1988 through 2001, and presence has been observed during an additional 491 surveys. These 221 observations of occupied behaviors may represent 125 or more distinct forest stands. Murrelets were not detected on the Medford BLM or the Rogue River National Forest. See Environmental Baseline Tables for a summary of the baseline data for marbled murrelets by Section 7 Watershed.

Murrelets have not been located more than 51.5 km (32 mi) inland on the Powers Ranger District or more than 25.7 km (16 mi) inland in the Gold Beach or Chetco Ranger Districts (Dillingham and others 1995; USDA Forest Service and USDA Bureau of Land Management 1996; Appendix M in USDA Forest Service/USDA Bureau of Land Management 2001). The Forest Service and BLM completed a study to better quantify the likelihood of murrelet occurrence beyond the eastern boundary of the western hemlock/tanoak vegetation zone in SW Oregon (USDA Forest Service and USDI Bureau of Land Management 2001). This study refined the existing survey zone boundaries to better reflect known murrelet occurrence. Area A encompasses the known range of the marbled murrelet. Area B is a "buffer" to area A and includes all land 10 km east of Area A. Surveys are conducted only in Areas A and B. Federal Land east of B is assumed to not be murrelet habitat, and is no longer surveyed. The project area is within Area B. To date, no murrelets have been found in Area B (other than in the transition zone between Areas A and B). See Appendix H, which includes a Map (H-1) of murrelet survey areas, and a letter from FWS concurring with our study conclusions: *Technical Assistance on the Final Results of Landscape level Surveys for Marbled Murrelets in Southwest Oregon [USDI Fish and Wildlife Service reference: 1-7-02-TA-6401*

## **E. MARBLED MURRELET CRITICAL HABITAT**

Final critical habitat for the species was designated in May 1996 (Federal Register Vol. 61, No. 102 May 24, 1996). FWS has designated approximately 3.9 million acres of land as critical

habitat, of which 78 percent (3.0 million acres) is located on Federal lands within the area covered by the Northwest Forest Plan boundary.

Within the Action Area, approximately 421,000 acres have been designated as critical habitat for the Marbled Murrelet (see map of critical habitat for murrelet in Appendix H). Of this total, 150,000 acres are suitable marbled murrelet habitat. Approximately 66,726 acres of suitable habitat are located within the known range (Area A) (most within LSR and CHU). Approximately 1,639 acres of suitable habitat in the known range was lost in the Biscuit Fire. An additional 7,000 acres of critical habitat within the Section 7 Watersheds included in this BA are managed by the Coos Bay District BLM.

The FWS considers two components of marbled murrelet habitat to be biologically essential: (1) terrestrial nesting habitat and associated forest stands and (2) marine foraging habitat used during the breeding season. Within areas essential for successful marbled murrelet nesting, the FWS has focused on the following primary constituent elements: (1) individual trees with potential nesting platforms and (2) forested areas within 0.8 kilometers (0.5 miles) of individual trees with potential nesting platforms, and with a canopy height of at least one-half the site potential tree height. Within the boundaries of designated critical habitat, only those areas that contain one or more primary constituent elements are, by definition, critical habitat.

#### **F. VERNAL POOL FAIRY SHRIMP - Threatened**

The vernal pool fairy shrimp (*Branchinecta lynchi*) is a member of the aquatic crustacean order *Anostraca*, in the *Branchinectidae* family. The species are endemic to vernal pools, an ephemeral freshwater habitat. The fairy shrimp are ecologically dependent on seasonal fluctuations in their habitat, such as absence or presence of water during specific times of the year, duration of inundation, and other environmental factors that include specific salinity, conductivity, dissolved solids, and pH levels. They are sporadic in their distribution, often inhabiting only one or a few pools in otherwise more widespread vernal pool complexes. Although the species has been collected from large vernal pools it tends to occur in smaller, frequently measuring less than 0.05 acres (less than 200 square meters) and shallower (mean of 5 cm) pools (Helm 1998). Genetic characteristics, as well as ecological conditions, indicate that populations are defined by pool complexes rather than by individual vernal pools.

At the time they were listed, there were 32 known populations of the vernal pool fairy shrimp, all within California. They were subsequently discovered in vernal pools of the Agate Desert landform in southern Oregon. On federal land in the Action Area, the fairy shrimp and vernal pools are located exclusively on Upper and Lower Table Rocks. Little is known about the intimacy of the relationship between fairy shrimp living in ephemeral pools and the surrounding terrestrial ecosystem.

Fairy shrimp have delicate elongate bodies, large-stalked compound eyes, no carapace, and eleven pairs of swimming legs. They swim or glide upside down by means of complex beating movements of the legs that pass in a wave-like anterior-to-posterior direction. While swimming on their backs, they feed on small particles of detritus, algal cells, and bacteria by scraping vegetation or other surfaces with their legs, or filtering the surrounding waters. The second pair

of antennae in the adult females is cylindrical and elongate, but in the males, these antennae are greatly enlarged and specialized for clasping the females during copulation. The females carry the eggs in an oval or elongate ventral brood sac. The eggs are either dropped to the pool bottom or remain in the brood sac until the female dies and sinks. The “resting” or “summer” eggs, also called diapause eggs, are not actually eggs, but cysts capable of withstanding heat, cold, and prolonged desiccation. After the eggs are fertilized, the embryo undergoes additional development to the nauplius or metanauplius stage before entering diapause.

Fairy shrimp first hatch at the bottom of the vernal pool when water temperatures reach 10 degrees Celsius. Under optimal conditions they undergo a series of molts before reaching maturity in about 2.5 weeks, when they are approximately 5-20 millimeters (mm) (0.2 inches - 0.8 inches (in.)) in length. They have been reported to live anywhere from 2-4.5 months, depending on many environmental factors (Eriksen and Belk 1999). These subpopulations often disappear early in the season long before the vernal pools dry up. Many species of insects, amphibians, waterfowl, and crustaceans prey on vernal pool fairy shrimp, making this species an extremely important link in the food web, particularly as a supply of energy for migratory birds.

The FWS listed the fairy shrimp as a threatened species primarily due to the present or threatened destruction, modification, or curtailment of their habitat or range. They determined that “the habitat of these animals is imperiled by a variety of human-caused activities, primarily urban development, water supply/flood control activities, and conversion of land to agricultural use. Habitat loss occurs from direct destruction and modification of pools due to filling, grading, discing, leveling, and other activities, as well as modification of surrounding uplands that alters vernal pool watersheds.”

## **G. VERNAL POOL FAIRY SHRIMP CRITICAL HABITAT**

The FWS designated critical habitat for the fairy shrimp in August 2003. The Table Rock sites are included. Vernal pools are seasonal wetlands that form only in regions where specialized soil and climatic conditions exist. During fall and winter rains typical of Mediterranean climates, water collects in shallow depressions in areas where downward percolation of water is prevented by the presence of an impervious hardpan or clay pan layer (duripan) below the soil surface (Keeley and Zedler 1998). Later in the spring when rains decrease and the weather warms, the water evaporates and the pools generally disappear by May. These shallow depressions then remain relatively dry until late fall and early winter with the advent of greater precipitation and cooler temperatures. Vernal pools thus provide unusual habitat conditions to which certain plants and animals have specifically adapted.

Fairy shrimp inhabit vernal pools with clear to tea-colored water, most commonly in grass-or mud-bottomed swales, or basalt flow depression pools in unplowed grasslands. This species has a sporadic distribution within vernal pool complexes, wherein the majority of pools in a given complex typically are not inhabited by the species. Eggs are dispersed by either hitching a ride on the legs or feet of wading birds, or on other animals passing through the pool, or by animals that ingest the eggs. Fairy shrimp typically are found at low population densities. Although they can mature quickly, allowing populations to persist in short-lived shallow pools, they also can persist later into the spring where pools are longer lasting.

When the pools refill in the same or subsequent seasons some, but not all, of the cysts may hatch. Branchiopods respond to inherent variability in climatic conditions by producing eggs with different diapause characteristics in each clutch. Some hatch after drying and getting wet again; while others may go through several wet/dry cycles before they hatch. The cyst bank in the soil may also be comprised of individuals from several years of breeding. The species typically produces only one clutch of eggs each year and then dies. Vernal pool fairy shrimp have been collected from early December to early May.

#### **H. COOK'S LOMATIUM (*Lomatium cookii*) - Endangered**

A perennial forb in the carrot family (*Apiaceae*), Cook's lomatium grows 1.5 to 5 decimeters (dm) (6 to 20 in) tall, from a slender, twisted taproot. Leaves are smooth, finely dissected, and strictly basal (growing directly above the taproot on the ground, not along the stems). One to four groups of clustered, pale yellow flowers produce boat-shaped fruits 8 to 13 mm (0.3 to 0.5 in.) long with thickened margins. The taproot can often branch at ground level to produce multiple stems. The branching taproot distinguishes Cook's lomatium from Bradshaw's lomatium (*L. bradshawii*) that is indigenous to wet prairies from southern Willamette Valley, Oregon to southwest Washington, and foothill lomatium (*L. humile*) that is found in vernal pools in northern California (Kagan 1986). Recent genetic research has shown Cook's lomatium to be most closely related to Bradshaw's lomatium.

Cook's lomatium was listed as a candidate for listing in 1990 and the State of Oregon listed it as State Endangered in 1995. In May 2000, it was proposed for listing (Federal Register 65:30941-30951, May 15, 2000), and the comment period was re-opened in January of 2002. It was listed as federally endangered in November of 2002 (Federal Register 67:68004-68015, November 7, 2002). Critical habitat was not designated.

The distribution of the plant is disjunct; it was originally discovered in 1981 in the Agate Desert, Jackson County, Oregon, on the edge of vernal pools, and subsequently described by J. Kagan in 1986. At this site just north of the Medford airport, 13 occurrences exist within the historical flood plain of the Rogue River on non-federal land. Additional populations were found in 1988 about 40-air miles to the southwest in the Illinois River valley in seasonally wet grassy meadows. Twenty-five occurrences are now known in the areas of Reeves creek, Fry Gulch, Indian Hill, Rough and Ready Creek, Woodcock Creek, and in the French Flat Area of Critical Environmental Concern (ACEC) in the Illinois River valley, mostly on federal lands. No populations have ever been found between these populations along the Rogue River or in alluvial areas along the lower Applegate River. Most of the habitat between these populations are on non-federal lands, and which have been heavily modified by development. Little likelihood exists that undiscovered populations occur between the Agate Desert and the Illinois valley occurrences.

The habitats of the species are different between the Agate desert and Illinois valley sites. In the Agate desert, its habitat is along the margins and bottoms of vernal pools. These pools, within swale and mound topography, form during the winter rains in shallow clayey-gravelly soils over an impervious hardpan. The Illinois valley habitats are mostly alluvial silts and clays within serpentine soils. The soils consist of flood plain bench deposits that also have a clay hardpan 60-

90 cm below the soil surface. This creates seasonally wet areas similar to vernal pools in the Agate desert, but lacks the swale and mound topography (*i.e.*, no pools). The Illinois valley sites are alluvial in nature within serpentine substrates and are within the serpentine valley bottom communities. The meadows are dominated by California oat-grass and occur within Oregon white oak – ponderosa pine/Jeffery pine savanna. An open shrub layer comprised of wedge-leaf ceanothus and white-leaf manzanita is interspersed with native and introduced grasses and herbs. No estimates of suitable habitat for Cook's lomatium have been done for the Illinois valley.

Flowering stems emerge from a rosette of leaves in late February, with flowers appearing in mid-march and blooming until mid-May. As with many *Lomatium* species, the earliest flowers are usually staminate, while the later umbels have both staminate and hermaphroditic flowers. Plants that produce only one umbel produce few, if any, seeds (Kaye and Kirkland, 1994). The pollinators of the plants are likely andrenid bees (Kaye 2002), and a small unidentified black moth has been documented visiting umbels (Kagan 1986).

Annual monitoring of three populations (Indian Hill, Rough and Ready and French flat ACEC) on BLM lands since 1994 has revealed large variations in population densities and reproduction, with numbers fluctuating year to year seemingly in response to undefined environmental changes. At these three sites (French Flat ACEC is the largest) the 2003 population numbers are: 198,293 plants at French flat, 1,148 plants at Rough and Ready, and 7,084 plants at Indian Hill (Kaye 2002). Most of the other populations in the valley are small, with less than 50 plants. The total population in the Illinois valley is not known, but is estimated to be less than 250,000 plants on 150 acres of occupied habitat (USDI Bureau of Land Management 2002). Because of the small occupied acreage, scattered distribution, and threats to its habitat (development and off-highway vehicle impacts in occupied habitat) the trend for populations in the Illinois valley is downward.

#### **H. LARGE-FLOWERED WOOLY MEADOWFOAM (*Limnanthes floccosa* spp. *grandiflora*) - Endangered**

Large flowered woolly meadowfoam (*Limnanthes floccosa* spp. *grandiflora*) is a delicate annual in the meadowfoam, or false mermaid, family (*Limnanthaceae*). The plant grows 5 to 15 centimeters (cm) (2 to 6 in) tall, with 5 cm (2 in) leaves divided into 5 to 9 segments. The stems and leaves are sparsely covered with short, fuzzy hairs. The flowers, and especially the calyx (outer whorl of floral parts), are densely covered with woolly hairs. Each of the 5 yellowish to white petals is relatively long compared to other meadowfoams, 6 to 13 mm (0.2 to 0.5 in.), and has 2 rows of hairs near its base.

This plant had been a candidate for listing since 1980 (45 FR 82480). In May of 2000 it was proposed for listing (Federal Register 65:30941-30951, May 15, 2000), and the comment period was re-opened in January of 2002. It was listed as federally endangered in November of 2002 (Federal Register 67:68004-68015, November 7, 2002) in the same listing package as Cook's lomatium. Critical habitat was not designated.

The current range of the species basically extends along the floor of the Rogue River from south of Shady cove, down river to Gold hill, along the historical floodplain of the Rogue River. Like Cook's lomatium in the Agate desert, it is associated with vernal pools in swale and mound

topography, except that large-flowered woolly meadowfoam grows on the wetter inner fringes of vernal pools and is not known from wet meadows. This species is now only known from the Agate desert, located on the valley floor of the Rogue River just north of Medford, Oregon in an area of rapidly expanding development. Populations have not been found on federal lands within its range, even though suitable habitat exists (most suitable habitat has been surveyed). One area with vernal pools on federal lands (the Table Rocks ACEC) has been extensively surveyed and does not have this species, even though it's within a few miles of existing occurrences. Mapped habitat for these species in the Agate Desert totals some (198 ac) for large-flowered woolly meadowfoam (ONHP Database 1998). However, due to recent alteration and destruction of vernal pools in the Agate Desert (ONHP Database 1998), habitat currently occupied by these plants is considerably less, an estimated 116 acres (ONHP Database 1998). No estimates of suitable habitat on federal lands in its range have been done.

In the Agate Desert, large-flowered woolly meadowfoam flowering and fruiting time occurs in early spring, from March to mid-April (Kendig 1998). In its habitat large-flowered woolly meadowfoam is sympatric or closely related with *L. floccosa* ssp. *floccosa*, however, sub-species "*floccosa*" grows on the slightly drier, outer fringes of the pools, whereas *L. f. grandiflora* grows on the relatively wetter, inner fringe of the pools (Kalin-Arroyo 1973). Only 10 occurrences of large-flowered woolly meadowfoam on non-federal lands in the Agate Desert are known. The numbers of plants are unknown, but probably are less than a 100,000 in this small area. Because of the existing threats to habitat, and the small amount of occupied habitat, the current trend for the species is downward.

### **I. GENTNER'S FRITILLARY (*Fritillaria gentneri*) - Endangered**

Helen Gilkey described *Fritillaria gentneri* in 1951 (Gilkey, H., 1951). It is commonly referred to as "Gentner's fritillary" and is a member of the lily family. Its discovery is attributed to Katherine Gentner who noticed it in a vase of wildflowers on her family's kitchen table in 1941 in Jacksonville, Oregon (personal communication K. Gentner, 2001).

Gentner's fritillary is a perennial herb arising from a fleshy bulb that has a wide axis and is flattened vertically in older specimens, with several large scales surrounded by numerous small rice-grained bulblets. Non-flowering plants vastly outnumber flowering plants in natural populations, and are recognizable only by their single ovate to lanceolate basal leaf that is indistinguishable from several other common related fritillaries. The species has dull to bright, red- to maroon-colored flowers mottled or streaked with yellow. The flowers are solitary, or in bracted racemes, 1 - 5 (rarely more) on long slender pedicels. The 25-40 mm bell-shaped perianth has segments that bend more or less outward, but are not strongly recurved; the nectary glands extend about ½ its length. The style is divided about ½ its length, with widely spreading branches. The whorled, lanceolate to linear leaves on the flowering stalks, are 70-150 mm in length.

In 1980, it was identified as a Candidate species for federal listing as a Category 2 species. The BLM and Oregon Natural Heritage have tracked this species since the early 1980's. The Oregon Natural Heritage program classifies this species as a G1 category species, which identifies it as a species that is threatened with extinction throughout its range. It is on the State of Oregon's State Endangered Plant list. It was listed as federally endangered on December 10, 1999

(Federal Register, 1999). Critical habitat was not designated. A final recovery plan is currently in draft and due to be published in late 2003.

This rare lily is endemic to the Rogue River basin in Jackson and Josephine County, and in the upper drainages of the Klamath basin in the Cascade-Siskiyou National Monument, Jackson County, Oregon. It was recently documented about 2 miles south of the Monument, in Siskiyou Co., California on BLM lands.

Within the Rogue basin, populations have been documented as far west as Pickett Creek near Merlin, north of Sexton Mountain, around the city of Grants Pass, and north of Murphy. A large number of populations occur in the Middle and Little Applegate drainage, around Jacksonville, and in the Gold Hill and Sam's Valley area. It is also documented to the northeast in Big Butte Creek, and another pocket of occurrences is in the Colestine valley and south of Soda Mountain in the Cascade Siskiyou National Monument (Klamath subbasin). Most of the known occurrences on private lands occur in close proximity to the cities of Jacksonville and Grants Pass.

Gentner's fritillary is known from a wide variety of habitats and soil types across its range. The draft recovery plan (USDI Fish and Wildlife Service 2002b) identifies over 25 soil types and about 16 different plant communities that this species can occupy. Because of the extreme variation in habitats, the attempt to develop habitat prediction models has not proved useful. This species prefers situations where it can receive at least partial light (Brock and Callagan 2002). It is rarely found under a dense conifer canopy, although a few "riparian" populations (riparian ecotones) have a high cover of mixed conifer and deciduous trees. It has been found growing on the edges of grasslands and chaparral, and in open mixed evergreen forest and woodland openings. It is most often found in forest ecotones or transitional areas, especially along ridgelines or aspect changes. It appears to have a moisture requirement in that it has not been found in fully exposed rocky, skeletal soil types (e.g. open grasslands), but prefers a level of soil moisture that is also capable of supporting trees and shrubs. At a coarse scale, this species can be found in:

- ecotones between forested sites and more open habitat (oak woodlands/grassland/chaparral)
- open-canopied woodlands and mixed evergreen forests (madrone and Douglas-fir)
- permanent openings in forest and woodlands
- riparian zone edges with canopy gaps and/or deciduous tree canopies.

No estimates of suitable habitat within its range have been done for this species.

It is often with or in close proximity to both scarlet fritillary (*Fritillaria recurva*), and at times, checker lily (*F. affinis* [syn. *F. lanceolata*]). Gentner's fritillary can be easily confused with scarlet fritillary. Where they all occur together, checker lily tends toward the moister, and shady habitats, scarlet fritillary toward the drier, more exposed habitats, and Gentner's fritillary occurs fully within the amplitude of the other two species (Brock and Callagan 2002).

The elevations of known occurrences range from 600 feet (near the Rogue River) to over 4,500 feet near Soda Mountain, and it can occur on nearly all aspects if the right habitat conditions are present. It does not appear to be an early colonizer of recently disturbed habitat, nor a "late

successional” species found in “old growth,” closed canopy forests. Its relationship with disturbance is not clear, although it exists in communities that had fairly frequent fire return intervals historically. Anecdotal evidence suggests that it is adapted to fire, especially later in the summer when it has gone dormant and exists as an underground bulb.

Most occurrences of this species contain few flowering plants. When Gentner’s fritillary does not flower, it is indistinguishable in its vegetative state from the common scarlet fritillary that can grow with it. Plants with the potential to bloom may be grazed (mostly by deer) prior to monitoring, and can be impossible to locate or tell apart from non-flowering scarlet fritillary. Plants can remain dormant for several years and never come above ground (Federal Register, 1999). Gentner’s fritillary bulbs can be shallow (an inch or two) or deeper (up to 8 inches), depending on the soil type and depth (Meinke 2000). Gentner’s fritillary is most likely pollinated by hummingbirds (McFarlane 1980), and by andrinid and halictid bees (Donham 2002). Several researchers (Donham 2002, Amsberry and Meinke 2002, Kaye 2003) have documented hummingbirds visiting Gentner’s fritillary. Foraging areas of a hummingbird are reported to be about 2.5 miles, which is likely the breeding distance for Gentner’s fritillary (A. Robinson 2000b).

Reproduction is mostly asexual. Small plants often arise from near the base of larger flowering plants, presumably from under ground “clonal” bulblets coming off the “mother” bulbs. Amsberry and Meinke (2002) documented between 10 – 200 rice-grain bulblets attached to mature mother bulbs on 25 excavated plants.

The frequency of the number of plants that set fruit is very low and variable (Knight 1991); a high number of fruits that do develop abort, and even fewer numbers of fruits contain viable seed (Guerrant 1991). Both Gentner’s fritillary and the common scarlet fritillary have low pollen germination rates, less than 20 percent (Amsberry and Meinke 2002). Recent reproductive studies have produced viable seed by successful hand pollination, and germination studies are in progress (Amsberry and Meinke 2002). Fruit set for *Gentneri* x *Gentneri* crosses on 132 plants was 2.3 percent (three plants). Gentner’s fritillary is a long-lived species, it is likely that successful sexual reproduction is episodic and only occurs given certain climate conditions.

Vegetative leaves appear in late February and early March (Gamon 1984; Knight 1991). Blooms have been documented from early April through late May, and as late as June 15<sup>th</sup>, depending on precipitation, temperature, and herbivory. The blooms can persist into June, often wilting on the stems. The search window is generally April 1 (lower elevations) through June 15 (higher elevations) (Gamon 1984). Fruits are identifiable (if present) into early July, and can be differentiated from the common scarlet fritillary (Gilkey 1951).

Individual plants do not always come up every year, nor in the exact same spot, making the tracking of individual plants difficult. At two sites on federal lands, on-going demographic monitoring is tracking individual plant changes through time (Brock and Callagan 2002; Kaye 2002), and annual revisits and census counts have been done since 1999 at 42 BLM sites. Accurate counts of the true number of plants in a population are difficult to obtain. The draft recovery plan lists a mean ratio of seven vegetative plants for every flowering plant (see Appendix C in USDI 2002) for all 42 BLM sites, although demographic plot data from the Jacksonville woodlands cites an average of 14 vegetative plants for every flowering plant (Brock

and Callagan 2002. Individual plants have been documented as dormant for several years (Brock and Callagan 2002), but the length of time one can be dormant and start growing again is unknown. The relationship between the numbers of mature, blooming plants and the true population size (all dormant, vegetative, and blooming plants) is not known. In any given year, in a population of at least eight plants, it appears that at least one plant, on average, will bloom.

Of the 42 BLM sites monitored for four years, 20 of the 42 occurrences monitored from 1999 – 2002 have had at least one year that produced no flowering plants at all. This appears to be an indication of very small populations. On 42 BLM sites monitored for 4 years, the four-year average population size is 16 flowering plants, with a range from 0 to 306 plants. However, the median population size is one plant. The total counts at the 42 sites over 4 years have varied from 381 flowering plants in 1999 to 925 in 2002. True population sizes (distinct individuals) are not known for any Gentner's fritillary sites, but assuming a one to seven ratio between flowering and vegetative plants, the estimated four-year average population is about 5,312 plants (all life stages) at the 42 monitored sites. There are 125 known occurrences for the plant on federal and non-federal lands. There are 77 sites (62 percent) on federal lands (75 BLM & 2 Forest Service), 16 sites (13 percent) on State, County, or City owned public lands, and 32 sites (25 percent) on private lands (USDI Fish and Wildlife Service 2002). About 2000 flowering plants are documented, and it is estimated that about 14,000 vegetative plants exist. Three populations on private lands are believed to be extirpated.

Gentner's fritillary and scarlet fritillary are browsed by deer and livestock. Data from monitored populations have shown deer grazed 57 percent of the flowering plants in a single year. Evidence of insect herbivory has also been documented (Brock and Callagan 2002). Grazing by cattle, donkeys, and horses has been documented on non-federal lands in a pasture setting (Marcia Wineteer, Medford BLM botanist, personal communication 2001).

Because of small population sizes, and widely scattered populations, the FWS believes that for some of the sub-populations of Gentner's fritillary, long-term viability is in question. As a result, the recovery plan calls for intensive augmentation of populations with nursery grown plants. Currently the existing trend for the species is downward.

#### **J. MCDONALD'S ROCKCRESS (*Arabis mcdonaldiana*) - Endangered**

McDonald's rock-cress is a member of the mustard family (*Brassicaceae*) and genus *Arabis*. Within the genus *Arabis* is a group of six perennial species of the coast ranges of northwestern California and southwestern Oregon that have purple flowers and a basal rosette. Members of this group besides McDonald's rock-cress include Waldo rock-cress (*A. aculeolata*), Oregon rock-cress (*A. oregana*), modest rock-cress (*A. modesta*), and coast rock-cress (*A. blepharophylla*). Preston peak rock-cress (*A. serpenticola*) is believed to be a variant of McDonald's rock-cress.

McDonald's rock-cress was first collected by Alice Eastwood on top of Red Mountain, Northern Mendocino County, California in 1907; it wasn't seen again until 1942. Additional surveys done in 1977 in California by J. Sawyer and R. Kay better delineated its habitat in California

(California Native Plant Society, Rare Plant Status Report, 1977). It was discovered in Del Norte County, California and in adjacent Southwest Oregon in 1980 on the Siskiyou National Forest in Curry County. D. Goforth did additional taxonomic & ecology work in 1983, and combined the Red Mountain *Arabis* population with the population in Del Norte and Curry Counties.

McDonald's rockcress is a short lived perennial, with basal leaves in a rosette from which the flowering stem supports lavender to deep pink (~ purple), four-petaled flowers. The plants can be 3.7 to 24.7 cm tall in flower, and have highly branched caudexes; the caudex branches are short, stiff and form new rosettes at their tip. The basal leaves are 7-32 mm long by 2.2 – 13 mm wide, slightly to strongly lobed, and pubescent or ciliate with simple, forked or dendritic trichomes (very small hairs), to 1.5 mm. The flower is a simple raceme or occasionally simple flowers in the axils of upper cauline leaves. The number of flowers is 4 - 19 with up to six open at a time. The light-green to pink sepals are 3.2 – 7.5 mm long by 1.2 – 2.8 mm wide with fine to .05 mm forked or dendritic trichomes. The four petals are 8 – 14 mm, claw 4 – 6.5 mm, blade 4 - 8 mm long, by 2.5 -5.0 mm wide. The fruits are 0 – 12, 22-58 mm long by 1.5 – 2.1 wide, with an obvious mid-vein from 30 percent - 100 percent of the tip.

Considerable taxonomic confusion and controversy have surrounded this species and the other “purple-flowered *Arabis*” species and has recently been sorted out by L. Vorobik (2002). The plant has been especially confused with the related Waldo rockcress and Preston peak rockcress, which also evolved in this area and inhabit the same habitats. L. Vorobik (2002) has determined that many of the sites originally thought to be McDonalds rockcress in the lower elevation areas of Rough and Ready creek, Eight Dollar Mountain, Woodcock bog areas in the Illinois valley on BLM lands are actually variants of Waldo rockcress (*A. aculeolata*). Waldo rockcress plants on extreme serpentine sites are often smaller than normal and can resemble plants of McDonald's rockcress. She also has proposed that populations of Preston Peak rockcress are an ecological variant of McDonald's rockcress, and not a valid species. Currently, no verified populations of McDonald's rockcress have been documented on lands managed by Medford BLM. Six populations are documented on lands managed by the Forest Service to the west of the Illinois valley in the areas of upper Rough and Ready creek, Cleopatra lookout, Stone corral, Josephine creek, and Packsaddle Mountain (ONHP 2002). One population last documented by Leach in 1932 on Red Mountain is believed to be extirpated. In the Illinois valley of southwest Oregon, BLM lands occupy the low elevation areas adjacent to private lands to the east, and National Forest lands occupy the higher elevations to the west.

McDonalds rockcress was listed as endangered in 1978 (Federal register 43:44812; September 28, 1978). The initial listing pertained to the Red Mountain, Mendocino County population only. The primary threat identified to the species was mining. The range of the listed plant was extended in 1980 to include the extreme SW corner of Oregon. A recovery plan was published in 1990, but only addresses the Red Mountain population in California; the plan has never been updated. Critical habitat has not been designated for the northwest California/southwest Oregon population.

McDonalds rockcress is found on soils and loose rock derived from ultramafic rocks, namely serpentinite and peridotite (*i.e.* serpentine). It has been found on ridgelines, hillsides, and along rivers throughout its range, on serpentine influenced soils. Most often, it is on steep, unstable

serpentine slopes at elevations between 1200 – 5200 feet. Common associates include knobcone pine (*Pinus attenuata*), Jeffery pine (*P. jeffreyi*), huckleberry oak (*Quercus vaccinifolia*), Siskiyou mat (*Ceanothus pumilus*), and other serpentine herbaceous plants. Serpentine intrusions across Northern California and Southwest Oregon are sporadic and support many plant species that have evolved in these harsh mineral environments. No estimates of suitable habitat have been done for this species.

There are about 50,000 individuals documented in Mendocino County, California, and less than 500 in Oregon, (ONHP 2002). Its life history and reproductive ecology is not well known. Both asexual spread by new rosettes forming off short-branched caudexes, and sexual reproduction by seed, are believed to be its reproductive means. Each plant can produce between one and twelve rosettes in a year, but how many survive is unknown. The pollinators are not documented, but are likely bees and butterflies. It is believed that McDonalds rockcress can interbreed with Waldo rockcress, resulting in intermediate forms. Molecular work done by Vorobik (2002) only showed that these species are very closely related.

The lower elevations in the Illinois valley have experienced a lot of disturbance by humans, and intensive mining activities have occurred in serpentine over the last 100 years. The Biscuit Fire in 2002 burned over some of the occurrences on National Forest lands, but the effects are not known. Road building and road maintenance have likely affected populations. Over the last ten years, many areas comprised of serpentine have been surveyed in the Illinois valley for rare endemic plants, but many more areas have yet to be surveyed. Based on Vorobik's (2002) taxonomic work, the Medford BLM has no known occurrences and only five populations have verified on the Siskiyou National Forest. Given the number of surveys on low elevation serpentine areas throughout the years, the likelihood of McDonald's rockcress occurring on the BLM lands is low; many more unsurveyed areas occur on lands managed by the Forest Service, but much of this is in remote areas, including the Kalmiopsis wilderness. No life history and demographic monitoring is being done in the Oregon populations. The trend for this species within the Action Area is not known, but given the small numbers and occurrences, is unknown.

## **V. EFFECTS OF THE PROPOSED ACTION ON LISTED SPECIES AND CRITICAL HABITATS**

### *Direct and Indirect Effects*

Direct effects are those immediate impacts such as habitat removal or degradation, or impacts that cause immediate changes to a listed individual's growth, reproduction, survival, and for wildlife: feeding or shelter. Indirect effects are impacts that occur later in time from the action.

For the listed wildlife species analyzed in this BA, direct effects are the removal, degradation or change in habitat, disturbance during the proposed activity, and indirect effects will be the later response of individuals to disturbance, primarily noise or smoke, that cause demonstrable changes in behavior. Other indirect effects include later habitat losses or impacts due to current project access or habitat changes that won't impact the species during the current project. Those activities that result in changes to wildlife habitat or behavior that can cause significant impairment of reproduction, survival, feeding, breeding, or sheltering were determined to be "may affect, likely to adversely affect" (LAA) situations (Table 9).

For the listed plants analyzed in this BA, direct effects are the physical disturbance to individual plants and populations that affect growth, survival, and reproduction. Indirect effects are changes in habitat that can affect the plants through time, and other changes that can influence growth and reproduction (e.g. increases or decreases in competition from other plants, the introduction of noxious weeds, increasing light to the plants from thinning, etc.). Most direct effects are minimized by implementation of the PDCs, and most of the "may effect" calls are based on indirect effects. A synopsis of effects to species is displayed in Table 7.

<b>Table 7. Summary of Direct and Indirect Effects of projects on Listed Species (see text also)</b>		<b>Direct Effects</b>	<b>Indirect Effects</b>
<b>Project category</b>			
<b>A</b>	Tree harvest	<p><i>Wildlife:</i> Seasonal restrictions or distance PDCs reduce impacts to species. Tree harvest involves the removal, degradation, or downgrade of suitable and/or dispersal habitat. In rare cases, tree harvest may occur during the reproductive season in suitable habitat where species presence is not documented, but undetected individuals may occur.</p> <p><i>Plants:</i> Implementation of PDCs result in no direct effects.</p>	<p><i>Wildlife:</i> Loss of habitat will reduce future reproduction and reduce survival of young. Disturbance from noise and activities may have some minor impacts to owls within 0.25 miles, unlikely to cause mortality or loss of reproduction.</p> <p><i>Plants:</i> canopy cover modification (increased light), increased temperature, and decreased humidity can indirectly affect populations as well as changes in the hydrologic regimes. Unintentional increase in weeds as a result of disturbance can increase competition with listed plants. <i>Commercial thinning</i> through populations during the dormant period can result in long-term beneficial effects for Gentner's fritillary.</p>
<b>B</b>	Silviculture	<p><i>Wildlife:</i> Silviculture could degrade or disturb suitable habitat. Seasonal restrictions or distance PDCs reduce impacts to species. Some ground disturbance may occur outside sensitive reproductive periods</p> <p><i>Plants:</i> Implementation of PDCs result in minimal direct effects.</p>	<p><i>Wildlife:</i> Most activities occur in habitats already disturbed due to previous tree harvest, and would be unlikely to be occupied by listed species. Some long-term prey and habitat restoration impacts could result over the long term.</p> <p><i>Plants:</i> canopy cover modification (increased light), increased temperature and decreased humidity, changes in the hydrologic regimes. Unintentional increase in weeds as a result of disturbance can increase competition with listed plants. Fertilization can increase growth and increase competition from other species.</p>
<b>C</b>	Watershed restoration	<p><i>Wildlife:</i> Direct effects on listed species would be avoided by seasonal or spatial PDCs. Emergency restoration activities could occur within sensitive reproductive periods under certain conditions (see PDCs)</p>	<p><i>Wildlife:</i> Some ground or indirect noise disturbance could occur outside sensitive reproductive periods. Most projects would benefit over the long term by restoring important aspects of ecological function. Some short-term habitat changes may displace wildlife temporarily.</p>

		<p><i>Plants:</i> Implementation of PDCs result in no direct effects</p>	<p><i>Plants:</i> PDCs will eliminate any indirect effects from equipment. Restoration of natural hydrologic regimes would likely be a beneficial effect in the long run to vernal pool and wet meadow species.</p>
<b>D</b>	Recreation	<p><i>Wildlife:</i> Little impact on listed species due to education, seasonal and spatial management. Some direct loss of fairy shrimp due to hikers who may leave trails during wet season (Unlikely but possible).</p> <p><i>Plants:</i> Implementation of PDCs result in no direct effects</p>	<p><i>Wildlife:</i> Occasional use of chainsaws or other motorized equipment to remove blown down trees along a trail could disturb nesting spotted owls or some other listed species in unsurveyed habitat on a short-term basis. A small amount of suitable habitat might be removed during campground renovations, or trail construction or reconstruction. Site-specific PDCs would reduce impacts.</p> <p><i>Plants:</i> No effect from maintenance activities given PDCs to protect existing occurrences. New developments and increased recreation use near existing sites can result in physical impacts through time; increases in weeds.</p>
<b>E</b>	Fuels Management	<p><i>Wildlife:</i> Most fuels activities would occur in habitats not currently suitable to listed species, or during non-sensitive periods, although adjacent habitats could be treated. .</p> <p><i>Plants:</i> Implementation of PDCs result in minimal direct effects. Individual Gentner's fritillary plants could be disturbed (above ground portion) but not likely killed. Seasonal restrictions on broadcast burning not likely to hurt underground bulbs.</p>	<p><i>Wildlife:</i> Some indirect impacts could occur through smoke or noise during sensitive reproductive periods. Most impacts to known sites would be reduced due to spatial or seasonal PDCs. There may be displacement from sites of (wildlife/owl) species that occur in unsurveyed suitable habitat during sensitive periods. Such temporary disturbance is not expected to cause mortality or reduce survival/reproduction</p> <p><i>Plants:</i> canopy cover modification (increased light), increased temperature, and decreased humidity. Unintentional increase in weeds as a result of disturbance can increase competition with listed plants. Fuels treatments and burning likely to improve habitat in the long term.</p>

<b>F</b>	Grazing	<p><i>Wildlife:</i> Direct mortality to fairy shrimp is possible in rare conditions of grazing during vernal pool productive season. Grazing dates and allotment plans will reduce impacts as much as possible.</p> <p><i>Plants:</i> Implementation of PDCs results in minimal direct effects (trampling/grazing).</p>	<p><i>Wildlife:</i> No impact to other listed wildlife species except potential indirect degradation of future suitable habitat.</p> <p><i>Plants:</i> increased competition from weeds / annual grasses as a result of disturbance.</p>
<b>G</b>	Special Forest products	<p><i>Wildlife:</i> No direct impacts to listed species when PDCs are followed.</p> <p><i>Plants:</i> The likelihood of direct effects from plant and burl harvesting is reduced by PDCs. Incidental direct effects (trampling) would be limited in scope and scale.</p>	<p><i>Wildlife:</i> Seasonal or spatial PDCs would reduce most direct impacts to listed species. Primary impacts would be indirect disturbance from noise or minor habitat changes. Mortality or reduced reproduction is not likely.</p> <p><i>Plants:</i> PDCs reduce the likelihood of indirect effects.</p>
<b>H</b>	Road maintenance	<p><i>Wildlife:</i> Negligible amounts of suitable (isolated individual trees may be removed, but PDCs will avoid direct impacts except under possible emergency situations. Road use is long-term displacement, but impacts have likely already occurred and any impacted wildlife already displaced.</p> <p><i>Plants:</i> Implementation of PDCs result in no direct effects for new road construction. PDCs result in minimal impacts for road maintenance, decommissioning, and obliteration, except some direct effects on McDonalds' rockcress from road maintenance.</p>	<p><i>Wildlife:</i> Negligible amounts of dispersal habitat (isolated trees along roads) may be removed. Some projects on the coastal Districts of the Siskiyou National Forest may be within critical habitat for the marbled murrelet. Indirect impacts due to disturbance on listed wildlife species could occur. Some direct impacts during the reproductive season could occur in unsurveyed suitable owl habitat.</p> <p><i>Plants:</i> increased competition from weeds as a result of disturbance; changes in hydrology.</p>
<b>I</b>	Roads Right of Way (existing and NLAA)	<p><i>Wildlife:</i> Permits of use of roads already open to the public are unlikely to add additional impacts to listed species. Long term habitat loss resulted when road was originally built. New rights of way involving I&amp;I will require separate formal consultation.</p>	<p><i>Wildlife:</i> Access impacts are already occurring in existing roads. Existing displacement of wildlife likely to continue. No habitat removal or disturbance except for maintenance (see above).</p>

		<i>Plants:</i> Implementation of PDCs result in no direct effects on federal lands; direct effects likely on non-federal lands.	<i>Plants:</i> Implementation of PDCs eliminates indirect effects on federal lands. Indirect effects from habitat conversion of non-federal lands to other uses.
<b>J</b>	Mining/ quarries	<i>Wildlife:</i> 15 acres of suitable habitat for spotted owl could be harvested. Most notices to drill within the Action Area are limited in intensity and duration, and has “no effect” on listed species. Indirect noise could impact listed wildlife. LAA mining projects would need separate formal consultation  <i>Plants:</i> Implementation of PDCs result in minimal direct effects. Cook’s lomatium in existing claims will be protected.	<i>Wildlife:</i> Existing mines and quarries have already removed suitable habitat. Interrelated activities involved with hauling or blasting could further affect suitable habitat, but impacts would be reduced by seasonal and spatial PDCs.  <i>Plants:</i> Indirect effects from changes in hydrology and subsurface drainage; increases in noxious weeds from disturbance. Any small-scale logging associated with claims could change light regimes and microclimate of adjacent populations.
<b>K</b>	Cultural	<i>Wildlife:</i> Seasonal or spatial PDCs would reduce impacts to negligible levels for listed species. <i>Plants:</i> Implementation of PDCs results in no direct effects.	<i>Wildlife:</i> Seasonal or spatial PDCs would reduce impacts to negligible levels for listed species. <i>Plants:</i> Implementation of PDCs result in minimal indirect effects.
<b>L</b>	Special permits	<i>Wildlife:</i> Some direct removal of suitable habitat for listed species. Seasonal or spatial PDCs would reduce impacts to negligible levels for listed species.  <i>Plants:</i> Implementation of PDCs will eliminate direct effects for new construction and facility maintenance.	<i>Wildlife:</i> Spatial and seasonal PDCs reduce impacts for new construction. Some direct and indirect impacts in unsurveyed suitable habitat could occur through small-scale (less than 10 acres) habitat removal or disturbance during reproductive season.  <i>Plants:</i> Increases in competitive weeds from surface disturbance.
<b>M</b>	Weed control	<i>Wildlife:</i> No direct impacts on wildlife expected. Disturbance would be reduced by PDCs.  <i>Plants:</i> Implementation of PDCs will eliminate direct effects for weed control.	<i>Wildlife:</i> Treatments would generally provide long-term benefits to species habitat. Spatial and seasonal PDCS would reduce direct effects. Some potential disturbance during treatment. <i>Plants:</i> Treatments would generally provide long-term benefits to species habitat.



