

# APPENDIX C

## Terrestrial Wildlife

### Species Accounts

A Biological Evaluation and biological examination process was conducted for Proposed, Endangered, Threatened, or Sensitive (PETS), Management Indicator Species, and other special or rare and uncommon terrestrial wildlife species, and neotropical birds for this designation process.

The purpose of this evaluation was to determine and document the possible effects that the proposed activity and alternatives would have on these species. Background and effects mechanisms are included in the body of the EIS, as documented by issue in Chapter III. In order to minimize the length and detail within the body of the EIS, terrestrial wildlife species accounts are included in this Appendix to the EIS.

Species accounts provide biological background (food, shelter, reproduction), habitat requirements, listing status, presence on the Rogue River Siskiyou National Forest, known threats to persistence and other information associated with these species. This Appendix includes four categories of species as follows:

- Threatened species listed under the Endangered Species Act (ESA)
- Sensitive species listed by Forest Service Region 6
- Management Indicator Species (for Rogue River and Siskiyou NFs)
- Neo-tropical migratory landbirds

#### **ESA THREATENED SPECIES**

##### **NORTHERN SPOTTED OWL - (*Strix occidentalis caurina*)**

Status: Federal – Threatened; State of Oregon - Threatened

The northern spotted owl was listed as a Threatened species by FWS on 26 June 1990 (USDI FWS 1990). Critical habitat for the northern spotted owl was designated on 1 January 1992 (USDI FWS 1992a). Information on the ecology of the northern spotted owl is contained within, Endangered and Threatened wildlife and plants: determination of threatened status for the northern spotted owl: final rule (USDI Fish and Wildlife Service, 1990), Endangered and Threatened wildlife and Plants; Determination of Critical Habitat for the Northern Spotted Owl; Final rule (USDI Fish and Wildlife Service 1992 and 2008), Scientific evaluation of the status of the northern spotted owl and the draft Spotted Owl Recovery Plan (Courtney et al. 2004 and 2008), and Status and Trends in Demography of Northern Spotted Owls (Anthony et al. 2004).

A detailed account of the taxonomy, ecology, and reproductive characteristics of the spotted owl is found in the Inter-Agency Scientific Committee (ISC) Report (Thomas et al. 1990).

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 et al. 1999). The NWFP was 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 was also to 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.

A report summarizing the meta-analysis of demography of the spotted owls throughout its range was released in September of 2004 (Anthony et al. 2004). The report showed a decline of approximately 3.7 percent across the range of the owl and showed significant declines of populations in some areas, in particular Washington State and northern Oregon. Only four study areas within the range of the spotted owl did not show evidence of spotted owl declines. In southern Oregon, three study areas did not show declines and appeared to have relatively stable or increasing populations based on the 95 percent confidence intervals. More recently Anthony (2006) found that the spotted owl population in the south Cascades demographic study area continues to be stationary.

Specific to the South Cascades demographic study area, There has been one USFS/OSU demographic study area located on the High Cascades Ranger district and small portion of the Fremont-Winema National Forest in the South Cascades that has been monitoring spotted owls on the RD for over twenty years. This project was initiated in 1990 and is part of the long-term Northern Spotted Owl Effectiveness Monitoring Program for the Northwest Forest Plan (Lint et al. 1999). At the beginning of this effort approximately 89 sites were visited every year; this effort has now increased to 170 sites.

In 2005, an annual report of spotted owl surveys conducted in the South Cascades demography study area was released (Anthony 2005). During that year, 162 spotted owl locations in both Matrix and LSR land allocations were surveyed to protocol, and spotted owls occupied 65 percent of the sites visited. The report showed that in the Matrix allocation, the percentage of occupied sites increased in 2005 (63 percent) compared to 2004 (55 percent). Between 2004 and 2005, the percentage of occupied sites in the LSRs increased from 53 to 66 percent and the percentage of sites occupied by owl pairs increased (44 to 53 percent).

According to the 2007 annual report (Anthony et al, 2007) , approximately 200 spotted owl locations in both Matrix and LSRs land allocations were surveyed to protocol, and spotted owls occupied 55 percent of the sites visited.

In 2008, approximately 122 spotted owl locations in both Matrix and LSRs land allocations were surveyed to protocol, and spotted owls occupied 45 percent of the sites visited (Anthony et al, 2008).

In 2009, approximately 169 spotted owl locations in both Matrix and LSRs land allocations were surveyed to protocol, and spotted owls occupied only 44 percent of the sites visited (Anthony et al, 2009).

Spotted owls were detected at 79 of the 170 sites visited in 2010 (46 %). There were 89 sites with continuous survey effort between 1992 and 2010, and banded spotted owls were detected at 41% of these sites in 2010 (= 56.6%, SE = 2.44, n = 19 years) down from a detection rate at all sites surveyed in 1992 of over 90 percent at the beginning of the study (Dugger et al 2010).

Spotted owls were detected at 7 Wilderness, 51 LSR, and 21 Matrix sites in 2010. The percentage of sites where spotted owls were detected (either single or paired) in Wilderness was 39% in 2010. In the LSRs, the percentage of sites where owls were detected was 52%. Owls were detected on 40% of Matrix owl territories. Overall, the mean percentage of sites with owls detected and the mean percentage of sites with pairs was very similar for the three land management categories (Dugger et al 2010).

The number of spotted owl pairs detected in 2010 at the five LSRs was similar to most previous years. There were 14 owl pairs located in the Rogue-Umpqua Divide LSR. There were 12 pairs located in the Middle Fork LSR in 2009. In the Dead Indian LSR, 12 pairs were found in 2010, three more than in 2009. A pair of spotted owls was located separately at the Sevenmile Creek and the Clover Creek LSRs in 2010 (Dugger et al 2010).

The Northwest Forest Plan anticipated that the LSRs would provide a network of suitable habitat distributed across the range of old forest associated species sufficient to endure stochastic events resulting in localized species extirpation (USDA and USDI 1994). The large LSRs within the study area were designed to meet those objectives of the Northwest Forest Plan and be able to support 15-20 spotted owl pairs. In 1994 all LSRs on the Rogue River National Forest portion of the study had at least 15 owl pairs occupying those LSRs, 2010 no LSRs within the study area boundary or on that portion of the Forest met that objective of 15-20 spotted owl pairs per LSR.

The annual percentage of barred owl detections at the 170 historic spotted owl territories on the study has increased from a low of 4.1% to a high of 28.2% in 2010. Cumulatively, barred owls have been detected at 63% of the spotted owl territories during at least one breeding season over the course of this study. The proportion of historic spotted owl territories where barred owls were located in 2010 increased by approximately 7% over 2009 for both the annual and cumulative totals, so many of the sites where barred owls were detected in 2010 had no previously documented barred owl activity.

Overall, annual survival appears to be declining in the southern Oregon Cascades study area, and this decline accelerated between 2003 and 2008. Fecundity also declined across the study area and seemed to be related to the increased detections of barred owls. However even given the annual realized rate of population change ( $\lambda$ ) exhibited large annual fluctuations, confidence limits broadly overlapped zero, which supports the conclusion that this population was stable (Dugger et al 2010).