## ***General Discussion on Disturbance to Wildlife***

Disturbance of listed wildlife species occurs when noise, smoke, vibration, or visual stimuli cause impairment of normal behavior. In rare situations where these activities cause significant impairment such that reproduction or survival is compromised, a Likely to Adversely Affect situation could occur. Wildlife are most vulnerable during the reproductive period. Adults have expended their energy into finding mates, building nests (in the case of marbled murrelets, bald eagles and northern spotted owls), and females have invested considerable energy reserves into egg production. While nesting and feeding/sheltering young, adults are less mobile than at other times of the year and less able to hunt. At the same time, the demand for food (for young) increases. Young are most vulnerable during the reproduction period and during the period of learning to survive on their own (pre-fledging in birds). They are less mobile, less experienced, and less able to defend themselves than they will be as they are older and have developed flight ability and hunting experience. In the case of fairy shrimp, the non-cyst stage of adults and young is the most vulnerable time and coincides with the reproductive season. Disturbance during the reproductive period is most likely to have adverse impacts on listed species.

Seasonal and distance PDCs can be effective at eliminating or reducing disturbance during this sensitive period. The Action Agencies have incorporated all reasonable protections during this period of time to reduce disturbance effects to listed species. There are some situations where PDCs may be inadequate to reduce impacts or the lack of knowledge about the presence of listed species may lead to PDCs not being implemented. In those situations, adverse effects can result to undetected individuals if activities occur during sensitive periods of their life cycle – usually the reproductive season, and early young development.

### **A. Bald Eagle**

Bald eagle nests are easily identified, are generally associated with riparian areas along large water bodies, and have been consistently monitored for several decades both by aerial and ground surveys. The Action Agencies are confident that most active bald eagle nests that could be potentially impacted by project disturbances have been located, at least to vicinity, and that PDCs are adequate to avoid adverse impacts. Bald eagle nests are protected by the management plans of the Action Agencies, so no direct habitat loss of nesting habitat would occur.

Bald eagles are among the most tolerant of the raptor species to disturbance, even in heavily used recreational areas, as evidenced by successful reproduction, site tenacity, and increasing number of sites in the Action Area during the last 20 years. Recreation could disturb individual bald eagles over the life of the plan in some sites in the Action Area. The development of individual Site Plans can reduce these impacts to the greatest degree possible, and for the few instances where adverse recreational impacts cannot be avoided to the Brushy Chutes site, the Rogue River RAMP biological opinion provides incidental take for the activities addressed in that plan (USDI Fish and Wildlife Service 2002). The Action Agencies do not anticipate additional adverse effects from their actions during the life of this consultation period due implementation of seasonal and spatial PDCs.

Seasonal and spatial PDCs reduce direct and indirect impacts to bald eagles in most instances.

Deviations from the standard PDCs can be made, if documented in approved Site Plans and designed to protect the existing pair and provide for future recovery of bald eagles. Individual Site Plans may allow some minor disturbance to various zones around eagle nests outside of sensitive periods.

The Action Agencies will continue to manage habitat for bald eagle recovery and work in coordination with private landowners adjacent to public lands to reduce disturbance impacts. Some activities may reduce brush and other fuels near bald eagle nests. These activities would occur outside the nesting season and/or be spaced such that the activity would not significantly impair nesting success or other important life functions of that pair. Long-term effects of these actions would be considered beneficial.

The Action Agencies also participate in community education programs, often with bald eagles as the focus. The objectives of community outreach are to inform the public of the value of bald eagles, their status, and how to live in harmony with them. Educational activities would have a beneficial effect on bald eagles.

Safety concerns can also over-ride seasonal PDCs for site-specific situations. The Action Agencies anticipate that some minor disturbance will occur to at least two bald eagle sites related to safety concerns. Trees may need to be removed from campgrounds for public safety, or other work may need to be completed in campgrounds near bald eagle nests during the sensitive period. In these cases, the Action Agencies will attempt to keep disturbance to a minimum, will schedule work to a time of day and year that has the least impact, and will monitor the site during the activities, as appropriate to ensure nesting abandonment will not occur. In most cases, the birds in areas of potential human safety areas (campgrounds, boat ramps, along major highways) are likely somewhat habituated to disturbance and will tolerate the activity without nest abandonment or loss of productivity. Any adverse impacts from safety actions will be evaluated by the Level 1 team, to determine whether the activity exceeds the impacts and extent evaluated in this consultation.

There are no bald eagle nests or potential within the vicinity of gopher poisoning activities, which are located in a small area in the Rogue River National Forest. Dead (poisoned) gophers are unlikely to be eaten by bald eagles, and most poisoned gophers die underground. Secondary poisoning is not foreseeable. A bald eagle would have to consume over eight dead gophers to be affected by the glycofosphate. The Action Agencies foresee no chance of bald eagles being impacted by gopher poisoning.

## **B. Northern spotted owl**

Northern spotted owl surveys are routinely not conducted to protocol standards, except in demographic study areas. The Action Area has one demographic study area, approximately 110,000 acres, within the Glendale Resource Area on BLM. Other owl sites that were known as of 1994, receive seasonal protection when occupied during the nesting season. Any new owls that have moved into the area, or any existing owls that have changed location from the "known" site documented in 1994 may not be located except opportunistically. Biologists attempt to locate new owl sites on an opportunistic basis, as funding allows, but the Action Agencies cannot guarantee that all spotted owl sites are found. Harvest in Matrix or AMA is not delayed

by seasonal restrictions, unless a historic owl site is known. Since protocol surveys are no longer required, there may be situations where occupied suitable matrix or AMA owl habitat could be treated, and an unknown nesting owl adversely impacted. Other activities, such as roadwork, quarry activity, and recreation cannot be restricted during the nesting season, and often must occur prior to conducting nesting clearances.

Disturbance is a tougher concept to evaluate and results from a combination of ambient noise level and disturbance timing, duration, and intensity. The following excerpt of disturbance is from the North Coast Province Biological Opinion for disturbance activities (FWS ref. # 1-7-02-F-422, 4 April 2002) and illustrates disturbance impacts to the northern spotted owl:

*Although there is little detailed information concerning the vulnerability of spotted owls to disturbance effects, research on a variety of other bird species suggest that such effects are possible (Henson and Grant 1991, Reijnen and others 1995, Rodgers and Smith 1995). Activities that may result in above ambient noise levels include the use of mechanized tree harvest equipment, road hauling, aircraft/helicopters, heavy equipment, and hydraulic hammers. In some instances, noise levels produced by these activities can remain above ambient levels out to 0.25 mile and may affect spotted owls. If potentially disturbing activities are implemented during the spotted owl critical nesting season, those activities may adversely affect spotted owls by causing adults to flush from their nest site, nest abandonment, causing juveniles to prematurely fledge or could interrupt foraging activity. After 30 June, it is presumed that most fledgling spotted owls are capable of sustained flight and can avoid harmful disturbances.*

The Action Agencies will utilize all possible mitigation measures to avoid adverse impact to nesting spotted owls wherever they occur, but acknowledge that some adverse impact is likely to occur to owls due to disturbance in unsurveyed suitable habitat adjacent to project areas. Seasonal restriction of all Matrix or AMA projects in suitable habitat would preclude many harvest activities, and a clearance of potential adjacent spotted owl habitat is not required. To assess this impact, the Action Agencies estimated that 40 percent of the area around a standard project area (presumed to be 50 acres) would be suitable owl habitat (as determined by the percentage of suitable habitat in the matrix or AMA according to the Environmental Baseline Tables). The disturbance resulting from the timber activities over the life of the programmatic was estimated to be 25,000 acres of potential impact to northern spotted owls. An additional 4,000 acres of potential disturbance could occur because of other activities listed in the proposed action table (Table 1) to northern spotted owls. This estimate probably exceeds the actual disturbance impact to nesting spotted owls because:

- Many BLM project areas are larger than 50 acres (larger perimeters would mean fewer impact areas and less total acres disturbed);
- Action Agencies attempt to locate nesting owls within the vicinity of project areas to avoid impact during the nesting season;
- Suitable habitat was generously estimated around project areas
- Many matrix or AMA projects would normally occur outside the nesting season for other

reasons (silviculture, workload planning, weather and fire restrictions, or other seasonal protections for non-listed species)

- Many individual animals inherently tolerate or develop tolerance to disturbing activities that cause them no direct harm
- Noise, smoke and visual impacts are often much less because they are inherently screened by topographic features or vegetation or otherwise buffered due to reasons other than threatened and endangered species protection

We expect that 30 percent of the disturbance acres could possibly occur in or adjacent to unsurveyed suitable spotted owl habitat (based on the percent of unprotected suitable habitat in the Action Area) during the sensitive breeding season. Disturbance could affect individual adult spotted owls or young such that their normal behavior, survival, and /or reproduction might be compromised. Disturbance in no more than 8,500 acres is likely to adversely affect northern spotted owls, although the Action Agencies will implement mandatory PDCs and when possible recommended PDCs to keep disturbance adverse effects to a minimum.

### ***Effects to spotted owl suitable habitat, including LSR:***

The Action Agencies anticipate the loss of 30,337 acres of suitable spotted owl habitat over the next 5 years from the 903,477 acres of suitable habitat currently within the Action Area (Environmental Baseline Tables). Suitable owl habitat is either **removed** during regeneration and selection harvests, or **downgraded** during thinning type tree harvest that downgrades suitable habitat to dispersal. Downgraded suitable reduces overstory canopy to less than 60 percent but greater than 40 percent, and changes suitable habitat to dispersal-only habitat. Thinning that removes some overstory, but retains 60 percent canopy coverage or more is considered **degraded, but remains suitable**. The Action Agencies anticipate 31,347 acres of degraded suitable habitat from FY 04-08.

Suitable habitat removal is planned over several watersheds, and will be scattered in time over the 5-year period. Therefore, habitat removal will not be concentrated in a few areas, although some watershed, critical habitat units, and portions of the Action Area may experience higher suitable habitat loss than other areas. No more than 11 percent of the suitable habitat in Matrix and AMA will be removed over the five-year life of this Biological Assessment (less than .002 percent of the suitable habitat will be removed in LSR, as the result of meadow restoration projects). No more than three percent of the extant suitable habitat in the Action Area (all land allocations) will be removed. No more than six percent of the suitable habitat will be removed from any one Section 7 Watershed under the proposed timber-planning schedule. Actual removal will likely be much less. Many watersheds will not lose any suitable owl habitat.

The current plan of timber sales and project boundaries and acres, as well as type of harvest activity, are likely to change significantly over the five year period as a result of NEPA analysis, field review, watershed and other resource protection, and workload scheduling. Although individual project activities may vary considerably, the overall projections of suitable habitat loss will be within the amounts predicted in this Biological Analysis. Should the predicted removal of suitable habitat exceed the rate or amount anticipated, the Action Areas will discuss

any potential changes well in advance of these activities, with the FWS, to determine if amendment or reconsultation is required.

If the predicted timber sale program differs substantially from that outlined in this document, the Action agencies will reinstate consultation. Any projects in LSRs or Riparian Reserves that result in habitat loss or degradation for spotted owl or marbled murrelet, and which have not been specifically discussed in this BA will be reviewed by the Level 1 team; consultation with the FWS will be reinstated where necessary.

Several projects in LSR are covered by this BA, including hazard tree removal, meadow restoration, and Port-Orford-cedar (POC) Sanitation and Arrow Wood sales, plus density management projects which may degrade suitable habitat for spotted owl and murrelet over the short term. Mid-age stands (usually less than 100 years old) in LSRs which currently serve as roosting or foraging habitat for spotted owls may be temporarily degraded (short-term, a decade or less), as a result of stand density management projects; the stands will continue to function as roosting and foraging habitat. These stands will recoup quickly and attain late-successional characteristics (including nest sites for spotted owl and marbled murrelet) sooner than under the "no management" option.

The removal of suitable habitat for owls reduces the amount of habitat available for nesting, roosting and impacts habitat available for flying squirrels and wood rats, the primary prey species of the owl in this area. Opening a stand through tree harvest can also provide more light to the ground and increase understory trees and shrubs. The results of this treatment on owl habitat depends on the current stand condition (and how close it approximates old-growth characteristics considered important to owls), how many trees are removed, the residual overstory, the aerial extent of the treatment, the time of year the treatment occurs, and the type of yarding/tree removal. PDCs and normal operating procedures by the Action Agencies reduce the impacts to the extent possible, while still facilitating tree harvest and other projects.

Opening the canopy can favor habitat for the barred owl, an aggressive competing species that has expanded its range into the typically more complex northern spotted owl habitat. Barred owls further threaten the recovery of northern spotted owls through competition for food, nesting, and roosting habitat. Contact between these two species, which historically have been separated by distinct habitat differences, can lead to genetic contamination when barred owls and spotted owls interbreed.

Removal of a few trees over a broad area has a lower impact on resident owls than a smaller acre regeneration harvest that removes the same number of trees from a smaller area. In some cases, the stimulation of understory vegetation and subordinate canopy can result in long-term structural improvements to the owl habitat, although there may be short-term immediate impacts resulting from the treatment. The spatial PDCs implemented in projects protect active nest stands and the most important structural trees in the stand. The seasonal PDCs reduce indirect effects to owls by deferring disturbance during the sensitive reproductive period. Once adults and young are off the nest and able to move throughout the area, disturbance impacts from treatments is significantly reduced.

Some tree harvest, silvicultural activities, watershed analysis, and other activities will occur in

late-successional reserves, as proposed in Table 1. Watershed restoration, vegetation treatments, fuels management and other activities in the LSR may have short-term adverse impacts, but over the long-term will encourage the old growth characteristics important to long-term owl recovery, as defined in the NWFP.

Most tree harvest and activities will occur in matrix or AMA lands. The reduction of suitable habitat is within the predictions of the NWFP, and will be spaced in time and location over the Action Area to reduce significant range-wide adverse impacts to owls. Projects in matrix or AMA lands will impact species habitats, as depicted in Table 1. Watershed restoration, vegetation treatments, fuels management, recreation, and other activities will occur across many land allocations, including matrix or AMA lands. .

Activities proposed during the life of this programmatic BA are not expected to result in the ability of the constituent elements of critical habitat for spotted owl to function as intended.

Protocol owl surveys are not required in matrix or AMA lands under the NWFP, although field biologists occasionally locate nests during NEPA field evaluations. Nest sites found up to 1994 were protected as "unmapped" LSRs in the NWFP, with a 100-acre no harvest zone. The NWFP did not presume that these small patches would support viable owl nesting. Rather they were retained to serve, along with riparian areas and other reserve areas, as connectivity blocks and short-term habitat. Any owl that has transferred nesting location or moved into matrix or AMA lands since 1994 receives no mandatory protection, except protection of the nest site and seasonal operating restrictions. There is a high likelihood that tree harvest or other treatments that have disturbance potential would significantly impact the viability of individual owls living and/or breeding in unsurveyed suitable habitat in matrix or AMA lands. The removal of suitable and dispersal habitat is likely to have significant impacts to owls dependent upon matrix or AMA lands.

**Dispersal habitat:** The Action Agencies predict the removal of 4,957 acres of dispersal-only habitat from the Action Area from FY04-08. The removal of suitable habitat (which also functions as dispersal), will reduce dispersal habitat by another 9,873 acres, for a total of 14,830 acres. The downgrade of suitable habitat to dispersal-only will result in an increase in dispersal-only habitat of 20,464 acres.

We are proposing tree harvest in 13 of the 14 Section 7 Watersheds. The proposed timber sales would reduce not reduce any of the 14 Watersheds to less than 50 percent dispersal habitat on federal lands (meets 50-11-40). The loss of dispersal habitat due to density management is temporary. Dispersal habitat will recover when canopy closure exceeds 40 percent. In the Action Area, this is expected to take 10-20 years, depending on the extent of tree removal and the precipitation in and elevation of the treatment area. Commercial thinning activities will degrade dispersal habitat by reducing canopy closure in 2,179 acres of dispersal habitat. These stands are expected to continue to function as dispersal habitat but not provide the full benefit to dispersing NSO; available forage may be lowered and risk to predation will be greater.

Dispersal habitat provides cover, food, and protection on a temporary basis to non-nesting owls moving between and among patches of suitable habitat. Dispersal habitat must be adequate to protect northern spotted owls from predation as they move through these less than optimal

habitats. Genetic interchange among physiographic provinces is important to maintain a diverse and healthy gene pool. Small amounts of genetic interchange in terms of a few successful breeding individuals, can significantly add to the genetic variability of a population. Theoretically, a diverse genetic make-up allows greater resilience of a population to disease, climate change, and response to changing conditions.

The NWFP identified two areas of dispersal concern in the Action Area. One is the forested area that joins the Siskiyou, Cascades, and the Coast Range across the Interstate 5 corridor (Klamath, Bear, Applegate Section 7 watersheds). The FWS indicated the Slate-Cheney area in the Applegate drainage was a specific area where spotted owl dispersal might be at risk. The Biscuit Fire of 2002 had an effect on the approach to the habitat "bridge" across Slate-Cheney, but the Fire did not affect the "bridge" itself. The approach to the "bridge" from the north, thru unburned area, is still functioning. We expect to remove 163 acres of dispersal habitat on National Forest land in this area over the next five years (no removal on BLM). These 163 acres equal less than one percent of the existing 23,685 dispersal acres in this HUC5 (Lower Applegate River - 1710030906). In this HUC, 68 percent of the Federal Land (percent of total capable) is currently Dispersal habitat. The potential impacts are low within the area and our proposed actions would not preclude dispersal.

The other is the Galesville area of concern. The draft Recovery Plan for the Northern Spotted Owl (Thomas and others 1990) recommended that non-Federal lands in the Galesville area of dispersal concern, and areas to the west, be managed to provide spotted owl dispersal habitat to facilitate movement between the Klamath and adjacent provinces. Spotted owls have been documented to traverse both the Galesville and Ashland-15 areas of concern (Forsman 2002), but the prospect for long-term viability of movement in these areas is unclear.

In addition, the Kalmiopsis Wilderness, in the western portion of the Action Area, has large areas of serpentine soils not capable of supporting conifer stands dense enough for dispersal of spotted owls. However, areas around the Kalmiopsis allow for sufficient dispersal from the Klamath Province to the Oregon Coast Province.

The Action Agencies do not consider the change in dispersal habitat due to the planned actions over the next 5 years to be an adverse impact to northern spotted owls. Riparian area, unmapped LSRs, connectivity blocks and other timber retentions, combined with spaced entries of timber harvest and the predominance of thinnings over regeneration harvests in the Action Area, combine to maintain adequate dispersal habitat for northern spotted owls, so they may move between physiographic regions and contribute to healthy genetic interchange.

## **C. Spotted Owl Critical habitat**

Timber sales (regeneration, commercial thinning, density management) are proposed in 12 of 22 CHUs in the Action Area (32, 34, 35, 37, 38, 62, 65, 67, 68, 71, 74, 75), although future NEPA and site-specific timbersale planning may change this prediction slightly. The Action Agencies anticipate the removal or downgrade of up to 7,524 acres of suitable habitat from these CHUs over the next 5 years, and the removal of up to 1,000 acres of dispersal-only habitat. The downgrade of some of the suitable habitat will be added to the dispersal-only category, and will probably negate the overall loss of 1,000 acres of dispersal-only habitat currently predicted. Should these predictions change, the Level 1 team will evaluate the situation and reinitiate consultation as needed. The Action Agencies are not planning to remove suitable or dispersal habitat from the remaining CHUs in the next five years.

Critical habitat was identified by the FWS to provide primary constituent elements for the northern spotted owl. These elements include habitat features that support spotted owl nesting, roosting, foraging, and dispersal. The US Forest Service and Bureau of Land Management provided an alternative proposal to provide these important life requirements through LSR, riparian reserves and other land use allocations and activities under the NWFP. The FWS acknowledged this plan adequately provided habitat for northern spotted owl recovery in their biological opinion on the NWFP (1994). All activities within the Action Area are consistent with the NWFP.

Our proposed actions will not affect the ability of the CHUs to function as intended for northern spotted owl (Appendix B). Proposed activities occurring in Matrix/AMA will not preclude dispersal of spotted owls between LSRs. The Action Agencies expect to harvest less than five percent of the existing suitable habitat in CHUs (Appendix B, Table B-1) over the next five years. Treatments in LSR will result in the removal of less than 2,000 acres of suitable habitat (meadow restorations). The remaining suitable habitat (482,000 acres – Appendix C, Table C-1) in LSR will also sustain the functions of nesting, roosting, foraging, and dispersal habitat for spotted owl in the Action Area. Riparian Areas, and other areas protected under the NWFP will also support the constituent elements of spotted owl habitat. Even though wildfires impacted some of the CHUs, Table B-1 shows that overall, throughout the Action Area, 90 percent of the suitable habitat remains (as of June 2003 – Table B-1 depicts timber changes through September 2003, but does not include any wildfires that may occur from July through September 2003). CHUs Dispersal habitat is well-distributed in the Action Area, and is ample for owl movement (Appendix G, Map G-1). See Dispersal Habitat write-up, above.

## **D. Marbled Murrelet**

The loss of significant amounts of suitable, unoccupied murrelet habitat may hamper efforts to stabilize and recover this species. The Federal listing of the murrelet as Threatened was primarily based upon the loss of late-successional forest and subsequent reduction in the number of nest sites available to murrelets (USDA Forest Service/USDI Bureau of Land Management 1994a; Carter and Erickson 1992; Sowls and others 1980). This loss of habitat may also explain gaps in their inland distribution. The implementation of the Northwest Forest Plan is expected to increase the amount of late successional forest habitat for the long term; however, suitable

habitat takes a very long period of time to develop. The FEMAT identified the next 50-100 years as critical for stabilizing murrelet population levels (USDA Forest Service and others 1994).

There may be several circumstances that result in currently suitable habitat remaining unoccupied [*i.e.* differences in offshore conditions that may result in changes in food abundance and breeding frequency (Ralph and others 1995)]. The availability of fish to murrelets may be influenced by human fisheries activities as well as short- and long-term natural fluctuations in marine productivity (such as El Niño or La Niña events). In addition, life history requirements may require wide spacing of nests in some areas, thus leading to unused suitable habitat between nests (Ralph and others 1995). Also, behavioral characteristics, such as site fidelity and nesting colonies, may influence stand occupation and the colonization rate between the destruction of a nest stand and the occupancy of the new stand.

A final concern with loss of unoccupied murrelet habitat is the continued fragmentation of suitable stands. Ralph and others (1995a) suggests that fragmentation may result in a higher susceptibility of murrelets to predation through increased predator populations, increased access to a stand by predators, and a decrease in hiding cover for murrelet nests. Research on murrelet nesting success indicated that successful nests were farther from forest edges and were better concealed than unsuccessful nests (Nelson and Hamer 1995b).

Noises associated with the proposed actions could disturb nesting murrelets and negatively affect productivity. Although little detailed information is available concerning the vulnerability of murrelets to disturbance effects, research on a variety of other bird species suggest such effects are possible (Henson and Grant 1991, Rodgers and Smith 1995). Such studies have shown that disturbance can affect productivity by; nest abandonment; egg and hatchling mortality due to exposure and predation; longer periods of incubation; premature fledgling or nest evacuation; depressed feeding rates of adults and offspring; reduced body mass or slower growth of nestlings; and avoidance of otherwise suitable habitat.

In 1999, sound-reducing techniques were applied to the 164 Salvage timber sale on the Powers Ranger District (occupied murrelet habitat was within 0.25 miles of the logging site). The logger (a sub-contractor) developed several techniques, including the use of a hydraulic chain saw, and muffling his yarder into a 500-gallon tank of water. Noise levels at the logging site were reduced significantly, and most logging noise had dropped to 40 decibels or less when measured 0.1 miles from the landing. These techniques merit further study.

Murrelets may be sensitive to disturbance due to their secretive nature and their perceived vulnerability to predation. Due to the significant lack of disturbance-related information on this species, we assume any amount of disturbance would result in negative impacts. Where surveys for presence of marbled murrelet have not yet been completed, the Action Agencies are treating these project areas as if murrelets are occupying the stand (until surveys are finished).

Projects are implemented after most birds have completed incubation and if daily work occurs two hours after sunrise until two hours before sunset, impacts to nesting murrelets will be reduced. Research on murrelets, for example, has demonstrated that in the first days after eggs hatch, adult murrelets tend to concentrate their nest visits during the crepuscular hours and that

nestlings are left unattended for most of the diurnal period (however, adults do increase diurnal visits to the nest as the chicks develop) (see Ralph and others 1995 for a more detailed discussion). A daily timing restriction will minimize the potential that adult murrelets will be disturbed when visiting the nest to feed offspring.

**Timber Sales.** The proposed action could remove up to 1,137 acres of suitable, but unoccupied, murrelet habitat from Area A (Known Range), and 2,867 acres from Area B. The acreage in Area A represents approximately two percent of the approximately 67,000 acres of suitable murrelet habitat occurring within the known range.

We conclude the loss of 1,137 acres of habitat in the known range (Area A) should not significantly preclude recovery of the murrelet because the Action Agencies are currently protecting over 80 - 90 percent of the current murrelet habitat under their management. Further, the Northwest Forest Plan hypothetically provides for the regeneration of nearly twice the amount of the currently suitable murrelet habitat through the protection of capable acres within LSRs and other lands with no-harvest allocations. This may be an optimistic projection, as growing conditions, wildfire, insect infestations, and other factors may affect growth rates.

The Action Agencies will utilize all possible mitigation measures to avoid adverse impact to nesting marbled murrelets wherever they occur, but acknowledge that some adverse impact is likely to occur to murrelets due to disturbance in unsurveyed suitable habitat adjacent to project areas. To assess this impact, the Action Agencies estimated that 40 percent of the zone ¼ mile around a standard project area (presumed to be 50 acres) would be suitable murrelet habitat (as determined by the percentage of suitable habitat in the matrix according to the Environmental Baseline Tables). Area A habitat disturbance was 1,100 acres and Area B habitat disturbance was anticipated to be 250. An additional 200 acres of potential disturbance could occur because of other activities listed in the proposed action table (Table 1). This estimate probably exceeds the actual disturbance impact to nesting murrelets because

- Area B is less likely to harbor nesting murrelets than Area A.
- Many BLM project areas (all BLM projects are in Area B) are larger than 50 acres (larger perimeters would mean fewer impact areas and less total acres disturbed)
- Action Agencies attempt to locate nesting murrelets within the vicinity of project areas to avoid impact during the nesting season
- Suitable habitat was generously estimated around project areas
- Many matrix projects would normally occur outside the nesting season for other reasons (silviculture, workload planning, weather and fire restrictions, or other seasonal protections for non-listed species)
- Many individual animals inherently tolerate or develop tolerance to disturbing activities that cause them no direct harm
- Noise, smoke and visual impacts are often much less because they are inherently

screened by topographic features or vegetation or otherwise buffered due to reasons other than threatened and endangered species protection

We expect that 30 percent of the disturbance acres could possibly occur in or adjacent to unsurveyed suitable marbled murrelet habitat (based on the percent of unprotected suitable habitat in the Action Area) during the sensitive breeding season. Disturbance could affect individual adult murrelets or young such that their normal behavior, survival, and /or reproduction might be compromised. Disturbance in no more than 500 acres is likely to adversely affect marbled murrelets, although the Action Agencies will implement mandatory PDCs and when possible recommended PDCs to keep disturbance adverse effects to a minimum.

**Miscellaneous timber harvest.** *Hazard tree removal.* Nesting platforms for marbled murrelet, may be present in some hazard trees. Removal of hazard trees during the nesting season may disturb nearby marbled murrelets; potential nest trees may be removed. *Opportunistic salvage sales.* Removal of salvage trees during the nesting season may disturb nearby marbled murrelets. *Small Sales of Pole-Sized Timber.* These sites do not contain suitable nest sites for marbled murrelet; however, removal of poles during the nesting season may disturb nearby marbled murrelets. *Cedar bough harvest and removal.* This activity does not occur during the nesting season for marbled murrelets. Therefore, this activity has no effect on marbled murrelets. *Firewood Cutting.* These sites do not contain suitable nest sites for marbled murrelet; however, removal of firewood during the nesting season may disturb nearby marbled murrelets. *Burl Removal.* Marbled murrelet do not use these trees species for nest sites; however, removal of burls during the nesting season may disturb nearby marbled murrelets. *Port-Orford-cedar Sanitation and Arrow Wood sales.* If POC projects occur during the nesting season this could disturb nearby marbled murrelets. Application of PDCs to miscellaneous timber harvest activities will minimize the effects of the activities on marbled murrelet.

**Other project types.** Occasionally, another project type, such as campground construction, could result in the removal of suitable habitat. These projects would be rare, and any suitable habitat would be surveyed. Many projects within the known range could result in disturbance that may affect marbled murrelets, because of presence of unsurveyed suitable habitat within ¼ mile of the projects. Disturbance effects would be minimized by implementation of the appropriate PDCs.

*Summary.* Most murrelet sighting locations and occupied sites have been found within approximately 16 - 32 miles of the coastline (16 miles inland south of the Rogue River drainage, 32 miles inland north of the Rogue River drainage). As a result of survey work from 1988 – 2002 (see Appendix H), it has been determined that potential marbled murrelet habitat within the Medford District or Rogue River National Forest, or on the east side of the Siskiyou National Forest, does not contribute to the recovery of marbled murrelets. Accordingly, the probability is limited that proposed projects outside of the known range will have any notable impact on the recovery of the species. Projects planned for FY04-08 within the known range of the species will remove 1,137 acres of murrelet habitat (LAA); 280 acres are within LSRs, and confined to Meadow Restoration Projects. Some activities related to timber sales are NLAA (such as disturbance of nesting marbled murrelets from road traffic between 6 August and 31 March).

## **E. Marbled Murrelet Critical Habitat**

Critical habitat for Marbled Murrelet coincides with Late Successional Reserve boundaries (see Appendix H, Map H-2). CHU outside of Areas A and B are moot, because very low likelihood of murrelet occurrence in Areas C and D – any impacts to the species from projects in Areas C and D would be negligible. Proposed projects that result in the modification or removal of constituent elements of critical habitat or influence the growth and/or structure of future habitat do not generally occur in critical habitat.

Proposed Timber Sale projects which result in the modification or removal of elements of critical habitat that influence the growth and/or structure of future habitat occur to a very limited extent in critical habitat, and are related to meadow restoration projects. Meadow restoration projects (*i.e.*, a special type of density management prescription) will modify a constituent element of critical habitat, namely forested areas within 0.5 miles of suitable nest trees and which have a canopy height of one-half the site potential tree height. Meadows are being restored as per the Southwest OR LSR assessment (USDA Forest Service-USDI Bureau of Land Management 1995); tree cover will be substantially removed at these sites: Agness, Corrals, Pine Grove, Potato Patch, Stonehouse, Sorrell, Woodruff (1,137 acres, all Gold Beach RD – 280 acres in Area A, and 857 acres in Area B). BLM proposes meadow restoration as well. Other density management projects consist of thinning projects, which, because they are located in LSR, are designed to accelerate the development of late successional characteristics, and thus, are expected to benefit murrelet habitat conditions in the longer term (see list of projects with LSR component, in Appendix A).

Other actions that may adversely affect critical habitat are tail holds (anchor trees) for cable yarders, and hazard tree removal (many of these trees will be snags, and not potential nesting habitat). The effects of these projects will be scattered throughout the critical habitat designated in the Action Area. Projects located in critical habitat would adversely affect the primary constituent elements through the modification of forested areas within 0.5 miles of suitable nest trees, where these removed trees have a canopy height of one-half the suitable nest tree height. Habitat removal associated with recreation projects, right-of-way clearing on federal land, and timber harvest on mining claims may also adversely affect critical habitat due to the removal of constituent elements. However, the small acreage estimated to be harvested by these activities, even if it all occurred in critical habitat, is negligible and would not affect the functioning of critical habitat.

Rarely, a potentially suitable nest tree may be removed, because it is a safety hazard. However, the small acreage estimated to be harvested by this activity (several acres per year, at most), even if it all occurred in critical habitat, is negligible and would not affect the functioning of critical habitat.

## **F, G. Effects to Fairy Shrimp and Fairy Shrimp Critical Habitat**

The Action Agencies have few activities that will affect fairy shrimp or vernal pools. On federal land, the fairy shrimp and vernal pools are located exclusively on Upper and Lower Table Rocks; no tree harvest, silviculture, mining, special forest products, nor road building is scheduled for these sites. The buttes are nearly half privately owned. Upper Table Rock is lightly grazed. The Nature Conservancy owns land on Lower Table Rock and it is not grazed. Cattle are not thought to have significant adverse impacts on the fairy shrimp in the cyst phase, nor to the population as a whole (Linda Hale, Medford BLM wildlife biologist, personal communication). They are seldom in the area of the vernal pools when they hold water, but there may be rare instances of late rains when cattle might intercept wet vernal pools when the fairy shrimp are in the adult or non-cyst stage. An occasional individual might be trampled. The grazing allotment on Upper Table Rock is currently 30 days, from April 15 until May 15. The permit is for 65 cattle. The pools are often dry before cattle get to the top of the butte, and in some years, the cattle do not graze on the top of the butte at all. April 15 is after the shrimp's reproductive period and encysting has begun by that date; it is unlikely that direct mortality from cattle would occur.

A more significant potential impact to the fairy shrimp and their habitat is anything that would threaten the perched water table and sub-surface flow that allows the vernal pools to form. Fencing the cattle from the private allotment could have significant adverse impacts that far outweigh the occasional mortality from cattle stepping on non-cyst stage fairy shrimp.

Table Rock is a highly popular recreational area and BLM manages an active trail program in the area. As with the grazing situation, most hikers avoid the mucky clay areas during the sensitive period of time and stay to the trails. In early spring, school children hike the butte and are attracted to the multitude of frogs at the vernal pools. Children commonly venture out into the vernal pool areas when they are wet. Occasional fairy shrimp individuals might get trampled, but the loss of a few individual mollusks is not considered significant to the population. As with the grazing situation, fencing or signing the area may cause more harm to the subsurface flow and long-term habitat than the slight risk of individual loss. Information at the trailhead stresses the importance of staying on the trail to avoid impacts to the sensitive vernal pool area. BLM is currently evaluating techniques that would protect pools or reduce the risk of people walking through one pool at the top of the trail. The plan would include designs to benefit the long-term viability of fairy shrimp and the vernal pool habitat.

Upper and Lower Table Rocks are in an urban interface area. Fuels reduction projects may be proposed on Upper and Lower Table Rocks as part of the fuels reduction program in the Butte Falls Resource Area of Medford BLM.

Fire lines for prescribed fire would not be constructed through vernal pools by project design. Prescribed fire would most likely occur in the fall after the rains begun or in the spring when the grasses are dry enough to burn. The pool areas would be moist-to-wet during this time and fairy shrimp could be present in the pools if rainfall has been sufficient to fill the pools. If the pools have not filled, a cool burn would likely not affect eggs in the soil. Burning may also help maintain the pools from becoming overgrown with vegetation. If sufficient rainfall has occurred to fill the pools, or pools have not dried in the spring, then burning would likely not burn the wet

vegetation at the pools. The risk to the fairy shrimp is considered to be low.

A research project on Nature Conservancy lands in the Agate Desert has used prescribed fire in an area with vernal pool fairy shrimp to maintain native grassland. These areas are burned in mid-summer when the pools are dry. Personal observation by Nature Conservancy workers indicates that there is no observable decline in the presence of fairy shrimp as a result of prescribed fire.

The Action Agencies anticipate a likely to adverse affect to individual fairy shrimp at some time during the life of the plan due to recreation, because of these slight risks to occasional individuals. Fuels management is not expected to be an adverse impact to fairy shrimp or their critical habitat. Overall management of the area is to benefit fairy shrimp populations and their critical habitat. The Action Agencies do not consider the loss of a few individuals essential to the population as a whole, nor do they consider these activities likely to adversely modify critical habitat.

## **H, I, J, K. Effects to Listed Plants.**

Surveys of suitable habitat for listed plants prior to federal activities during the growing season, combined with spatial or seasonal protection, are the primary PDCs for all activities. Knowing where the plants are and where they are not, has proven to be the best way to facilitate conservation for these species, and to meet the goals of the agencies. The developed PDCs in most cases negate direct and reduce indirect effects to the listed plants. Indirect effects from habitat disturbance can have adverse, neutral, or beneficial effects to plants, depending on the type of disturbance, the intensity and duration, and the timing. PDCs reduce adverse effects in all cases. The long-term effects of habitat modification are not well known, as few studies have occurred for these species. Most information is anecdotal in nature, or based on ecological patterns seen in related species.