While the Siskiyou Mountains Ranger District is not located within a demographic study area, there are recent surveys for some of the historic locations, primarily in the Mt Ashland LSR. From 2004 through 2009, protocol surveys have taken place in the LSR and have detected 8 spotted owl pair sites. This is down over 40 percent from a high of 14 pairs and one resident single detected from 1990 through 1995.

On the Applegate portion of the District, there were some surveys conducted in 2009 on a subset of owl locations that had been previously surveyed continuously from 1990 through 1995 (n=29). Spotted owls were detected at eleven (40%) of those sites surveyed; barred owls were detected at 2 sites.

Overall across the Forest spotted owl detections at known sites have declined approximately 50 percent from 1994. If one assumes that these sites are no longer occupied, the spotted owl population would be about 100 pairs or resident singles, a population similar to the 1990 estimate in the Forest LRMP. There are still approximately 153 spotted owl core areas identified on the Forest as well as 154,000 acres of suitable habitat.

The Service also conducted a status review in 2004 of the spotted owl across its range, in a document known as the Sustainable Ecosystem Institute Report, or SEI, which summarized the biology, ecology, habitat associations and trends, as well as current and potential threats to the species (Courtney et al. 2004).

The three major operational threats they identified were timber harvest, large-scale stand replacement wildfire, and barred owls. Other potential threats included effects associated with West Nile Virus, and Sudden Oak Death.

Courtney et al. (2004) found that habitat loss, the primary reason for listing of the spotted owl, had declined significantly across the range. However, there was also some concern as to the potential lag effects to spotted owl populations from past timber harvest. The greatest amount of habitat loss due to timber harvest had occurred in the Oregon Klamath and west Cascade provinces.

In a review of the draft spotted owl recovery plan (DRP), Courtney et al. (2008) opined that the threat from wildfire was underestimated in the DRP for the dry forest provinces, and is inadequately addressed. They said that this threat is likely to increase given both current forest conditions, and future climatic change. The Courtney Team also discussed what they thought was an underestimate of the threat of habitat loss from fire and the harvest or ‘salvage’ of large and very large trees. The DRP threat assessment assumed that there would be no major loss of habitat currently conserved under the Northwest Forest Plan (NWFP).

The Courtney Team also recommended reducing surface fuels, increase the height to live crowns, decrease crown densities, and to favor large fire tolerant trees in dry forest types such as southern and eastern Oregon and Washington. Specific to SW Oregon Klamath Province, they recommended that all large and old trees, either living or dead, are important wherever they occur, and suggested landscape designs that promote the increased abundance of large trees of fire tolerant species using ecologically sound landscape design criteria. Courtney et al. (2008) also suggested that existing plantations are one major source of risk of high severity fires and that the fire tolerance of existing plantations can be increased by manipulating species composition, reducing density, promoting spatial heterogeneity in forest structure (avoiding large areas of homogeneous plantations), treating surface fuels, and favoring the development of large, fire tolerant trees.

They suggested that this could be accomplished through large scale thinning operations (that include treatment of activity fuels and increasing spatial variability) in plantations outside of owl habitat (where plantations are generally concentrated), or using a larger regional landscape strategy that prioritizes the risk of high severity fire outside of owl habitat. They also recommended that the establishment of new plantations should not be favored, but rather activities in dry forest settings that improve overall fire tolerance of the landscape and decrease the likelihood that a few large fires will destroy a significant number of owl territories. The subsequent final Recovery Plan includes these recommendations in large part for SW Oregon forests (FWS 2011)

There have been recent large fires in SW Oregon, in particular the Biscuit and the Timbered Rock fires, which reduced spotted owl NRF habitat within the Klamath province. There is uncertainty as to how spotted owls respond to fire in southwest Oregon and research was conducted in the Timbered Rock Fire area in an attempt to answer that question.

Of the 15 spotted owl pairs affected by the Timbered Rock Fire, initially, 11 of those pairs continued to occupy their historic activity centers immediately after the fire even though their habitat was subjected to varying degrees of fire severity. However, a severe decline of owl pairs from the fire area was seen from 2004 to 2006. Survival and productivity also decreased greatly in birds from within the fire area (Clark 2007). Barred owls have increased in southwest Oregon but not to the extent of other areas within the range of the spotted owl (Courtney et al 2003, Anthony et al. 2004, 2005, and 2006, Dugger 2010). In the South Cascades demographic study area, there has been an increase of barred owls and they occupy up to 20 percent of historic or known spotted owl sites within that study area. However, there are far less barred owls known for southwest Oregon than other areas in the northern portion of the range and the spotted owl survival is stable in that study area as well as in the Klamath demographic study area (Anthony et al. 2004).

The other new threats of Sudden Oak Death (SOD) and West Nile virus are thought to be potential stressors to the northern spotted owl population. Sudden Oak Death or *Phytophthora* canker disease kills or injures many species of trees and shrubs, and may affect habitat components important to spotted owls and their prey. However, SOD is only known for the coastal region of NW California and SW Oregon. West Nile virus infects birds, although as of April, 2005, no wild spotted owl infections have been documented; West Nile virus has been detected in Jackson County. It is unknown when and to what extent this threat may become a risk for the spotted owl.

The new information provided above and summarized by Courtney et al. (2004 and 2008) and the final Spotted Owl Recovery Plan (USDI Fish and Wildlife Service 2011) does not alter analysis or change the effects determinations for any of the Designation Alternatives. The concerns for spotted owls related to a population decline and the increase in barred owls are less in southwest Oregon than in other areas within the range of the spotted owl because the population in South Cascades is stable and the barred owl population is not as robust as in the northern portions of the range of the spotted owl (Courtney et al. 2004, 2008, Anthony 2005 and 2006, Dugger 2010).

Zabel et al. (2003) identified habitat models for northern spotted owls in the Klamath Province of northern California which correctly classified owl-occupied sites with >85% accuracy. Within Douglas-fir habitats below 6,000 ft. elevation in the Eastern Klamath Ecological zone, these sites were classified as >17" average diameter and >60% CC. Zabel et al. (2003) concluded that their model performed best at the 200 hectare radius (0.5 mi).

The primary prey of northern spotted owls are dusky-footed woodrats (*Neotoma fuscipes*) and northern flying squirrels (*Glaucomy sabrinus*). Both woodrats and Northern flying squirrels are generally associated with older forests. Zabel et al. (1995) verified a trend of negative, linear relationship between home range size during the breeding season and the proportion of woodrats in the diet of northern spotted owls. The proportion of northern flying squirrels in the diet was positively correlated with home range size.

**Critical Habitat for the northern spotted owl** was designated in Federal Register 57 and includes the primary constituent elements that support nesting, roosting, foraging, and dispersal. Designated Critical Habitat also includes forest land that is currently unsuitable, but has the capability of becoming suitable NRF habitat in the future (FR57 (10):1796-1837).

Primary constituent elements of spotted owl critical habitat are those physical and biological attributes that are essential to species conservation. In addition, the Act stipulates that the areas containing these elements may require special management consideration or protection. Such physical and biological features, as stated in 50 DFR 4.2.4.1.2 includes, but are not limited to the following:

- Space for individual and population growth, and for normal behavior;
- Food, water, or other nutritional or physiological requirements;
- Cover or shelter;
- Sites for breeding, reproduction, rearing of offspring; and
- Habitats that are protected from disturbance or are representatives of the historic geographical and ecological distribution of the species.

For spotted owls, features that support nesting and roosting habitat typically include a moderate to high canopy (60-90 percent), a multi-storied multi-species canopy with large overstory trees (>30 inch diameter), a high incidence of larger trees with various deformities, including mistletoe, large snags, large accumulations of fallen trees and wood on the ground and flying space (Thomas et al. 1990).

**MARBLED MURRELET** (*Brachyramphus marmoratus*)

Status: Federal - Threatened; State of Oregon – Threatened

The marbled murrelet is a small seabird found from Alaska to California. The marbled murrelet spends most of its life at sea but typically nests in trees (Paton and Ralph 1990, Csuti et al. 1997, USDI FWS 1997, Marshall 1998). Nests are almost exclusively located in mature or old-growth conifer trees with large moss-covered branches (Hamer and Nelson 1995).

In the Pacific Northwest, murrelets have been found as far inland as 53 miles (USDI FWS 1997). Dillingham et al. (1995) examining murrelet survey data for the Rogue River-Siskiyou N.F., found that no murrelets were detected more than 32 miles from the ocean, although surveys had been conducted up to 47 miles inland. South of the divide between the Rogue and Coquille Rivers, the farthest inland murrelets had been detected was 17 miles.

FWS listed the marbled murrelet as Threatened under the Endangered Species Act in 1992 (USDI FWS 1992b). The primary reasons postulated for the decline in marbled murrelet numbers included a loss of nesting habitat and poor reproductive success (USDI FWS 1997).

Predation via corvids and or rodents is also considered a threat to reproductive success. Critical habitat for marbled murrelets was designated in 1996 and corresponded primarily to areas designated as Late-Successional Reserve in the Northwest Forest Plan (USDA and USDI BLM 1994).

The 2006 status review reconfirmed the murrelet's status as a threatened species and summarized the terrestrial habitat. Throughout the forested portion of their range, marbled murrelet habitat use is positively associated with the presence and abundance of mature and old growth forests, large core areas of old growth, low amounts of edge and fragmentation, proximity to the marine environment, and increasing forest age and height (McShane et al. 2004, 4-39; Hamer and Nelson 1995b, 72-75). In all cases, marbled murrelets focus on the presence of platforms used for nesting. Platform presence is more important than the size of the nest tree, and tree size alone is not a good indicator of the abundance of platforms (Evans Mack et al. 2003, 3). The presence of platforms is the most important characteristic of marbled murrelet nesting habitat (McShane et al. 2004, 4-45–4-51, 4-53, 4-55, 4-56, 4-59; Nelson 1997, 6). Individual tree attributes that provide platforms suitable for nesting include large or forked branches, deformities caused by broken tops or mistletoe infection, or other structures large enough to provide a platform for a nesting adult murrelet (Hamer and Nelson 1995b, 79).

Platforms are defined as limbs 4 inches (10 centimeters) in diameter or more and 33 feet (10 meters) or more above ground (Burger 2002, 41-42; McShane et al. 2004, 4-31). Tree diameter and height have been positively correlated with platform size and the abundance of platforms, but the relationship may change depending on the variety of tree species and forest types marbled murrelets use for nesting (Huff et al. 2006, 12). Overall, nest trees in Washington, Oregon, and northern California have been greater than 19 inches (48 centimeters) dbh and greater than 98 feet (30 meters) tall (Hamer and Nelson 1995b, 81). Other important attributes of the platform are vertical and horizontal cover and substrate. Known nest sites have platforms that are generally protected by branches above (vertical cover) or to the side (horizontal cover) (Huff et al. 2006, 14). Marbled murrelets appear to select limbs and platforms that provide protection from predation (Luginbuhl et al 2001, 558; Marzluff et al. 2000, 1135) and inclement weather (Huff et al. 2006, 14). Substrate, such as moss, duff, or needles, on the nest limb is important for protecting the egg and preventing it from falling (Huff et al. 2006, 13).

Range-wide habitat loss is by far the greatest terrestrial threat to murrelets. Timber harvest has reduced the amount of old growth forest habitat within western Oregon and Washington by more than 80 percent and it is likely disproportionate harvesting has occurred within the range of the murrelet compared with forests further inland.

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 Service designated murrelet critical habitat, which largely overlaps mapped LSRs within the murrelet range on Federal lands.

There is potential for disturbance to breeding murrelets from activities in adjacent non-murrelet habitat. 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 Service's positions 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).

The 2009 5 year review (USFWS 2009), continued to document threats listed above. Additional new information regarding the condition of the marine environment in the 3-state area includes harmful algal blooms, dead zones, prey availability and quality, and the potential exacerbation of these conditions from climate change (USFWS 2009, page 34). This new information suggests there is an increase in the level of threats in the marine environment (USFWS 2009, page 46). Three new threats were identified, derelict fishing gear, energy development and production, and exposure to elevated underwater sound levels (USFWS 2009, page 67).

The Service also believes climate change is likely to further exacerbate some existing threats such as the projected potential for increased habitat loss from drought related fire, mortality, insects and disease, and increases in extreme flooding, landslides and windthrow events in the short-term (10 to 30 years). However, while it appears likely that the murrelet will be adversely affected, we lack adequate information to quantify the magnitude of effects to the species from the climate change projections described above (USFWS 2009, page 34).

The species' recovery plan refers to the NWFP as the backbone of the murrelet recovery effort (USFWS 1997). However, the plan strategically builds off the NWFP and considers non-Federal lands' recovery role. The NWFP contributes to murrelet recovery and conservation by providing large blocks of protected habitat in LSR land allocations within murrelet conservation zones along the Washington, Oregon, and California coasts. Furthermore, murrelet habitat is protected on Federal land under the NWFP. No new timber sales are planned in forested stands known to be occupied by murrelets regardless of whether these stands occur in LSRs, AMAs, or Matrix areas (USDA and USDI 1994b). Protocol surveys (Evans et al. 2003) are required in suitable habitat to determine occupancy prior to actions that result in habitat loss. In addition, the LSR system not only protects currently suitable murrelet habitat, but also develops future habitat in larger blocks.

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 FWS 1992b), the final rule designating critical habitat for the species (USDI FWS 1996), *Ecology and Conservation of the Marbled Murrelet* (Ralph et al. 1995), *Recovery Plan for the Marbled Murrelet* (USDI FWS 1997), and the Service's BO for Alternative 9 (USDI FWS 1994) 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 and USDI 1994a).

In 1995, it was estimated 1,077 occupied murrelet sites occurred within Washington, Oregon, and California. Suitable habitat for the murrelet was estimated at 2,561,500 acres of Federal lands in the listed range of this species (Ralph et al. 1995). Murrelet habitat is protected on Federal land under the NWFP.