Direct physical ground disturbance in occupied habitat from equipment (*e.g.* logging equipment, slashbusters, excavators) or permanent modification of the habitat with bulldozers (*e.g.* road construction, mining, quarry development) undoubtedly have adverse effects as the plants, bulbs and roots would be crushed, broken, dug up, and the soil compacted or removed. The establishment of no-equipment buffers in population sites found during surveys would eliminate this threat. Physical impacts from humans walking through populations during the growing season, in the course of authorized BLM activities (timber harvesting, silvicultural practices) can also crush the above ground portions of plants, reduce the season's reproduction potential, but is unlikely to eliminate entire populations unless they are very small, as soil disturbance is minimal and the roots and bulbs will survive. The PDCs involving seasonal restrictions, identification of the occurrence on the ground, and making the field crews aware of the site, will minimize inadvertent trampling and adverse effects.

The modification of listed plant habitat, such as partial thinning of the canopy, increasing the light regime and available precipitation, can have a beneficial effect for species like Gentner's fritillary. These activities likely mimic the role that wildfire historically played in these habitats by keeping the site more open. Based on existing data from known populations, it appears that a 40 percent canopy cover is optimum for species like Gentner's fritillary. McDonald rockcress

and large flowered wooly meadow foam likely won't benefit from thinning. Watershed restoration activities that improve vernal pool habitat could benefit large-flowered wooly meadowfoam. Tree encroachment into meadows supporting Cook's lomatium was probably regulated by periodic wildfires during the dormant season. The removal of these trees (and shrubs) would benefit this species, as this plant prefers full sun.

Because of extreme fuels loads from many decades of fire suppression, wildfires can now burn with more intensity and more sustained heat at a site. Sustained heat will bake bulbs and roots that historically would have survived a less intense fire. For example, in the Biscuit Fire that occurred in southwest Oregon in 2002, several populations of the rare Umpqua swertia (*Frasera umquaensis*) that had been monitored for nearly decade we burned through. In areas that the fire burned with light to moderate severity, the populations survived and will likely benefit from the open habitat created by the fire. In the areas where the fire was severe, because of dense fuels that caused a sustained burn over the plants, the populations were lost (Kaye, 2003). Excavations of this species large root system at these sites revealed that the tubers literally baked under-ground from the sustained heat. Fuels reduction projects can have a long term beneficial effect by creating more open habitat that is more suitable for plants like Gentner's fritillary and Cook's lomatium. With continued fuels treatments, areas containing these listed plants will burn with less intensity in the future increasing the probability of survival, and potentially helping with recovery.

Ground disturbing activities from timbersales, fuels projects, watershed restoration, grazing projects etc., can facilitate the introduction and spread of noxious weeds such as yellow starthistle, dyer's woad, and Canada thistle, to name a few. Weeds can have an indirect effect by competing with listed plants for light, space, water, and nutrients. The washing of BLM and contractor equipment and vehicles can reduce the spread, but does not control noxious weeds. The implementation of PDCs for active weed treatment can have a long-term beneficial effect by reducing competition in and adjacent to listed plant sites, while protecting populations from direct effects. Disturbance from grazing also can contribute to increased noxious weeds. Weeds are often found in areas that have experienced plant community changes from heavy grazing in the past, and areas of high livestock concentrations can be prone to invasion by weeds which can then spread to other areas and compete with listed plants. Cattle grazing can have effects to plants from eating and trampling. Cattle can also browse on certain weeds that compete with the listed plants. Gentner's fritillary is highly palatable to deer, and presumably cattle as well. While cattle can walk on and trample plants, reducing the year's reproductive potential, the plants would not likely be killed; the underground bulbs would likely survive. The PDCs will reduce effects from grazing on rare plants. Populations will be surveyed for, identified and measures taken to protect occurrences.

High concentrations of recreation use near listed plant sites can lead to effects through time. Incidental trampling and flower picking can, in time, lead to decreased populations. Small populations of especially showy plants like Gentner's fritillary would be especially vulnerable to being "loved to death." Noxious weeds also can be introduced into areas of high use (trailheads, developed recreation sites) and can spread to other areas and compete with listed plants. The implementation of PDCs will reduce effects to listed plants.

Numerous special permits are authorized, from telecommunication sites, power-lines, special

forest product permits, to research permits (see list). Effects are variable and hard to predict from such varied activities, but the PDCs will eliminate nearly all direct effects. Surveys for and protection of listed plant populations from ground disturbing activities will protect populations. Maintenance activities of permitted sites that trigger a NEPA review, including vegetation maintenance along powerlines, would also be subject to surveys in suitable habitat and buffering requirements. The issuance of special forest products collection permits in suitable habitat also has PDCs to reduce effects. The likelihood of affects given the scope and scale of these permitted activities is so small, that adverse affects are not likely.

Road maintenance actions are not likely to cause adverse effects, although both Cook's lomatium and McDonald's rockcress can colonize onto road edges from adjacent occupied habitat. Known sites will be protected. Gentner's fritillary can be on the edge of the undisturbed habitat along roads, and tops could be brushed during the growing season. Plants would not likely be killed, and the lily would likely benefit from the more open edge habitat in following years (more light). Road edge disturbance can facilitate the introduction and spread of weeds that can compete with listed plants however. In response, much of the federal weed treatment programs (hand-pulling and spot spray) are occurring along roads.

All significant adverse effects from the project activities can be eliminated by implementation of the PDCs for listed plants. Some minor and insignificant effects will occur, mostly from indirect and cumulative effects.

## **Interrelated and Interdependent Actions for all listed or proposed species**

Timber harvest projects often have activities directly or indirectly associated with their completion. For example, timber harvest necessitates site surveys for wildlife, archeology, fisheries, botanical, etc.; road construction or hauling on existing system roads; and post harvest treatment for site preparation for planting, fuels reduction, and restoration efforts. Timber harvest can fragment existing late-successional stands, and interior forest habitat may be impacted. All timber harvest will have interrelated and interdependent effects.

Road construction has the most significant effects on spotted owls, marbled murrelet, bald eagles, and their habitat. Clearing for the road right-of-way removes suitable habitat and has the potential to disturb nesting pairs in close proximity. Road construction under the timber sale program consist of two categories: new construction and re-construction. The number of miles in each category varies considerably due to terrain, previous management activities, or size and type of sale. Acres logged as part of road building are included in the totals for the timber sale. Gentner's fritillary can be adversely affected from road building associated with timber sales, as it is often found on ridgelines where many new roads are built. Roads and drainage structures can change or influence hydrologic regimes within wet meadow and other riparian habitats that could support Cook's lomatium and large flowered wooly meadowfoam. Road reconstruction can affect McDonald's rockcress, and Cook's lomatium, as the plants can be found growing within or adjacent to the road prism.

Other interrelated and interdependent actions include brush disposal (lop and scatter, pile, pile

and burn), site preparation, reforestation (planting and seeding), release (brush control), fertilization, and precommercial thinning (PCT). Brush disposal activities vary by timber sale due to fuels management objectives, requirements for retention of down woody material, and other resource management goals. Brush disposal abates the slash created by the timber sale. Typical activities associated with this program include: burning of piles, broadcast burning of cutting units, re-arranging of fuels by crushing, mulching, lopping and scattering, etc. These activities are conducted for the most part in areas not considered habitat for any of the other listed or proposed species discussed in this document. These activities could cause disturbance to listed or proposed species.

Pile and broadcast burning would occur normally within portions of the proposed harvest areas. Most acres will be planted. Burning and planting operations that utilize power equipment may affect any owls or murrelets that might be present in surveyed and unsurveyed suitable habitat, through noise disturbance. The PDCs described in this document would be implemented for the activities.

Pile and broadcast burning would occur annually on approximately 5,800 acres (BLM 3,800, ROR 1,000, and SIS 1,000) of the proposed harvest area. Planting would also occur annually on as much as 6,150 acres (5,000 BLM, ROR 350, and SIS 800), and because it is routinely accomplished with hand tools (no power equipment), it would have no effect on owls or murrelets.

Slash piles, fuel reduction, understory, or “maintenance” burning within plant communities within sale areas can affect occurrences and habitats of Gentner’s fritillary, as well as other native plants. Spring/early summer burning could directly kill growing Gentner’s fritillary plants, but could also create new habitat that could become occupied. The species is adapted to fire in the summer and early fall when it is dormant underground. Fire can be used to promote, enhance, or maintain these edge habitats and create suitable habitat.

The affects of fire on Cook’s lomatium are not known. Where this species occurs in wet meadows and at the edge of vernal pools, fire may have been infrequent and may have had a limited role in the maintenance of these communities. However, the grassland mosaics (dry, open stringer meadows) in the Illinois Valley are being invaded by shrubs. Succession happens. Fire in these sites in the late summer or fall could benefit these communities and Cook’s lomatium. Thinning, slashing, and burning activities may occur in riparian reserves and could affect Cook’s lomatium if present at those sites.

In most cases, reforestation is completed within 1 to 3 years after harvest and timber stand improvement (TSI) activities are usually completed within 5 to 7 years after planting. Much of the TSI activities are designed to promote the health of young stands by controlling stocking basal area and maintaining growth rates sufficient to resist insect and disease infestations. Some harvested stands may need treatment up to 30 years after harvest, as a result of reforestation failures or natural agents such as fire or windstorms.

## **Cumulative Impacts to the Action Area from Non-Federal Land ~**

Cumulative effects are those effects of future tribal, county, state or private activities, not

involving a Federal nexus, that are reasonable certain to occur within the Action Area of the federal action subject to consultation (50 CFR 402.2). The effects of future federal actions will be evaluated during future Section 7 consultations and are not included in cumulative effects under ESA. Cumulative effects analysis of foreseeable state and private actions provide the FWS and the Action Agencies an accurate environmental baseline to assess impacts of federal actions. Table 8 provides an estimate of the acres of non-federal that is adjacent to the federal land (for National Forest only).

<b>Table 8. Private or state administered suitable habitat for spotted owls or marbled murrelets near federal lands (Data from 2001 BA).</b>			
Management Unit	Private, state or other non- federal lands in boundary (Acres w/in 1 mile)	Private, state, or other non-federal lands in late-successional stage [Acres (%)]	% Acres with dominant over- story < 80 yrs old
Ashland	11,560	1,080 ( 9)	90 %
Applegate AMA	22,835	4,518 (20)	80 %
Butte Falls/Prospect	26,400	2,600 (10)	90 %
Siskiyou NF	120,000	9,142 ( 8)	92 %
BLM, Medford District	Large percentage and juxtaposition of private inholdings within BLM boundaries make such calculations misleading	N/A	N/A
<b>TOTAL</b>	<b>180,795 (w/out BLM)</b>	<b>17,340</b>	<b>90%</b>

Most active bald eagle nest sites within the Action Area are located on federal lands. However, non-federal land harbors two territories and alternate nest sites for several other territories. State regulations protect bald eagle nest trees, and these non-federal sites are expected to receive adequate protection from habitat change and disturbance.

Several known spotted owl activity centers within the Action Area are located partially on private or other non-federal ownerships (state, county, etc). Under Oregon Forest Practices Rules (629-665-0210), owl nest sites (70 acre core areas) are protected for at least three years following the last year of occupation. Timber Harvest Plans (THP) on Private lands in the state of California State are governed under the California Environmental Quality Act; each THP goes through an extensive review process, including a review by NOAA Fisheries and USDI Fish and Wildlife Service (Rich Klug, pers. comm.).

The amount of suitable habitat for spotted owls or marbled murrelets on private land is unknown, though it is likely to be relatively low. Although private lands may provide some dispersal habitat for spotted owls due to the selective harvest regimes typically carried out in the Rogue Valley and surrounding area, under the typical rotation age of 40 to 60 years, the amount of

dispersal habitat for spotted owls on private land would be expected to decline. The FWS concluded in the Biological Opinion for the NWFP (p. 44-45, Appendix G in USDA Forest Service and USDI Bureau of Land Management 1994):

*“Non-federal landowner compliance with the take prohibition of the [Endangered Species] Act does not assure the maintenance of spotted owl dispersal habitat within Areas of Concern and checkerboard ownership nor provide for improvement of existing populations. Consequently, it is likely that a reduction in dispersal habitat would occur on non-federal lands in certain areas.”*

Known occupied marbled murrelet sites and the majority of suitable habitat is located on the Siskiyou National Forest lands within the Action Area. Private land within the Action Area is unlikely to provide significant amounts of marbled murrelet habitat. Current forest practice regulations for private lands do not address marbled murrelets. The FWS concluded in the Biological Opinion for the NWFP (p. 46, Appendix G in USDA and USDI 1994):

*“...because a significant portion of this species' range is on non-federal lands, it may not be possible to provide for the recovery of this species without contribution from these areas. therefore, timber harvest that is currently occurring on non-federal lands in all three states may be contributing to a future inability to recover the marbled murrelet.”*

Habitat for the northern spotted owl, marbled murrelet, and bald eagles has not been comprehensively classified or surveyed on state and private lands. Private rural residential tracts of land generally range in size from 10 to 60 acres. State and private timber company holdings cover many thousand acres within the Action Area. Most state and private holdings have been harvested within the last 50 years and are now either in woodland residential, agricultural, or as managed shrub, pole, or large pole condition classes. Some mature forested stands exist on county, state, or private land, but these stands represent a small proportion of private land ownership. The mature stands provide limited amounts of suitable habitat for listed forest species. Mature and large pole stands are presently being logged at an accelerated rate due to economic/market conditions. Managed private and state timberlands are likely to be maintained in younger seral stages throughout their harvest rotation. The conversion of timberland to rural residential/non-timber agriculture has accelerated throughout the lower elevations and foothills of the Action Area, and this trend is expected to continue into the foreseeable future.

The majority of state and private forests in Washington, Oregon, and Northern California is managed for timber production (Thomas and others 1990, USDA Forest Service/USDA Bureau of Land Management 1994a). Historically, non-federal landowners practiced even-aged management (clear cutting) of timber over extensive acreages. The Action Agencies assume that these past management practices will continue and reduce the amount of suitable habitat for spotted owl and marbled murrelets on non-federal lands over time. Harvest activities on state and private lands can be expected to impact spotted owls and marbled murrelets located within adjacent federal lands by removing and fragmenting habitat and through disturbance activities adjacent to occupied sites during sensitive periods.

Federal lands will make significant contributions to the recovery of spotted owls and marbled murrelets through the implementation of the NWFP. However, non-federal lands are important

where federal lands are absent or where suitable habitat on federal lands is believed insufficient to maintain local populations. In the case of the spotted owl, non-federal lands are not expected to provide demographic support across and between physiographic provinces (Thomas and others 1990, USDA Forest Service 1990b, USDI Fish and Wildlife Service 1992a, USDA Forest Service/USDI Bureau of Land Management 1994a). Contributions in certain regions (including the Ashland I-5 corridor and the Cheney-Slate watershed between Medford BLM and Siskiyou National Forest) may provide important habitat to LSRs with poor reproductive potential or with poor connection to adjacent LSRs. Over 60 percent of the land within the boundary of the Medford District BLM is private. The Conservation Strategy for the Northern Spotted Owl (Thomas and others 1990) recommended that non-federal lands in the Galesville and the Ashland-I5 areas of dispersal concern, and areas to the west, be managed to provide spotted owl dispersal habitat to facilitate movement between the Klamath and adjacent provinces.

Habitat for McDonalds's rockcress, Gentner's fritillary, large-flowered wooly meadowfoam, and Cook's lomatium has not been well-classified, mapped, or surveyed on state and private lands in the Rogue Valley. Habitat for large-flowering wooly meadowfoam and Cook's lomatium has been well documented in the Agate desert on all ownerships in this small area north of Medford. This is due to the existence of the Nature Conservancy refuge in the Agate desert. For plants listed or proposed under the ESA, there is no federal requirement to manage or survey for plant species on non-federal lands, nor is there an incidental take provision under Section 10 of the act. Section 9 of the act does prohibit the "removal or possession of any listed plant from lands under federal jurisdiction" and "maliciously damaging or destroying any such species on any such (federal) area." Existing Oregon State laws for endangered species do require State public lands (state, county, city) to address endangered plants, however, this is not well enforced. Few of these agencies employ botanists to survey for and manage these species. For the listed plants addressed in this BA, populations and suitable habitat on non-federal lands have likely experienced negative impacts over the last 150 years from resource extraction (mining, logging), the conversion of low elevation wild-lands to agricultural systems, and rural/urban development. Habitat and populations of Gentner's fritillary and Cook's lomatium (outside the Agate desert) on non-federal lands will continue to be affected, or lost, as the human population of the Rogue Valley sub-basin expands. Populations may survive if located within green belts, parks, and refuges, but the ability of these populations to persist across an ever-increasing fragmented landscape is unknown. Several populations of Gentner's fritillary exist in private woodlands around the city of Jacksonville, and are currently under the stewardship of concerned and ecologically minded citizens. The likelihood of persistence on these sites for the next 100 years is unknown, and will depend upon future landowners, or revised state laws that would require protection. Populations occurring on federal lands, where the ESA specifically mandates conservation, will likely serve as the primary refugia for these species into the 22<sup>nd</sup> century.

## VI. BIOLOGICAL ASSESSMENT CONCLUSIONS

The determination of effects table (Table 9) reflects the entire project, including the direct, indirect, interrelated and interdependent and cumulative effects. There will be situations where "may affect, not likely to adversely affect" (NLAA) determinations will be made on specific projects, if adverse affects can be avoided, even if the determination on the table is a LAA.

determinations are also implied. MA = May Affect; CHU=Critical Habitat Unit.											
Activity Type	Spotted Owl	Spotted Owl CHU	Marbled Murrelet	Marbled Murrelet CHU	Bald Eagle	Fairy Shrimp	Fairy Shrimp CHU	Cook's Lomatium	Gentner's Fritillary	Large-flowered Woolly Meadowfoam	McDonald's Rockcress
Tree Harvest	LAA	MA	LAA	MA	NLAA	NE	NE	NE	NLAA	NE	NE
Vegetation Management	LAA	MA	LAA	MA	NLAA	NE	NE	NLAA	NLAA	NE	NE
Watershed Restoration	LAA	MA	LAA	MA	NLAA	NLAA	MA	NLAA	NLAA	NLAA	NLAA
Recreation	LAA	MA	LAA	MA	NLAA	LAA	MA	NLAA	NLAA	NLAA	NLAA
Fuels Management	*NLAA	MA	*NLAA	MA	NLAA	NE	NE	NLAA	NLAA	NE	NLAA
Grazing	NE	NE	NE	NE	NE	NLAA	MA	NE	NLAA	NE	NE
Special Forest Products	NLAA	MA	NLAA	NE	NE	NE	NE	NE	NLAA	NE	NE
Road Maintenance /Construction	LAA	MA	LAA	MA	NLAA	NE	NE	NLAA	NLAA	NLAA	NLAA
Road Use Permits	LAA	MA	LAA	MA	NLAA	NE	NE	NE	NE	NE	NE
Other Special Use Permits	NLAA	MA	NLAA	MA	NLAA	NE	NE	NLAA	NLAA	NLAA	NLAA
Mining And Quarry Operation	LAA	MA	LAA	MA	NLAA	NE	NE	NLAA	NLAA	NE	NLAA
Cultural	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Weed Control	NE	NE	NE	NE	NE	NE	NE	NLAA	NLAA	NLAA	NLAA

\* Fuel breaks

It is the conclusion of this biological assessment that proposed actions may affect listed species or their designated critical habitat as documented above. In addition, disturbance from some of the activities above “may affect and likely adversely affect” (LAA) adjacent undetected individual spotted owls or marbled murrelets. This is true for the “excepted” projects listed in Table 2. Formal consultation is requested on the actions “may affect and likely to adversely affect” (LAA) listed species or designated critical habitat. We also request concurrence on “may affect, not likely to adversely affect” (NLAA) determinations made relative to all actions included in this assessment.

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## Maps and Tables

- Map 1. Section 7 watersheds. Boundaries of 5th Field Watersheds also shown.
- Table 1. Table listing all 5th Field Watersheds by number and name.
- EBTs . Environmental Baseline Tables. Baseline Acres for Spotted Owl and Marbled Murrelet habitat, plus Critical Habitat Acres for Spotted Owl. Summaries of changes in the baseline acres due to Timber Sales and Wildfires since 1996. One summary table plus one table for each of 14 Section 7 Watersheds (these were the Table 2's in our previous programmatic BAs).

## Appendices

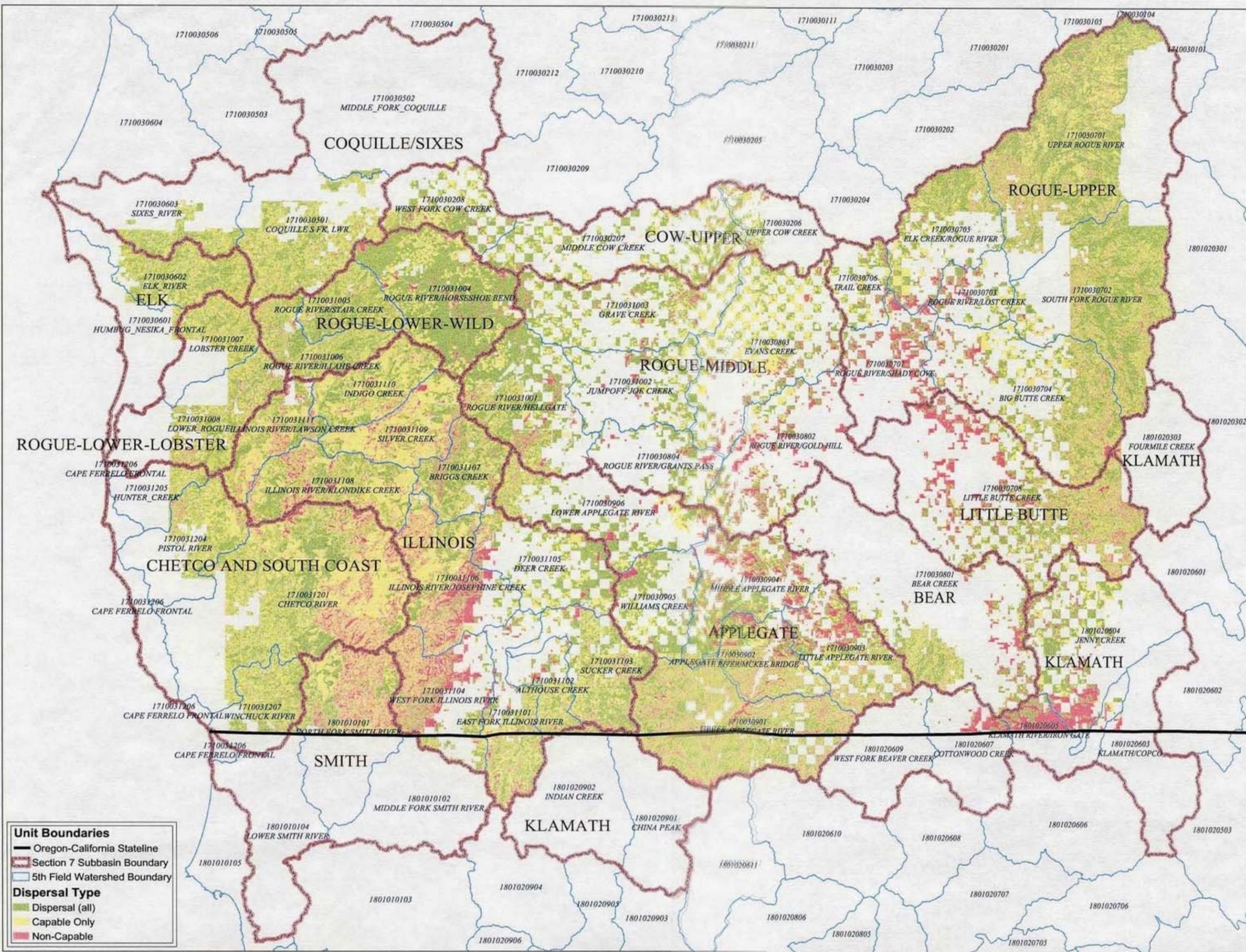
- Appendix A. List of timber Sale Projects Currently Proposed for FY01/02/03 ..... A-1
- Appendix B. CHU Descriptions, including Map ..... B-1
- Appendix C. LSR Descriptions, including Map ..... C-1
- Appendix D. Blank Project Tracking Forms (for submission to FWS) ..... D-1
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- Appendix G. Spotted Owl Dispersal Habitat by - Tables (5<sup>th</sup> field), Map (Sections). G-1
- Appendix H. Southwest Oregon – Change in Inland Survey Area for Marbled Murrelet, Survey Map, and CHU Map..... H-1
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- Appendix J. Range Maps for Listed plant species and Critical Habitat for vernal pool fairy shrimp ..... J-1

# Section 7 Subbasins with 5th Field Watersheds and Spotted Owl Dispersal Habitat (Medford BLM, Rogue & Siskiyou NF)

Main Map Scale  
1 inch = 10.71 miles



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.



**Unit Boundaries**

- Oregon-California Stateline
- Section 7 Subbasin Boundary
- 5th Field Watershed Boundary

**Dispersal Type**

- Dispersal (all)
- Capable Only
- Non-Capable

**5th Field Watersheds for the Rogue River and Siskiyou National Forests, and Medford District of the Bureau of Land Management (plus adjacent Coos Bay District BLM).**

For Programmatic Consultation with USDI Fish and Wildlife Service.

Table HUC5. Rogue River National Forest (ROR), Siskiyou National Forest (SIS) and Medford BLM (MED), by 5 <sup>th</sup> Field Watershed. Grouped by Section 7 Watersheds. Many HUC5's are peripheral to the land managed by the Rogue River and Siskiyou National Forests, and the Medford District of the Bureau of Land Management (See HUC5 map). HUC5's are based on the 2002 update of HUC5 boundaries.		
HUC5 ID	Huc5 Watershed Name	HUC5 Acres
<b>Applegate</b>		
1710030901	Upper Applegate River	142,208
1710030902	Applegate River/Mckee Bridge	52,258
1710030903	Little Applegate River	72,261
1710030904	Middle Applegate River	82,571
1710030905	Williams Creek	52,942
1710030906	Lower Applegate River	90,635
<b>TOTALS</b>		<b>492,875</b>
<b>Bear</b>		
1710030801	Bear Creek	231,094
<b>TOTALS</b>		<b>231,094</b>
<b>Chetco and South Coast</b>		
1710031201	Chetco River	225,073
1710031204	Pistol River	66,820
1710031205	Hunter Creek	28,451
1710031207	Winchuck River	45,578
<b>TOTALS</b>		<b>365,922</b>
<b>Coquille/Sixes</b>		
1710030501	Coquille S Fork, Lower	108,300
1710030502	Middle Fork Coquille	197,121
1710030603	Sixes River	85,831
<b>TOTALS</b>		<b>394,252</b>
<b>Cow-Upper</b>		
1710030201	Upper South Umpqua River	87,055
1710030202	Jackson Creek	102,312
1710030204	Elk Creek/South Umpqua	54,329
1710030205	South Umpqua River	141,460
1710030206	Upper Cow Creek	47,436

Table HUC5. Rogue River National Forest (ROR), Siskiyou National Forest (SIS) and Medford BLM (MED), by 5<sup>th</sup> Field Watershed. Grouped by Section 7 Watersheds. Many HUC5's are peripheral to the land managed by the Rogue River and Siskiyou National Forests, and the Medford District of the Bureau of Land Management (See HUC5 map). HUC5's are based on the 2002 update of HUC5 boundaries.

HUC5 ID	Huc5 Watershed Name	HUC5 Acres
1710030207	Middle Cow Creek	113,048
1710030208	West Fork Cow Creek	55,871
1710030209	Lower Cow Creek	102,417
<b>TOTALS</b>		<b>703,928</b>
<b>Elk</b>		
1710030601	Humbug Nesika Frontal	55,637
1710030602	Elk River	59,332
<b>TOTALS</b>		<b>114,969</b>
<b>Illinois</b>		
1710031101	East Fork Illinois River	57,624
1710031102	Althouse Creek	29,242
1710031103	Sucker Creek	62,495
1710031104	West Fork Illinois River	76,931
1710031105	Deer Creek	72,572
1710031106	Illinois River/Josephine Creek	81,672
1710031107	Briggs Creek	43,729
1710031108	Illinois River/Klondike Creek	67,063
1710031109	Silver Creek	51,592
1710031110	Indigo Creek	49,063
1710031111	Illinois River/Lawson Creek	41,157
<b>TOTALS</b>		<b>633,140</b>
<b>Klamath</b>		
1801020301	Wood River	122,654
1801020302	Klamath Lake	265,442
1801020303	Fourmile Creek	74,504
1801020601	Spencer Creek	54,157
1801020603	Klamath/Copco	86,728
1801020604	Jenny Creek	134,329
1801020605	Klamath River/Iron Gate	42,123
1801020607	Cottonwood Creek	63,544
1801020609	West Fork Beaver Creek	69,661
1801020610	Beaver Creek	98,606
1801020611	Grider Creek	81,768
1801020901	China Peak	67,170
1801020902	Indian Creek	86,270
1801020904	Clear Creek	71,307

Table HUC5. Rogue River National Forest (ROR), Siskiyou National Forest (SIS) and Medford BLM (MED), by 5<sup>th</sup> Field Watershed. Grouped by Section 7 Watersheds. Many HUC5's are peripheral to the land managed by the Rogue River and Siskiyou National Forests, and the Medford District of the Bureau of Land Management (See HUC5 map). HUC5's are based on the 2002 update of HUC5 boundaries.

HUC5 ID	Huc5 Watershed Name	HUC5 Acres
<b>TOTALS</b>		<i>1,318,263</i>
<b>Little Butte</b>		
1710030708	Little Butte Creek	238,594
<b>TOTALS</b>		<i>238,594</i>
<b>Rogue-Lower-Lobster</b>		
1710031007	Lobster Creek	44,254
1710031008	Lower Rogue	82,691
<b>TOTALS</b>		<i>126,945</i>
<b>Rogue-Lower-Wild</b>		
1710031004	Rogue River/Horseshoe Bend	104,084
1710031005	Rogue River/Stair Creek	36,476
1710031006	Rogue River/Illahe Creek	44,938
<b>TOTALS</b>		<i>185,498</i>
<b>Rogue-Middle</b>		
1710031001	Rogue River/Hellgate	93,317
1710031002	Jumpoff Joe Creek	69,698
1710031003	Grave Creek	104,417
1710030802	Rogue River/Gold Hill	135,959
1710030803	Evans Creek	143,280
1710030804	Rogue River/Grants Pass	53,636
<b>TOTALS</b>		<i>600,307</i>
<b>Rogue-Upper</b>		
1710030101	Diamond Lake	42,946
1710030104	Clearwater	49,654
1710030105	Fish Creek	53,621
1710030701	Upper Rogue River	245,447
1710030702	South Fork Rogue River	159,016
1710030703	Rogue River/Lost Creek	36,291
1710030704	Big Butte Creek	158,211
1710030705	Elk Creek/Rogue River	85,427
1710030706	Trail Creek	35,309
1710030707	Rogue River/Shady Cove	74,230
<b>TOTALS</b>		<i>940,152</i>
<b>Smith</b>		
1801010101	North Fork Smith River	101,099
1801010102	Middle Fork Smith River	83,719

Table HUC5. Rogue River National Forest (ROR), Siskiyou National Forest (SIS) and Medford BLM (MED), by 5<sup>th</sup> Field Watershed. Grouped by Section 7 Watersheds. Many HUC5's are peripheral to the land managed by the Rogue River and Siskiyou National Forests, and the Medford District of the Bureau of Land Management (See HUC5 map). HUC5's are based on the 2002 update of HUC5 boundaries.

HUC5 ID	Huc5 Watershed Name	HUC5 Acres
1801010104	Lower Smith River	88,745
	<b>TOTALS</b>	273,563
	<b>GRAND TOTALS</b>	6,616,502

Environmental Baseline Tables. Medford BLM, Rogue River & Siskiyou NFs. 1. Protected = "large" land allocations with no programmed timber harvest (Wilderness, LSR, Riparian Reserves except intermittent, etc. Unprotected incl all Matrix, as well as Known Spotted Owl Activity Centers and other small "protected" areas)						
SECTION 7 WATERSHEDS = <b>All Basins</b> 12 Aug 03 Ranger Dist/Resource Areas = SIS, ROR, Med/Coos Bay BLM	Changes from 96 Baseline			Baseline Acres 18Oct96 (BO 1-7-96-F-392)		
	New Total (% change)	Fires 96-03	Timber Sales 96-03	Total	Total Protected <sup>1</sup> (+ % of Total)	Total Un-protected (+ % of Total)
1. Total Acreage within Sub-Basin, all Ownerships				5,051,868		
-Private, State and other Government				2,512,108		
-Federal Acres				2,539,760		
2. Land Allocations - Federal (hierarchal, no acres double-counted)						
-Congressionally Reserved Areas				352,740		
-Late Successional Reserves (not incl 100 ac owl LSRs)				878,407		
-Adaptive Management Areas				178,193		
-Administratively Withdrawn Areas				187,383		
-Riparian Reserves (Matrix and AMA Riparian acres only)				240,893	Unmapped Class IV streams counted as within Matrix	
-Matrix				702,144		
3. SPOTTED OWL HABITAT - Federal Land						
-Total Spotted Owl Habitat - Capable Acres (not incl disp/suit)				435,687	205,705 (47%)	227,965 (53%)
-Total Spotted Owl Habitat - Dispersal Acres (not incl suit) (increase due to NRF downgrading)	422,732 (-10%)	-61,525 (-13%)	+16,162 (+3%)	469,683	282,826 (59%)	197,496 (41%)
-Total Spotted Owl Habitat - Suitable Acres (NRF) (* Unprotected = 278,034 acres combined timber sales-fires.)	920,484 (-13%) *	-100,430 (-10%)	-32,495 (-3%)	1,053,409	730,647 (69%)	322,762 (31%)
-Total Acres in Critical Habitat within <b>All Basins</b>				772,722	582,798 (75%)	189,924 (25%)
-Total Acres in Critical Habitat which is suitable (NRF)	356,651 (-9%)	-25,329 (-6%)	-9,005 (-3%)	390,985	304,070 (78%)	86,915 (22%)
4. SPOTTED OWL SITES - # Activity Centers (Fed Land)				819	450 (55%)	369 (45%)
-# Spotted Owl Sites (>40% NRF)				305	247 (81%)	58 (19%)
-# Spotted Owl Sites (30-40% NRF)				143	76 (53 %)	67 (47%)
-# Spotted Owl Sites (<30% NRF)				371	127 (34%)	244 (66%)
5. MARBLED MURRELET (Fed Land)						
-Total Marbled Murrelet - Capable Acres (not incl suitable)				692,263	536,867 (76%)	155,396 (24%)
-Total Marbled Murrelet - Suitable Habitat (to 50 miles) [Suitable habitat known range = 66,726 (wi -1,639 Biscuit)]	280,543 (-13%)	-37,089 (-12%)	-3,075 (-1%)	320,707	238,263 (74%)	82,444 (26%)
-Total Occupied Marbled Murrelet Sites	Data through FY 00			200	200 (100%)	0 (0%)
-Total Sites With MM Presence (not incl occupied sites)				486	Not Calculated	Not Calculated
6. BALD EAGLE - # Known Nest Sites (Fed Land)	Data through FY 00			24		

Environmental Baseline Tables. Medford BLM, Rogue River & Siskiyou NFS 1. Protected = "large" land allocations with no programmed timber harvest (Wilderness, LSR, Riparian Reserves except intermittent, etc. Unprotected incl all Matrix, as well as Known Spotted Owl Activity Centers and other small "protected" areas)						
SECTION 7 WATERSHEDS = <b>Applegate</b> 11 July 03 Ranger Dists/Resource Areas = SIS, ROR, Med/Coos Bay BLM	Changes from 96 Baseline			Baseline Acres 18Oct96 (BO 1-7-96-F-392)		
	New Total (% change)	Fires 96-03	Timber Sales 96-03	Total	Total Protected <sup>1</sup> (+ % of Total)	Total Un-protected (+ % of Total)
1. Total Acreage within Sub-Basin, all Ownerships				471,329		
-Private, State and other Government				157,195		
-Federal Acres				314,134		
2. Land Allocations - Federal (hierarchal, no acres double-counted)						
-Congressionally Reserved Areas				16,626		
-Late Successional Reserves (not incl 100 ac owl LSRs)				40,318		
-Adaptive Management Areas				178,193		
-Administratively Withdrawn Areas				25,808		
-Riparian Reserves (Matrix and AMA Riparian acres only)				52,955	Unmapped Class IV streams counted as within Matrix	
-Matrix				234		
3. SPOTTED OWL HABITAT - Federal Land						
-Total Spotted Owl Habitat - Capable Acres (not incl disp/suit)				55,707	14,953 (27%)	40,754 (73%)
-Total Spotted Owl Habitat - Dispersal Acres (not incl suit)	78,543 (+1%)	-238	+915	78,220	23,391 (30%)	54,829 (70%)
-Total Spotted Owl Habitat - Suitable Acres (NRF)	114,512 (-9%)	-3,126	-8,745	126,383	48,980 (39%)	77,403 (61%)
-Total Acres in Critical Habitat within Sub-basin				98,515	45,142 (46%)	53,373 (54%)
-Total Acres in Critical Habitat which is suitable (NRF)	41,2334 5%	-340	-1721 (4%)	43,294	22,809 (53%)	20,485 (47%)
4. SPOTTED OWL SITES - Total # Activity Center (Fed Land)						
-# Spotted Owl Sites (>40% NRF)				34	19 (56%)	15 (44%)
-# Spotted Owl Sites (30-40% NRF)				26	11 (44%)	15 (56%)
-# Spotted Owl Sites (<30% NRF)				85	16 (19%)	69 (81%)
5. MARBLED MURRELET (Fed Land)						
-Total Marbled Murrelet - Capable Acres (not incl suitable)				37,914	22,618 (60%)	15,296 (40%)
-Total Marbled Murrelet - Suitable Habitat (to 50 miles)	28,517 (>-1%)	0	-59 (>-1%)	28,576	20,363 (71%)	8,213 (29%)
-Total Occupied Marbled Murrelet Sites	Data through FY 00			0	N/A	N/A
-Total Sites With MM Presence (not incl occupied sites)				0	N/A	N/A
6. BALD EAGLE - # Known Nest Sites (Fed Land)						
	Data through FY 00			2		