The estimated rate of annual decline for 2000 to 2008 was 2.4 percent, which is equivalent to an average decline of about 488 (standard error = 241) birds per year (Falxa 2009). The estimated rate of decline from year 2001 to 2008 was greater, averaging 4.3 percent or 867 (standard error = 129) birds per year (Falxa 2009). Additional at-sea monitoring will be needed to test for population declines at the scale of individual conservation zones, and to evaluate whether the declines observed to date continue into the future. Oregon has an estimated 8,696 murrelets with 95 percent confidence intervals of 5,680 to 12,405 birds (CCR 2010, page 4).

A report in 2010 showed that the population estimate for Zone 3 (North Bend Oregon to Mendicino Ca.) was of 7,223 birds, 11% higher than the mean over all years but not significantly different (FWS 2011).

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 on the loss of late-successional forest and the subsequent reduction in the number of nest sites available to murrelets (USDA and USDI 1994a). This loss of habitat may also explain gaps in their inland distribution.

#### **Marbled Murrelet Critical Habitat**

Critical habitat for marbled murrelets was designated in May 1996 (61 FR 102:26256-26320). The Service 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 NWFP boundary.

Within the Action Area, 421,000 acres have been designated as marbled murrelet critical habitat (Figure 3). Of this total, 150,000 acres are suitable marbled murrelet habitat; 66,726 acres of suitable habitat are located within the known range (Area A) mostly within LSRs and CHUs. Approximately 1,639 acres of suitable habitat in the known range was removed in the 2002 Biscuit Fire.

The Service 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 Service has focused on the following primary constituent elements: (1) individual trees with potential nesting platforms and (2) forested areas within 0.5 miles (0.8 kilometers) 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 element are, by definition, critical habitat.

Reductions or removal of marbled murrelet habitat and critical habitat on the RRSNF has been minimal since 2003. To date, no suitable habitat has been removed and no suitable habitat within critical habitat has been removed due to management activities since the marbled murrelet was listed. Wildfires have reduced 37,089 acres of suitable habitat on a combined baseline of Rogue River-Siskiyou National Forest/Medford BLM (320,707 acres) since 1994 (USDA and USDI 2006).

## **FS SENSITIVE**

### **AMERICAN PEREGRINE FALCON** (*Falco peregrinus anatum*)

Peregrine falcons are most typically associated with cliffs that serve as nesting and perching sites. Nest site criteria include ledges, potholes, and small caves that are inaccessible to mammalian predators and provide protection from precipitation as well as heat and cold. Nest sites are almost always located near water. Proximity to foraging areas providing an adequate prey base is also important (Johnsgard 1990). Peregrine falcons nest along seacoasts, marshes, lakes, and even in some cities but peregrine falcons are not commonly associated with interior forests (Csuti et al. 1997). Peregrine falcons feed almost exclusively on birds.

The American peregrine falcon was first identified as an Endangered species in 1970 under the Endangered Species Conservation Act of 1969 (USDI FWS 1999). The American peregrine falcon was subsequently listed as Endangered under the Endangered Species Act of 1973 (USDI FWS 1999). By 1999, populations of peregrine falcons in the United States had recovered sufficiently that the FWS removed the American peregrine falcon from the federal list of endangered and threatened wildlife (USDI FWS 1999a). The American peregrine falcon remains on the Regional Forester's Sensitive animal list for the Pacific Northwest Region of the Forest Service. Peregrine falcon habitat on the Rogue River - Siskiyou N.F. is managed in accordance with Standard and Guidelines 4-5 of the Land and Resource Management Plan for the Siskiyou National Forest (USDA 1989). On the Rogue River-Siskiyou N.F., major rivers provide the best habitat for bald eagles.

Cliffs with suitable ledges provide nesting habitat for peregrine falcons. Peregrine habitat on the Forest is managed in accordance with the Regional Forester's letter of July 19, 1999 (USDA 1999b). On 25 August 1999, the USDI Fish and Wildlife Service removed (delisted) the American peregrine falcon throughout its range as a threatened species from the Federal List of Endangered and Threatened Wildlife, thereby removing all protections provided by the Act. A strategy for the 5-year monitoring plan that follows the delisting has been developed and is being implemented (FWS 2003).

### **NORTHERN BALD EAGLE** (*Haliaeetus leucocephalus*)

Most bald eagles nest within 0.6 to 1.2 miles of aquatic foraging areas, which is typically a lake, reservoir, large river, or coastal estuary (Anthony et al. 1982, Stalmaster 1987, Anthony and Isaacs 1989, Johnsgard 1990, Garrett et al. 1993). Nest trees are usually the dominant trees in the stand, often much larger than the surrounding trees (Anthony et al. 1982, Stalmaster 1987). The nest trees provide adequate support for the large nests, an open flight path to the nest, and a view of the surrounding terrain (Stalmaster 1987). Although bald eagles usually nest near water, they will search areas away from water to find suitable structure for their nest (Anthony et al. 1982, Stalmaster 1987). Young stands are avoided, but eagles do desire large openings in the canopy provided by lakes, rivers, and meadows (Stalmaster 1987).

Roosting and perching habitat is also important. Roost trees are often the largest trees in the stand (Anthony et al. 1982). When selecting roost trees, eagles choose trees providing greater shelter versus trees close to food (Stalmaster 1987). On the other hand, trees used for perching are usually near water and food (Stalmaster 1987). Perches are used for resting, hunting, and eating (Stalmaster 1987). The species of tree is less important than the location and form of the tree (Stalmaster 1987).

Bald eagles require an abundant supply of food because of their large size (Stalmaster 1987, Johnsgard 1990). Bald eagles feed on fish, waterfowl, small mammals, and carrion (Stalmaster 1987, Johnsgard 1990). The specific diet may vary by season and location (Stalmaster 1987).

Bald eagles were listed as Endangered in Oregon and elsewhere by the FWS in 1967 (USDI FWS 1967). In 1995, bald eagles were down listed to threatened status (USDI FWS 1995). In 1999, FWS proposed delisting the bald eagle because of significant gains in populations across the United States due to habitat protection and a reduction of persistent organochlorine pesticides (e.g., DDT) in the environment, which had caused significant reproductive problems for bald eagles and other raptors (USDI FWS 1999b).

Bald eagle habitat on the Rogue River-Siskiyou N.F. is protected and managed in accordance with the Pacific Bald Eagle Recovery Plan (USDI FWS 1986), and Standards and Guidelines 4-3 and 4-4 of the Siskiyou National Forest Land and Resource Management Plan (USDA 1989). As part of the recovery plan, key nesting habitat areas have been identified on the Rogue River-Siskiyou N.F. along the Rogue, Illinois, and Sixes Rivers (USDI FWS 1986).

Information on the ecology of the northern bald eagle is contained within the Draft site-specific management plan for the Emigrant Lake bald eagle nest site (Popp and Isaacs 1995), the Working Implementation Plan for Bald Eagle Recovery in Oregon and Washington (OR-WA Interagency Wildlife Committee 1989) and within the Pacific Bald Eagle Recovery Plan (USDI Fish and Wildlife Service 1986).

Bald eagles are fairly tolerant of human activity, but high level noise or disturbance can dissuade them from important breeding area or winter roost sites, particularly during the early nesting season. Individual pairs have widely variable responses to disturbance. 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 and any disruptive activity is scheduled outside of sensitive periods (USDA Forest Service; USDI FWS 2003).

#### **HARLEQUIN DUCK** (*Histrionicus histrionicus*)

An east-west migrant, the Harlequin duck winters on the coast as far south as central California, and nests on inland rivers as far east as Montana. Breeding occurs primarily on the rivers in northern Oregon, with occasional records from the Umpqua drainage. In 2007 a female with young was photographed on the Powers RD (J. Lowe 2007, pers. com.). The harlequin duck has been documented on National Forests in both states (COL, CRG, DES, GIP, MBS, MTH, OKW, OLY, RRS, SIU, UMP, WAW, WIL) and four BLM districts in Oregon (CB, EU, RO, SA).

When engaged in behavioral interactions, the Harlequin Duck gives a distinctive mouse-like squeak that is loud enough to carry over the roar of fast-moving white water. The high pitched piping of these ducks is the reason these birds are also called "sea mice" or "squeakers." (Cornell 2003, Street 1999). The female also makes a coarse "ek-ek-ek" sound (Cornell 2003). Males do not reach their full breeding plumage until their third year, and have distinctive juvenile (1<sup>st</sup> year) and subadult (2<sup>nd</sup> year) plumages; molting males look similar to females when in full eclipse plumage (Cooper and Wright 1998). Males have white scapulars, a black tail and coverts.

The harlequin duck is a bird of turbulent waters, breeding on fast-flowing streams and wintering along rocky coastlines in the surf (Cornell 2003). These small ducks are expert swimmers. They ride rapids, diving and probing among the bottom stones of swift rivers and streams (Street 1999). They are often seen in compact flocks during the non-breeding season. Females and paired males show strong affinity to their wintering sites (Cooke et al. 2000, Robertson et al. 2000).

The harlequin is a short-distance migrant that moves to breeding streams from Pacific coastal areas (Cooper and Wright, 1998). Harlequin ducks migrate northward and inland in spring, arriving at their breeding areas in the intermountain western U.S. late-April through mid-May, with males departing for west coast molting areas soon after females begin incubating (Spahr et al. 1991). Breeding females move to the coast later depending on breeding success and whether or not females abandon young.

Non-breeding females also remain on rivers through the incubation period. Successful females and juveniles arrive on the coast in mid to late September. Some coastal breeding populations are probably non-migratory (Cooper and Wright, 1998). Young accompany their mothers to coastal molting or wintering areas in the late summer (Regehr et al. 2001).

This species has a holarctic range. Breeding occurs in Eurasia and two disjunct regions in North America (Natureserve 2007). The North American Pacific population breeds from western Alaska (see Johnson and Herter 1989 for details), northern Yukon, northern British Columbia, and southern Alberta south to Oregon, Idaho, Wyoming, and east of the Continental Divide in Montana (perhaps historically in California and Colorado) (Natureserve 2007). In the western portion of the United States, Cassirer et al. (1996) estimated 72 pair breed in Oregon.

Harlequin ducks breed in mountain streams and rivers. In western North America, most breeding sites are on relatively rapid streams of moderate size, typically surrounded by undisturbed forest. They winter in rough coastal waters, especially along rocky shores or reefs; summering non-breeders and immatures also occur in this habitat (Cassirer et al. 1993, Cornell 1993, Wiggins 2005).

Activities such as logging, road-building, and mining may act to increase sedimentation along breeding streams that may affect its food source. These activities also increase disturbance to nesting birds, and facilitate easier human access to remote breeding sites.

#### **LEWIS' WOODPECKER** (*Menalpes lewis*)

Lewis' woodpeckers are migratory in southwestern Oregon, with sporadically large populations in the winter and scattered breeding pairs in the summer reported. They were formerly common breeders in summer in Jackson and Josephine Counties but in the last 10 years they have not been documented (N. Barrett 2008, pers. com.) and there are few recent breeding records (Janes et al. 2002). This species is closely tied to the ponderosa pine/oak savannah habitats of eastern and southwest Oregon.

Nests are often in the large Ponderosa Pine snags or mature oaks while the birds forage on insects and acorn meat. In winter they store acorn meat in crevices in trees and power poles. Because this woodpecker does not usually excavate its own cavity, they have a close tie to older snags within the forest that are likely to contain cavities and have crevices for food storage.

The population of Lewis' woodpeckers has fallen dramatically across Oregon as pine – oak woodlands are lost. A contributing factor in the decline has been the spread of the European Starling, which aggressively out-competes this species for available cavities. Habitat loss is due to a wide variety of concerns that include urbanization of valley floors, fire suppression and encroachment of conifer forests, timber harvest of pine components in the oak forests, etc.

#### **WHITE-HEADED WOODPECKER** (*Picoides albolarvatus*)

White-headed woodpeckers have been confirmed breeding on Mount Ashland, Dead Indian Plateau, and along the California border into Josephine County. Primarily a Ponderosa Pine habitat breeder on the East side of the Cascades, they locally breed in the Shasta fir zone in Jackson County and in mixed conifer forest. This species is not migratory and can be found on the forest year round (Janes et al. 2002). Thinned stands with large remnant trees are suitable habitat, as well as old growth forests.

On the Rogue River–Siskiyou National Forest any dry, open forest stand with large trees may serve as suitable foraging breeding habitat for the species, though breeding is probably limited to Ponderosa pine and true fir stands.

Known breeding sites on the forest include the meadow complexes on the south side of Mt. Ashland and a Shasta Fir shelterwood (appx. 6 trees/ac.) east of Howard Prairie. One Mt. Ashland nest was in a 5 foot tall stump within a campground.

#### **NORTHERN WATERTHRUSH** (*Seiurus noveboracensis*)

This small brown warbler is suspected to breed in Lane County near Salt Creek Falls (Gilligan et al 1994) and possibly on the Idaho border in Union and Wallowa Counties (Contraras 2003). No nests have been found due to difficulty to locate them in dense riparian thickets, but presence of birds for decades at the same site and singing territorial males indicates probably breeding.

On the Rogue River–Siskiyou National Forest there is a single record of a bird captured during fall migration at the Skeeter Swamp MAPS station. There are 3 additional records for the species in Jackson County during breeding season (Janes et al. 2002). As the forest has suitable breeding habitat for the species and no effort has been made to survey for this species, it is assumed to potentially breed here.

Breeding habitat consists of dense willows 5-8 feet in height. The surrounding forests can be lodgepole, Douglas fir, and/or spruce. Breeding starts in early June at the known sites but could be slightly earlier here due to the earlier season.

Conservation: Any management activity that would impact mature willow riparian habitat has the potential for impacting this species. This would include road or bridge building, grazing or beaver introduction as examples. Surveying for this species during breeding season is relatively easy as the bird has a loud and distinctive call and often sings from an exposed perch.