Environmental Baseline Tables. Medford BLM, Rogue River & Siskiyou NFs 1. Protected = "large" land allocations with no programmed timber harvest (Wilderness, LSR, Riparian Reserves except intermittent, etc. Unprotected incl all Matrix, as well as Known Spotted Owl Activity Centers and other small "protected" areas)						
SECTION 7 WATERSHEDS = Bear Ranger Dists/Resource Areas = SIS, ROR, Med/Coos Bay BLM	Changes from 96 Baseline			Baseline Acres 18Oct96 (BO 1-7-96-F-392)		
	New Total (% change)	Fires 96-03	Timber Sales 96-03	Total	Total Protected <sup>1</sup> (+ % of Total)	Total Un-protected (+ % of Total)
1. Total Acreage within Sub-Basin, all Ownerships				231,110		
-Private, State and other Government				182,593		
-Federal Acres				48,517		
2. Land Allocations - Federal (hierarchal, no acres double-counted)						
-Congressionally Reserved Areas				0		
-Late Successional Reserves (not incl 100 ac owl LSRs)				12,579		
-Adaptive Management Areas				N/A		
-Administratively Withdrawn Areas				13,567		
-Riparian Reserves (Matrix and AMA Riparian acres only)				5,319	Unmapped Class IV streams counted as within Matrix	
-Matrix				17,052		
3. SPOTTED OWL HABITAT - Federal Land						
-Total Spotted Owl Habitat - Capable Acres (not incl disp/suit)				5,795	2,476 (43%)	3,319 (57%)
-Total Spotted Owl Habitat - Dispersal Acres (not incl suit)	13,352 (0%)	n/a	0	13,352	10,536 (79%)	2,816 (11%)
-Total Spotted Owl Habitat - Suitable Acres (NRF)	21,174 (-1%)	-72	-39	21,285	14,405 (68%)	6,880 (32%)
-Total Acres in Critical Habitat within Sub-basin				33,172	28,369 (86%)	4,803 (14%)
-Total Acres in Critical Habitat which is suitable (NRF)	15,412 (>-1%)	0	-39 (>-1%)	15,471	13,360 (86%)	2,111 (14%)
4. SPOTTED OWL SITES - Total # Activity Centers (Fed Land)						
-# Spotted Owl Sites (>40% NRF)				44	33 (75%)	11 (25%)
-# Spotted Owl Sites (30-40% NRF)				22	22 (100%)	0
-# Spotted Owl Sites (30-40% NRF)				4	4 (100%)	0
-# Spotted Owl Sites (<30% NRF)				18	7 (39%)	11 (61%)
5. MARBLED MURRELET (Fed Land)						
-Total Marbled Murrelet - Capable Acres (not incl suitable)				N/A		
-Total Marbled Murrelet - Suitable Habitat				N/A		
-Total Occupied Marbled Murrelet Sites				N/A		
-Total Sites With MM Presence (not incl occupied sites)				N/A		
6. BALD EAGLE - # Known Nest Sites (Fed Land)	Data through FY 00			1		

Environmental Baseline Tables. Medford BLM, Rogue River & Siskiyou NFs 1. Protected = "large" land allocations with no programmed timber harvest (Wilderness, LSR, Riparian Reserves except intermittent, etc. Unprotected incl all Matrix, as well as Known Spotted Owl Activity Centers and other small "protected" areas)						
SECTION 7 WTRSHDS = <b>Chetco/South Coast</b> 12 Aug 03 Ranger Dists/Resource Areas = SIS, ROR, Med/Coos BayBLM	Changes from 96 Baseline			Baseline Acres 18Oct96 (BO 1-7-96-F-392)		
	New Total (% change)	Fires 96-03	Timber Sales 96-03	Total	Total Protected <sup>1</sup> (+ % of Total)	Total Un-protected (+ % of Total)
1. Total Acreage within Sub-Basin, all Ownerships				382,849		
-Private, State and other Government				133,603		
-Federal Acres				249,246		
2. Land Allocations - Federal (hierarchal, no acres double-counted)						
-Congressionally Reserved Areas				99,639		
-Late Successional Reserves (not incl 100 ac owl LSRs)				79,805		
-Adaptive Management Areas				N/A		
-Administratively Withdrawn Areas				20,294		
-Riparian Reserves (Matrix and AMA Riparian acres only)				9,917	Unmapped Class IV streams counted as within Matrix	
-Matrix				39,591		
3. SPOTTED OWL HABITAT - Federal Land						
-Total Spotted Owl Habitat - Capable Acres (not incl disp/suit)				22,469	16,612 (74%)	5,857 (26%)
-Total Spotted Owl Habitat - Dispersal Acres (not incl suit)	44,725 (-31%)	-19,542	-200	64,467	52,453 (81%)	12,014 (19%)
-Total Spotted Owl Habitat - Suitable Acres (NRF)	68,916 (-25%)	-23,245	-261	92,422	79,609 (85%)	12,813 (15%)
-Total Acres in Critical Habitat within Sub-basin			0	46,343	45,721 (99%)	622 (1%)
-Total Acres in Critical Habitat which is suitable (NRF)	21,799 (-2%)	-341 (-2%)	0	22,140	21,963 (99%)	177 (1%)
4. SPOTTED OWL SITES - Total # Activity Centers(Fed Land)				44	38 (86%)	6 (14%)
-# Spotted Owl Sites (>40% NRF)				28	25 (89%)	3 (11%)
-# Spotted Owl Sites (30-40% NRF)				12	9 (75%)	3 (25%)
-# Spotted Owl Sites (<30% NRF)				4	4 (100%)	0
5. MARBLED MURRELET (Fed Land)						
-Total Marbled Murrelet - Capable Acres (not incl suitable)				144,736	117,027 (81%)	27,709 (19%)
-Total Marbled Murrelet - Suitable Habitat This Area is in the Known Range	32,871 (-5%)	-1,607 (-5%)	-261 (-1%)	34,639	30,940 (89%)	3,699 (11%)
-Total Occupied Marbled Murrelet Sites	Data through FY 00			58	58 (100%)	0
-Total Sites With MM Presence (not incl occupied sites)				130	Not Calculated	Not Calculated
6. BALD EAGLE - # Known Nest Sites (Fed Land)	Data through FY 00			0		

Environmental Baseline Tables. Medford BLM, Rogue River & Siskiyou NFs 1. Protected = "large" land allocations with no programmed timber harvest (Wilderness, LSR, Riparian Reserves except intermittent, etc. Unprotected incl all Matrix, as well as Known Spotted Owl Activity Centers and other small "protected" areas)						
SECTION 7 WATERSHEDS = <b>Coquille/Sixes</b> 11 July 03 Ranger Dists/Resource Areas = SIS, ROR, Med/Coos Bay BLM	Changes from 96 Baseline			Baseline Acres 18Oct96 (BO 1-7-96-F-392)		
	New Total (% change)	Fires 96-03	Timber Sales 96-03	Total	Total Protected <sup>1</sup> (+ % of Total)	Total Un-protected (+ % of Total)
1. Total Acreage within Sub-Basin, all Ownerships				864,757		
-Private, State and other Government				775,604		
-Federal Acres				89,153		
2. Land Allocations - Federal (hierarchal, no acres double-counted)						
-Congressionally Reserved Areas				8,366		
-Late Successional Reserves (not incl 100 ac owl LSRs)				57,321		
-Adaptive Management Areas				N/A		
-Administratively Withdrawn Areas				4,772		
-Riparian Reserves (Matrix and AMA Riparian acres only)				3,708	Unmapped Class IV streams counted as within Matrix	
-Matrix				14,986		
3. SPOTTED OWL HABITAT - Federal Land						
-Total Spotted Owl Habitat - Capable Acres (not incl disp/suit)				9,963	7,891 (79%)	2,072 (21%)
-Total Spotted Owl Habitat - Dispersal Acres (not incl suit)	22,997 (0%)	n/a	+3	23,000	18,448 (80%)	4,552 (20%)
-Total Spotted Owl Habitat - Suitable Acres (NRF)	40,713 (0%)	n/a	-170	40,883	35,577 (87%)	5,306 (13%)
-Total Acres in Critical Habitat within Sub-basin				47,248	43,303 (92%)	3,945 (8%)
-Total Acres in Critical Habitat which is suitable (NRF)	22,979 (0%)		-126	23,105	21,293 (92%)	1,812 (8%)
4. SPOTTED OWL SITES - Total # Activity Centers (Fed Land)				24	19 (79%)	5 (21%)
-# Spotted Owl Sites (>40% NRF)				13	11 (85%)	2 (15%)
-# Spotted Owl Sites (30-40% NRF)				9	7 (78%)	2 (12%)
-# Spotted Owl Sites (<30% NRF)				2	1 (50%)	1 (50%)
5. MARBLED MURRELET (Fed Land)						
-Total Marbled Murrelet - Capable Acres (not incl suitable)				55,304	51,252 (93%)	4,052 (7%)
-Total Marbled Murrelet - Suitable Habitat This Area is in the Known Range	18,370 (-1%)	0	-175 (-1%)	18,545	16,840 (91%)	1,705 (9%)
-Total Occupied Marbled Murrelet Sites	Data through FY 00			25	26 (100%)	0
-Total Sites With MM Presence (not incl occupied sites)				130	Not Calculated	Not Calculated
6. BALD EAGLE - # Known Nest Sites (Fed Land)	Data through FY 00			2		

Environmental Baseline Tables. Medford BLM, Rogue River & Siskiyou NFs 1. Protected = "large" land allocations with no programmed timber harvest (Wilderness, LSR, Riparian Reserves except intermittent, etc. Unprotected incl all Matrix, as well as Known Spotted Owl Activity Centers and other small "protected" areas)						
SECTION 7 WATERSHEDS = <b>Cow-Upper</b> 11 July 03 Ranger Dists/Resource Areas = SIS, ROR, Med/Coos Bay BLM	Changes from 96 Baseline			Baseline Acres 18Oct96 (BO 1-7-96-F-392)		
	New Total (% change)	Fires 96-03	Timber Sales 96-03	Total	Total Protected <sup>1</sup> (+ % of Total)	Total Un-protected (+ % of Total)
1. Total Acreage within Sub-Basin, all Ownerships				214,169		
-Private, State and other Government				133,775		
-Federal Acres				80,394		
2. Land Allocations - Federal (hierarchal, no acres double-counted)						
-Congressionally Reserved Areas				0		
-Late Successional Reserves (not incl 100 ac owl LSRs)				26,653		
-Adaptive Management Areas				N/A		
-Administratively Withdrawn Areas				2,212		
-Riparian Reserves (Matrix and AMA Riparian acres only)				8,480	Unmapped Class IV streams counted as within Matrix	
-Matrix				43,049		
3. SPOTTED OWL HABITAT - Federal Land						
-Total Spotted Owl Habitat - Capable Acres (not incl disp/suit)				23,971	9,710 (41%)	14,261 (59%)
-Total Spotted Owl Habitat - Dispersal Acres (not incl suit)	6,722 (+4%)	n/a	+242	6,480	2,954 (46%)	3,526 (54%)
-Total Spotted Owl Habitat - Suitable Acres (NRF)	43,848 (-3%)	n/a	-1,260	45,108	18,336 (41%)	26,772 (59%)
-Total Acres in Critical Habitat within Sub-basin CHU		Dispersal	+345	46,377	27,661 (60%)	18,716 (40%)
-Total Acres in Critical Habitat which is suitable (NRF)	24,460 (-3%)	0	-877	25,337	14,977 (59%)	10,360 (41%)
4. SPOTTED OWL SITES - Total # Activity Centers(Fed Land)				62	19 (30%)	43 (70%)
-# Spotted Owl Sites (>40% NRF)				9	3 (33%)	6 (67%)
-# Spotted Owl Sites (30-40% NRF)				14	2 (14%)	12 (86%)
-# Spotted Owl Sites (<30% NRF)				39	14 (36%)	25 (64%)
5. MARBLED MURRELET (Fed Land)						
-Total Marbled Murrelet - Capable Acres (not incl suitable)				14,605	883 (6%)	13,722 (94%)
-Total Marbled Murrelet - Suitable Habitat (to 50 miles) This Area is not in Known Range	21,952 (-2%)	0	-441 (-2%)	22,393	4,418 (20%)	17,975 (80%)
-Total Occupied Marbled Murrelet Sites	Data through FY 00			0	N/A	N/A
-Total Sites With MM Presence (not incl occupied sites)				1	N/A	N/A
6. BALD EAGLE - # Known Nest Sites (Fed Land)	Data through FY 00			0		

Environmental Baseline Tables. Medford BLM, Rogue River & Siskiyou NFs 1. Protected = "large" land allocations with no programmed timber harvest (Wilderness, LSR, Riparian Reserves except intermittent, etc. Unprotected incl all Matrix, as well as Known Spotted Owl Activity Centers and other small "protected" areas)						
SECTION 7 WATERSHEDS = Elk + 11 July 03 Ranger Dists/Resource Areas = SIS, ROR, Med/Coos Bay BLM	Changes from 96 Baseline			Baseline Acres 18Oct96 (BO 1-7-96-F-392)		
	New Total (% change)	Fires 96-03	Timber Sales 96-03	Total	Total Protected <sup>1</sup> (+ % of Total)	Total Un-protected (+ % of Total)
1. Total Acreage within Sub-Basin, all Ownerships				96,099		
-Private, State and other Government				47,741		
-Federal Acres				48,358		
2. Land Allocations - Federal (hierarchal, no acres double-counted)						
-Congressionally Reserved Areas				9,998		
-Late Successional Reserves (not incl 100 ac owl LSRs)				22,996		
-Adaptive Management Areas				N/A		
-Administratively Withdrawn Areas				6,683		
-Riparian Reserves (Matrix and AMA Riparian acres only)				1,893	Unmapped Class IV streams counted as within Matrix	
-Matrix				6,788		
3. SPOTTED OWL HABITAT - Federal Land						
-Total Spotted Owl Habitat - Capable Acres (not incl disp/suit)				5,386	4,452 (83%)	934 (17%)
-Total Spotted Owl Habitat - Dispersal Acres (not incl suit)	14,366	n/a	0	14,366	12,457 (87%)	1,909 (13%)
-Total Spotted Owl Habitat - Suitable Acres (NRF)	22,533	n/a	0	22,533	19,661 (86%)	2,872 (14%)
-Total Acres in Critical Habitat within Sub-basin				9,151	9,064 (99%)	87 (1%)
-Total Acres in Critical Habitat which is suitable (NRF)	4,343			4,343	4,307 (99%)	36 (1%)
4. SPOTTED OWL SITES - Total # Activity Centers (Fed Land)						
-# Spotted Owl Sites (>40% NRF)				6	6 (100%)	0
-# Spotted Owl Sites (30-40% NRF)				0	0	0
-# Spotted Owl Sites (<30% NRF)				0	0	0
5. MARBLED MURRELET (Fed Land)						
-Total Marbled Murrelet - Capable Acres (not incl suitable)				31,514	27,135 (86%)	4,379 (14%)
-Total Marbled Murrelet - Suitable Habitat This Area is in the Known Range	0	0	0	10,881	9,545 (88%)	1,336 (14%)
-Total Occupied Marbled Murrelet Sites	Data through FY 00			44	44 (100%)	0
-Total Sites With MM Presence (not incl occupied sites)				105	Not Calculated	Not Calculated
6. BALD EAGLE - # Known Nest Sites (Fed Land)						
	Data through FY 00			0		

Environmental Baseline Tables. Medford BLM, Rogue River & Siskiyou NFs 1. Protected = "large" land allocations with no programmed timber harvest (Wilderness, LSR, Riparian Reserves except intermittent, etc. Unprotected incl all Matrix, as well as Known Spotted Owl Activity Centers and other small "protected" areas)						
SECTION 7 WATERSHEDS = <b>Illinois</b> Ranger Dists/Resource Areas = SIS, ROR, Med/Coos Bay BLM	Changes from 96 Baseline			Baseline Acres 18Oct96 (BO 1-7-96-F-392)		
	New Total (% change)	Fires 96-03	Timber Sales 96-03	Total	Total Protected <sup>1</sup> (+ % of Total)	Total Un-protected (+ % of Total)
1. Total Acreage within Sub-Basin, all Ownerships				630,785		
-Private, State and other Government				119,253		
-Federal Acres				511,532		
2. Land Allocations - Federal (hierarchal, no acres double-counted)						
-Congressionally Reserved Areas				71,359		
-Late Successional Reserves (not incl 100 ac owl LSRs)				220,617		
-Adaptive Management Areas				N/A		
-Administratively Withdrawn Areas				66,751		
-Riparian Reserves (Matrix and AMA Riparian acres only)				30,588	Unmapped Class IV streams counted as within Matrix	
-Matrix				122,217		
3. SPOTTED OWL HABITAT - Federal Land						
-Total Spotted Owl Habitat - Capable Acres (not incl disp/suit)				44,394	28,477 (64%)	15,917 (36%)
-Total Spotted Owl Habitat - Dispersal Acres (not incl suit)	53,952 (-37%)	-33,562	+1,274	86,240	65,854 (76%)	20,386 (24%)
-Total Spotted Owl Habitat - Suitable Acres (NRF)	135,841 (-32%)	-61,149	-2,837	199,828	158,266 (79%)	41,562 (21%)
-Total Acres in Critical Habitat within Sub-basin		Dispersal	-7	117,760	105,684 (90%)	12,076 (10%)
-Total Acres in Critical Habitat which is suitable (NRF)	33,787 (-42%)	-23,252 (-40%)	-855 (-1%)	57,894	51,631 (89%)	6,263 (11%)
4. SPOTTED OWL SITES - Total # Activity Centers (Fed Land)				82	59 (72%)	23 (28%)
-# Spotted Owl Sites (>40% NRF)				49	38 (78%)	11 (22%)
-# Spotted Owl Sites (30-40% NRF)				18	13 (72%)	5 (28%)
-# Spotted Owl Sites (<30% NRF)				15	8 (53%)	7 (47%)
5. MARBLED MURRELET (Fed Land)						
-Total Marbled Murrelet - Capable Acres (not incl suitable)				231,506	176,694 (76%)	54,812 (24%)
-Total Marbled Murrelet - Suitable Habitat (to 50 miles) This Area is not in Known Range; some in survey buffer	57,456 (-37%)	-33,248 (-36%)	-513 (-1%)	91,217	72,834 (82%)	18,383 (18%)
-Total Occupied Marbled Murrelet Sites	Data through FY 00			2	2 (100%)	0
-Total Sites With MM Presence (not incl occupied sites)				5	Not Calculated	Not Calculated
6. BALD EAGLE - # Known Nest Sites (Fed Land)	Data through FY 00			1		

Environmental Baseline Tables. Medford BLM, Rogue River & Siskiyou NFs 1. Protected = "large" land allocations with no programmed timber harvest (Wilderness, LSR, Riparian Reserves except intermittent, etc. Unprotected incl all Matrix, as well as Known Spotted Owl Activity Centers and other small "protected" areas)						
SECTION 7 WATERSHEDS = <b>Klamath-Upper</b> 11 July 03 Ranger Dists/Resource Areas = SIS, ROR, Med/Coos Bay BLM	Changes from 96 Baseline			Baseline Acres 18Oct96 (BO 1-7-96-F-392)		
	New Total (% change)	Fires 96-03	Timber Sales 96-03	Total	Total Protected <sup>1</sup> (+ % of Total)	Total Un-protected (+ % of Total)
1. Total Acreage within Sub-Basin, all Ownerships				164,213		
-Private, State and other Government				99,211		
-Federal Acres				65,002		
2. Land Allocations - Federal (hierarchal, no acres double-counted)						
-Congressionally Reserved Areas				0		
-Late Successional Reserves (not incl 100 ac owl LSRs)				25,613		
-Adaptive Management Areas				N/A		
-Administratively Withdrawn Areas				12,385		
-Riparian Reserves (Matrix and AMA Riparian acres only)				4,795	Unmapped Class IV streams counted as within Matrix	
-Matrix				22,209		
3. SPOTTED OWL HABITAT - Federal Land						
-Total Spotted Owl Habitat - Capable Acres (not incl disp/suit)				7,978	3,002 (38%)	4,976 (62%)
-Total Spotted Owl Habitat - Dispersal Acres (not incl suit)	13,767 (+4%)	n/a	+586	13,181	8,451 (64%)	4,730 (36%)
-Total Spotted Owl Habitat - Suitable Acres (NRF)	16,820 (-4%)	n/a	-745	17,565	10,348 (59%)	7,217 (41%)
-Total Acres in Critical Habitat within Sub-basin				34,579	20,540 (59%)	14,039 (41%)
-Total Acres in Critical Habitat which is suitable (NRF)	10,241 (-2%)		-211 (2%)	10,452	6,168 (59%)	4,284 (41%)
4. SPOTTED OWL SITES - Total # Activity Centers (FedLand)				18	14 (78%)	4 (22%)
-# Spotted Owl Sites (>40% NRF)				0	N/A	N/A
-# Spotted Owl Sites (30-40% NRF)				2	1 (50%)	1 (50%)
-# Spotted Owl Sites (<30% NRF)				16	13 (81%)	3 (19%)
5. MARBLED MURRELET (Fed Land)						
-Total Marbled Murrelet - Capable Acres (not incl suitable)				N/A		
-Total Marbled Murrelet - Suitable Habitat				N/A		
-Total Occupied Marbled Murrelet Sites				N/A		
-Total Sites With MM Presence (not incl occupied sites)				N/A		
6. BALD EAGLE - # Known Nest Sites (Fed Land)				4		
	Data through FY 00					

Environmental Baseline Tables. Medford BLM, Rogue River & Siskiyou NFs 1. Protected = "large" land allocations with no programmed timber harvest (Wilderness, LSR, Riparian Reserves except intermittent, etc. Unprotected incl all Matrix, as well as Known Spotted Owl Activity Centers and other small "protected" areas)						
SECTION 7 WATERSHEDS = <b>Little Butte</b> 11 July 03 Ranger Dist/Resource Areas = SIS, ROR, Med/Coos Bay BLM	Changes from 96 Baseline			Baseline Acres 18Oct96 (BO 1-7-96-F-392)		
	New Total (% change)	Fires 96-03	Timber Sales 96-03	Total	Total Protected <sup>1</sup> (+ % of Total)	Total Un-protected (+ % of Total)
1. Total Acreage within Sub-Basin, all Ownerships				238,506		
-Private, State and other Government				126,026		
-Federal Acres				112,480		
2. Land Allocations - Federal (hierarchal, no acres double-counted)						
-Congressionally Reserved Areas				2,005		
-Late Successional Reserves (not incl 100 ac owl LSRs)				47,599		
-Adaptive Management Areas				N/A		
-Administratively Withdrawn Areas				1,118		
-Riparian Reserves (Matrix and AMA Riparian acres only)				16,919	Unmapped Class IV streams counted as within Matrix	
-Matrix				44,839		
3. SPOTTED OWL HABITAT - Federal Land						
-Total Spotted Owl Habitat - Capable Acres (not incl disp/suit)				10,334	2,846 (28%)	7,488 (72%)
-Total Spotted Owl Habitat - Dispersal Acres (not incl suit)	10,195 (+13%)	n/a	+1,140	9,055	3,546 (39%)	5,509 (61%)
-Total Spotted Owl Habitat - Suitable Acres (NRF)	40,765 (-7%)	-279	-2,647	43,691	25,291 (58%)	18,400 (42%)
-Total Acres in Critical Habitat within Sub-basin				62,087	53,145 (86%)	8,942 (14%)
-Total Acres in Critical Habitat which is suitable (NRF)	24,324 (-7%)		-1,745 (7%)	26,069	21,426 (82%)	4,643 (18%)
4. SPOTTED OWL SITES - Total # Activity Centers (Fed Land)						
-# Spotted Owl Sites (>40% NRF)				5	3 (60%)	2 (40%)
-# Spotted Owl Sites (30-40% NRF)				15	8 (53%)	7 (47%)
-# Spotted Owl Sites (<30% NRF)				19	9 (47%)	10 (53%)
5. MARBLED MURRELET (Fed Land)						
-Total Marbled Murrelet - Capable Acres (not incl suitable)				N/A		
-Total Marbled Murrelet - Suitable Habitat				N/A		
-Total Occupied Marbled Murrelet Sites				N/A		
-Total Sites With MM Presence (not incl occupied sites)				N/A		
6. BALD EAGLE - # Known Nest Sites (Fed Land)	Data through FY 00			3		

Environmental Baseline Tables. Medford BLM, Rogue River & Siskiyou NFs 1. Protected = "large" land allocations with no programmed timber harvest (Wilderness, LSR, Riparian Reserves except intermittent, etc. Unprotected incl all Matrix, as well as Known Spotted Owl Activity Centers and other small "protected" areas)						
SECTION 7 WTRSHDS = <b>Rogue Lwr-Lobster</b> June 24, 2003 Ranger Dists/Resource Areas = SIS, ROR, Med/Coos Bay BLM	Changes from 96 Baseline			Baseline Acres 18Oct96 (BO 1-7-96-F-392)		
	New Total (% change)	Fires 96-03	Timber Sales 96-03	Total	Total Protected <sup>1</sup> (+ % of Total)	Total Un-protected (+ % of Total)
1. Total Acreage within Sub-Basin, all Ownerships				126,882		
-Private, State and other Government				55,783		
-Federal Acres				71,099		
2. Land Allocations - Federal (hierarchal, no acres double-counted)						
-Congressionally Reserved Areas				0		
-Late Successional Reserves (not incl 100 ac owl LSRs)				45,932		
-Adaptive Management Areas				N/A		
-Administratively Withdrawn Areas				2,671		
-Riparian Reserves (Matrix and AMA Riparian acres only)				11,823	Unmapped Class IV streams counted as within Matrix	
-Matrix				10,673		
3. SPOTTED OWL HABITAT - Federal Land						
-Total Spotted Owl Habitat - Capable Acres (not incl disp/suit)				8,611	6,836 (79%)	1,775 (21%)
-Total Spotted Owl Habitat - Dispersal Acres (not incl suit)	16,264 (0%)	n/a	-1	16,265	12,927 (79%)	3,338 (21%)
-Total Spotted Owl Habitat - Suitable Acres (NRF)	31,076	n/a	0	31,076	27,050 (87%)	4,026 (13%)
-Total Acres in Critical Habitat within Sub-basin				8,985	7,705 (86%)	1,280 (14%)
-Total Acres in Critical Habitat which is suitable (NRF)	4,264		0	4,264	3,721 (87%)	543 (13%)
4. SPOTTED OWL SITES - Total # Activity Centers (Fed Land)						
-# Spotted Owl Sites (>40% NRF)				11	10 (91%)	1 (9%)
-# Spotted Owl Sites (30-40% NRF)				2	2 (100%)	0
-# Spotted Owl Sites (<30% NRF)				2	2 (100%)	0
5. MARBLED MURRELET (Fed Land)						
-Total Marbled Murrelet - Capable Acres (not incl suitable)				41,899	34,402 (82%)	7,497 (18%)
-Total Marbled Murrelet - Suitable Habitat This Area is in the Known Range	0	0	0	14,053	12,411 (88%)	1,642 (12%)
-Total Occupied Marbled Murrelet Sites	Data through FY 00			71	71 (100%)	0
-Total Sites With MM Presence (not incl occupied sites)				115	Not Calculated	Not Calculated
6. BALD EAGLE - # Known Nest Sites (Fed Land)						
	Data through FY 00			1		

Environmental Baseline Tables. Medford BLM, Rogue River & Siskiyou NFs 1. Protected = "large" land allocations with no programmed timber harvest (Wilderness, LSR, Riparian Reserves except intermittent, etc. Unprotected incl all Matrix, as well as Known Spotted Owl Activity Centers and other small "protected" areas)						
SECTION 7 WATERSHEDS = <b>Rogue Lwr-Wild</b> June 24, 2003 Ranger Dists/Resource Areas = SIS, ROR, Med/Coos Bay BLM	Changes from 96 Baseline			Baseline Acres 18Oct96 (BO 1-7-96-F-392)		
	New Total (% change)	Fires 96-03	Timber Sales 96-03	Total	Total Protected <sup>1</sup> (+ % of Total)	Total Un-protected (+ % of Total)
1. Total Acreage within Sub-Basin, all Ownerships				186,248		
-Private, State and other Government				14,577		
-Federal Acres				171,671		
2. Land Allocations - Federal (hierarchal, no acres double-counted)						
-Congressionally Reserved Areas				32,720		
-Late Successional Reserves (not incl 100 ac owl LSRs)				105,006		
-Adaptive Management Areas				N/A		
-Administratively Withdrawn Areas				10,244		
-Riparian Reserves (Matrix and AMA Riparian acres only)				4,168	Unmapped Class IV streams counted as within Matrix	
-Matrix				19,533		
3. SPOTTED OWL HABITAT - Federal Land						
-Total Spotted Owl Habitat - Capable Acres (not incl disp/suit)				22,309	16,927 (76%)	5,382 (24%)
-Total Spotted Owl Habitat - Dispersal Acres (not incl suit)	27,008 (0%)		+6	27,002	25,331 (94%)	1,671 (6%)
-Total Spotted Owl Habitat - Suitable Acres (NRF)	105,074 (>-1%)		-314	105,388	90,448 (86%)	14,940 (14%)
-Total Acres in Critical Habitat within Sub-basin				86,087	73,300 (85%)	12,787 (15%)
-Total Acres in Critical Habitat which is suitable (NRF)	54,883 (>-1%)		-144 (>-1%)	55,027	45,270 (82%)	9,757 (18%)
4. SPOTTED OWL SITES - Total # Activity Centers (Fed Land)				53	41 (77%)	12 (23%)
-# Spotted Owl Sites (>40% NRF)				44	35 (80%)	9 (20%)
-# Spotted Owl Sites (30-40% NRF)				4	4 (100%)	0
-# Spotted Owl Sites (<30% NRF)				5	2 (40%)	3 (60%)
5. MARBLED MURRELET (Fed Land)						
-Total Marbled Murrelet - Capable Acres (not incl suitable)				72,240	65,187 (90%)	7,053 (10%)
-Total Marbled Murrelet - Suitable Habitat This Area is not in Known Range	65,867 (>-1%)	0	-308 (>-1%)	66,175	55,135 (83%)	11,040 (17%)
-Total Occupied Marbled Murrelet Sites	Data through FY 00			0	N/A	N/A
-Total Sites With MM Presence (not incl occupied sites)	Data through FY 00			0	N/A	N/A
6. BALD EAGLE - # Known Nest Sites (Fed Land)	Data through FY 00			2		

Environmental Baseline Tables. Medford BLM, Rogue River & Siskiyou NFs 1. Protected = "large" land allocations with no programmed timber harvest (Wilderness, LSR, Riparian Reserves except intermittent, etc. Unprotected incl all Matrix, as well as Known Spotted Owl Activity Centers and other small "protected" areas)						
SECTION 7 WATERSHEDS = <b>Rogue-Middle</b> 11 July 03 Ranger Dists/Resource Areas = SIS, ROR, Med/Coos Bay BLM	Changes from 96 Baseline			Baseline Acres 18Oct96 (BO 1-7-96-F-392)		
	New Total (% change)	Fires 96-03	Timber Sales 96-03	Total	Total Protected <sup>1</sup> (+ % of Total)	Total Un-protected (+ % of Total)
1. Total Acreage within Sub-Basin, all Ownerships				599,369		
-Private, State and other Government				353,845		
-Federal Acres				245,524		
2. Land Allocations - Federal (hierarchal, no acres double-counted)						
-Congressionally Reserved Areas				6,136		
-Late Successional Reserves (not incl 100 ac owl LSRs)				22,780		
-Adaptive Management Areas				N/A		
-Administratively Withdrawn Areas				2,247		
-Riparian Reserves Matrix and AMA Riparian acres only)				39,351	Unmapped Class IV streams counted as within Matrix	
-Matrix				175,010		
3. SPOTTED OWL HABITAT - Federal Land						
-Total Spotted Owl Habitat – Capable Acres (not incl disp/suit)				62,745	4,960 (8%)	57,785 (92%)
-Total Spotted Owl Habitat - Dispersal Acres (not incl suit)	46,195 (+12%)	-38	+5,147	41,048	6,129 (15%)	34,919 (85%)
-Total Spotted Owl Habitat – Suitable Acres (NRF)	91,499 (-7%)	n/a	-6,863	98,362	24,934 (25%)	73,428 (75%)
-Total Acres in Critical Habitat within Sub-basin OR-32				43,656	18,638 (43%)	25,018 (57%)
-Total Acres in Critical Habitat which is suitable (NRF)	26,176 (-3%)		-910 (3%)	27,086	10,649 (39%)	16,437 (61%)
4. SPOTTED OWL SITES - Total # Activity Centers (Fed Land)						
-# Spotted Owl Sites (>40% NRF)				76	1 (1%)	75 (99%)
-# Spotted Owl Sites (>40% NRF)				5	1 (25%)	4 (75%)
-# Spotted Owl Sites (30-40% NRF)				18	0	18 (100%)
-# Spotted Owl Sites (<30% NRF)				53	0	53 (100%)
5. MARBLED MURRELET (Fed Land)						
-Total Marbled Murrelet - Capable Acres (not incl suitable)				34,891	14,015 (40%)	20,876 (60%)
-Total Marbled Murrelet - Suitable Habitat (to 50 miles) This Area is not in Known Range	28,620 (-4%)	0	-1,318 (-4%)	29,938	11,487 (38%)	18,451 (62%)
-Total Occupied Marbled Murrelet Sites	Data through FY 00			0	N/A	N/A
-Total Sites With MM Presence (not incl occupied sites)	Data through FY 00			0	N/A	N/A
6. BALD EAGLE - # Known Nest Sites (Fed Land)						
	Data through FY 00			2		

Environmental Baseline Tables. Medford BLM, Rogue River & Siskiyou NFs 1. Protected = "large" land allocations with no programmed timber harvest (Wilderness, LSR, Riparian Reserves except intermittent, etc. Unprotected incl all Matrix, as well as Known Spotted Owl Activity Centers and other small "protected" areas)						
SECTION 7 WATERSHEDS = <b>Rogue-Upper</b> 11 July 03 Ranger Dists/Resource Areas = SIS, ROR, Med/Coos Bay BLM	Changes from 96 Baseline			Baseline Acres 18Oct96 (BO 1-7-96-F-392)		
	New Total (% change)	Fires 96-03	Timber Sales 96-03	Total	Total Protected <sup>1</sup> (+ % of Total)	Total Un-protected (+ % of Total)
1. Total Acreage within Sub-Basin, all Ownerships				787,409		
-Private, State and other Government				312,262		
-Federal Acres				475,147		
2. Land Allocations - Federal (hierarchal, no acres double-counted)						
-Congressionally Reserved Areas				85,613		
-Late Successional Reserves (not incl 100 ac owl LSRs)				136,729		
-Adaptive Management Areas				N/A		
-Administratively Withdrawn Areas				15,865		
-Riparian Reserves (Matrix and AMA Riparian acres only)				50,977	Unmapped Class IV streams counted as within Matrix	
-Matrix				185,963		
3. SPOTTED OWL HABITAT - Federal Land						
-Total Spotted Owl Habitat – Capable Acres (not incl disp/suit)				150,679	81,217 (54%)	69,462 (46%)
-Total Spotted Owl Habitat - Dispersal Acres (not incl suit)	85,272 (+8%)	-403	+7,050	78,625	31,328 (40%)	47,297 (60%)
-Total Spotted Owl Habitat – Suitable Acres (NRF)	181,526 (-5%)	-1,168	-8,614	191,308	160,165 (84%)	31,143 (16%)
-Total Acres in Critical Habitat within Sub-basin (OR 34)				132,378	98,142 (74%)	34,236 (26%)
-Total Acres in Critical Habitat which is suitable (NRF)	69,917 (-6%)	-1,216	-2,530 (3%)	73,663	63,656 (86%)	10,007 (14%)
4. SPOTTED OWL SITES - Total # Activity Centers (Fed Land)						
-# Spotted Owl Sites (>40% NRF)				77	72 (94%)	5 (6%)
-# Spotted Owl Sites (30-40% NRF)				19	15 (79%)	4 (21%)
-# Spotted Owl Sites (<30% NRF)				113	51 (45%)	62 (55%)
5. MARBLED MURRELET (Fed Land)						
-Total Marbled Murrelet - Capable Acres (not incl suitable)				N/A		
-Total Marbled Murrelet - Suitable Habitat				N/A		
-Total Occupied Marbled Murrelet Sites				N/A		
-Total Sites With MM Presence (not incl occupied sites)				N/A		
7. BALD EAGLE - # Known Nest Sites (Fed Land)	Data through FY 00			6		

Environmental Baseline Tables. Medford BLM, Rogue River & Siskiyou NFs 1. Protected = "large" land allocations with no programmed timber harvest (Wilderness, LSR, Riparian Reserves except intermittent, etc. Unprotected incl all Matrix, as well as Known Spotted Owl Activity Centers and other small "protected" areas)						
SECTION 7 WATERSHEDS = <b>Smith</b> 11 July 03 Ranger Dist/Resource Areas = SIS, ROR, Med/Coos Bay BLM	Changes from 96 Baseline			Baseline Acres 18Oct96 (BO 1-7-96-F-392)		
	New Total (% change)	Fires 96-03	Timber Sales 96-03	Total	Total Protected <sup>1</sup> (+ % of Total)	Total Un-protected (+ % of Total)
1. Total Acreage within Sub-Basin, all Ownerships				58,143		
-Private, State and other Government				640		
-Federal Acres				57,503		
2. Land Allocations - Federal (hierarchical, no acres double-counted)						
-Congressionally Reserved Areas				20,278		
-Late Successional Reserves (not incl 100 ac owl LSRs)				34,459		
-Adaptive Management Areas				0		
-Administratively Withdrawn Areas				2,766		
-Riparian Reserves (Matrix and AMA Riparian acres only)				0	Unmapped Class IV streams counted as within Matrix	
-Matrix				0		
3. SPOTTED OWL HABITAT - Federal Land						
-Total Spotted Owl Habitat – Capable Acres (not incl disp/suit)				5,346	5,346 (100%)	0
-Total Spotted Owl Habitat - Dispersal Acres (not incl suit)	-100%	-9,330*	0	9,021*	9,021 (100%)	0
-Total Spotted Owl Habitat – Suitable Acres (NRF)	6,186 (-65%)	-11,391	0	17,577	17,577 (100%)	0
-Total Acres in Critical Habitat within Sub-basin				6,834	6,834 (100%)	0
-Total Acres in Critical Habitat which is suitable (NRF)	2,660 (-6%)	-180	0	2,840	2,840 (100%)	0
4. SPOTTED OWL SITES - Total # Activity Centers (Fed Land)						
-# Spotted Owl Sites (>40% NRF)				2	2 (100%)	0
-# Spotted Owl Sites (30-40% NRF)				0	0	0
-# Spotted Owl Sites (<30% NRF)				0	0	0
5. MARBLED MURRELET (Fed Land)					* = Siskiyou NF data not included	
-Total Marbled Murrelet - Capable Acres (not incl suitable)				27,654	27,654 (100%)	0
-Total Marbled Murrelet - Suitable Habitat (to 50 miles) This Area is not in Known Range	2,056 (-52%)	- 2,234 (-52%)	0	4,290	4,290 (100%)	0
-Total Occupied Marbled Murrelet Sites	Data through FY 00			0	0	0
-Total Sites With MM Presence (not incl occupied sites)				0	0	0
6. BALD EAGLE - # Known Nest Sites (Fed Land)	Data through FY 00			0		

\* Acres burned are more than baseline due to better information and finer scale used in fire analysis than 1996 baseline. Difference is not significant

## Appendix A. List of timber sale projects, by Ranger District or Resource Area, which were submitted to Level 1 Team for this “FY 04-08” Programmatic BA. For Rogue River and Siskiyou National Forests, and Medford District of the Bureau of Land Management.