#### **CALIFORNIA WOLVERINE** (*Gulo gulo luteus*)

Marshall (1989) described wolverine habitat in Oregon as similar to what was described by Hornocker and Hash (1981) in Montana. In Montana, wolverines selected alpine fir (*Abies lasiocarpa*) forests over ponderosa pine (*Pinus ponderosa*), Douglas-fir (*Pseudotsuga menziesii*) and spruce (*Picea* sp.), but showed some preference for lodgepole pine (*Pinus contorta*) and western larch (*Larix occidentalis*). Wolverines tended to work large areas of scattered conifers but also pockets, rocky, and ecotonal areas. Young, dense conifer stands were used least. Wolverines were rarely located in burned-over or wet areas, and crossed but did not linger in clear-cuts (Hornocker and Hash 1981).

Status of the wolverine in Oregon remains unknown. There are very few verifiable records for the State (Verts and Carraway 1998), none of which come from Jackson or Josephine Counties. Numerous carnivore surveys and a considerable amount of carnivore research have been conducted in southern Oregon and northern California in the past decade.

These include, but are not limited to, over 150 baited camera stations on the High Cascades district of the RRSNF, numerous baited stations on the Diamond Lake R.D. of the Umpqua N.F., and surveys in the Ashland Watershed by agency biologists and private individuals in cooperation with the BLM, Southern Oregon University, and Forest Service. Radio-telemetry studies have been conducted on marten in northwestern California and on the Winema National Forest, and radio-telemetry studies have been conducted on fisher in northwestern California and the southern Oregon Cascades. All of these efforts have used carrion as bait; none have detected wolverine.

In addition, the Winema, Umpqua, and Rogue River-Siskiyou National Forests have been conducting helicopter surveys in the Sky Lakes and Thielsen Wilderness areas for the past 3 years, which provide the highest quality wolverine denning habitat in southern Oregon based on known den sites (Magoun and Copeland 1998) and a wolverine den habitat model (Hart et al. 1997). Wolverine dens or tracks have not been detected with this effort.

Since virtually all studies of wolverines have shown their dependence on carrion as forage, and wolverines are known to den at high elevation at or above timberline, it appears highly unlikely that wolverines are resident in southern Oregon and northern California at the present time.

Wolverines are known to make long distance movements and disperse across large areas. A wolverine was photographed in the Sierra Nevada Mountains of California in February, 2008. Additional photographs and genetic samples were collected in March, 2008. Analysis of the genetic samples identified the individual as originating from the Rocky Mountains. Dispersing individuals from neighboring states have the ability to enter SW Oregon, therefore, there is potential for wolverines to be located in SW Oregon in the future.

#### **PACIFIC FISHER (*Martes pennanti*)**

The Pacific fisher was petitioned for listing by the Center for Biological Diversity and several other environmental organizations in November 2000. After a 12-month review, the U.S. Fish and Wildlife Service found Pacific fisher to be a distinct population segment (DPS) and gave a “warranted but precluded” decision to the petition, designating the West Coast DPS a Federal Candidate species (USDI Fish and Wildlife Service 2004). Other rankings include: U.S.D.A Forest Service, Region 6 – Sensitive, Region 5 - Sensitive; U.S.D.I. Bureau of Land Management, Oregon – Sensitive, California - Sensitive; Oregon State Sensitive – Critical species, California State – Species of Special Concern; The Natural Heritage Program ranks this species as Globally demonstrably widespread (G5), Oregon State (S2) imperiled because of rarity or other factors, and ORNHIC List 2 (Lofroth et al. 2010).

According to reviews, the fisher occurs from southern Yukon and southwestern Northwest Territories southeast through British Columbia and possibly extreme southeastern Alaska, Alberta, Saskatchewan, Manitoba, Ontario, southern Quebec, and New Brunswick to Nova Scotia. Its distribution extends south through several forested areas of the northeastern United States including Maine, New Hampshire, Vermont, northern New York, Pennsylvania, western Massachusetts, the upper peninsula of Michigan, and northern Wisconsin and Minnesota. There is also a population in West Virginia. In the western United States, fisher populations are known to occur in western Montana, the Idaho panhandle, the southern Sierra Nevada of California, the Klamath and Siskiyou mountains of northwestern California and extreme southwestern Oregon, and the southern Cascade Range of southwestern Oregon. The fisher may be extirpated from Washington (Lofroth et al. 2010). However, there has been a recent fisher reintroduction effort in the Olympic Peninsula in 2007 and 2008 (Lofroth et al. 2010).

The geographic distribution of fishers in the Pacific Coast states has been greatly reduced in extent from pre-settlement conditions. Prior to extensive European settlement, the fisher occupied most coniferous forest habitats in Washington, Oregon, and California (Lofroth et al. 2010). Persistence of fishers in Washington is questionable. Lewis and Stinson (1998) reported that the fisher is very rare in Washington. Extensive surveys by the Washington Dept. of Fish and Wildlife and the U.S. Forest Service have failed to locate a fisher population, or confirm the presence of a fisher in areas where recent reports are concentrated (Lewis and Stinson 1998). Fishers have recently been reintroduced on the Olympic Peninsula. One telemetry study and several surveys conducted by various agencies and individuals have documented fishers in the southern Oregon Cascades and Siskiyou Mountains (Lofroth et al. 2010). The presence of fishers in California is well-documented (Lofroth et al. 2010).

The U.S. Fish and Wildlife Service has determined that fishers in the Cascade Range and all areas west, to the coast in Oregon and Washington; and in California, the North Coast from Mendocino County north to Oregon, east across the Klamath Mountains, across the southern Cascade Range and south through the Sierra Nevada as the West Coast Distinct Population Segment (USDI Fish and Wildlife Service 2004).

Currently, there are two documented populations in southern Oregon which appear to be genetically isolated from each other (Aubry et al. 2004). This is considered to be due to the presence of potentially strong ecological and anthropogenic barriers including the white oak savanna habitat of the Rogue Valley and Interstate 5.

Based on DNA analyses, individuals in the southern Oregon Cascades appear to be descendents of animals re-introduced from British Columbia and Minnesota during the late 1970s and early 1980s by the Oregon Department of Fish and Wildlife (Drew et al. 2003). Animals in the eastern Siskiyou Mountains of Oregon are genetically related to individuals in the northwestern California population, which is indigenous (Lofroth et al. 2010).

Two recent surveys that have incorporated hair snaring and subsequent DNA analysis as a component have identified fishers near the Ashland Watershed as members of the indigenous population (Aubry et al. 2005, Farber and Criss 2005).

A local population area is defined as those individuals residing within the entire Mt. Ashland Late-Successional Reserve (LSR), and on Federal lands within 5 km of the LSR boundary, except on the eastern edge, where Interstate 5 defines the edge of the fisher local population area due to its potential to act as a barrier to movement and dispersal (see also cumulative effects). This buffer is derived from reported dispersal distances for female fishers in California and Oregon in the scientific literature and personal communications with researchers which have conducted fisher studies in southern Oregon and northern California.

The total population is defined as all individuals residing in the Klamath-Siskiyou and California Coast Regions. Fishers in these 2 areas have been shown to be closely related through genetic analyses (Wisely et al. 2004). Fishers in the southern Oregon Cascade Range are introduced and not considered to be part of the total population. Estimates of fisher population size are based on 1) the cumulative mean home range size of female fishers (10 km<sup>2</sup>) reported in 7 studies in northern California, and 2) generally, fisher home range sizes increase in size from south to north (Lofroth et al. 2010). Female dispersal distances were analyzed because dispersal distances for juvenile male fishers are widely variable, are likely influenced by intra-specific competition with resident males, and males in some populations have been shown to have non-breeding season home ranges separate from the general population (Aubry and Raley 2006).

Because the local population being analyzed is at the northern extreme of the California population, it is expected female fisher home ranges to vary from 10-20 km<sup>2</sup> in size, and male home ranges to vary from 25-45 km<sup>2</sup> in size. The local population area is defined as 653 km<sup>2</sup>. This equals approximately 33-65 female home ranges and 15-26 male home ranges. Assuming the habitat is fully occupied by both male and female fishers, there is no overlap of territories within sexes, and there is complete overlap between sexes, the local population estimate is 48-91 resident fishers. This is likely a liberal estimate of population size because generally, not all suitable habitat within an extant population's range is occupied. Carlos Carroll estimated the entire northern California-southwestern Oregon (total) fisher population as 1,000-2,000 individuals (Center for Biological Diversity 2000).

Fishers exhibit intrasexual territoriality, where individuals defend a home range against members of the same sex, but there is considerable overlap between sexes. These territories are maintained year-round except at times during the breeding season when males may trespass on each other's territories while they search for receptive females (Powell 1993).

In Oregon, the breeding season begins in early February when adult males became more active and start to make longer distance movements. Males sometimes moved well beyond their non-breeding season home ranges, presumably to find reproductive females (Aubry et al. 2004). Mating occurs shortly after parturition, although the fertilized eggs do not implant for approximately 10 months. Active pregnancy typically begins in February and lasts until March or early April, when fishers give birth to an average of 2 to 3 kits (Lofroth et al. 2010). In southwestern Oregon, adult females gave birth to kits from about 17 March to 5 April, and the natal denning period lasted until late-May or the beginning of June (Aubry and Raley 2006).

The size of fisher home ranges varies both regionally and by habitat condition, although male home ranges are generally larger than those of females. Home range size for fishers is likely related to the availability of resources, including abundance and diversity of prey and suitable habitats for den and rest sites. Male home range sizes may also be influenced by the availability of females. Mean home range sizes of males in the southern Cascades of Oregon was 147 km<sup>2</sup> during the breeding season and 62 km<sup>2</sup> during the non-breeding season compared to female home ranges of 25 km<sup>2</sup> (Lofroth et al. 2010). Male home ranges near the north coast of California averaged 58 km<sup>2</sup> compared to 15 km<sup>2</sup> for females (Lofroth et al. 2010).

Seasonal movements are generally related to the breeding period for males. In southwest Oregon, male home ranges were twice as large during the breeding season compared to the non-breeding season (Aubry and Raley 2006). One adult male who resided on the east slope of the Cascade Range during the non-breeding season traveled approximately 30 km across the Cascade crest to the west slope during 3 successive breeding seasons (Aubry et al. 2004). Aubry and Raley (2006) used fixed-wing aircraft to monitor two adult males during the breeding season and reported that a 3 year old male occupied a 226 km<sup>2</sup> area, and a 6 year old male occupied a 100 km<sup>2</sup> area. The younger male made excursions far to the south of his non-breeding season home range, and the older male moved primarily within his non-breeding home range with some excursions beyond his usual activity area. During the denning season, females on the Hoopa Reservation used an average of 3.1 dens/season and moved kits a cumulative average distance of 871 m with a range of 85-2,228 m. Dens were located an average of 414 m apart. Despite the distance between den structures, dens used each year were located within a small, concentrated area of each females home range (Mathews 2006). In southwestern Oregon, when females moved their kits from the natal den, subsequent use of maternal dens was variable. Females that only had 1 kit were relatively mobile and few maternal dens were found. In contrast, when females had  $\geq 2$  kits, maternal dens were found regularly and at least some of the dens were used for  $>2$  weeks (Lofroth et al 2010).

At 2-3 months of age, juveniles begin foraging for themselves, though they remain on their mother's home range until they disperse at 6-12 months of age (Powell 1993). Riparian corridors (Heinemeyer and Jones 1994) and forested saddles between major drainages (Buck 1983) may provide important dispersal habitat or landscape linkages for fishers.

Reported dispersal distances for fishers vary. In a study in Maine, dispersal distances ranged from 4 to 19 km, and there was no significant difference in dispersal distances between males and females (Arthur et al. 1993). The authors believed that these dispersal distances were short compared to the size of an adult home range, and probably resulted from the study population being trapped, creating many unoccupied home ranges. However, these dispersal distances are not greatly different from those reported in Oregon and California. In the southern Oregon Cascades, Aubry and Raley (2006) documented 7 juvenile dispersals (4 females, 3 males). By approximately the end of May, most 1-year-old fishers had settled into the area where they eventually established a home range. Males dispersed an average of 29 km, mean dispersal distance of females was 6 km. Two of the 4 females did not disperse from their natal areas; these females appeared to establish home ranges adjacent to and slightly overlapping their mother's home range (Aubry and Raley 2006).

On the Hoopa Reservation in northern California, 1 female dispersed 1-2 km from her natal den and set up a home range. Another female moved up to 10 km from her natal den and was apparently moving towards her mother's home range when she died. One male dispersed 3-4 km from his natal den and set up a home range. There has been high turnover in female fishers in recent years on the Hoopa Reservation, suggesting that there are a high percentage of vacant home ranges that could be occupied by dispersing individuals (M. Higley 2007, pers. comm.).

Powell (1993) reported that the primary prey of fishers throughout most of their range is snowshoe hares (*Lepus americanus*) and porcupines (*Erethizon dorsatum*). Although the fisher is reported to be a specialist in late-seral, mixed conifer-hardwood forests, recent analysis of the diet of fishers in the southern Sierra Nevada portray an opportunistic predator with a diverse diet. Zielinski et al. (1999) characterized fisher diets by analyzing 201 fisher scats and found that mammals were the most frequent food item. Reptiles (20.4%) and insects (55.7%) were also major components in the diet (Zielinski et al. 1999). In southwest Oregon Aubry and Raley (2006) analyzed 303 scats from 11 female and 84 scats from 8 male fishers. Food items from 5 major taxa groups were identified; Mammalia (female 85%, male 76%), Aves (female 28%, male 27%), Reptilia (females 7%, males 5%), Insecta females (25%, males 27%), and Planta (females 14%, males 13%). Their results suggested that female fishers were capturing smaller-bodied prey more frequently than larger-bodied prey, and males were capturing larger-bodied prey more frequently. Aubry and Raley (2006) also found evidence that males, but not females were preying upon porcupines. These findings suggest that fishers, at least in the western states, are a generalist predator.

The fisher is one of the most habitat-specialized mammals in western North America (Buskirk and Powell 1994). Specialization appears to be tied primarily to denning and resting habitats. The varied diet of fishers suggests they may forage in a variety of habitats.