**Appendix A.** List of timber sale projects, collected from Ranger Districts and Resource Areas, proposed to Level 1 Team for this FY04-08 programmatic BA. For Rogue River and Siskiyou National Forests, and Medford District of the BLM. Only “may affect” projects are listed. We have assumed that all projects are LAA (May Affect, Likely to Adversely Affect) for spotted owl and marbled murrelet, if habitat is present, and being removed or degraded. Ultimately, after all fieldwork is completed (including protocol surveys), some projects may be determined to be NLAA (May Affect, Not Likely to Adversely Affect). Sales determined to be “no effect” are not listed in this table. A few sales may be added to the FY04-08 program that are not listed here; and some sales may be dropped from the FY04-08 program.

**Note:** The programmatic BA/BO process is based on a specified timber sale program (number of acres) implemented over a specified period of time. This FY04-08 programmatic BA covers ONLY those timber sale projects that will be implemented in FY04-08. “Sell date” is considered to be “implementation date.” Any timber sale(s) scheduled to “sell” in FY 03 which actually “sells” during FY04-08, will be covered in this BA/BO, not in the 01-03 BO, even though this sale(s) may have been mentioned by name in the 18 July 03 BA for FY 01-03 (this “carryover” circumstance will also prevail at the end of FY08—beginning of FY09). Sales in this Appendix are listed by name for “**information only**.” [LSR = Late Successional Reserve, Mtx = Matrix, RR = Riparian Reserve, AMA = Adaptive Management Area, Ot = Other]

Some Meadow Restoration projects will occur in LSR that will result in removal or downgrading of NRF, or removal of Dispersal habitat. Project-specific details are listed below.

*NRF (Suitable) Removal or Downgraded to Dispersal.* Illinois Watershed (Northwest Coast/Fish Hook LSRs): Agness Fuel Hazard Reduction/Meadow Restoration, GB, 151; Pine Grove Meadow Restoration, GB, 400; Corrals Meadow Restoration, GB, 4. Rogue-Lower-Lobster Watershed (Northwest Coast LSR): Potato Patch Meadow Restoration, GB, 200; Woodruff Meadow Restoration, GB, 50; Stonehouse Meadow Restoration, GB, 20. Rogue-Lower-Wild Watershed (Fish Hook LSR): Agness Fuel Hazard Reduction/Meadow Restoration, GB, 302.

*Dispersal Removal.* These projects in LSR are related to Meadow Restoration projects, including Dispersal removed on meadow/oak woodland edges. (1) Chetco and South Coast Section 7 Watershed (South Chetco and North Chetco LSRs): Alder, Chetco RD, 15 Acres; East Fork Meadow Restoration, CH, 5; Chetco River Fuel Hazard Reduction, CH, 138; Fairview Fuel Hazard Reduction, CH, 200. Illinois Watershed (Fish Hook LSR): Agness Fuel Hazard Reduction, Gold Beach RD, 25. Rogue-Lower-Lobster Watershed (Northwest Coast LSR): Woodruff Meadow Restoration, GB, 80. Rogue-Lower-Wild Watershed (Fish Hook LSR): Agness Fuel Hazard Reduction, GB, 170. Rogue-Upper Watershed (Middle Fork LSR): Big Butte EIS Prospect, 12; Middle South Fork, PR, 60.

Section 7 Watershed	RD/RA	FY	Sale Name
Applegate	AS (AMA)	04	China Keeler
	AS (AMA)	04	Bald Lick
	AS (AMA)	05	Bugman Again
	AS (AMA)	05	Deadman Palm
	AS (AMA)	05	Bald Lime
	AS (AMA)	06	Upper Thompson
	AS (AMA)	06	Prince Castor
	GP (AMA)	07	Cheney Hayes
	AP (AMA)	05	regen
	AP (AMA)	06	regen
	AP (AMA)	07	rege
	AP (AMA)	08	regen
	GA (AMA)	06	Butcher Knife/Cedar Gap Tsales
	GA (AMA)	08	Ramsey Tsale
	GA (AMA)	06	Waters Thin #2
Bear	AS (Matrix)	07	Neil Creek
	AS (Matrix)	07	Galls Kane Jackson
	AS (Matrix)	08	Wagner/ Anderson
	AS (Matrix)	08	Sampson Cove
Chetco & South Coast	CH (Matrix)		Biscuit Salvage
	CH (Matrix)		Buzzle
	CH (LSR)		Alder
	CH (Matrix)		Elkman
	CH (LSR-Matrix)		East Fork Meadow Restoration
	CH (LSR)		Chetco River Fuel Hazard Reduction
	CH (Matrix)		Fairview Fuel Hazard Reduction
	CH (Matrix)		Fairmont
	CH (Matrix)		Norfolk Pistol
	CH (Matrix)		Long Ridge Meadow Restoration
	CH (Matrix)		Kitty Thin
	CH (Matrix)		Some Thin
	CH (LSR)		Red Thin
	CH (Matrix)		Pyramid Thin
	CH (Matrix)		Sunrise Creek Meadow Restoration
	CH (LSR)		Winchuck-Peavine Fuel Hazard Reduction
	CH (LSR)		South Quail
Cow Upper	GL (Matrix)	05	Five Cows
	GL (Matrix)	06	Boney Skull
	GL (Matrix)	07	Three Creeks/Dollar Glen
	GL (LSR)	07	Starving Cow
	GL (LSR)	06	Healthy Murph
	GL (LSR)	05	Slim Jim
Coquille/Sixes	PO (LSR)	03	Dude Creek Arrowwood
	PO (LSR)	04	Crown Arrow
	PO (LSR-Mtx-Ot)	04	Corridor
	PO (LSR)		Hey Dude Arrowwood
	PO (LSR, Ot)	05	Foggy POC sanitation
	PO (Ot)	05	Foggy Thin
	PO (LSR-Mtx-Ot)	04	Foggy Eden #1
	PO (Matrix)	05	ER Thin
	PO (LSR-Mtx-Ot)		Land Crk Thin
PO (LSR-Ot)	05	Sand Trap	

Section 7 Watershed	RD/RA	FY	Sale Name
Elk	PO (LSR-Matrix)	04	Milther
	PO (Matrix)		Hue
Illinois	GP (Matrix)	04	West Fork Illinois
	GP (Matrix)	04	South Deer
	GP (Matrix)	05	Althouse
	GP (Matrix)	05	Upper Illinois
	GP (Matrix)	06	East Kerby
	GP (Matrix)	06	Holland Loop
	GP (Matrix)	07	Kerby West
	GP (Matrix)	07	NE by East
	CH, GB, GA, IV		Biscuit Salvage (Matrix, RR, LSR, Other)
	GB (LSR)		Agness Fuel Hazard Reduction
	GB (LSR-Matrix)		Corrals Meadow Restoration
	GB (Matrix)		Indigan Thin
	GB (Matrix)		Farout
	GB (Matrix)		Fairview Fuel Hazard Reduction
	GB (Matrix)		Fairmont
	GB (LSR)		Pine Grove Meadow Restoration
	GB (Matrix)		Mayhap
	IV (Matrix)	05	East Fork Illinois
	GA (Matrix)	05	Briggs wildlife habitat
	IV (LSR-Matrix)	07	East Fork Illinois
IV (Matrix)	06	Briggs Waters Down	
IV (LSR-Matrix)	08	Althouse	
IV (Matrix)	07	Greyback/Sucker - Laid Back, Lilly Pond	
Klamath	AS (Matrix)	07	Plateau Thin
Little Butte	BF (Matrix)	06	Heppsie
Rogue Lower Lobster	GB (Matrix)		Black Cat Thin
	GB (Matrix)		Elkman
	GB (Matrix)		Farout
	GB (LSR)		Potato Patch Meadow Restoration
	GB (Matrix)		Mayhap
	GB (LSR)		Stonehouse Meadow Restoration
	GB (LSR)		Sorrell Meadow Restoration
	GB (LSR)		Woodruff Meadow Restoration
Rogue Lower Wild	GL (Matrix)	04	Upper East Kelsey
	GL (Matrix)	05	West Whiskey/Mary Kelsy
	GL (Matrix)	06	Minnie Mule/Chew Choo
	GB (Matrix)		Biscuit Salvage
	GB (LSR)		Agness Fuel Hazard Reduction/meadow restoration

Section 7 Watershed	RD/RA	FY	Sale Name
Rogue Middle	GP (Matrix)	04	Birdseye Jones
	GL (Matrix)	04	Five Rogues
	GP (Matrix)	05	Pickett Charge
	BF (Matrix)	05	Slick Thin
	BF (Matrix)	05	Pleasant Fry
	GP (Matrix)	06	Granite Joe
	BF (Matrix)	06	Evans Sardine
	BF (Matrix)	06	Lower Evans
	GP (Matrix)	07	Bald Bluie
	GL (Matrix)	07	Wolf Pup
	AS (Matrix)	07	Birdeye
	BF (Matrix)	07	Slick Battele
	AS (Matrix)	08	Timber Foot
Rogue Upper	BF (Matrix)	04	Flounce Around
	BF (Matrix)	05	Campcur
	BF (Matrix)	07	Ginger Tokyo
	PR (LSR-Mtx-Rr)		Middle South Fork
	PR (LSR-Mtx-Rr)		S. Fork Little Butte/ Antelope Creek
	PR (LSR-Mtx-Rr)		Mill Creek EIS timber sales
	PR (LSR-Mtx-Rr)		Big Butte EIS (multiple years)
	PR (LSR-Mtx-Rr)		Elk Creek
Smith	CH, GB (Matrix)		Biscuit Salvage

## Appendix B. Northern spotted owl critical habitat unit (CHU) descriptive narratives for the Rogue River and Siskiyou National Forests, and the BLM Medford district. This information is provided as supplemental, descriptive support to the Biological Assessment. Table and Map included.

This Appendix was originally developed for the 1 August 96 BA (1-7-96-F-392). It has been updated to reflect the changes from large forest fires since that time. See table.

### 1) CA-14

CA-14 is located on the Klamath National Forest (not within the action area). One hundred percent of the unit is located within the Mt. Ashland LSR. This unit and OR-76 provide the most important connection between the Shasta-McCloud Subprovince and the Northern Interior Coast Range Subprovince.

### 2) CA-15

CA-15 is located on the Rogue River and the Klamath National Forests. Eighty-seven percent of the unit is located within the Applegate/Oak Knoll and Grider/Thomas LSRs. This unit surrounds the Red Buttes Wilderness and is the northernmost unit in the California portion of the Klamath Mountains Province. This unit strengthens the north-south link between California and Oregon.

### 3) OR-8

OR-8 is located mostly on the Winema National Forest (not within the action area). Sixty-five percent of the unit is located within the Dead Indian LSR. This unit provides the single north-south connection in the southern portion of the Eastern Cascades Province, and adjoins Crater Lake National Park, Sky Lakes Wilderness, and the Mountain Lakes Wilderness. This unit helps maintain the range-wide distribution of owl nesting habitat along the eastern fringe of the subspecies range.

### 4) OR-30

OR-30 is located on the Rogue River and Umpqua National Forests. Sixty-eight percent of the unit is within the Rogue-Umpqua Divide LSR. This unit abuts the Rogue-Umpqua Divide Wilderness and provides an important link from Crater Lake National Park to units OR-29 and OR-28 to the west and northwest. This unit, along with the adjacent unit OR-34 to the south, is an important southern stronghold of essential nesting habitat in the core of the Western Cascades Province.

**5) OR-32**

OR-32 is located on Medford and Roseburg Districts BLM and the Umpqua National Forest. Thirty-seven percent of the unit is within the Cow Creek LSR. This unit coincides with the Rogue-Umpqua Area of Concern, which provides an essential link in connecting the Western Cascades Province with the southern portion of the Coast Ranges and northern end of the Klamath Mountains Province. This unit provides the single link from the Western Cascades Province to the Klamath Mountains Province and associated Area of Concern. The land ownership patterns elevate the importance of maintaining areas of owl nesting habitat to link the Western Cascades, Coast Ranges, and the Klamath Mountains Provinces.

**6) OR-33**

OR-33 is located on the Umpqua National Forest (not within the action area). Ninety-nine percent of the unit is within the Lookout Mt./Black Butte LSR. This unit provides linkage from unit OR-34 to OR-32 along the southwest portion of the Western Cascades Province. This unit encompasses a large tract of roadless area and augments the link from the eastern end of the Rogue-Umpqua portion of the I-5 Area of Concern to the southern extension of the Western Cascades Province.

**7) OR-34**

OR-34 is located on the Medford District BLM and Rogue River NF. Seventy-four percent of the unit is within the Elk Creek and Lookout Mt/Black Butte LSRs. This unit was designated to maintain suitable and dispersal habitat in this area of high fragmentation, due primarily because of land ownership patterns. This CHU should provide north-south and east-west linkage from the Klamath/Siskiyou to the Western Cascades Provinces. The 2002 Timber Rock Fire occurred in this CHU; 1,198 acres of suitable habitat for spotted owls was lost.

**8) OR-35**

OR-35 is located on the Rogue River National Forest. Seventy-six percent of the unit is within the Middle Fork LSR. This unit provides the single link from the southern end of the Western Cascades Province south to unit OR-37 toward the Klamath Mountains Province. This unit also leads to the bottleneck of the Ashland Area of Concern. The unit abuts the southwest edge of Crater Lake National Park and the western edge of the Sky Lakes Wilderness. Both of these areas are primarily high elevation non-habitat.

**9) OR-36**

OR-36 is located on the Medford District BLM. No LSR allocation is within this unit. This unit provides an important link along the southern end of the Western Cascades Province, thereby assisting in the connectivity to the south and the Klamath Mountains Province. This unit provides east-west linkage to OR-34 and OR-35, and supports the north-south linkage for the Western Cascades Province. The placement of this unit helps to reduce the bottleneck just north

of the Ashland Area of Concern. An area of limited habitat potential is along the Rogue River corridor and associated McCloud Reservoir, which separates units OR-35 and OR-36.

#### **10) OR-37**

OR-37 is located on the Medford District BLM, the Rogue River, and Winema National Forests. Eighty-one percent of the unit is located within the Dead Indian LSR. This unit provides the single most important link connecting the Oregon Cascades Province to the Klamath Mountains Province across the south Ashland portion of the I-5 Area of Concern. By straddling the crest, this unit provides an important east-west connectivity for the southern Oregon Cascades. This unit also provides the only link to the north in the Oregon Cascades, and is the key link from Oregon to California south of Highway 66.

#### **11) OR-38**

OR-38 is located on the Medford District BLM. Fifty-two percent of the unit was located within the Cascade-Siskiyou National Monument. This unit provides the sole link between the Western Cascades and the Klamath Mountains Provinces. This unit makes up the majority of the connection between the two Provinces across the Ashland portion of the I-5 Area of Concern. This area is of concern because of past management practices, ownership patterns and current habitat conditions.

#### **12) OR-62**

OR-62 is located on the Roseburg and Medford District BLM. No LSR allocation is within this unit. This unit provides the link from the Klamath Mountains Province to the Coast Ranges Province, and establishes the link from those two Provinces through the Rogue-Umpqua portion of the I-5 Area of Concern. This unit was designated because of the current habitat conditions, land ownership patterns and past management practices. This unit includes not only areas where linkage between physiographic provinces are of concern, but also areas with known owl pairs within a region of relatively low abundance of suitable owl habitat.

#### **13) OR-64**

OR-64 is located on Medford District BLM. No LSR allocation is within this unit. This unit was established to maintain the remaining owl habitat between units OR-65 and OR-32. This unit is along the western end of the Rogue-Umpqua portion of the I-5 Area of Concern. This connection between the Coast Ranges Province and the Western Cascades Province is threatened by its current habitat condition, its high fragmentation by past management practices, and land ownership patterns. This unit provides a link where range-wide distribution can be maintained.

#### **14) OR-65**

OR-65 is located on the Medford District BLM and the Siskiyou National Forest. Sixty-six percent of this CHU is located within the Fish Hook/Galice LSR. This unit provides two inter-provincial links: from the Klamath Mountains Province to the Western Cascades Province, and

from the Klamath Mountains Province north to the Coast Ranges Province. This unit provides a core area of suitable habitat to help augment the severely fragmented Rogue-Umpqua portion of the I-5 Area of Concern. A portion of the 2002 Biscuit Fire occurred in the SW corner of this CHU; 1,642 acres of suitable habitat for spotted owl was lost.

#### **15) OR-66**

OR-66 is located on the Siskiyou National Forest and the Coos Bay District BLM. One hundred percent of this CHU is located within the Northwest Coast LSR. This CHU provides the connecting link between the Oregon Cascades Province and the Klamath Mountains Province. This unit adjoins the Grassy Knob Wilderness, which currently supports suitable habitat.

#### **16) OR-67**

OR-67 is located on the Medford District BLM and the Siskiyou National Forest. Sixty-eight percent of this CHU is located within the Northwest Coast and Fish Hook/Galice LSRs. This CHU provides a portion of the link from the Klamath Mountains Province to the southern end of the Oregon Coast Ranges Province. It helps support the western end of the Rogue-Umpqua portion of the I-5 Area of Concern which connects the southwest edge of the Oregon Cascades Province to the Klamath Mountains Province. Lands immediately north of this unit are non-federal and lack suitable owl habitat. This unit also encompasses the Wild Rogue Wilderness, which supports suitable habitat in its lower elevations.

#### **17) OR-68**

OR-68 is located on the Siskiyou National Forest. Eighty-seven percent of this CHU is located within the Fish Hook/Galice LSR. This unit provides a narrow band of suitable habitat that connects OR-67 and OR-69. A portion of the 2002 Biscuit Fire occurred in the southern end of this CHU; 2,971 acres of suitable habitat for spotted owl was lost.

#### **18) OR-69**

OR-69 is located on the Siskiyou National Forest. Ninety-one percent of this CHU is located within the Fish Hook/Galice LSR. This unit provides the single link through the northwest portion of the Klamath Mountains Province leading to the Coast Ranges Province. This unit provides the key link for north-south movement of owls between units OR-71, OR-67, OR-65, and OR-68. This unit also adjoins the northern end of the Kalmiopsis Wilderness, which currently supports little suitable owl habitat. The 2002 Biscuit Fire encompassed much of this CHU; 9,482 acres of suitable habitat for spotted owl was lost in the fire, of the 13,109 acres which existed pre-fire.

#### **19) OR-70**

OR-70 is located on the Siskiyou National Forest. Seventy-six percent of this CHU is located within the Briggs and West IV LSRs. This unit provides the only link between CHUs OR-69 and OR-72. The Siskiyou National Forest and the Medford District BLM have identified the

Highway 199 corridor between units OR-70 and OR-72 as an Area of Concern due to the geology, ownership and past management practices (SW OR LSR Assessment, USDA Siskiyou National Forest/USDI Medford District Bureau of Land Management. 1995). This unit also adjoins the eastern boundary of the Kalmiopsis Wilderness. The 2002 Biscuit Fire encompassed much of the western portion of this CHU; 9,157 acres of suitable habitat for spotted owl was lost in the fire, of the 18,852 acres that existed pre-fire.

## **20) OR-71**

OR-71 is located on the Siskiyou National Forest. Ninety-five percent of this CHU is located within the South Chetco LSR. This unit provides the only north-south link within the Klamath Mountains Province to the California Coastal redwood zone. This unit adjoins the southwest portion of the Kalmiopsis Wilderness, and is the most westerly unit within the range of the northern spotted owl. The 2002 Biscuit Fire encompassed part of the east side of this CHU; 421 acres of suitable habitat for spotted owl was lost in the fire, of the 24,281 acres that existed pre-fire. The Repeater Fire of 1999 removed an additional 100 acres of suitable habitat for spotted owl

## **21) OR-72**

OR-72 is located on the Medford District BLM and the Siskiyou National Forest. Eighty-nine percent of this CHU is located within the East IV/Williams LSR. This unit provides a very important east-west and north-south intra-provincial (Klamath Mountains Province) connectivity, in an area of high fragmentation. The high fragmentation is a result of the geology, fire history, ownership patterns, and past management practices. This unit is an important link for the Highway 199 Area of Concern (SW OR LSR Assessment, USDA Siskiyou National Forest/USDI Medford District Bureau of Land Management. 1995).

## **22) OR-73**

OR-73 is located on the Siskiyou and the Rogue River National Forest. Eighty-six percent of the CHU is located within the East IV/Williams LSR. This unit provides a north-south link through the Central portion of the Klamath Mountains Province from Oregon to California and the Red Buttes Wilderness. The unit also provides important east-west connectivity along the Oregon-California border. This area is naturally fragmented by serpentine soils and high elevation mountain ridges, and present habitat fragmentation has been compounded by past management practices.

## **23) OR-74**

OR-74 is located on the Medford District BLM and the Siskiyou National Forest. Five percent of the unit is located within the East IV/Williams. This unit along with OR-75 provides the east-west connection along the southern portion of the Klamath Mountains Province. This region is highly fragmented from ownership patterns, geology, and past management practices.

**24) OR-75**

OR-75 is located on the Medford District BLM and the Rogue River National Forest. No LSR allocation is located within this unit. This unit reduces the distance between OR-74 and OR-76. Along with OR-74, this unit provides the east-west connection along the southern portion of the Klamath Mountains Province. The 2001 Quartz Fire occurred in the southern portion of the portion of this CHU; 340 acres of suitable habitat for spotted owl was lost in the fire (all managed by BLM).

**25) OR-76**

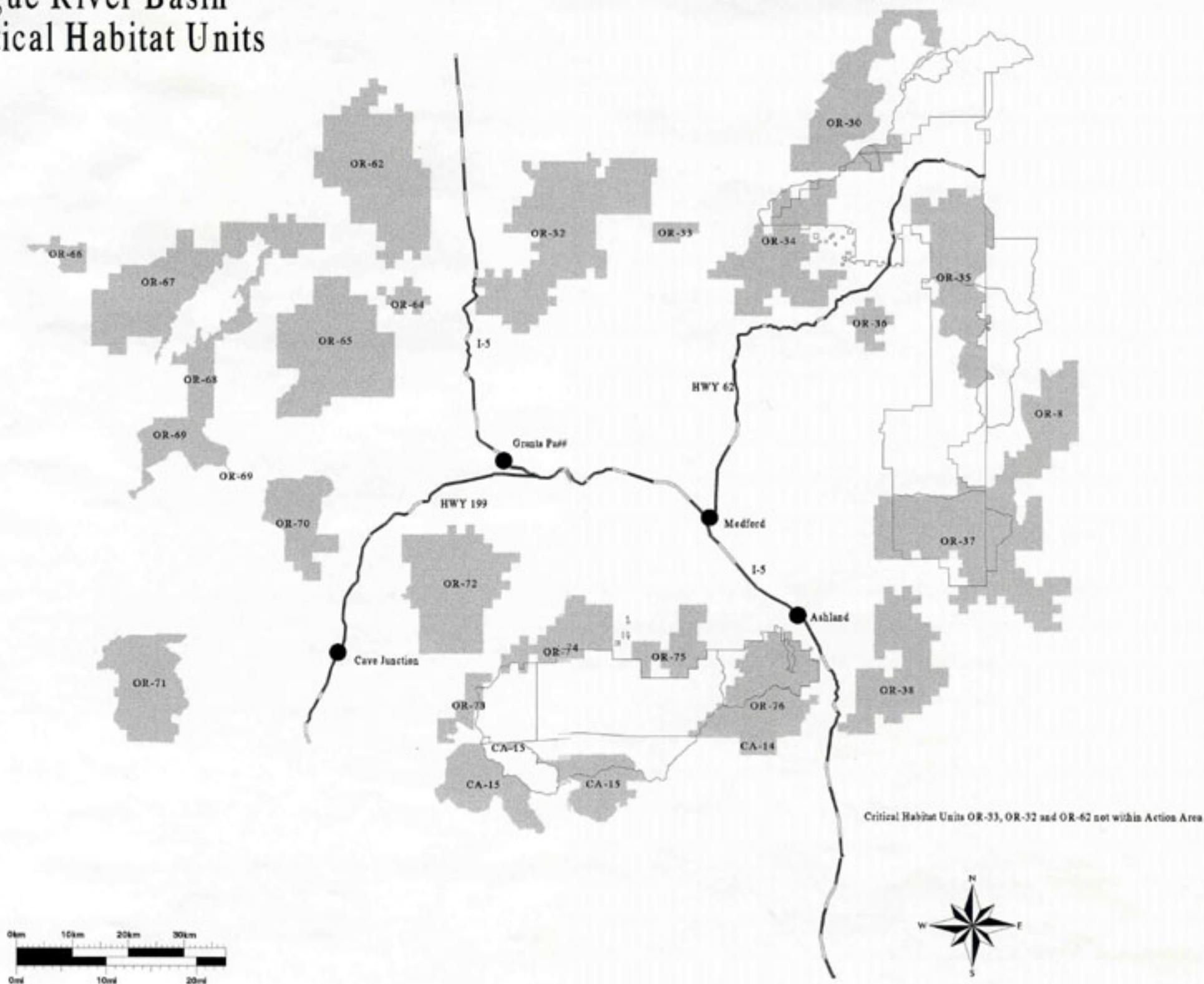
OR-76 is located on the Rogue River National Forest. Sixty-three percent of the unit is located within the Mt. Ashland LSR. This unit provides inter- and intra-provincial linkage between the Klamath Mountains Province and the Western Cascades Province. It is also the main link to the Ashland Area of Concern and provides east-west distribution of spotted owl habitat in the Oregon portion of the Klamath Mountains Province.

**Table B-1. Northern Spotted Owl Critical Habitat Environmental Baseline, as of October 1,2003 (June 03 for fires)**

Baseline 1996 information				Acres and percentages below are suitable (NRF) habitat % and changes compared to 1996 Baseline Suitable acres							Fire Names
CHU #	Total acres in CHU	Percent of CHU that's LSR	Acres Capable of being NRF	1996 Baseline Suitable (NRF)*	NRF lost to Fires since 1996	Fire % chg	NRF Lost to Timber since 1996	Timber % chg	Current CHU NRF baseline	Total % chg	
CA-15	11,478	10,043 (87%)	9,075	8,559	0	0%	0	0%	8,559	0%	
OR-30	8,617	5,893 (68%)	8,316	4,857	0	0%	0	0%	4,857	0%	
OR-32	68,873	25,453 (37%)	39,694	20,667	0	0%	380	2%	20,287	2%	
OR-34	46,733	34,410 (74%)	41,897	23,359	1,216	5%	1,043	4%	21,100	10%	Tim Rock
OR-35	68,895	52,031 (76%)	67,930	27,582	0	0%	471	2%	27,111	2%	
OR-36	7,080	None	6,607	3,891	0	0%	977	25%	2,914	25%	
OR-37	86,484	70,450 (81%)	56,021	38,498	0	0%	1956	5%	36542	5%	
OR-38	41,511	21,665 (52%)	27,900	14,159	0	0%	39	0%	14,120	0%	
OR-62	8,609	None	5,168	3,849	0	0%	240	6%	3609	6%	
OR-64	7,538	None	5,489	3,874		0%	66	2%	3,808	2%	
OR-65	74,664	49,064 (66%)	61,872	42,102	1,642	4%	1303	3%	39,157	7%	Biscuit
OR-66	8,384	8,384 (100%)	8,251	4,506	0	0%	0	0%	4,506	0%	
OR-67	98,238	66,440 (68%)	80,964	39,515	0	0%	704	2%	38,811	2%	
OR-68	13,382	11,547 (86%)	13,223	7,082	2,971	42%	0	0%	4,111	42%	Biscuit
OR-69	26,616	24,247 (91%)	23,683	13,109	9,482	72%	0	0%	3,627	72%	Biscuit
OR-70	36,943	27,770 (75%)	23,148	18,852	9,157	49%	0	0%	9,695	49%	Biscuit
OR-71	53,784	51,082 (95%)	53,162	20,879	521	2%	0	0%	20,358	2%	Bsct, Rptr
OR-72	53,380	47,681 (89%)	43,361	19,055	0	0%	590	3%	18,465	3%	
OR-73	12,330	10,575 (86%)	9,884	4,568	0	0%	0	0%	4,568	0%	
OR-74	25,231	1,160 (5%)	18,962	10,309	0	0%	781	8%	9,528	8%	
OR-75	19,365	None	12,587	6,229	340	5%	455	7%	5,434	13%	Quartz, Sterling
OR-76	33,058	20,832 (63%)	N/A	18,087	0	0%	0	0%	18,087	0%	
<b>Total</b>	811,193	528,737(65%)	617,194	353,588	25,329	7%	9,005	3%	319,224	10%	

\* = Baseline CHU numbers are from Table B1 in Appendix of Rogue River/Siskiyou National Forests and Medford BLM Biological Assessment 9/27/01. Acres shown for CHUs OR-30, 36, 62, 64, 66 depict the part of the CHU in the Action Area. See October 2001 BO for total CHU acres.

# Rogue River Basin Critical Habitat Units



## Appendix C. Descriptive narratives of Late Successional Reserves (LSR) located on the Rogue River and Siskiyou National Forests and the Medford District Bureau of Land Management.

This Appendix was originally developed for the 1 August 96 BA (1-7-96-F-392). It has been updated to reflect the changes from large forest fires since that time. See table C-1.

### 1) South Chetco LSR

The South Chetco LSR is located west of the Smith River and West IV LSR. Most of the area consists of National Forest with a small amount of BLM land (Coos Bay District) that exists between the National Forest and the Pacific Ocean. Ninety-five percent of the LSR is capable of growing spotted owl habitat. Post-Biscuit Fire, 44 percent of the capable lands are currently older forests.

Pre-Biscuit Fire, the LSR historically supported 20 activity centers for the northern spotted owl. Twelve of the 20 (60%) centers had less than 30 percent of their home range in suitable owl habitat. Only one of the 20 home ranges encompassed more than 40 percent suitable owl habitat. Post-Biscuit Fire, four activity centers in the Fire area suffered reductions in NRF habitat. Occupied behaviors by marbled murrelets have been detected on 20 occasions in this LSR, and presence has been detected on an additional 52 occasions.

The areas of older forest habitat that connect to other areas are along the rivers. The north slopes along these streams support large trees and form stringers to connect older forests. For example, the Wild and Scenic Chetco River has older forest habitat that links this LSR to the Kalmiopsis Wilderness. In addition, older forest connections also link this LSR to the Six Rivers National Forest to the South.

The 2002 Biscuit Fire and 1999 Repeater Fire encompassed a small portion of this LSR; 855 acres of suitable habitat for spotted owl was lost in the fires, of the 30,542 acres that existed pre-fire (100 lost acres from the Repeater Fire, the rest from Biscuit).

### 2) North Chetco LSR

The North Chetco LSR consists of National Forest lands, and is a continuation of the South Chetco LSR. The hardwood component is not as dominant, although the tanoak plant series covers much of this LSR. Ninety-four percent of the LSR has the potential to grow large trees and older forests suitable for the northern spotted owl. Post-Biscuit Fire, 28 percent of the capable lands are currently in older forests.

Pre-Biscuit Fire, the LSR historically supported four activity centers for the northern spotted owl. One of these owl home ranges had less than 30 percent suitable owl habitat. Another home range had greater than 40 percent suitable owl habitat. Post-Biscuit Fire, all activity centers in the Fire area suffered reductions in NRF habitat. Occupied behaviors by marbled

murrelet have been detected on four occasions in this LSR, and presence has been detected on an additional 14 occasions.

North-facing slopes close to riparian areas contain extremely large trees. These older forest areas connect to the Fish Hook/Galice LSR through the riparian zones of Lawson Creek downstream to the Illinois River.

The 2002 Biscuit Fire encompassed a portion of this LSR; 2,458 acres of suitable habitat for spotted owl was lost in the fire, of the 9,910 acres that existed pre-fire.

### **3) Northwest Coast LSR**

The Northwest Coast LSR consists mostly National Forest land, except for small BLM areas on the west, north, and northeast borders. The majority of this large LSR is within the tanoak and hemlock plant series. Ninety-five percent of the LSR is capable of growing spotted owl habitat. Forty-eight percent of the capable land is currently older forest.

This LSR presently supports 37 known activity centers for the northern spotted owl. Fourteen (38%) of these home ranges contain less than 30 percent suitable owl habitat. Nineteen (51%) of the 37 home ranges contain more than 40 percent suitable owl habitat. Occupied behaviors by marbled murrelets have been detected on 70 occasions in this LSR, and presence has been detected on an additional 150 occasions. The boundary between the Northwest Coast and Fish Hook/Galice LSRs defines the known inland extent for the range of the marbled murrelet.

This coastal LSR is large (146,000 acres), with many linkages of older forest habitat. A large older forest links the Rogue River/Agness area to Agness Pass via the late-successional habitat in Foster Creek. A relatively large area of older forest habitat exists in the Elk River drainage, including the Grassy Knob Wilderness. The older vegetation along the Coquille River corridor links with Agness Pass and Elk River. Hall Creek in the Coquille drainage supports a relatively large unfragmented block of habitat with numerous Port-Orford-cedar stands containing many large trees, murrelets, and spotted owls. The boundary between Fish Hook LSR and the Northwest Coast LSR, and the North/South Chetco LSRs and the Kalmiopsis Wilderness is a 3,000' or greater ridge. Nesting murrelets have not been detected inland from this ridge during protocol surveys (except for three "presence" sightings just east of the line). The summer fog and western hemlock plant series also do not cross this ridge.

### **4) Fish Hook/Galice LSR**

The Fish Hook/Galice LSR contains a mixture of BLM and National Forest lands. The tanoak and Douglas-fir plant series occupy the majority of this LSR, with a major component of white fir. Ninety-three percent of the LSR is capable of growing spotted owl habitat. Of these capable lands, 42 percent are currently older forests, Post-Biscuit Fire

Pre-Biscuit Fire, the LSR historically supported 53 activity centers for the northern spotted owl. Forty-one activity centers (77%) had greater than 30 percent of their home range as suitable owl habitat, and 45 (88%) of the 51 home ranges contained greater than 40 percent suitable owl habitat. Two spotted owl activity centers (4%) had less than 30 percent suitable

owl habitat. Post-Biscuit Fire, 19 activity centers in the Fire area suffered reductions in NRF habitat.

This is the central LSR on the Siskiyou National Forest and consequently provides many connections. It provides a corridor of older forest habitat between the Kalmiopsis and Wild Rogue Wildernesses. It has a connection of existing older forest habitat through Lawson Creek and the Illinois River to the Northwest Coast LSR. Another connection is the Foster Creek drainage where older forest habitat connects to the Northwest Coast LSR. In addition, the areas not harvested in Silver, Shasta Costa, and Indigo watersheds provide unfragmented habitat (Silver Creek drainage was hit especially hard by the Biscuit Fire). The east/west older forest link helps connect the coastal mountains east across the valley to the Rogue-Umpqua divide.

The 2002 Biscuit Fire encompassed a major portion of this LSR; 24,872 acres of suitable habitat for spotted owl was lost in the fire, of the 117,252 acres that existed pre-fire (1,465 acres lost on BLM; the rest of the loss on NF).

### **5) Taylor LSR**

The Taylor LSR consists entirely of National Forest lands. This LSR is a small area, designated for its critical anadromous fish habitat and stair step (low elevation to high elevation) characteristics. Douglas-fir plant series is the major ecological classification. Ninety-four percent of the lands are capable of growing spotted owl habitat. Currently, 54 percent of the capable lands are in older forests.

It presently supports two known activity centers for the northern spotted owl. One home range contains less than 30 percent suitable owl habitat. The other contains between 30 percent and 40 percent suitable owl habitat.

Stringers of older forest habitat in the northeast and west link BLM-managed lands to the Fish Hook/Galice LSR. Habitat corridors along riparian reserves also connect Taylor LSR to the southwest.

### **6) Briggs LSR**

The Briggs LSR consists entirely of National Forest lands. The tanoak and Douglas-fir plant series occupy the majority of this LSR. Only 66 percent of the LSR is capable of growing spotted owl habitat. Of these capable lands, 31 percent are currently older forests, Post-Biscuit Fire (late successional habitat occupied 66 percent, pre-fire).

Pre-Biscuit Fire, the LSR historically supported eight activity centers for the northern spotted owl. All activity centers had greater than 30 percent of their home range as suitable owl habitat, and of these 6 (75%) centers had greater than 40 percent of their home range in suitable owl habitat. Post-Biscuit Fire, five activity centers in the Fire area suffered reductions in NRF habitat.

Important characteristics of this LSR are the Illinois River connection between the Illinois Valley and the Rogue River. In addition, the older forest habitat in the Briggs LSR connects to the Kalmiopsis Wilderness and to the Taylor Creek LSR.

The 2002 Biscuit Fire encompassed a major portion of this LSR; 13,300 acres of suitable habitat for spotted owl was lost in the fire, of the 23,773 acres that existed pre-fire.

#### **7) East IV/Williams-Deer LSR**

The East IV/Williams-Deer LSR contains a combination of National Forest and BLM lands. The white fir, tanoak, and Douglas-fir plant series occupy most of this LSR. Eighty-eight percent of the LSR is capable of growing spotted owl habitat. Of these capable lands, 49 percent are currently older forests.

It presently supports 42 activity centers for the northern spotted owl. Fourteen of these activity centers (33%) have less than 30 percent of their home range in suitable owl habitat. Twenty-two of these 42 (52%) activity centers contain greater than 40 percent of their home range in suitable owl habitat.

Other characteristics and functions of this LSR are the high elevation older forest connections between the mountains east of the Illinois Valley and the coastal part of the Siskiyou. Most of this high elevation connection occurs in the white fir and red fir plant series. Parts of this LSR also connect the Rogue and Illinois River Valleys. In addition, this LSR provides contiguous forest reserves from the lower elevations to the higher elevations. This LSR connects with scattered older forest habitat on BLM lands to the north and east (part of the Applegate AMA) and larger blocks of older forest habitat in the Siskiyou and Red Buttes Wildernesses to the south and east (on Klamath and Rogue River NFs, respectively). Older forest connections directly to the east and west are lacking.

#### **8) West IV LSR**

National Forest lands dominate within the West IV LSR; a small amount of BLM land is also present. It has a large component of Jeffrey pine plant series and Douglas-fir/tanoak plant series. Only 22 percent of the LSR has the potential to grow large trees and older forests suitable for the northern spotted owl. Nineteen percent of these capable lands are in late-successional conditions, Post-Biscuit Fire. Acres of capable NRF habitat for the West IV LSR are inherently low, because serpentine soils overlay much of this LSR; most serpentine sites are not capable of producing NRF habitat (see Table B-1).

Pre-Biscuit Fire, the LSR historically supported three known activity centers for the northern spotted owl. One of these centers had less than 30 percent of its home range in suitable owl habitat. One of the centers had greater than 40 percent of its home range in suitable owl habitat. Post-Biscuit Fire, two activity centers in the Fire area suffered reductions in NRF habitat.

This LSR connects Briggs, South Chetco, and East IV LSRs and connects to an administrative study area in the Siskiyou National Forest, the North Fork Smith Recreation area to the south

(Six Rivers National Forest), and the Kalmiopsis Wilderness to the north. Important areas for older forest connections are the Illinois River corridor and the BLM lands which connect to the Sucker-Grayback drainage. Only limited connections of older forests are available to the east, west, and south due to private land, geology, and past management practices.

The 2002 Biscuit Fire encompassed much of this LSR; 5,094 acres of suitable habitat for spotted owl was lost in the fire, of the 7,240 acres that existed pre-fire.

### **9) Grider/Thomas LSR**

The Grider/Thomas LSR consists entirely of National Forest lands. Analysis for this LSR has not yet been completed by the Klamath National Forest, so USDI FWS data was used. Data on capable lands were not available; however, currently 26 percent of the land is in older forests.

It presently supports 13 activity centers. Two (15%) activity centers have greater than 40 percent of their home range in suitable owl habitat. Eleven of the 13 (85%) have between 30-40 percent suitable owl habitat within their home range. However, most of the LSR has not been surveyed to protocol.

This LSR connects the East IV/Williams LSR to the north, the Red Buttes Wilderness to the east, and the Marble Mountains Wilderness to the south. Older forest connections are present in these areas. However, lack of older forest connections is expected to the southeast towards the Siskiyou Wilderness and to the east towards Critical Habitat Unit CA-16. Reasons for this are the land ownership patterns and typical past management practices.

### **10) Applegate/Oak Knoll LSR**

The Applegate/Oak Knoll LSR consists entirely of National Forest lands. White-fir plant series is the major ecological classification. Eighty-nine percent of the land is capable of growing spotted owl habitat. Currently, 56 percent of the capable lands are in older forests.

It presently supports 18 activity centers for the northern spotted owl. Two centers have less than 40 percent suitable owl habitat.

This LSR has older forest connections across the Applegate Ranger District east to the Mt. Ashland LSR and west to the East IV/Williams LSR. It also has older forest connections through the Red Buttes Wilderness to the Grider/Thomas LSR. This region is naturally fragmented by climate, ecotype, and fire regime. There are high elevation ridges along these connections; however, the abundance of dispersal habitat allows no greater than 3/4-mile distance from dispersal/suitable owl habitat.

### **11) Mt. Ashland LSR**

The Mt. Ashland LSR consists entirely of National Forest lands. The majority of the LSR is coniferous forest. Douglas-fir and ponderosa pine communities dominate at the lower elevations. White fir communities dominate the middle elevations, with Shasta red fir dominating the higher elevations, and giving way to mountain hemlock at the highest

elevations. Ninety-one percent of the lands are capable of growing spotted owl habitat. Currently, 64 percent of the capable lands are in older forests.

It presently supports 26 activity centers for the northern spotted owl. One (0.5%) activity center has less than 30 percent suitable owl habitat, and three (14%) centers have 30 percent to 40 percent suitable owl habitat.

The Mt. Ashland LSR links the high elevation Siskiyou range of the Klamath Geological Province with the Southern Oregon Cascades. This link is a critical node in the overall migratory patterns in the Pacific Northwest. It allows flow to and from all legs and arms of the 'H,' a process important to the Region as a whole for the last 60 million years. The Cascade-Siskiyou National Monument to the east is highly fragmented by ownership patterns and past land use, substantially decreasing its function as a link in the LSR network. It is separated from the Mt. Ashland LSR by private lands and Interstate Highway 5, which is a barrier for some animal species.

LSRs to the west are more continuous, lack significant migratory barriers, and over half the area in each is in late-successional condition.

### **12) Soda Mt. LSR — Now Cascade-Siskiyou National Monument**

The Cascade-Siskiyou National Monument consists entirely of BLM lands. White fir and mixed conifer plant series dominate this LSR. Fifty-five percent of the lands are capable of producing spotted owl habitat. Currently, 31 percent of the capable lands are in older forests/suitable habitat.

It presently supports 18 activity centers for the northern spotted owl. Two centers (11%) have 30 percent to 40 percent suitable owl habitat, and the remaining 16 centers (89%) have less than 30 percent suitable owl habitat within their home ranges.

This LSR is highly fragmented as a result of ownership patterns, and past management actions. However, it does provide a crucial link along with the Ashland LSR between the Western Cascades and the Klamath Provinces in the southern portion of the I-5 Area of Concern. There has been at least one confirmed spotted owl migration from west of the Applegate District to this LSR. However, forest connectivity for dispersal remains a concern.

### **13) Dead Indian LSR**

The Dead Indian LSR consists entirely of National Forest lands. This LSR straddles the Cascade Crest. The eastern half is located in the Oregon Eastern Cascades Physiographic Province and the western half is in the Oregon Western Cascades Physiographic Province. White fir and Shasta red fir plant associations dominate the LSR. Sixty-three percent of the lands are capable of growing spotted owl habitat. Currently, 71 percent of the capable lands are in older forests.

It presently supports 67 activity centers for the northern spotted owl. Thirty-six centers (54%) have less than 30 percent suitable owl habitat within their home ranges. Fourteen of the 67 (21%) centers have between 30 percent and 40 percent suitable owl habitat.

The east half of Dead Indian LSR lacks connectivity to the west side habitat, as a result of natural and manmade fragmentation. Fragmentation is caused by high elevation plant communities, lava fields from Mt. McLoughlin and Brown Mt., and past land management activities. The east half of the LSR appears to be weakly connected through older forest habitat to Crater Lake National Park to the north. However, dispersal habitat is strongly connected to the Park through subalpine and lodgepole pine plant communities in the Sky Lakes Wilderness. Mixed areas of BLM and privately owned lands occur south of the LSR. These areas are highly fragmented, caused by natural conditions, past land use, and ownership patterns. Connectivity north to the Middle Fork LSR is a concern. A fragmented landscape of private land and scattered remnants of older forest dominate the landscape between these two LSRs. The very eastern boundary of the LSR approximates the eastern edge of the range of the spotted owl.

#### **14) Middle Fork LSR**

The Middle Fork LSR consists entirely of National Forest lands. The majority of the LSR is coniferous forest. Douglas-fir and Western hemlock communities dominate at lower elevations. White fir and Shasta red fir communities dominate the middle to upper elevations, giving way to mountain hemlock and lodgepole pine at the highest elevations. Ninety-nine percent of the lands are capable of growing spotted owl habitat. Currently, 56 percent of the capable lands are in older forest.

It presently supports 38 activity centers for the northern spotted owl. Twenty-three centers (61%) have greater than 40 percent suitable owl habitat. Eight centers (21%) have 30-40 percent suitable owl habitat, and the remaining 7 centers (18%) have less than 30 percent suitable owl habitat within their home ranges.

Large blocks of older forest located within Red Blanket Creek, Middle, and South Fork drainages of the Rogue River provide good dispersal across this LSR. Mountain hemlock and lodgepole pine communities dominate the eastern boundary of this LSR. Older forests, in the Sky Lakes Wilderness, occur along the stream bottoms and sides of the systems previously described.

#### **15) Elk Creek LSR**

The Elk Creek LSR contains a mixture of National Forest and BLM lands. Elevations range from 1,600- 4,000 feet in the mixed conifer series. It is considered a key watershed (deferred watershed). Fifty-one percent of the lands are capable of growing spotted owl habitat.

It presently supports 17 activity centers for the northern spotted owl. Two-thirds of the LSR is within a study area on owl density (OSU-Wagner) that has undergone an intensive owl monitoring effort since 1986. Many of the active owl sites seem to be barely hanging on and not producing young.

The 2002 Timbered Rock Fire encompassed a portion of this LSR; 1,198 acres of suitable habitat for spotted owl was lost in the fire, of the 10,402 acres that existed pre-fire.

### **16) Rogue-Umpqua Divide LSR**

The Rogue-Umpqua Divide LSR consists entirely of National Forest lands. The majority of the LSR is coniferous forest. Douglas-fir and Western hemlock communities dominate at the lower elevations. White fir and Shasta red fir communities dominate the middle to upper elevations, giving way to mountain hemlock and lodgepole pine at the highest elevations. Ninety-four percent of the lands are capable of growing spotted owl habitat. Currently, 53 percent of the capable lands are in older forest.

It presently supports 24 activity centers for the northern spotted owl. Twenty-three centers (96%) have greater than 40 percent suitable owl habitat. One owl center (4%) have 30-40 percent suitable owl habitat within its home range.

Riparian reserves, Administratively Withdrawn Areas (Research Natural Area, and Pileated/Pine Marten areas) provide the connective web across the LSR. There is a lack of older forest connections on the eastern boundary (Crater Lake National Park) of the LSR and forest connectivity for migration is a concern.

### **17) Lookout Mt./Black Butte LSR**

The Rogue River Basin portion of this large LSR (528,000+ acres) represents 5 percent of the area. Two to three National Forests and three BLM Districts make up the Federal ownership. Information for the entire LSR will be forthcoming after the assessment is completed. Discussion and figures are for the five percent portion of this LSR located on the Rogue River NF.

The portion of the Lookout Mt./Black Butte LSR in the Rogue Basin consists entirely of National Forest lands. The majority of this part of the LSR is mixed coniferous forest. Douglas-fir/hardwood communities dominate at the lower elevations. Shasta red fir communities dominate the middle and upper elevations. Ninety-eight percent of these lands are capable of growing spotted owl habitat. Currently, 53 percent of the capable lands are in older forest.

This LSR presently supports 24 activity centers for the northern spotted owl. Twenty centers (83%) have >40 percent suitable owl habitat. Three centers (13%) have 30-40 percent suitable owl habitat.

Large blocks of older forest are present in this part of the LSR and provide very good connectivity. In addition, several large blocks of older forest are located north of this portion, on the Umpqua National Forest, which provide an excellent connective link across the Western Cascade Mountain Range.

### **18) South Umpqua River/Galesville LSR**

The South Umpqua River/Galesville LSR is a combination of National Forest and BLM lands. There is a checkerboard ownership pattern within the LSR. This LSR plays a critical function in East-West connectivity, linking the Coast Province with the Cascades Province. The western hemlock and Douglas-fir/chinkapin plant series comprise approximately 75 percent of the vegetation within the LSR. An estimated 43 percent of the federal lands in the LSR are in late-successional stands, and an additional 12 percent are expected to grow to late-successional stage within 40 years.

This LSR currently supports 46 northern spotted owl activity centers. Eleven of these activity centers (24%) contain greater than 40 percent of their home range in suitable owl habitat. Thirty-five (76%) activity centers do not have 40 percent of their home range in suitable condition.

Important characteristics of this LSR include the South Umpqua River and the critical function of connectivity that this LSR is expected to perform. Because of topography, land management patterns, and existing stands, the northern portion of the LSR is expected to play a greater role in connectivity.

#### **19) West Glendale Resource Area - Four Sections LSR**

This LSR consists of portions of four sections in the NW corner of the Glendale Resource Area. These sections were designated LSR primarily because they had previously been designated as Critical Habitat for marbled murrelet. Two spotted owl activity centers are present; for both, over 40 percent of the habitat within their home ranges is suitable. NRF habitat predominates in these four sections.

TABLE C-1. Late-Successional Reserves within the Rogue River/South Coast Basins. <sup>10/ 8Aug03</sup>

LSR NAME	FEDERAL ACRES IN LSR	Area with Potential Acres (%) <sup>1/ 11/</sup>	Existing Late Successional Acres, Pre-fires (%) <sup>2/</sup>	Existing Late Successional Acres, Post-fires (%) <sup>2/</sup>	Acres Late Successional Habitat column 4 lost to Fires (%)	Fire Names
South Chetco <sup>3/</sup>	71,382	67,684 (95)	30,542 (45)	29,787 (44)	855 ( 3)	Biscuit/Repeater-FS
North Chetco <sup>3/</sup>	28,199	26,476 (94)	9,910 (40)	7,452 (28)	2,458 (25)	Biscuit-FS
NW Coast <sup>3/</sup>	145,974	139,180 (95)	67,201 (48)	67,201 (48)	0	
Fish Hook/Galice <sup>3/</sup>	234,860	217,826 (93)	117,252 (54)	92,380 (42)	24,872 (21)	Biscuit – FS/BLM
Taylor <sup>3/</sup>	8,934	8,420 (94)	4,584 (54)	4,584 (54)	0	
Briggs <sup>3/ 11/</sup>	53,980	35,785 (66)	23,563 (66)	11,191 (31)	12,372 (53)	Biscuit-FS
West IV <sup>3/ 11/</sup>	53,738	11,558 (22)	7,240 (59)	2,146 (19)	5,094 (70)	Biscuit-FS
East IV/Williams <sup>3/</sup>	122,526	107,320 (88)	52,061 (49)	52,061 (49)	0	
Applegate/Oak Knoll <sup>4/</sup>	46,831	41,687 (89)	23,270 (56)	23,270 (56)	0	
Mt. Ashland <sup>5/</sup>	51,512	47,041 (91)	30,069 (64)	30,069 (64)	0	
Soda Mt. (Cas/Sis NM) <sup>6/</sup>	34,480	19,020 (55)	10,630 (56)	10,630 (56)	0	
Dead Indian <sup>7/</sup>	115,233	72,558 (63)	51,431 (71)	51,431 (71)	0	
Middle Fork	49,805	49,286 (99)	27,383 (56)	27,383 (56)	0	
Elk Creek	20,520	16,031 (78)	10,402 (65)	9,204 (57)	1,198 (7)	Tmbrd Rock-BLM
Rogue-Umpqua Div.	39,024	37,453 (94)	19,750 (53)	19,750 (53)	0	
Lookout Mt/Black Butte <sup>8/</sup>	25,553	25,096 (98)	13,327 (53)	13,327 (53)	0	
S. Umpqua River/Galesville	66,173	64,850 (98)	32,417 (49)	32,417 (49)	0	
West Glendale RA - 4 Secs	2,300	N/A	N/A	N/A	0	
TOTAL	1,171,024 <sup>9/</sup>	977,271 (83)	532,696 (55)	482,101 (49)	46,849 (9)	N/A

<sup>1/</sup> Area left after serpentine, meadows, rock, water, and grass have been removed (% is of column 2).

<sup>2/</sup> Percent figures in this column are "percent of the number" in column 3.

<sup>3/</sup> Areas with Late Successional characteristics that includes Late or Giant seral stages with >40% canopy closure - "Late" equals trees with at least 21 inch DBH.

<sup>4/</sup> Late-Successional areas were determined using 1993 GRS satellite data, criteria were >40% canopy closure and trees >20 inches DBH.

<sup>5/</sup> Late-Successional areas were determined using 1993 satellite data, criteria were >40% canopy closure and trees >24 inches DBH.

<sup>6/</sup> These acres are designated as National Monument as of June 9, 2000.

<sup>7/</sup> Late-Successional criteria used for Eastern Cascades Province side was: stands dominated by medium/large trees with >40% canopy closure, and small treed stands with remnant med/large trees with canopy closure >55%. Western Cascades Province side used 1992 photo interpreted/ground verified known functional owl habitat.

<sup>8/</sup> These numbers reflect the RRNF portion; remainder of the LSR is on the Umpqua and Willamette National Forest, the Eugene, Roseburg and Medford Bureau of Land Management (5% of total acres).

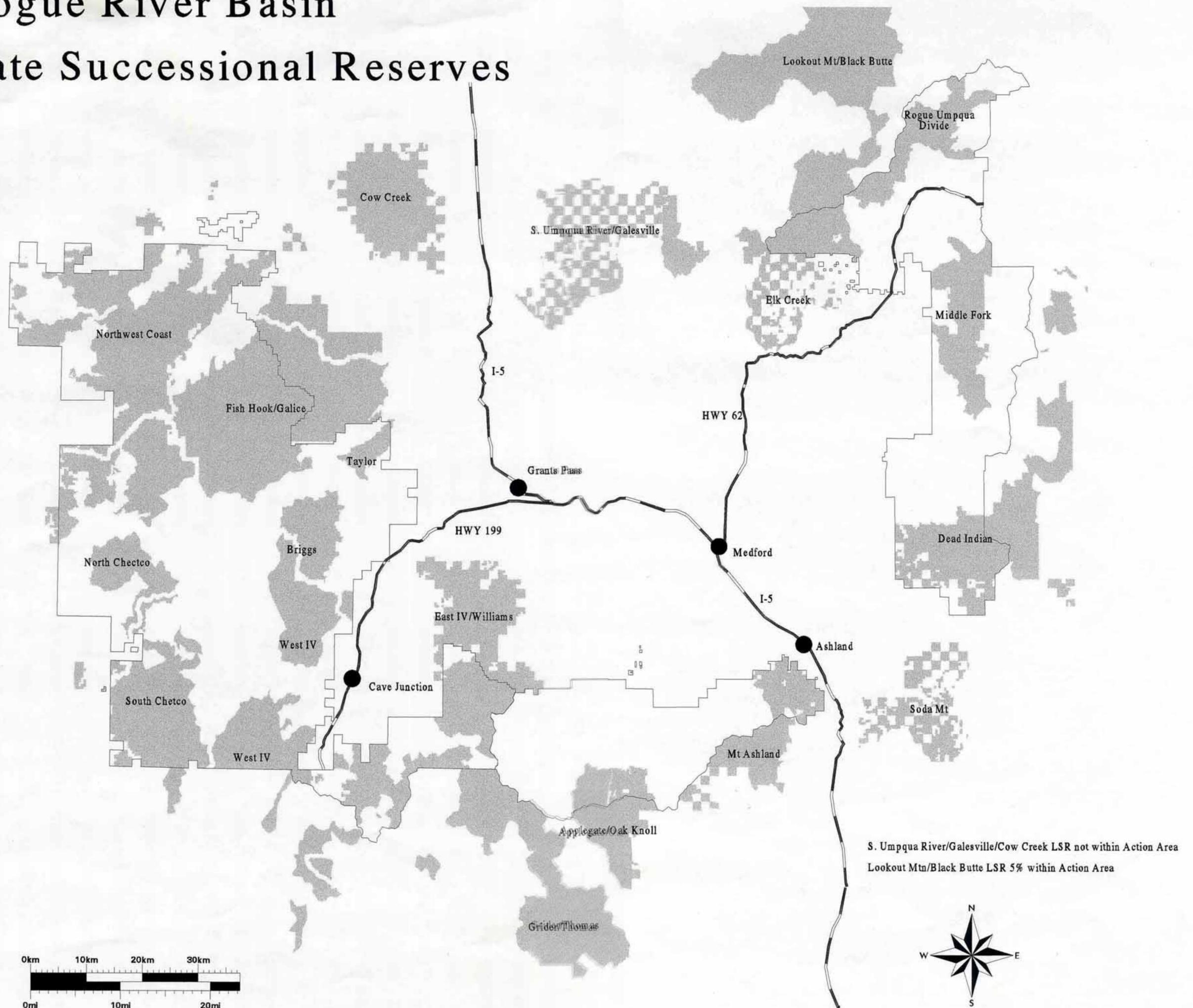
<sup>9/</sup> Total LSR acres for those LSRs occurring in the action area (i.e., portions of some LSRs are located outside the action area; however, those "outside" acres are included in this figure. The total LSR acres in the action area are found in Summary Table 2 of the BA [878,407]).

<sup>10/</sup> Acres of potential and existing late-successional habitat in LSRs on Siskiyou National Forest updated 2003 by analysis done for Biscuit Fire EIS. In general, higher potential acres were generated by the Biscuit analysis, than were generated in the 1995 SW OR LSR Assessment (overlap of LSR acres with other land allocations may have inadvertently left out of the 1995 calculations).

<sup>11/</sup> For calculations in this table, for LSRs on the Siskiyou NF, acres of *capable* owl habitat for the LSRs were considered to be all Sapling, Small, Medium, Large, and Giant conifer stands with a canopy closure of  $\geq 40\%$ . Existing *NRF (Late Successional)* habitat is considered to be all Medium, Large, and Giant conifer stands with a canopy closure of  $\geq 40\%$ . The "breaks" for canopy cover in the Siskiyou's Vegetation GIS layer are at 40 and 70 percent, but suitable habitat for spotted owl is classified as older stands which have a canopy closure of  $\geq 60\%$ . Because most natural non-serpentine stands between 40% and 70% are actually 60%+, we classify suitable habitat as  $\geq 40\%$ . Most serpentine sites are not capable of producing NRF habitat. Natural stands on serpentine soils between 40% and 70% are more likely to measure under 60% canopy closure. Regardless of canopy closure %, serpentine areas of Low or Moderate productivity are not considered Capable of becoming Suitable habitat (High productivity areas *are* considered Capable); these Low and Moderate serpentine areas have been removed from the calculation of Suitable habitat within the Fire perimeter.

N/A Information is not available at this time.

# Rogue River Basin Late Successional Reserves



Appendix D. Blank Project Tracking Forms (for submission to FWS. This “Project Implementation And Monitoring Form (updated 6/30/03) will be used during FY04-08, until revised. These forms will be used to build an annual “tracking report” to FWS from the consolidated action agencies.

**TRACKING REPORTS:** On 1 August 1996 our three administrative units sent the *Rogue River/South Coast Biological Assessment for FY 97/98 Timber Sale Projects and FY 97/05 for All Other Projects* to the USDI Fish and Wildlife Service. They replied with a Biological Opinion on 18 October 1996 (1-7-96-F-392). As part of this and subsequent consultation efforts, our three administrative units agreed to report (“track”) all “likely to adversely affect” (LAA) projects to FWS several times each fiscal year. This reporting procedure tracks and monitors Forest Service/BLM projects which “are likely to adversely affect” bald eagle, spotted owl, marbled murrelet, vernal pool fairy shrimp, Cook’s lomatium, Gentner’s fritillary, large-flowered woolly meadow-foam, and McDonald’s rockcress, or critical habitat for spotted owls, marbled murrelets, and vernal pool fairy shrimp.

To report projects covered by this Biological Assessment, the Level 1 team has agreed to use this *Project Implementation and Monitoring Form*. All *Likely to Adversely Affect* projects implemented during FY 04-08 will be annually reported to FWS (Roseburg Field Office). This tracking form will be used until replaced. The Tracking form with instructions is attached (see also a list of 5th field watersheds and map, located after the Literature Cited section of this document. Copy the form as needed. The form is basically self-explanatory; however, some points need to be emphasized.

1. Report **ONLY** those projects which were “likely to adversely affect” (**LAA**) one or more listed wildlife species (bald eagle, spotted owl, marbled murrelet, Gentner’s fritillary, etc.). Do not report “no effect” (NE) or “not likely to adversely effect” (NLAA) projects. Note that a project which is active during 1 July to 30 September and would disturb spotted owls could be LAA (meeting PDC 3-a-I does not automatically confer a determination of NLAA for the project).
2. Report **all** of your FY04-08 LAA projects by 5th field watershed. Most LAA projects involve timber sales or recreation projects; but report all LAA projects, in all categories (report only the Federal impacts of road use permits).
3. If a project is located in more than one 5th field watershed, fill out a separate form for each watershed (note in the “remarks” block of each form which other 5th field watersheds are involved).
4. This form is under development, and the Level 1 team would like feedback on it — ease of use, etc. Make these comments in the Remarks block.
5. Use the Remarks block to record anything “out of the ordinary” for a given project.
6. Keep a copy of all forms you fill out, and file in a three ring binder. We will be adding to these binders in the future.

**PROJECT IMPLEMENTATION AND MONITORING FORM updated 6/3003**

Tracking effects to T&E species, including habitat removal and thinning below 40% crown cover of spotted owl dispersal habitat within physiographic province: \_\_\_\_\_

Administration Unit	Compiler	BO/FWS Reference Number	
Ranger District/Resource Area	Agency Contact	FWS Contact	FY Sold or non-timber Project implemented

**General Project Information:** List project name and type of effect

Project Name: \_\_\_\_\_ [    ] habitat modification (with associated disturbance) or [    ] disturbance-only  
 Project Acres: \_\_\_\_\_

Activity Type/Unit of Measure (if applicable, see definitions in BO)*	Acres	Amount Treated (by land use allocation – non-duplicative)					HUC # (s) for 5 <sup>th</sup> field watersheds (and comments, if any)
		Total	LSR	AMA	Matrix	Other	
Regeneration harvest							
Other (describe)							

\* add other activity types and units of measure based on how the activity is categorized in the applicable BO

Northern Spotted Owls.

**Project Name** \_\_\_\_\_

In the top portion of the table, please give total acres for each land allocation (LUA) in the project area– the total acres in this part of the table should equal the total acres of the project. The bottom part of the table is for recording effects to critical habitat in the project area – this is a *subset* of the information in the top part of table. Degraded, removed, and disturbed acres do not overlap.

Land allocation (include # if mapped LSR or AMA)	NOT STOC Habitat (Acres)	STOC suitable habitat				STOC dispersal		TOTAL	Bald eagle**	Comments
		Suitable Degraded but still suitable (CC ≥ 60%)	Suitable down-graded to dispersal (acres) (CC 40-59%)	Suitable removed to unsuitable (acres) (CC>40%)	Suitable habitat disturbed * (acres)	Dispersal Habitat Degraded but still suitable (CC ≥ 40%)	Dispersal habitat removed/ thinned below 40% crown cover (acres)		Site Name and nest number** Describe effects	
<b>Matrix</b>										
<b>LSR- #</b>										
<b>AMA -</b>										
<b>Other</b>										
<b>Total</b>										
Land allocation with CHU overlap (include # if mapped LSR or AMA)	List CHU#									
<b>Matrix</b>										
<b>LSR #</b>										
<b>LSR #</b>										
<b>AMA-</b>										
<b>Total of allocation acres with CHU overlap</b>										

\*Activity within 0.25 miles of activity, use the most recent known pair activity center for a given owl pair, from 1 March to 30 June

\*\*Explain Bald eagle affects: Site management plan name, other info in comment(s) below. Add additional pages if necessary.

Marbled Murrelets

Project Name \_\_\_\_\_

Effect of activity to murrelets. Please give acres for each land allocation/CHU combination separately. For example, each land allocation could be paired with no CHU or several overlying CHUs and each of these combinations receives a separate line on this table. Also, fill out a separate line for Areas A or B, if your project will be in both Areas. No information is required for Areas C and D. Degraded, and removed acres do not overlap each other.

Land allocation (Show Matrix, LSR, or Other on separate rows; include # if mapped LSR)	Area A or B? (show A and B on separate rows)	BRMA Suitable Habitat					Critical Habitat	
		Suitable Habitat Degraded (acres)	Suitable Habitat Removed (acres)	Suitable Habitat Disturbed during Restricted Period** (acres)	Occupied Suitable Habitat within ¼ mile (acres)	Unsurveyed Suitable Habitat within ¼ mile (acres)	Suitable Habitat Degraded (acres)	Suitable Habitat Removed (acres)

\*\* within 0.25 miles of activity, as measured from the edge of suitable habitat contiguous with nest stand, from 1 Apr thru Aug 5.

**Project Name** \_\_\_\_\_

**Other** \_\_\_\_\_

To date, fields for species other than murrelets, spotted owls, and bald eagles have not yet been fully defined. If your project may affect other listed, proposed, or candidate species, please contact your U.S. Fish and Wildlife Service provincial representative to discuss additional information prior to form completion. Discuss effects to **fairy shrimp** and **listed plants** on this page.

Fairy shrimp	
Cook's lomatium	
Gentner's fritillary	
Large-flowered woolly meadowfoam	
McDonald's rockcress	

Appendix E. Project Design Criteria: Protection Measures for Peregrine Falcons. Although the peregrine falcon was removed from the Endangered Species List in August 1999, the subspecies has been re-classified as Sensitive on lands managed by the Forest Service and BLM. The following PDCs are effective for habitat planning for this species. Appendix G provides Detailed PDCs and management criteria for Peregrine Falcon nest sites, and potential habitat. [Prepared by: Joel E. (Jeep) Pagel, Principal Investigator, Pacific Northwest Interagency Peregrine Falcon Project, USDA Forest Service]

## **PDCs**

### Timber Sales

#### **a. Mandatory**

(I) Work activities should not take place within the primary or secondary nest protection zones of known peregrine falcon nests during restriction periods established in draft or final site management plans. These dates are site specific, per individual site management plan.

(II) Use draft or final management plans for additional site-specific guidance.

(III) If a draft or final management plan has not been written, management guidelines should reflect maximum nesting restriction periods and corresponding spatial protection until additional site specific information can be collected or applied. January 1 is the earliest start date for the restricted activities within primary and secondary protection zones at any nest site; the latest end date for any nest site is August 15, and are dependent on the elevation of each nest site (see Pagel 1992).

(IV) Draft management plans should be created for each known site within one year of discovery. Templates for management plans are available from the Regional Interagency Peregrine Falcon program.

#### **b. Recommended**

(I) Conserve riparian habitat and known preferred forage locations within the tertiary nest protection zone.

### Silvicultural Projects

Use mandatory and recommended PDCs listed under Timber section, except as noted below; specific criteria are listed for strychnine baiting for gopher control. See separate heading for PDCs related to **prescribed burning**.

a. **Mandatory**

(I) Strychnine baiting should not take place within the primary or secondary protection zones of known nest sites, or within 2 air miles of any site where a management plan has not been drafted or implemented.

## **Prescribed Fire**

a. **Mandatory**

(I) Prescribed burning should not take place within the primary and secondary management zones of an active peregrine falcon nest site between 1 January and 15 August, unless otherwise addressed in a draft or final site management plan. Use draft or final site specific management plans when planning burns or interdependent activities. Refer to management plans for determination of non-nesting dates. These vary per nest site.

## **Wildfire**

a. **Mandatory**

(I) Each known site has a Draft or Final Management Plan for peregrine falcon, with the exception of NI-68 in the Red Buttes Wilderness, NI-97 on the Siskiyou National Forest and OE-47, and OE-83 on the Rogue River National Forest. These plans should be referred to when wildfire suppression activities occur within 3 air miles of known nest sites. A synopsis of the most important protection measures (refer to management plans for other protection measures) necessary for fire suppression activities include the following: The restriction period for peregrine nest sites extend from 1 January - 15 August. For peregrines, the area within 3 air miles of a nest site (distance based upon topographic boundaries) should be protected from disturbance during fire suppression activities, whenever feasible. This area of heightened protection will be within the primary and secondary management zone for each peregrine site (see site specific management plans for guidelines). In order to accomplish this objective, minimize repeated aircraft flights which are less than 1,500 feet Above Ground Level (AGL). Also minimize the use of fire line explosives within 3 air miles of known nest sites during the protection period. Camp and staging areas set up before 15 August should be located outside of the peregrine falcon primary and secondary nest protection zones.

## **Introduction**

Until August 1999, peregrine falcons were listed as **Endangered** by the Federal Endangered Species Act (et seq. 1973). The recovery plan was developed by The Pacific Coast American Peregrine Falcon Recovery Team (USDI 1982). The species is listed as Sensitive by the Forest Service, and a Special Status (Sensitive) species by the Bureau of Land Management. Below are guidelines for habitat management, and minimization of human-generated disturbance to

eliminate or significantly reduce the potential for impacting peregrine falcons during the nesting season.

Within the action area, 14 peregrine falcon nest sites have been active since 1986. Not all sites are active each year. Eggshell thinning induced by chronic levels of organochlorines has hampered productivity at all nest sites in within southwestern Oregon. Due to eggshell thinning, protection of sites from disturbance is important to reduce potential for nest failure caused by human activities.

### **Abbreviated natural history**

Peregrine falcons are crow/raven-sized raptors that inhabit cliffs located within approximately 0.5 mile of riparian habitat. Peregrines nest on ledges clear of rock rubble, located approximately 40 - 80% of total cliff height. Peregrines are aerial predators who feed mostly on birds. Much of the prey consists of pigeons-sized species; however, avian prey ranges in size from hummingbirds to Aleutian Canada geese.

Courtship for peregrine falcons commences soon after winter solstice; photoperiodic changes affect male hormone levels. Peregrines lay 2-4 eggs in March-May, and commence incubation after the clutch is complete. Eggshell thinning induced by the metabolite of DDT, DDE, affected populations in the Pacific Northwest, and residual levels of DDE continue to affect the reproductive success of peregrines. Reproductive failure at peregrine nests has been chronic in northern CA and OR due to eggshell thinning.

Eggs hatch after an incubation period of 31.5 days. Developing young are altricial and remain on the ledge while being fed and protected by both adults. Fledging occurs when the young are between 37 and 45 days of age. Juveniles continue to be fed and protected by the adults until they disperse, which can range from 3 weeks to 3 months.

Adults (or subadults in some instances) at lower and medium elevation nest sites occupy the nesting territory for the remainder of the year until the next nesting season commences at the winter solstice. In extreme instances, the adults temporarily abandon the territory due to cold temperatures and/or significant reduction of availability of avian prey. During this period, the peregrines will travel to coastal, or central valley areas of CA, OR, and WA.

### **Disturbance**

Peregrine falcons can be disturbed by human activity during the nesting season. Disturbance can cause: nest sites and new territories to be abandoned; active nesting attempts to fail due to egg breakage; or divert adult attention from opportunities to forage and feed eyases.

Based on site-specific observations collected in northern California, Oregon, and southern Washington since 1983 [D. Davis notes (Willamette Nat. Forest), B. Norton notes (Medford BLM), Pagel notes (USDA FS Region 6), Pagel 1992], restriction periods for known peregrine falcon nest sites should be tailored to the specific nest, or if generalized, adapted to a range of elevations where the nest site is located (see Pagel 1992). While some variability in nesting

restrictions exist due to known nesting chronology, peregrine falcon nest site chronologies have been established with enough rigor to show consistency. This has allowed us to prescribe reasonable restriction periods, with extra reasonable allowances for chronological outliers. To eliminate the potential for impact during the nesting season, the following practices should be considered as PDCs. These PDCs will remain in place while the peregrine is listed as Forest Service Sensitive, Bureau of Land Management Special Status, or during the 13-year monitoring period following delisting (referred to in the FWS draft monitoring plan for the species).

Draft site specific management plans should be generated by the action agency within one year of locating new peregrine falcon nest sites. Plans are created to guide management and monitoring activities.

For the purpose of this document, disturbance has been defined as human-generated activities detrimental to peregrine falcon occupation of cliffs, courtship, nesting, and fledging of young. These activities include, but are not limited to: logging and interrelated and interdependent activities (i.e. mechanized slash piling, site preparation, log yarding and loading, firewood cutting, girdling, and tree topping), road construction and maintenance, recreational activities, wildlife and archeological surveys, and law enforcement and fire suppression activities. Seasonal restrictions may be necessary for all or some of these activities near peregrine falcon nest sites, and are determined by site-specific analysis set forth in management plans.

Data has been collected by action and regulatory agencies on peregrine falcons in the Pacific Northwest since 1979. This information should be referred to during the development of site specific management plans, project planning, and interagency consultation efforts. Templates for management plans are available from the Pacific Northwest Interagency Peregrine Falcon Program.

### Detailed Project Design Criteria

1) Restriction periods concurrent with site specific nesting chronology should be imposed on known nest sites. These restrictions should generally adhere to the following guidelines based on elevation above sea level.

Low	1 - 2000 feet	1 January - 1 July
Medium	2001 - 4000 feet	15 January - 31 July
Upper	4001 feet +	1 February - 15 August

2) Spatial boundaries (zones) around nest sites should be detailed on a site-specific basis, but will generally follow these guidelines. All distances listed below are approximate ranges of concentric circles which are established using topographic boundaries, observed peregrine falcon behavior patterns, and other site specific considerations. Site-specific distances WILL vary among nest sites. Management plans should delineate specific distances.

**Primary:** 0.25 to 0.75 mile "circle" around active nest cliff (average of 0.5 mile).

**Secondary:** 0.5 up to 2 air miles from active cliff.

**Tertiary:** 3 air miles from the active cliff.

These zones are imposed for disturbance and habitat management concerns.

3) Spatial zones to have the following restrictions.

**Primary**

1. Seasonal restrictions on human entry and activities are strictly followed.
2. Human activity (foot, vehicle, or aerial entry) within this zone is prohibited during the nest season, except for peregrine falcon monitoring and related activities, law enforcement, or to preserve human life in emergencies.
3. No new human habitat alteration activity is planned within this zone (e.g. road or trail building, harvest, construction, recreation).

**Secondary**

1. Seasonal restrictions are strictly followed.
2. New human activity (e.g. road construction, timber harvest, construction,...) is allowed outside of the nesting season, but is designed in such a manner as to benefit peregrine falcons and their prey.
3. Most recreation related activities are permitted in this zone during the nesting season. Exceptions may include hang gliding, trail blasting, large group gatherings (e.g. Rainbow Family).
4. Harvest activity and habitat manipulation are to be designed to retain structure and function of the ecosystem in the immediate area of the nest cliff and surrounding habitat to augment production of prey for peregrine falcons. Silvicultural practices should use the best available information for protection and augmentation of avian prey populations, and should consider and create action alternatives which will benefit and support local biological diversity.

**Tertiary**

1. Seasonal restrictions for helicopter use and blasting are normally adhered to within this zone (exceptions noted in draft and final management plans). Small helicopters (e.g. Bell 205, 206, etc.) are normally permitted in this zone during the nesting season.
2. Proposed human-generated activities within this zone are scrutinized to determine potential affect to peregrine falcons.
3. Fire suppression activities within this zone should closely follow draft or final site specific management plans.
4. Aircraft (special use permit or Agency contracted/owned) are permitted outside of a 1500 ft AGL (above ground level) "bubble" around the nest site outside of the primary nest protection zone; however, aerial activities are restricted within the secondary boundary during the restriction period. Further, most aerial activity is permitted outside of the secondary management zone boundary during the restriction period.

**Habitat Management**

Habitat management for peregrine falcons has generally been undefined. Peregrine falcons do not appear to be dependent upon specific vegetation conditions like other listed species (e.g.

spotted owl, marbled murrelet, coho salmon...). Specific management prescriptions applicable across the entire landscape, or within the tertiary management zone are not necessary. However, habitat management to augment and restore vegetation conditions for prey (and their prey) of peregrines is prudent to assist peregrine falcons in nesting attempts, and recovery of the sub-species.

For the purposes of this document, peregrine falcon habitat is defined as:

Potential, historic, or known cliff sites where suitable substrate exists for peregrine falcon nesting. Potential nest sites to be included for field-review prior to human-generated activities include any cliff larger than 75 feet in height which has a ledge surface greater than about 18 x 18 inches (500 sq. cm.)

Specific management considerations include the following for peregrine falcons in northern California, Oregon and Washington.

### **Habitat**

1. Retention of large woody material, and protection/creation of the snag component (all conditions) has been a standard practice to enhance and retain prey populations. The levels of protection/retention within units has generally been for the maximum amount achievable, per site condition for large woody material and snags.
2. Retention of hardwood components in clumps to aid avian productivity.
3. Gate or otherwise close excess roads within the secondary nest protection zone.

### **Cliffs**

1. Management of habitat around cliffs, including the cliffs, is based upon site specific management plans.
2. Cliffs generally do not require specific habitat management, but are a unique component of the landscape with their own retinue of species.
3. Nest ledge enhancements of active or potential sites are accomplished per recommendations based on nest entry from previous years. This information is detailed in site specific nest management plans.

### **Monitoring and Survey**

Survey activity must occur at least one year before implementation of the project, and the year of the project (due to resurgent population) if suitable known or suspected cliff habitat is known within 3 air miles. A potential cliff is defined as any rock face taller than 75 feet, with a potential ledge surface greater than 500 square cm.

Protocol for survey and monitoring peregrine falcons has been established by Pagel (1992):  
*Pagel, J. E. 1992. Monitoring protocol for peregrine falcons in the Pacific Northwest. Proceedings; symposium on peregrine falcons in the Pacific Northwest. US Forest Service, Medford OR.*

This protocol has been reviewed and adopted by the USDA Forest Service, USDI Bureau of Land Management, USDI Fish and Wildlife Service, and state wildlife agencies in the contiguous US Pacific Northwest.

The monitoring protocol consists of at least 2 visits to potential habitat conducted between 15 April and 30 June. The visits must be spaced 25 - 30 days apart, and each visit must be at least 4 hours, start to finish (no breaks in observation time). Visits must occur on days with excellent visibility, and from observation posts having the best possible view of the potential cliff (see Pagel 1992 for information on placement of observation posts). Further details regarding weather, equipment, time of year, time of day, establishment of observation posts, duration of stay at observations, helicopter surveys, and procedures for monitoring traditional peregrine falcon eyries are in Pagel (1992), and should be reviewed during project planning, and prior to survey attempts.

Monitoring known nest sites is critical to provide information that can be used to assess demographic resurgence of peregrine falcons that may lead to a recovery of the subspecies. Minimum data to be collected between January and August includes occupancy and reproductive success. To obtain this information, up to 4 protocol length (at least 4 hours each) visits by qualified biologists to known nest sites may be necessary during the course of the field season. *Qualified biologists* are defined as biologists, technicians, and other personnel who have received training on monitoring, behavior, and data recording on peregrine falcons, either via workshops presented in the Pacific Northwest, and/or via site visits with other qualified biologists. Mentoring of biologists who will monitor potential and known nest sites is strongly recommended.

Final documentation of unoccupied potential habitat, inactive nest sites, abandonment of active nests, or nesting failure will be made by qualified biologists. If nesting failure has occurred and adequate documentation of current year peregrine falcon behavior has been collected, restriction periods may be lifted using the following schedule which is based on elevation of nest sites and corresponding nesting chronologies;

Low	1-2000 feet	1 June
Medium	2001 - 4000 feet	15 June
Upper	4001 feet +	30 June

Collected monitoring data should be stored in district files, and later distributed to the USDI Fish and Wildlife Service and State wildlife management agencies.

## Appendix F. Discussion of the rationale for ending the Spotted Owl restricted season on 30 June, and Definition of Suitable Habitat for Spotted Owl and Marbled Murrelet.

### *Rationale for ending the Spotted Owl restricted season on 30 June*

The 30 June date is supported by the following rationale. The Ashland Resource Area (BLM) analyzed spotted owl data collected from 1992 through 1996 to determine age of young and fledging success prior to June 15 (Level 1 team members and agency biologists believe this data adequately represents chronologies of nesting owls at all locations in the action area). These data represent nests sites ranging in elevation from approximately 2,000 to 5,000 feet. The four nestlings/branchers after June 15 were from nests located at 2,800 and 3,600 feet. The period between 16 and 30 June gives late season nestlings/branchers an extra two weeks to make sure they are mobile enough to avoid disturbances.

Young Fledged prior to June 15.....89  
 Nestlings/Branchers after June 15.....4

The preponderance of Federal lands in the action area are below 3,500 feet in elevation. June 30 is assumed by the action agency biologists to be a valid “end” of the restricted season for spotted owl. For those few nestlings which fledge after 15 June, action agency biologists have the discretion to extend the restricted season as necessary, even after 30 June (if surveys have been conducted). If requested, the Level 1 team will review recommendations to extend the restricted season.

*Additional supporting data for 30 June date.* A recently published study detailed the effect of helicopter and chainsaw noise on the behavior of Mexican spotted owls (Delaney, David K., Teryl G. Grubb, Paul Beier, Larry L. Pater, M. Hildegard Reiser. 1999. Effects of Helicopter Noise on Mexican Spotted Owls. *Journal of Wildlife Management* 63(1):60-76). The study showed that the Mexican spotted owl appeared to tolerate disturbance at distances much closer than 0.25 mile. Spotted Owls did not flush if the noise stimuli were greater than 350 feet distant. Spotted owl nest sites adjacent to project areas are protected from 1 March to 30 September (PDC B.a.I); it appears that nesting spotted owls not adjacent to project areas (separated by 350 feet or more) would not be affected by noise generated by normal logging activities. Any spotted owls nesting within 350 feet of a project area would likely be noticed, even if no recent owl surveys had been conducted.

*Summary of findings.* Military helicopter training over the Lincoln National Forest in south central New Mexico had been severely limited to protect nesting Mexican spotted owls (*Strix occidentalis lucida*). To evaluate nesting and non-nesting spotted owl responses to helicopter noise, the authors measured flush frequency, flush distance, alert behavior, response duration, prey delivery rates, female trips from the nest, and nest attentiveness during manipulated and nonmanipulated periods, 1995-96. Chain saws were included in the manipulations to increase experimental options and to facilitate comparative results. They analyzed stimulus events by measuring noise levels. Manipulated and non-manipulated nest sites did not differ in reproductive success or the number of young fledged. As stimulus distance decreased,

spotted owl flush frequency increased, regardless of stimulus type or season. They recorded no spotted owl flushes when noise stimuli were >105 m away. Spotted owls returned to predisturbance behavior within 10-15 min after a stimulus event. All adult flushes during the nesting season occurred after juveniles had left the nest. Spotted owl flush rates in response to helicopters did not differ between non-nesting and nesting seasons. Chain saws were more disturbing to spotted owls than helicopter flights at comparable distances. Their data indicated a 105-m buffer zone for helicopter overflights on the Lincoln National Forest would minimize spotted owl flush response and any potential effects on nesting activity.

### *~Definition of Suitable Habitat for Spotted Owl and Marbled Murrelet~*

For all three administrative units, the general definition for old-growth spotted owl suitable habitat (NRF – Nesting, Roosting, or Foraging) is defined as a stand with average dbh of 26” ( $\geq 20$  mbf/ac. volume),  $\geq 200$  years old. Canopy is multi-layered with  $\geq$  than 60% canopy closure in the overstory; midstory and understory are present. Douglas-fir, grand fir, pines and hardwoods are in the overstory. Present are large trees with cavities, broken tops, or mistletoe platform branches; dead standing and fallen decayed trees support a prey base. NRF which is “less-than-ideal” may be present in some areas: trees may not quite be 200 years old (average trees as small as 21” dbh, with some smaller trees), or large defective trees may be in short supply, or the understory may be sparse – but nesting spotted owls may still be present. Dispersal habitat is defined as any stand with trees  $\geq 11$ ” dbh (average dbh of those trees which make up the canopy), with a canopy closure  $\geq 40\%$ .

*MEDFORD DISTRICT BLM. General definitions of Northern Spotted Owl Suitable and Dispersal Habitat in the mixed conifer and conifer-hardwood stands of southwest Oregon – habitat mapping procedure.*

**Suitable:** There are two categories of suitable habitat - Habitat 1 and Habitat 2.

Habitat 1 - Comprised of conifer forest stands that satisfy the daily and annual needs of the owl for nesting roosting and foraging. These stands generally have a multilayered canopy of several species of conifers with large trees in the overstory and an understory of shade tolerant conifers and hardwoods. Canopy closure generally exceeds 70 percent, and average DBH is generally 21 inches or greater.

Habitat 2 - Comprised of conifer stands and some hardwood stands which provide roosting and foraging opportunities for owls, but lack the necessary structure for consistent nesting. These stands generally have less diversity in the vertical structure and have limited or poorly defined multi-layered canopy structure. The understory is open enough to allow owl movement and foraging. Canopy closure generally exceeds 70 percent, and average DBH is 11-21 inches.

These two categories of habitat are generally collectively referred to as “suitable habitat.”

**Dispersal:** “Dispersal-only” habitat generally meets the 11-40 criteria, i.e., trees are  $\geq 11$  inches DBH and canopy closure is 40-60 percent, but this may vary based on personal knowledge of habitat use in a given area.

**Methodology:**

In support of the RMP effort in 1991-1992, all BLM managed lands in the Medford district were categorized into 6 categories with respect to their current and future function as spotted owl habitat. The categories are:

- Habitat 1 - provides nesting, roosting and foraging structure.
- Habitat 2 - lacks nesting structure; has foraging and/or roosting characteristics at varying degrees of quality.
- Habitat 3 - lacks nesting, roosting, or foraging (NRF) and dispersal-only structure; has the potential to develop into NRF habitat.
- Habitat 4 - lacks NRF and dispersal-only structure; does not have the potential to develop into NRF habitat.
- Habitat 5 - lacks NRF structure; provides dispersal-only function; has the potential to develop into NRF habitat.
- Habitat 6 - lacks NRF structure, provides dispersal-only function; does not have the potential to develop into NRF habitat.

The general approach used by the resource area biologists to accomplish the categorization employed the following methods for classifying the Operations Inventory (OI) units: (1) on-the-ground knowledge of the habitat, (2) photo interpretation, (3) OI stand descriptor interpretation, and (4) formulating search strings that identified OI units having or lacking desired attributes.

*NATIONAL FORESTS – ROGUE RIVER AND SISKIYOU. Spotted Owl.* For National Forest lands, suitable habitat identified on the PMR vegetation layer is defined generally as Mid, Late, or Giant forest stands which have 60% or greater canopy closure. Trees in the Mid stage range from 21.0 to 31.9" dbh (estimated 100 years old or more); trees in the Large stage range from 32.0 to 47.9" dbh (estimated 150 to 200 years old or more); and trees in the Giant stage exceed 48" dbh (estimated 200 years old and more). Trees smaller than 21.0" may be present in any of these stands.

*Forest Service - further discussion.* We used 1989 PMR (Pacific Meridian Resources) satellite data to map the spotted owl habitat; in our analysis of the PMR data, we defined NRF as coniferous forest  $\geq 40\%$  canopy closure, in the Mid, Late, and Giant seral types. Dispersal habitat includes the before-mentioned seral stages, plus young forest. We used 40% canopy for NRF instead of 70%, because old-growth forest in SW Oregon typically has a canopy closure of 60%; thus, if we did not use the 40-69% PMR category, we would miss recording the 60-69% class, and a substantial amount of NRF would not be counted. From our knowledge of forest conditions, we are confident that unmanaged coniferous stands in the 40-69% PMR category are actually clustered in the 60-69% bracket (managed coniferous stands are identified in GIS, and are in Young or earlier seral stages). The PMR data is estimated to have an accuracy of over 80%, when comparing similar habitat types ("closely related" polygons). For example, some "large" stands may actually be "giant" or vice versa, this type of error occurs because of the inherent diversity in all stands – no two stands are exactly the same – one stand may have a few more giant trees than the next, etc. The accuracy rate is close to 100% when comparing stands which are grossly unlike (a "pioneer"

[recent clearcut] will not be mistaken for a “large” stand – a Mid stand could occasionally be mistaken for a Young stand, or vice versa). On a project scale, a wildlife biologist would determine whether a stand is habitat or not, based on an on-the-ground-survey.

*Marbled Murrelet.* Suitable habitat on National Forest land is defined generally as Late or Giant forest stands which have 40% or greater canopy closure. On BLM land the stands must contain trees with at least a 21" dbh.

Coos Bay BLM lands are included only under section 1 of any applicable Table 2's; these acres are specifically listed under the entry for “Private, State and other Government.” No Coos Bay BLM project activities are included in this document. Consultation for Coos Bay BLM will be conducted by their office directly with FWS.

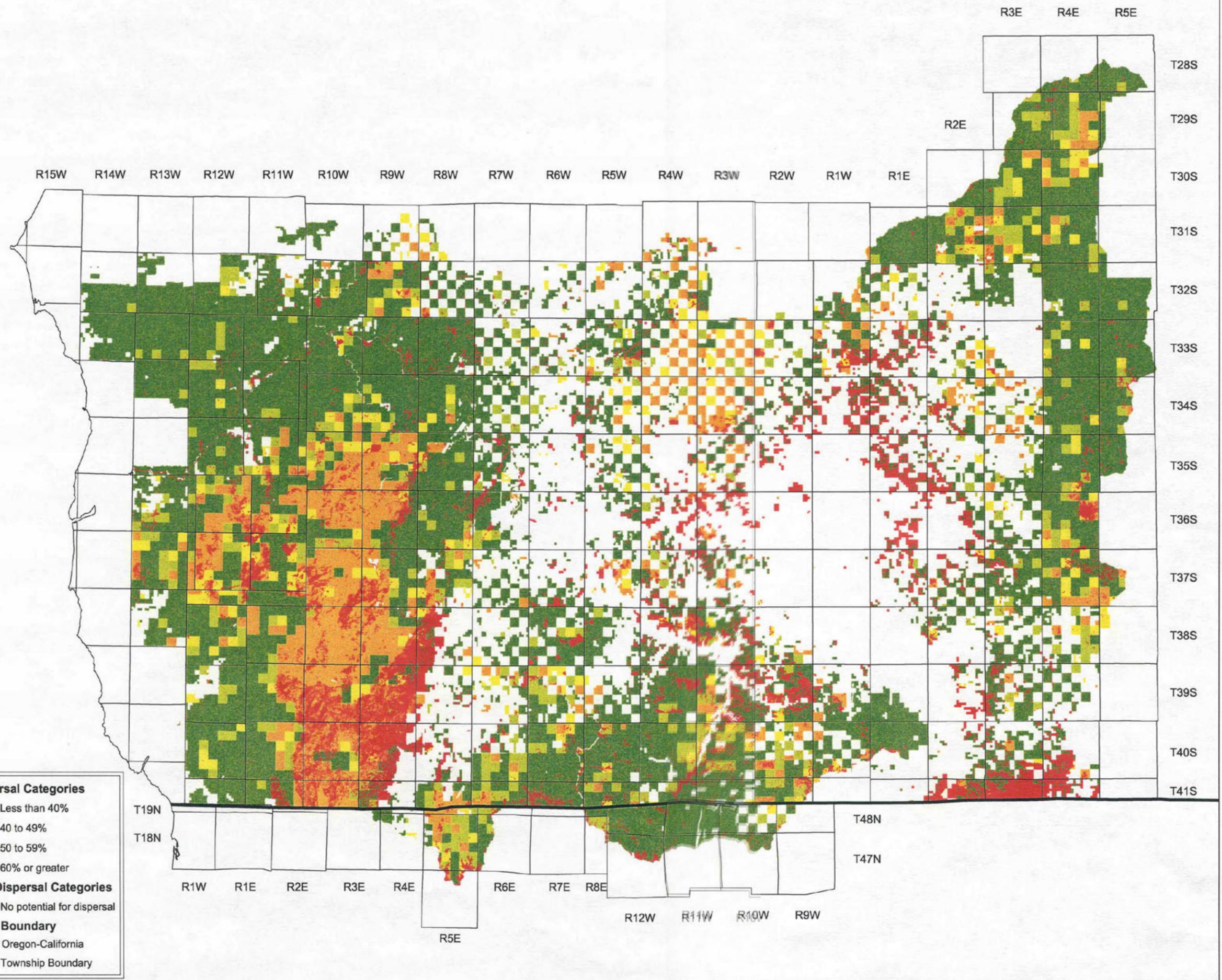
## Appendix G. Table G-1, Dispersal Habitat by 5<sup>th</sup> Field Watershed, and Map of Dispersal Habitat by Sections.

Table G-1. Northern spotted owl dispersal habitat - Rogue River National Forest (ROR), Siskiyou National Forest (SIS) and Medford BLM (MED), by 5 <sup>th</sup> Field Watershed. Grouped by Section 7 Watersheds. Federal lands outside of ROR/SIS/MED not included in Table. Many HUC5's are peripheral to the land managed by the Rogue River and Siskiyou National Forests, and the Medford District of the Bureau of Land Management. HUC5's are based on the 2002 update of HUC5 boundaries. Acre totals based on Biscuit Fire effects analysis June 03.							
HUC5 ID	Huc5 Watershed Name	HUC5 Acres	Federal Land				
			Total Federal (ROR, SIS, MED) (% of HUC5)	Total Capable (Dispersal + Capable) (% of HUC5)	All Dispersal Habitat (% of Total Capable)	Capable Only (not presently Dispersal)	Non-Capable Only
<b>Applegate</b>							
1710030901	Upper Applegate River	142,208	128,293 (90)	109,340 (77)	74,779 (68)	34,561	18,953
1710030902	Applegate River/Mckee Bridge	52,258	45,382 (87)	35,124 (67)	22,204 (63)	12,920	10,258
1710030903	Little Applegate River	72,261	52,086 (72)	37,744 (52)	25,587 (68)	12,157	14,342
1710030904	Middle Applegate River	82,571	48,904 (59)	34,933 (42)	27,027 (77)	7,906	13,971
1710030905	Williams Creek	52,942	28,078 (53)	25,794 (49)	19,418 (75)	6,376	2,284
1710030906	Lower Applegate River	90,635	39,056 (43)	34,841 (38)	23,685 (68)	11,156	4,215
<b>TOTALS</b>		<b>492,875</b>	<b>341,799 (69)</b>	<b>277,776 (56)</b>	<b>192,700 (69)</b>	<b>85,076</b>	<b>64,023</b>
<b>Bear</b>							
1710030801	Bear Creek	231,094	45,549 (20)	39,602 (17)	31,526 (80)	8,076	8,947
<b>TOTALS</b>		<b>231,094</b>	<b>45,549 (20)</b>	<b>39,602 (17)</b>	<b>31,526 (80)</b>	<b>8,076</b>	<b>8,947</b>
<b>Chetco and South Coast</b>							
1710031201	Chetco River	225,073	175,143 (78)	151,026 (67)	72,680 (48)	78,346	24,117
1710031204	Pistol River	66,820	35,013 (52)	33,046 (49)	20,690 (62)	12,356	1,967
1710031205	Hunter Creek	28,451	6,922 (24)	6,811 (24)	3,570 (52)	3,241	111
1710031207	Winchuck River	45,578	32,209 (71)	31,934 (70)	22,581 (71)	9,353	275
<b>TOTALS</b>		<b>365,922</b>	<b>249,287 (68)</b>	<b>222,817 (61)</b>	<b>119,521 (54)</b>	<b>103,296</b>	<b>26,470</b>
<b>Coquille/Sixes</b>							
1710030501	Coquille S Fork, Lower	108,300	64,492 (60)	62,744 (58)	43,545 (69)	19,199	1,748
1710030502	Middle Fork Coquille	197,121	1,690 (1)	1,690 (1)	1,353 (80)	337	0
1710030603	Sixes River	85,831	21,499 (25)	21,398 (25)	17,167 (80)	4,231	101
<b>TOTALS</b>		<b>394,252</b>	<b>87,681 (22)</b>	<b>85,832 (22)</b>	<b>62,065 (72)</b>	<b>23,767</b>	<b>1,849</b>
<b>Cow-Upper</b>							
1710030201	Upper South Umpqua River	87,055	0 (>1)	0 (>1)	0 (0)	0	0
1710030202	Jackson Creek	102,312	5 (>1)	4 (>1)	3 (66)	1	1
1710030204	Elk Creek/South Umpqua	54,329	190 (>1)	190 (>1)	142 (75)	48	0
1710030205	South Umpqua River	141,460	555 (>1)	554 (>1)	200 (36)	354	1
1710030206	Upper Cow Creek	47,436	9,454 (20)	8,394 (18)	4,268 (51)	4,126	1,060
1710030207	Middle Cow Creek	113,048	63,553 (67)	42,383 (37)	29,340 (69)	13,043	21,170
1710030208	West Fork Cow Creek	55,871	29,016 (52)	27,579 (49)	18,880 (45)	8,699	1,437
1710030209	Lower Cow Creek	102,417	401 (>1)	397 (>1)	252 (63)	145	4
<b>TOTALS</b>		<b>703,928</b>	<b>103,174 (15)</b>	<b>79,501 (11)</b>	<b>53,085 (67)</b>	<b>26,416</b>	<b>23,673</b>
<b>Elk</b>							
1710030601	Humbug Nesika Frontal	55,637	2,881 (5)	2,832 (5)	2,106 (74)	717	58
1710030602	Elk River	59,332	45,054 (76)	44,553 (75)	34,622 (77)	9,931	501
<b>TOTALS</b>		<b>114,969</b>	<b>47,935 (42)</b>	<b>47,385 (41)</b>	<b>36,728 (78)</b>	<b>10,648</b>	<b>559</b>
<b>Illinois</b>							
1710031101	East Fork Illinois River	57,624	40,517 (70)	34,924 (61)	19,069 (55)	15,855	5,593
1710031102	Althouse Creek	29,242	18,210 (62)	15,839 (54)	10,127 (64)	5,712	2,371
1710031103	Sucker Creek	62,495	48,963 (78)	44,589 (71)	30,977 (69)	13,612	4,374
1710031104	West Fork Illinois River	76,931	49,139 (64)	22,370 (29)	10,056 (45)	12,314	26,769
1710031105	Deer Creek	72,572	37,612 (52)	32,634 (45)	23,184 (71)	9,450	4,978
1710031106	Illinois River/Josephine Creek	81,672	70,683 (87)	42,701 (52)	15,181 (36)	27,520	27,982
1710031107	Briggs Creek	43,729	41,390 (95)	36,539 (84)	26,562 (73)	9,977	4,851

Table G-1. Northern spotted owl dispersal habitat - Rogue River National Forest (ROR), Siskiyou National Forest (SIS) and Medford BLM (MED), by 5 <sup>th</sup> Field Watershed. Grouped by Section 7 Watersheds. Federal lands outside of ROR/SIS/MED not included in Table. Many HUC5's are peripheral to the land managed by the Rogue River and Siskiyou National Forests, and the Medford District of the Bureau of Land Management. HUC5's are based on the 2002 update of HUC5 boundaries. Acre totals based on Biscuit Fire effects analysis June 03.							
HUC5 ID	Huc5 Watershed Name	HUC5 Acres	Federal Land				
			Total Federal (ROR, SIS, MED) (% of HUC5)	Total Capable (Dispersal + Capable) (% of HUC5)	All Dispersal Habitat (% of Total Capable)	Capable Only (not presently Dispersal)	Non-Capable Only
1710031108	Illinois River/Klondike Creek	67,063	67,061 (100)	57,179 (85)	26,535 (46)	30,644	9,882
1710031109	Silver Creek	51,592	51,293 (99)	43,984 (85)	8,151 (14)	35,833	7,309
1710031110	Indigo Creek	49,063	48,872 (99)	46,360 (95)	23,409 (50)	22,951	2,512
1710031111	Illinois River/Lawson Creek	41,157	39,000 (95)	33,952 (82)	17,144 (50)	16,808	5,048
<b>TOTALS</b>		<b>633,140</b>	<b>512,740 (82)</b>	<b>411,071 (68)</b>	<b>210,395 (57)</b>	<b>200,676</b>	<b>101,669</b>
<b>Klamath</b>							
1801020301	Wood River	122,654	73 (>1)	65 (>1)	37 (57)	28	8
1801020302	Klamath Lake	265,442	61 (>1)	43 (>1)	21 (49)	22	18
1801020303	Fourmile Creek	74,504	1,102 ( 1)	456 ( 1)	139 (95)	317	646
1801020601	Spencer Creek	54,157	28 (>1)	26 (>1)	14 (54)	12	2
1801020603	Klamath/Copco	86,728	807 ( 1)	120 (>1)	77 (64)	43	687
1801020604	Jenny Creek	134,329	47,468 (35)	34,434 (26)	26,271 (76)	8,163	13,034
1801020605	Klamath River/Iron Gate	42,123	13,810 (33)	4,209 (10)	3,664 (87)	545	9,601
1801020607	Cottonwood Creek	63,544	5,668 ( 9)	1,200 ( 2)	1,003 (84)	197	4,468
1801020609	West Fork Beaver Creek	69,661	292 (>1)	241 (>1)	229 (95)	12	51
1801020610	Beaver Creek	98,606	36 (>1)	29 (>1)	17 (59)	12	7
1801020611	Grider Creek	81,768	10 (>1)	4 (>1)	2 (50)	2	6
1801020901	China Peak	67,170	503 ( 1)	421 ( 1)	300 (71)	121	82
1801020902	Indian Creek	86,270	2,116 ( 2)	1,157 ( 1)	854 (74)	303	959
1801020904	Clear Creek	71,307	1 (>1)	0 ( 0)	0 ( )	0	1
<b>TOTALS</b>		<b>1,318,263</b>	<b>71,975 ( 5)</b>	<b>42,405 ( 3)</b>	<b>32,628 (77)</b>	<b>9,777</b>	<b>29,570</b>
<b>Little Butte</b>							
1710030708	Little Butte Creek	238,594	111,480 (47)	80,341 (34)	54,528 (68)	25,813	31,139
<b>TOTALS</b>		<b>238,594</b>	<b>111,480 (47)</b>	<b>80,341 (34)</b>	<b>54,528 (68)</b>	<b>25,813</b>	<b>31,139</b>
<b>Rogue-Lower-Lobster</b>							
1710031007	Lobster Creek	44,254	26,793 (61)	26,186 (59)	17,815 (68)	8,371	607
1710031008	Lower Rogue	82,691	44,462 (54)	41,613 (50)	29,642 (71)	11,971	2,849
<b>TOTALS</b>		<b>126,945</b>	<b>71,255 (56)</b>	<b>67,799 (53)</b>	<b>47,457 (70)</b>	<b>20,342</b>	<b>3,456</b>
<b>Rogue-Lower-Wild</b>							
1710031004	Rogue River/Horseshoe Bend	104,084	99,843 (96)	95,064 (91)	78,197 (82)	16,867	4,779
1710031005	Rogue River/Stair Creek	36,476	35,524 (97)	34,575 (95)	28,241 (82)	6,334	949
1710031006	Rogue River/Illahe Creek	44,938	43,492 (97)	41,447 (92)	31,858 (77)	9,589	2,045
<b>TOTALS</b>		<b>185,498</b>	<b>179,859 (97)</b>	<b>171,086 (92)</b>	<b>138,296 (81)</b>	<b>32,790</b>	<b>7,773</b>
<b>Rogue-Middle</b>							
1710031001	Rogue River/Hellgate	93,317	66,794 (72)	60,124 (64)	46,956 (78)	13,168	6,670
1710031002	Jumpoff Joe Creek	69,698	21,471 (31)	19,476 (28)	14,026 (72)	5,450	1,995
1710031003	Grave Creek	104,417	50,044 (48)	45,861 (44)	30,855 (67)	15,006	4,183
1710030802	Rogue River/Gold Hill	135,959	33,053 (24)	18,184 (13)	11,009 (61)	7,175	14,869
1710030803	Evans Creek	143,280	59,231 (41)	52,497 (37)	24,056 (46)	28,441	6,734
1710030804	Rogue River/Grants Pass	53,636	12,490 (23)	10,202 (19)	8,628 (85)	1,574	2,288
<b>TOTALS</b>		<b>600,307</b>	<b>243,083 (40)</b>	<b>206,344 (34)</b>	<b>135,530 (66)</b>	<b>70,814</b>	<b>36,739</b>
<b>Rogue-Upper</b>							
1710030101	Diamond Lake	42,946	10 (>1)	10 (>1)	10 (100)	0	0
1710030104	Clearwater	49,654	6 (>1)	6 (>1)	6 (100)	0	0
1710030105	Fish Creek	53,621	9 (>1)	8 (>1)	7 (84)	1	1
1710030701	Upper Rogue River	245,447	167,476 (68)	156,954 (64)	105,665 (67)	51,289	10,522
1710030702	South Fork Rogue River	159,016	118,510 (75)	110,852 (70)	85,268 (77)	25,584	7,658
1710030703	Rogue River/Lost Creek	36,291	12,938 (36)	9,364 (26)	6,445 (69)	2,919	3,574
1710030704	Big Butte Creek	158,211	87,168 (55)	75,896 (48)	50,153 (66)	25,743	11,272
1710030705	Elk Creek/Rogue River	85,427	50,403 (59)	45,026 (53)	31,418 (70)	13,608	5,377

Table G-1. Northern spotted owl dispersal habitat - Rogue River National Forest (ROR), Siskiyou National Forest (SIS) and Medford BLM (MED), by 5 <sup>th</sup> Field Watershed. Grouped by Section 7 Watersheds. Federal lands outside of ROR/SIS/MED not included in Table. Many HUC5's are peripheral to the land managed by the Rogue River and Siskiyou National Forests, and the Medford District of the Bureau of Land Management. HUC5's are based on the 2002 update of HUC5 boundaries. Acre totals based on Biscuit Fire effects analysis June 03.							
HUC5 ID	Huc5 Watershed Name	HUC5 Acres	Federal Land				
			Total Federal (ROR, SIS, MED) (% of HUC5)	Total Capable (Dispersal + Capable) (% of HUC5)	All Dispersal Habitat (% of Total Capable)	Capable Only (not presently Dispersal)	Non-Capable Only
1710030706	Trail Creek	35,309	14,680 (42)	12,828 (36)	8,345 (65)	4,483	1,852
1710030707	Rogue River/Shady Cove	74,230	22,591 (30)	6,746 (9)	5,972 (89)	774	15,845
	<b>TOTALS</b>	<b>940,152</b>	<b>473,791 (50)</b>	<b>417,690 (44)</b>	<b>293,289 (70)</b>	<b>124,401</b>	<b>56,101</b>
<b>Smith</b>							
1801010101	North Fork Smith River	101,099	56,362 (56)	38,214 (38)	15,172 (40)	23,042	18,148
1801010102	Middle Fork Smith River	83,719	259 (>1)	132 (<1)	9 ( 7)	123	127
1801010104	Lower Smith River	88,745	624 ( 1)	624 ( 1)	416 (67)	208	0
	<b>TOTALS</b>	<b>273,563</b>	<b>57,245 (21)</b>	<b>38,970 (14)</b>	<b>15,597 (40)</b>	<b>23,373</b>	<b>18,275</b>
	<b>GRAND TOTALS</b>	<b>6,616,502</b>	<b>2,595,853 (39)</b>	<b>2,188,619 (33)</b>	<b>1,423,345 (65)</b>	<b>765,265</b>	<b>410,243</b>

# Spotted Owl Dispersal Categories by Section on Bureau of Land Management and Forest Service Lands Within the Medford District (BLM), Siskiyou NF, and Rogue NF



**Dispersal Categories**

- Less than 40%
- 40 to 49%
- 50 to 59%
- 60% or greater

**Non-Dispersal Categories**

- No potential for dispersal

**State Boundary**

- Oregon-California

**Township Boundary**

- Township Boundary

Main Map Scale  
1 inch = 10.71 miles



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

## Appendix H. Southwest Oregon – Change in Inland Survey Area for Marbled Murrelet, Survey Map, and CHU Map.

1. Letter from USDI Fish and Wildlife Service (6 May 2002) to The Rogue River and Siskiyou National Forests, and Medford District of the Bureau of Land Management, confirming FWS support of the Action Agencies' recommendation to **discontinue surveys for marbled murrelets in zones C and D**. The citation for the FWS letter is: *Technical Assistance on the Final Results of Landscape level Surveys for Marbled Murrelets in Southwest Oregon [FWS reference: 1-7-02-TA-6401]* (attached below). The Action Agencies had made this recommendation in their March 2002 report *Results of Landscape Level Protocol Survey of Survey Zones 1 and 2 for Marbled Murrelets in SW Oregon*. The California portion of the Siskiyou Forest was not included in the study area. The Action Agencies' report is on file at the Rogue River/Siskiyou National Forests Supervisor's office, and the Medford District office of the Bureau of Land Management. A draft of the Action Agencies' report was included in the FY01/02/03 Programmatic Biological Assessment for Timber Sales.
2. **Map of Marbled Murrelet Survey "Areas."** Area A is the Known Range of marbled murrelet in SW Oregon. Area B is a "survey buffer" related to Area A. Surveys for marbled murrelet are required only in Areas A and B (see below: *Technical Assistance on the Final Results of Landscape level Surveys for Marbled Murrelets in Southwest Oregon [FWS reference: 1-7-02-TA-6401]*).
3. **Map of Critical Habitat Units** for Marbled Murrelet in SW Oregon.

United States Department of the Interior  
FISH AND WILDLIFE SERVICE  
Oregon Fish and Wildlife Office  
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Portland, Oregon 97266  
(503) 231-6179 FAX: (503) 231-6195

Reply To: 8330.6402 (02)  
File Name: finalletter.wpd  
TS Number: 02-423

May 6, 2002

Thomas K. Reilly  
Acting Forest Supervisor  
Rogue River and Siskiyou National Forests  
333 W 8<sup>th</sup> Ave.  
Medford, OR 97501

Ron Wenker  
District Manager, Medford District  
Bureau of Land Management  
3040 Biddle Road  
Medford, OR 97504

RE: Technical Assistance on the Final Results of Landscape level Surveys for Marbled Murrelets in Southwest Oregon [FWS reference: 1-7-02-TA-6401].

Dear Mr. Reilly and Mr. Wenker:

The U.S. Fish and Wildlife Service (Service) has reviewed the report entitled Southwest Oregon Inland Survey Assessment for Marbled Murrelets, dated March 4, 2002 and your letter of the same date. We received the final report in this office on March 22, 2002. This study is the result of many years of effort and we acknowledge the Forest Service and Bureau of Land Management (BLM) for completing the study and working collaboratively with the Service.

This study was conducted throughout Southwest Oregon on lands administered by the Siskiyou and Rogue River National Forests and the Medford District BLM. The study area was divided into four zones (A, B, C, and D) representing areas at increasing distances from the Oregon coast, and closely tied to the transition from the hemlock/tanoak vegetative zone to the more inland mixed conifer/mixed evergreen zone. Zones C and D represent the mixed conifer/mixed evergreen zone and extend to 50 miles inland. These zones were modified based on the marbled murrelet zones 1 and 2 as described by the Forest Ecosystem Management Assessment Team.

The study provides results on the occurrence of murrelets within the four inland zones and a statistically valid approach that evaluates the likelihood of murrelets occurring at the two farthest inland zones (C and D). Murrelets were not detected during the study in zones C and D with the exception of one survey visit where audible calls only were heard. Although this single observation occurred, based on the number and years that surveys were conducted, and the statistical modeling that showed a very low likelihood of murrelet occurrence, we agree that any impacts to the species in zones C and D would be negligible. Furthermore, we

believe the application of these results is consistent with the marbled murrelet recovery plan because intensive surveys and analytical methods were used to more accurately delineate the inland boundary of nesting habitat. Consequently, we support the recommendation to discontinue surveys for marbled murrelets in zones C and D as defined in the final report (excluding the California portion of the Siskiyou Forest). We also suggest that future Land and Resource Management Plans or Resource Management Plans would be appropriate documents to update marbled murrelet zones where surveys would continue.

We encourage you to continue study on the inland distribution of the murrelet, particularly to the south where other Federal lands are adjacent to your lands. The Six Rivers and Klamath National Forests have conducted similar studies to define the inland extent of murrelets. However, the remaining gap in these studies and yours is the Oregon/California border south to the Klamath River.

If questions arise concerning this letter, please contact Lee Folliard or Nancy Lee at (503) 231-6179.

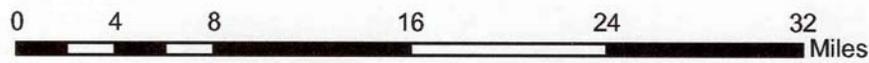
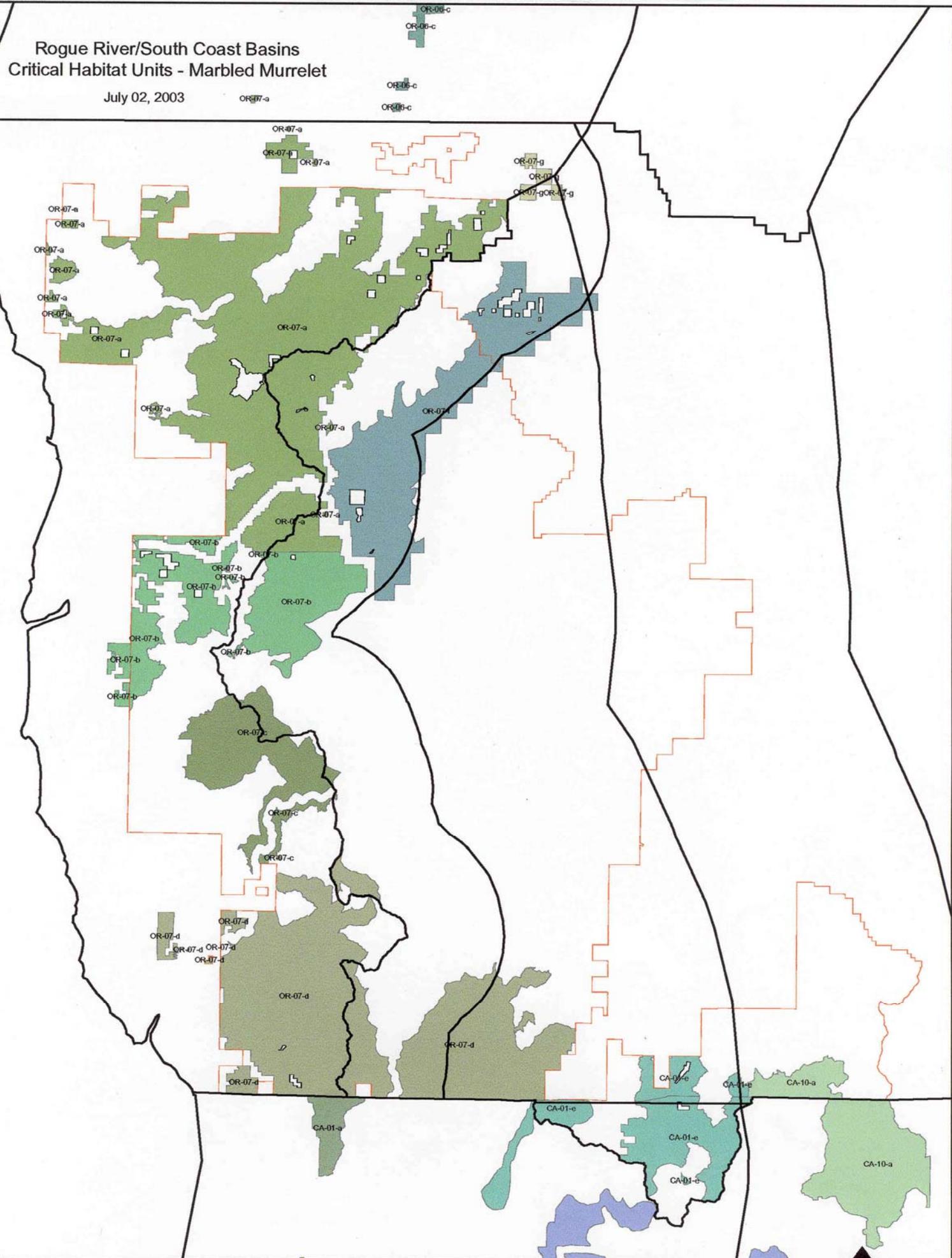
/s/ Kemper M. McMaster

Sincerely,  
Kemper M. McMaster  
State Supervisor

cc: Regional Office, OTS, Attn: Paul Phifer  
California Coastal Field Office, Attn: Lynn Roberts  
Roseburg Field Office, Attn: Craig Tuss  
Yreka Field Office, Attn: John Hamilton  
Western Washington Field Office, Attn: Kim Flotlin  
Siskiyou National Forest, Attn: Lee Webb  
Forest Service Region 6, Attn: Sarah Madsen  
Bureau of Land Management, Attn: Joe Lint

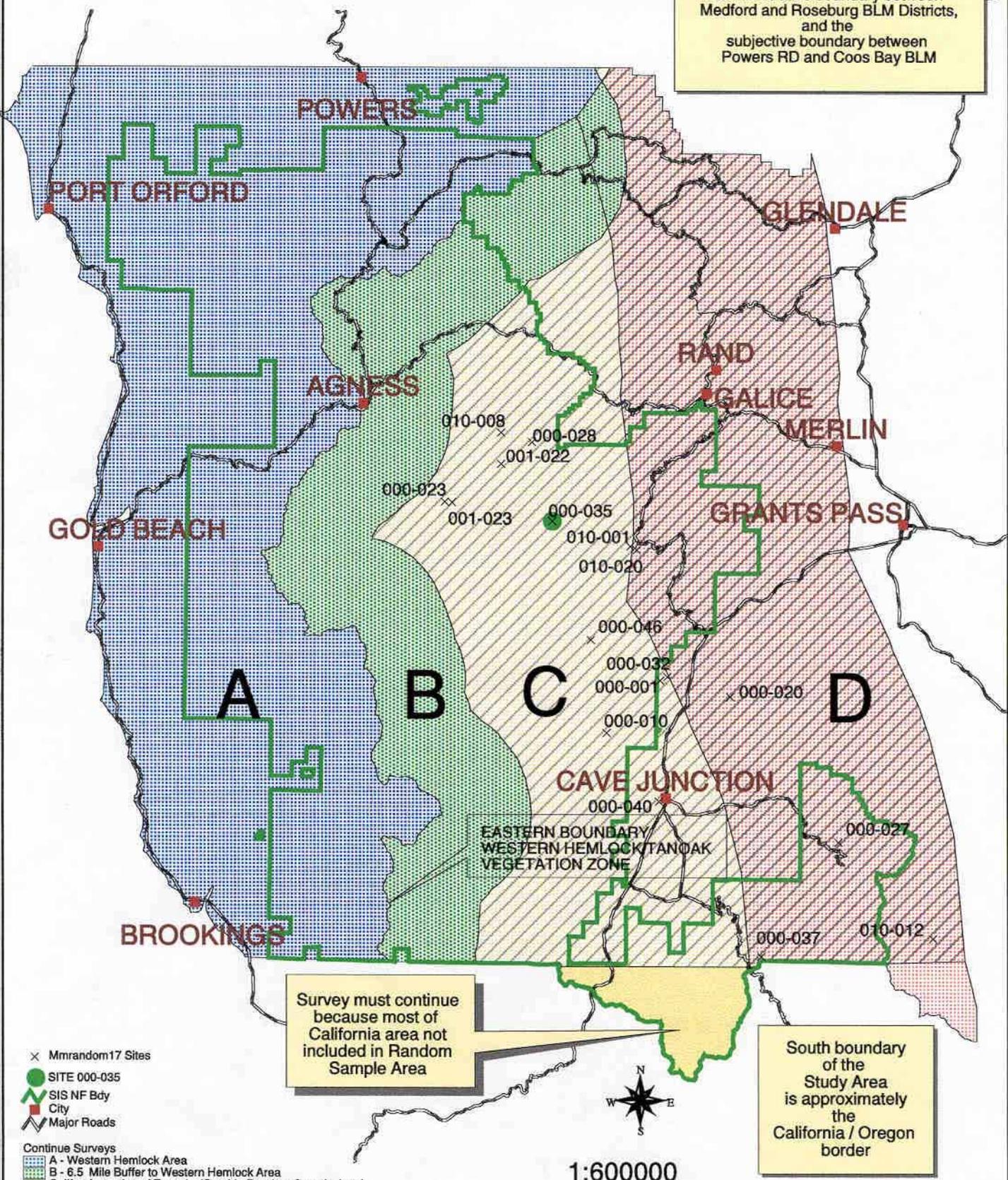
# Rogue River/South Coast Basins Critical Habitat Units - Marbled Murrelet

July 02, 2003



# SISKIYOU NATIONAL FOREST

North boundary of the Study Area is the administrative boundary between Medford and Roseburg BLM Districts, and the subjective boundary between Powers RD and Coos Bay BLM



Survey must continue because most of California area not included in Random Sample Area

South boundary of the Study Area is approximately the California / Oregon border

- × Mmrandom17 Sites
  - SITE 000-035
  - SIS NF Bdy
  - City
  - Major Roads
- Continue Surveys
- A - Western Hemlock Area
  - B - 6.5 Mile Buffer to Western Hemlock Area
  - California portion of Zone 1, (Outside Random Sample Area)
- Discontinue Surveys
- C - Rest of Zone 1, to 35 miles Inside Random Sample Area
  - D - 35 - 50 Miles, Zone 2



1:600000

Figure 3 - 17 Marbled Murrelets Random Sample Areas (detection of BRMA at site 000-035)

## Appendix I. Assessment of Marbled Murrelet Nesting Habitat Pacific Seabird Group – 15 July 1996

# Pacific Seabird Group



DEDICATED TO THE STUDY AND CONSERVATION OF PACIFIC SEABIRDS AND THEIR ENVIRONMENT

15 July 1996

Michael Spear  
Director  
U.S. Fish and Wildlife Service  
911 Northeast 11th Ave.  
Portland, OR 97232

RE: Assessment of Marbled Murrelet Nesting Habitat

Dear Mr. Spear:

As research scientists and specialists on the forest ecology and status of the Marbled Murrelet, it has come to our attention that there may be significant problems in the methods used to determine whether a stand is suitable nesting habitat. Habitat assessments usually consist of a walk through the stand to evaluate habitat conditions. Currently there are no standards or guides to aid foresters and biologists in making these determinations. This letter is intended to provide information that will assist land managers in making accurate habitat suitability assessments.

The Pacific Seabird Group (PSG) is an international organization founded in 1972 to promote the knowledge, study and conservation of Pacific seabirds. Our members include research biologists, state and federal officials who manage seabird populations and refuges, and individuals who are interested in marine bird conservation. The PSG Marbled Murrelet Technical Committee was formed in 1986 to provide scientific guidance on a variety of issues relating to the murrelet and drafted the inland survey protocol used to identify breeding sites of this species.

Currently, stands considered to be suitable nesting habitat are surveyed to determine if they are occupied. Stands considered unsuitable habitat are not surveyed and can be harvested within a relatively short period of time. Therefore, the field assessments conducted to make the determination of habitat suitability are of vital importance to the conservation and protection of Marbled Murrelet breeding sites in Washington, Oregon and California. The harvest of stands occupied by Marbled Murrelets, because of errors in assessing the suitability of this habitat, could greatly affect their chances of survival and recovery. These assessment errors include designating stands as unsuitable habitat because they have: 1) small patches of habitat or a few remnant old growth trees; 2) smaller limb sizes; 3) little moss cover on tree branches; 4) poor

access conditions for birds and; 5) particular aspects.

From research on Marbled Murrelet habitat use conducted over the last seven years it is clear that the species can utilize small patches of suitable habitat within larger stands of unsuitable habitat. Murrelets can also nest in larger residual trees that often remain in a stand from past fire and management activities (Grenier and Nelson 1995, Ralph et al. 1995, Final EIS, Washington State Forest Practice Rule Proposals, May 1996). These residual trees are often found at low densities, sometimes less than one tree/acre (Grenier and Nelson 1995, Nelson and Hardin 1993). Therefore, any assessment of habitat must include a walk-through of every acre of the area in question. Without this detailed assessment it is easy to miss small patches of habitat and residual trees within the stand. If these smaller areas within the stand are considered suitable, then surveys should be performed to determine if birds are present in the area. Any stand with a residual tree component or small patches of suitable habitat should be considered potential nesting habitat.

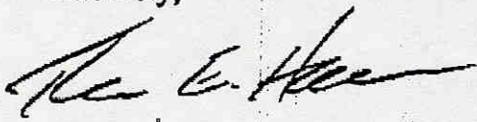
There are no standard forest characteristics used to assess habitat conditions. Research shows that stand structure (the presence of potential nesting platforms) is significantly more important than tree diameter in predicting murrelet presence in an area (Grenier and Nelson 1995, Hamer 1995). This is especially true in the western hemlock zone where mistletoe can create platforms on small diameter trees or in areas where moss cover on limb surfaces can artificially thicken limb diameters thus creating suitable nesting platforms on smaller diameter trees (Hamer 1996). Therefore, large diameter trees do not always need to be present for a stand to be potential nesting habitat. We suggest that any stand with limb diameters or platform structures of 10 cm or more may have the potential of being suitable nesting habitat (Hamer and Nelson 1995). Moss does not have to be present within the canopy for a stand to be considered suitable nesting habitat (Hamer and Nelson 1995). Birds can nest on duff platforms, which frequently occur in the Douglas-fir Zone and Redwood Zone.

Lack of access for Marbled Murrelets into a stand should not be considered as a criteria to dismiss a stand as potential nesting habitat. Stands positioned on slopes with a gradient of 20% or more often create natural access for these birds since the canopy of potential nest trees are layered along the slope and exposed (Hamer et al. 1994). In addition, for stands with a residual component, these trees often protrude through the top of the sub-dominant overstory creating easy access for nesting murrelets. Most stands are bisected by stream courses of various sizes that also create natural access points for nesting birds. The aspect of a stand has not been shown to be an important variable in predicting occupancy (Hamer et al. 1994, Hamer and Nelson 1995). To our knowledge, stands that are present on the inland side of a ridge that do not face the ocean have just as high a likelihood of being occupied as stands with other aspects.

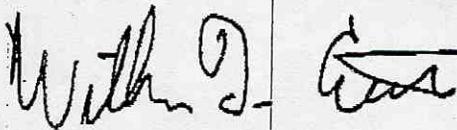
We hope this information clarifies and assists in the assessment of Marbled Murrelet nesting habitat throughout the three state range. There is some discussion within PSG of drafting some guidelines using a consistent assessment methodology to assist managers in assessing habitat that would help standardize results based on actual measurements taken at the site. We

will Keep the USFWS advised as this process proceeds. Thank you for your attention and consideration of this matter and please contact us if we can provide any additional information.

Sincerely,



Thomas E. Hamer  
Coordinator, Marbled Murrelet Tech. Committee  
Pacific Seabird Group  
2001 Highway 9  
Mt. Vernon, WA 98273  
(360) 422-6510



William T. Everett  
Chair  
Pacific Seabird Group  
P.O. Box 1085  
La Jolla, CA 92038  
(619) 589-0870

Grenier, J. J. and S. K. Nelson. 1995. Marbled Murrelet habitat associations in Oregon. Pages 191-204 in C. J. Ralph, G. L. Hunt, Jr., M. G. Raphael, and J. F. Piatt, eds. Ecology and conservation of the Marbled Murrelet. U.S. Department of Agriculture, Forest Service General Technical Report PSW-GTR-152, Albany, CA.

Hamer, T. E. 1995. Inland habitat associations of Marbled Murrelets in western Washington. Pages 163-175 in C. J. Ralph, G. L. Hunt, Jr., M. G. Raphael, and J. F. Piatt, eds. Ecology and conservation of the Marbled Murrelet. U.S. Department of Agriculture, Forest Service General Technical Report PSW-GTR-152, Albany, CA.

Hamer, T.E., B. Ritchie, E.B. Cummins, and C. Turley. 1994. A statistical model of habitat suitability for the marbled murrelet. Unpublished report, Wildlife Management Division, Nongame Program, Washington Department of Wildlife, Olympia, Washington. 28pp.

Hamer, T.E. and D. Meekins. 1996. A predictive model of habitat suitability for the marbled murrelet and habitat rating strategy for the Elliott State Forest. Unpublished report, Oregon Department of Forestry, Coos Bay, Oregon 97420. 41 pp.

Hamer, T. E. and S. K. Nelson. 1995. Characteristics of Marbled Murrelet nest trees and nesting stands. Pages 69-82 in C. J. Ralph, G. L. Hunt, Jr., M. G. Raphael, and J. F. Piatt, eds. Ecology and conservation of the Marbled Murrelet. U.S. Department of Agriculture, Forest Service General Technical Report PSW-GTR-152, Albany, CA.

Nelson, S. K. and J. G. Hardin. 1993. Landscape patterns and Marbled Murrelet occupancy: a pilot study. Pub. No. 92-9-04, Oregon Department of Fish and Wildlife, Portland, OR. 76pp.

Ralph, C. J., G. L. Hunt, Jr., M. G. Raphael, and J. F. Piatt. 1995. Ecology and conservation of the Marbled Murrelet in North America: an overview. Pages 3-22 in C. J. Ralph, G. L. Hunt, Jr., M. G. Raphael, and J. F. Piatt, eds. Ecology and conservation of the Marbled Murrelet. U.S. Department of Agriculture, Forest Service General Technical Report PSW-GTR-152, Albany, CA.

## Appendix J. Range Maps for Listed plant species and Critical Habitat for vernal pool fairy shrimp

Two maps for each Species

*Arabis Mcdonaldiana* (E)

*Fritillaria gentneri* (E) (first map includes Waters Creek Site - second does not)

*Limnanthes floccosa* ssp. *grandiflora* (E)

*Lomatium cookii* (E)

These maps depict the known ranges of the various listed plant species. Whenever any project area overlaps any USGS Quad, which in turn overlaps a plant's home range, the project area must be surveyed (if potential habitat is present). In other words, survey potential habitat at any project site that overlap any of the Quads that contain the home range.

These maps will be revised as new populations are discovered.

*Branchinecta lynchi* (E) –Critical Habitat Units for vernal pool fairy shrimp (designated 6 August 03, 68 FR 46683 46732)

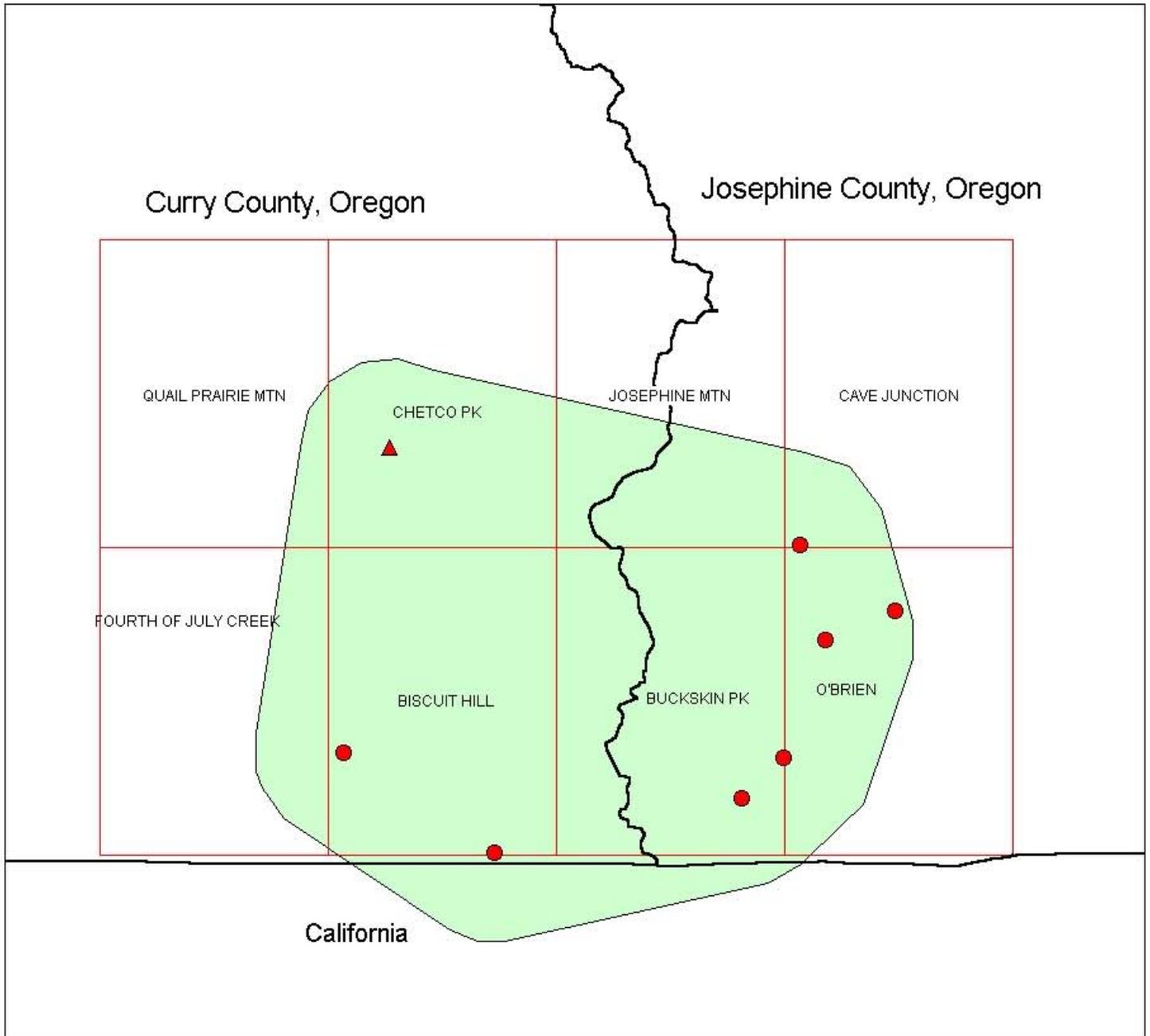
Arabis macdonaldiana Range Map



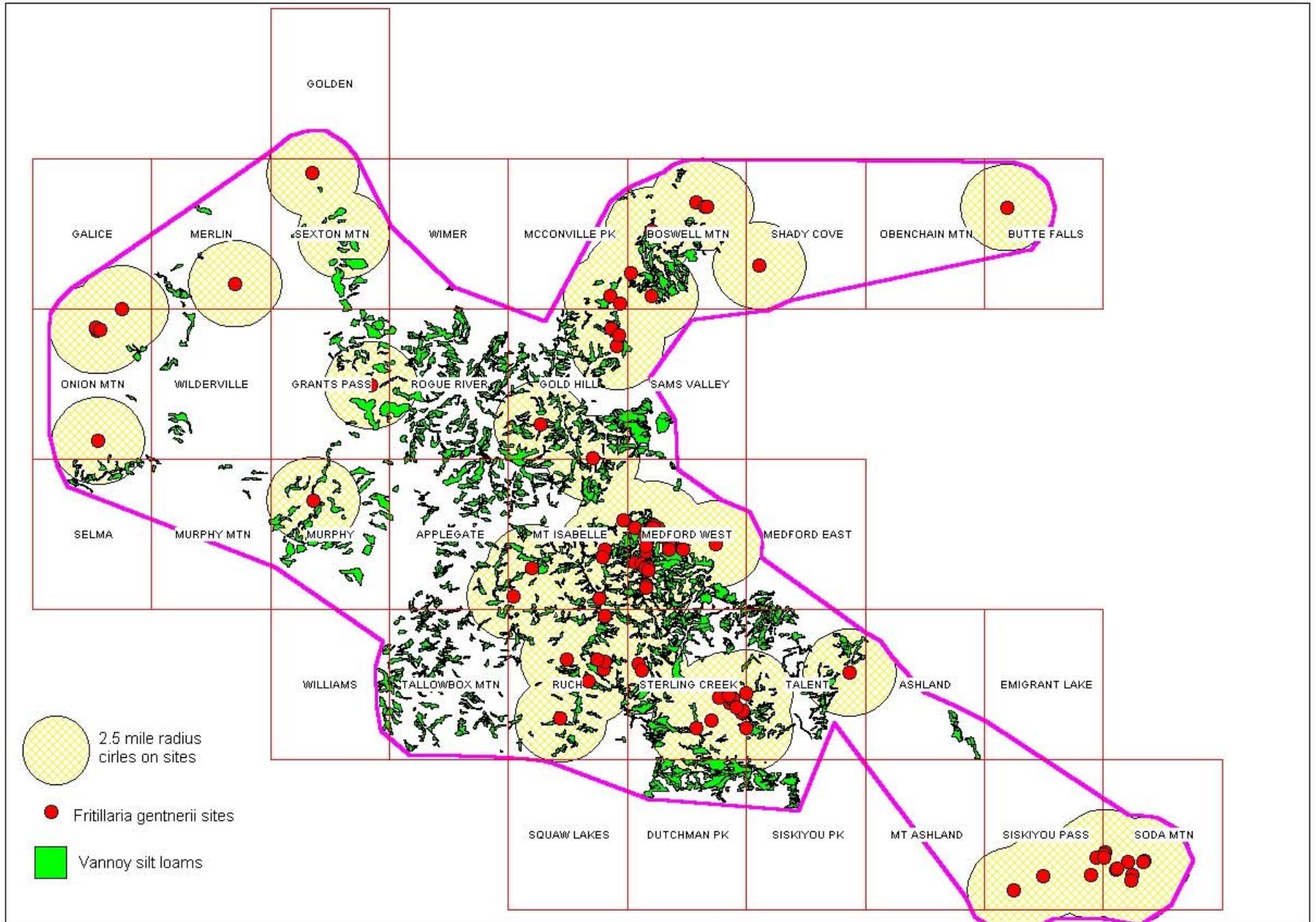
Arabis macdonaldiana Range Map

- Extant site with accuracy within 1 second
- ▲ Extant site with accuracy within 1 minute

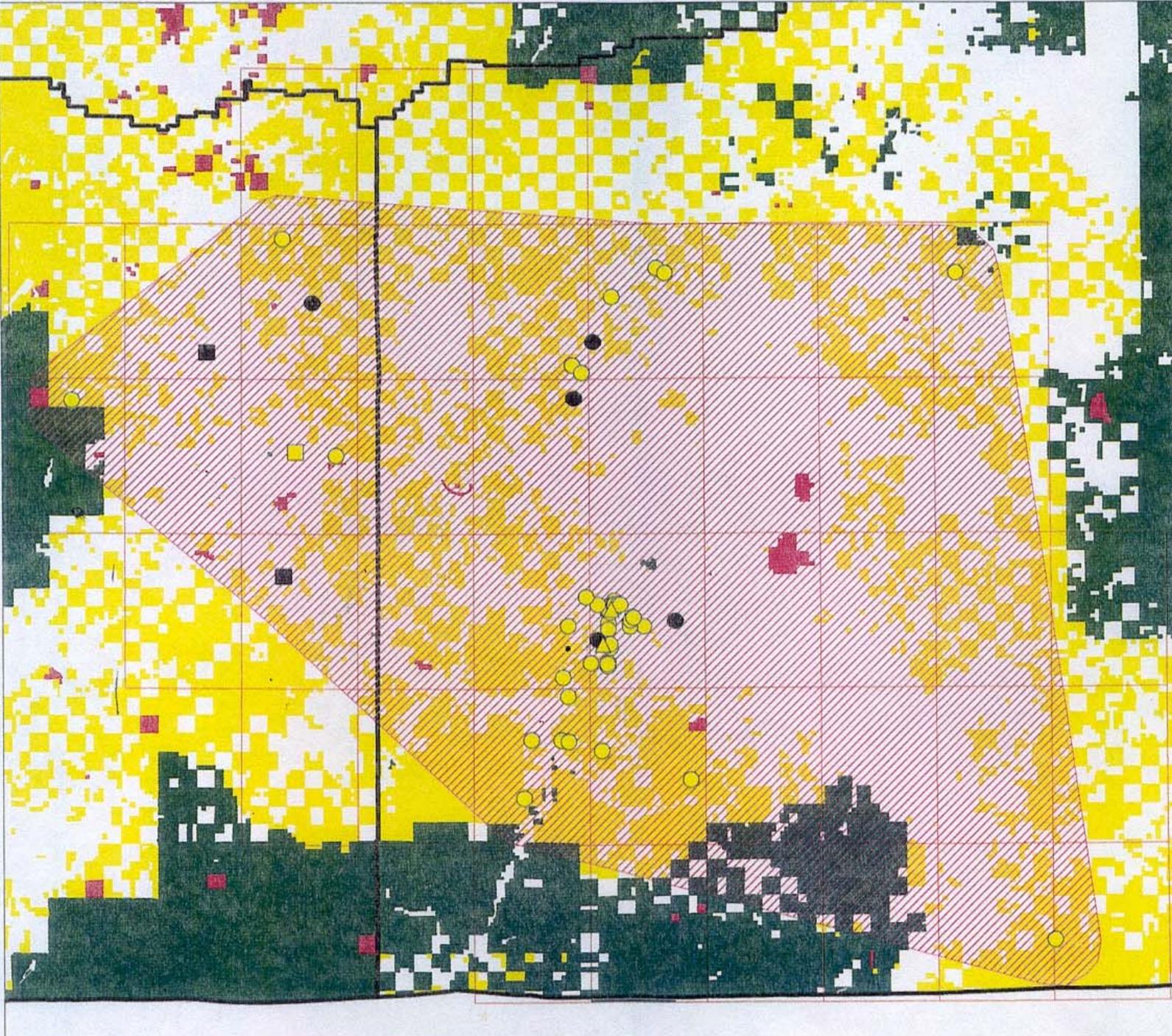
Range of species



Fritillaria gentneri range map

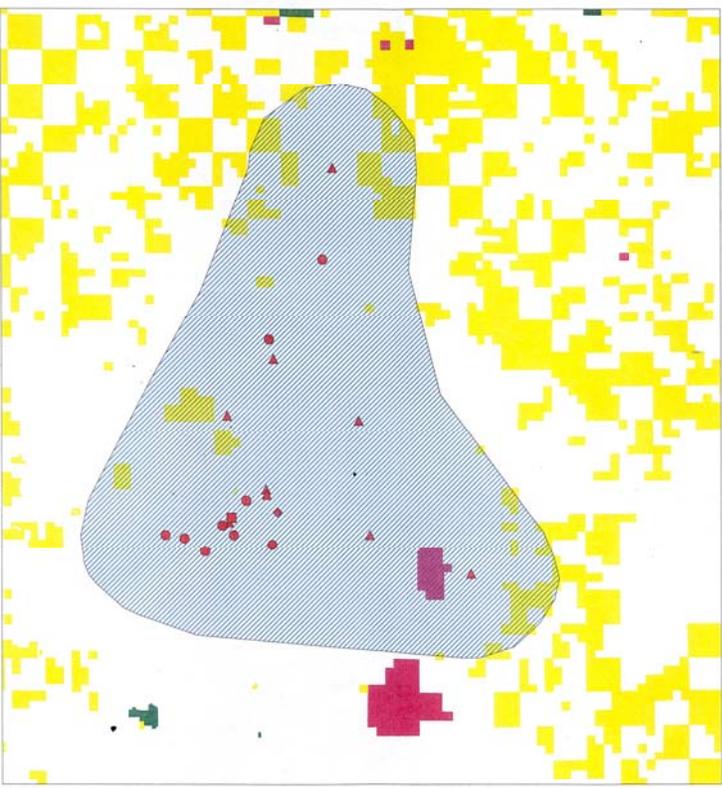


Fritillaria gentneri Range Map



- Extant sites of *Fritillaria gentneri*
- Extirpated sites of *Fritillaria gentneri*
- U.S. Forest Service Lands
- BLM Lands

Waters Creek Site  
Not Included



-  BLM Lands
-  State Lands

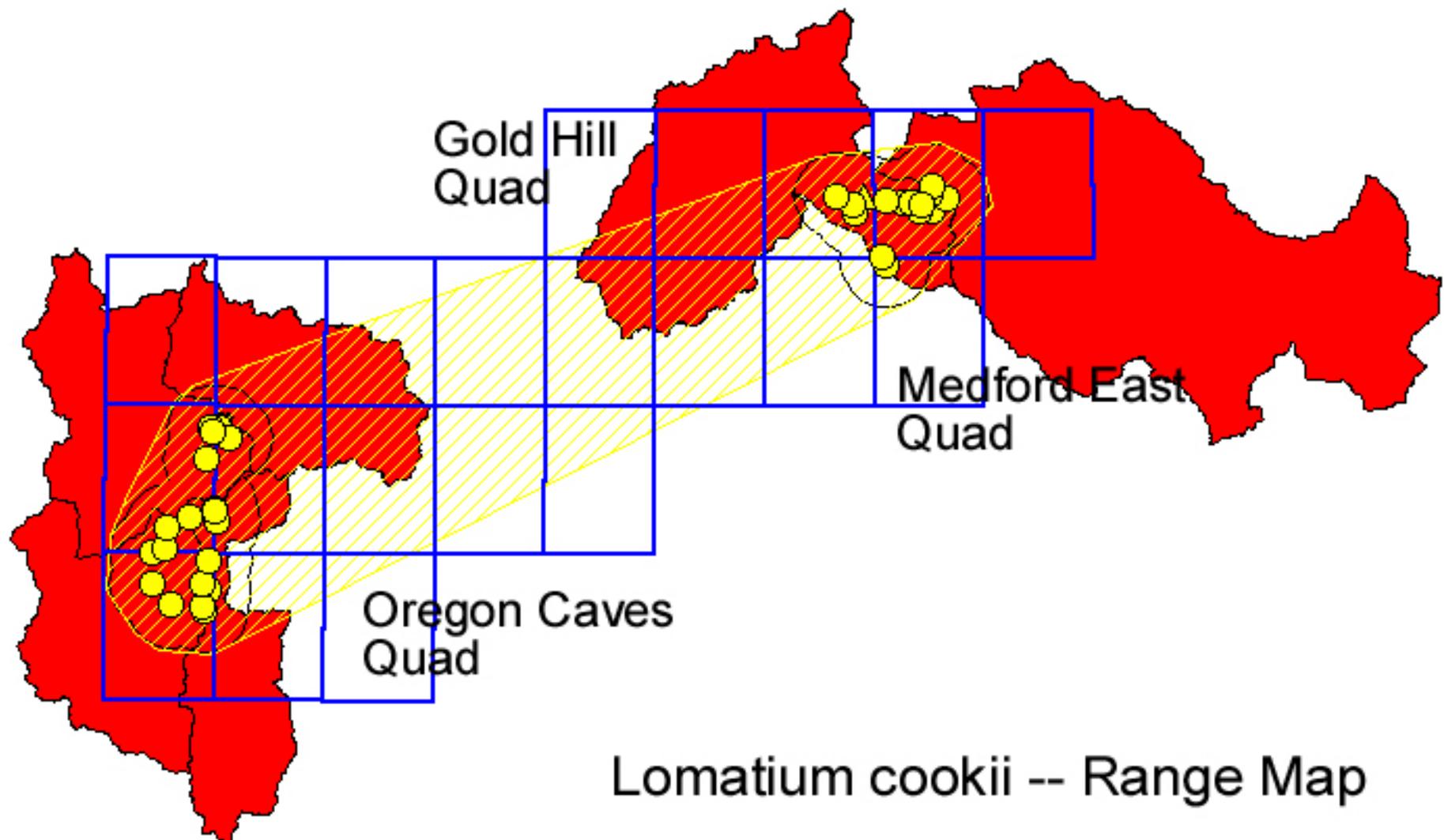
Limnanthes floccosa grandiflora Range Map

- ▲ Extant site with accuracy within 1 minute
- Extant site with accuracy within 1 second
- ◆ Extant site with accuracy within 15 minute
- Extant site with accuracy within 7 minute

▨ Species Range



Jackson County, Oregon



Gold Hill  
Quad

Medford East  
Quad

Oregon Caves  
Quad

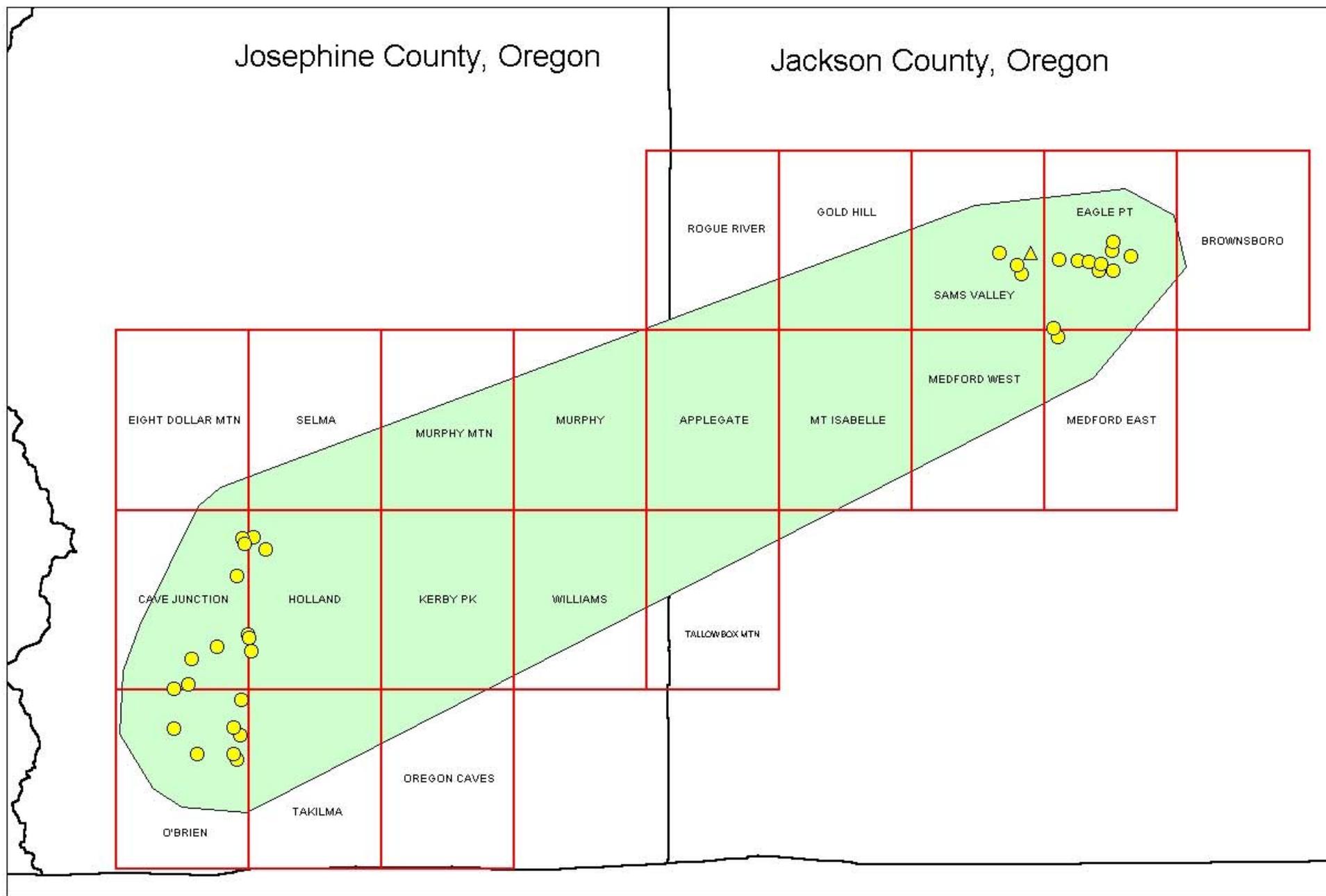
*Lomatium cookii* -- Range Map

Lomatium cookii Range Map

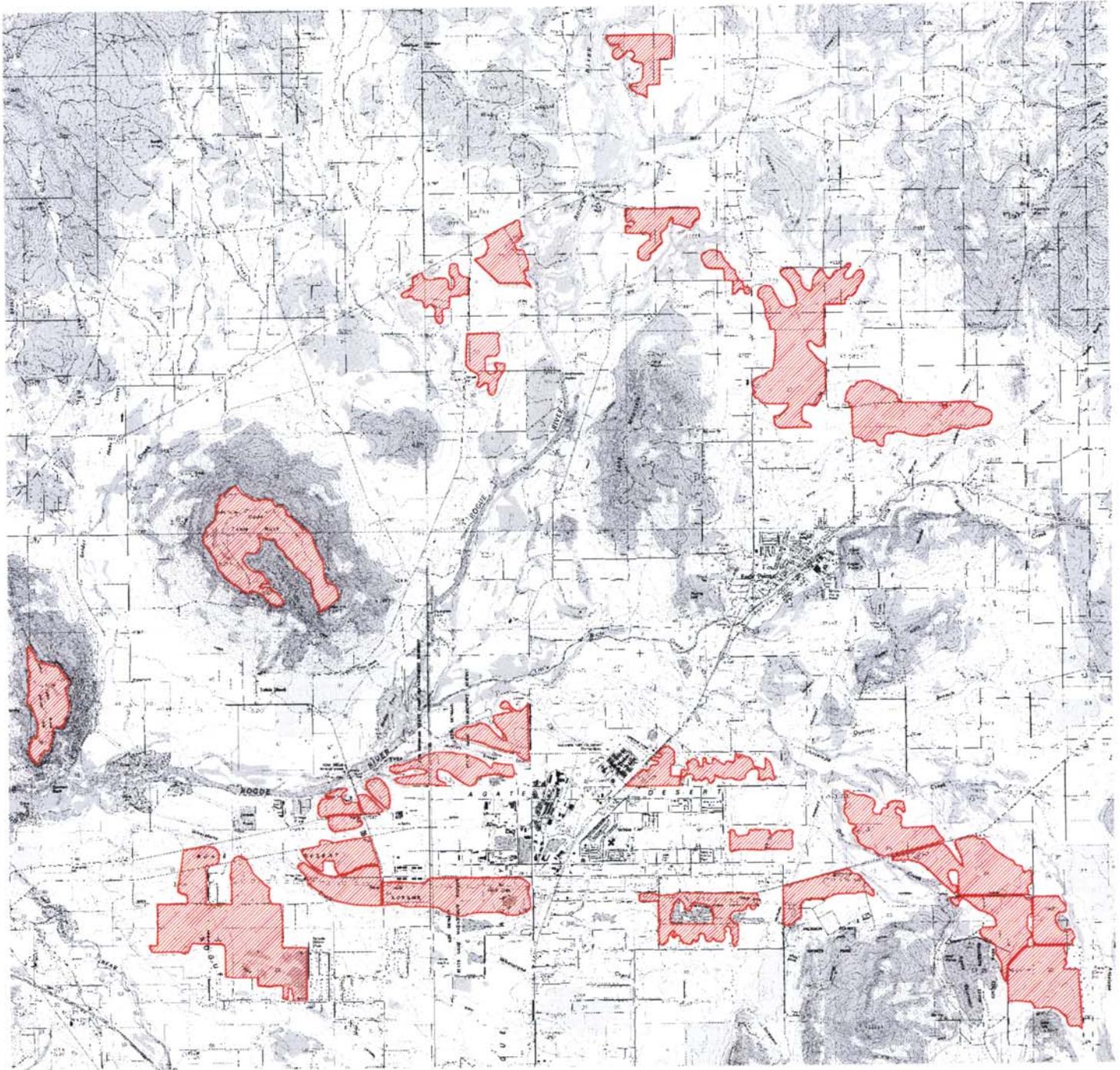
▲ Extant site with accuracy within 1 minute

● Extant site with accuracy within 1 second

Range of species



# Vernal Pool Complex



No warranty is made by the U.S. Fish and Wildlife Service as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. Spatial information may not meet National Map Accuracy Standards. This information may be updated without notification.

Map Scale 1:31,000



July 24, 2001  
bwg.mf