Fishers use landscapes at different spatial scales for different behaviors and activities (Powell 1994, Weir and Harestad 2003). For example, fishers may establish their home ranges at the landscape scale, forage at the patch scale, and select habitat for resting or denning at the patch scale as well as at a finer scale of habitat characteristics of elements within a patch (Powell 1994, Powell and Zielinski 1994, Weir and Harestad 2003).

Several studies have shown that fishers appear to be highly selective of resting structures (Lofroth et al. 2010). In California, Zielinski et al. (2004) found that resting structures were in the largest diameter trees available. Average dbh for live conifers was 117 cm for live conifers, 120 cm dbh for conifer snags, and 69 cm dbh for hardwoods. On the Hoopa Valley, and Shasta-Trinity study areas, Yeager (2005) determined that rest trees used by fisher had a significantly larger dbh than the average dbh of the four largest trees on the rest site plots. In the Hoopa Valley, the rest tree was one of the four largest trees on 91 percent of the rest site plots measured, and was the single, largest tree on 46 percent of the rest site plots. In southwest Oregon, Aubry and Raley (2006) reported that the average diameter of live trees used by females for resting was slightly greater than those used by males: 88 cm dbh versus 64 cm dbh.

In California, Zielinski et al. (2004) found that fishers select rest sites with significantly higher canopy closure immediately adjacent to the rest site (93.4 %) when compared to random sites (88.8%). Yeager (2005) reported that on the Hoopa Valley study area, 86.8 % of all rest sites had more than 50% canopy cover and 59.7% had greater than 75% canopy cover. At Shasta-Trinity 97.6% of all rest sites had more than 50 % canopy cover and 87.5% had greater than 75% canopy cover. In SW Oregon fishers selected rest sites with canopy closure greater than 80% (Aubry and Raley 2006).

In the southern Oregon Cascades, Aubry and Raley (2006) located and typed 641 different resting structures. Fourteen percent of the rest structures were reused by the same animal on more than 1 occasion, and 3 %were used by another radio-collared fisher at some time during the study. Both male and female fishers primarily used live trees for resting. Use of logs and cull piles by females and males was similar. Females used a greater proportion of snags for resting than males. Both male and female fishers used mistletoe brooms in live trees more than any other micro-site (females 31%, males 21%). Mistletoe brooms in live trees were suspected rest sites for an additional 44% of live trees used by females, and 33%of live trees used by males. Rodent nests were used in 24% of the trees used by male fishers.

Cavities in both conifers and hardwoods are used by fishers for resting. However, to create suitable rest cavities, trees must be old enough to have suffered the type of stresses that create infection courts for heartrot fungi, and large enough to form cavities large enough to be used by fishers (Lofroth et al. 2010). Large trees also provide platform-type resting structures such as mistletoe brooms, clumped branches that support rodent nests, or rust brooms that can support the weight of fishers. Once these large trees die and fall, they become the type of log that fishers have been known to use as rest sites. Removal of understory and mid-story canopies around large structures may also reduce the effectiveness of the structure as a secure rest site because they contribute to the microclimate of the site. Under- and mid-story canopies probably also provide some protection for female and juvenile fishers from predation or harassment by large raptors and mobbing by corvids because sight distance is reduced in dense, multi-storied stands.

As with resting structures, both conifers and hardwoods provide habitat for fisher dens. Yeager (2005) categorized 18 fisher dens in the Hoopa and Shasta-Trinity study sites. Sixteen were located in hardwoods, and 2 in conifers. Of these 18 dens, all but 3 were located in live trees. On both study areas, black oaks were used in 50% of all dens categorized. Other species used were tanoak, white oak, canyon live oak, chinquapin, Douglas-fir, and ponderosa pine. In southwestern Oregon, Aubry and Raley (2006) located 13 natal and 18 maternal dens. For natal dens, fishers used both live trees and snags with openings that accessed hollows created by heartwood decay. The most commonly used tree species were incense cedar, true fir, and western white pine. Douglas-fir, incense cedar and true firs were used as maternal dens. Structures used for maternal dens were more variable than those used for natal dens, and included cavities in the bole or butt of large live trees and snags, and large hollow logs (Aubry and Raley 2006). Natal den trees need to be large enough to accommodate a cavity capable of containing an adult female fisher and multiple kits (Aubry and Raley 2006). In the southern Cascades of Oregon, the average dbh and height of live trees used for natal dens was 92 cm and 40 m respectively. The average dbh and height of snags used for natal dens was 89 cm and 26 m respectively (Aubry and Raley 2006).

Based on their diverse diet, fishers appear to be a generalist predator that is opportunistic in its foraging strategies (Lofroth et al. 2010 Lofroth et al. 2010). There is some indication of seasonal variation in the fisher's diet (Zielinski et al. 1999) which is likely linked to seasonal abundance of prey and forage species. While fishers require structures provided by older aged or residual stands for denning and resting, they appear to use a broad array of stand conditions for foraging.

Weir and Harestad (2003) found that fishers exhibited selectivity for stands and patches with high volumes of coarse woody material (CWM) and specific closures of high and low shrub layers. However, they hypothesize that an overly complex forest floor may affect the hunting success of fishers by reducing the likelihood of capturing prey. Fishers avoided stands with >80% closure of the low shrub layer. Jones and Garton (1994) found that fishers did not use non-forested sites while resting or hunting, but did use pole-sapling forests for hunting significantly more than for resting. The inclusion of berries in the fisher's diet suggests that they do forage, at least occasionally or seasonally, in forest gaps or along edges of forested stands where many fruit-bearing shrubs and forbs are found.

**PACIFIC PALLID BAT** (*Antrozous pallidus*)

Pallid bats are known to occur throughout SW Oregon and NW California. Suitable roost habitat types include buildings, bridges, rock outcrops, and large decadent snags. Pallid bats have been captured from several sites on the RRSNF, including some locations in the Applegate area. They have also been captured at a site just south of Pilot Rock at 4,500 feet in elevation, southeast of the Analysis Area (Dave Clayton pers. obs.). Pallid bats are known to roost under loose bark of large snags and within rock crevices (D. Clayton, pers. obs.).

**TOWNSEND'S BIG-EARED BAT** (*Corynorhinus townsendii*)

Townsend's big-eared bats occur in a wide variety of habitats, its distribution tends to be geomorphically determined and is strongly correlated with the availability of caves or cave-like roosting habitat (e.g., old mines). The species may also use hollow trees for roosting. Suitable roosts sites and hibernacula fall within a specific range of temperature and moisture conditions. Moths make up the majority of the diet for *C. townsendii*.

**PACIFIC FRINGE-TAILED MYOTIS** (*Myotis thysanodes*)

Verts and Carraway (1998) considered *M. thysanodes* a cave-dwelling bat, even though most of the specimens they examined were from buildings. In SW Oregon, they are considered a snag obligate rooster (Cross 1997). It appears to be adapted to living in areas with diverse vegetative substrate.

**NORTHWESTERN POND TURTLE** (*Actinemys marmorata marmorata*)

Northwestern pond turtles are capable of living in a wide variety of aquatic habitats. The northwestern pond turtle inhabits marshes, ponds, lakes, reservoirs, sloughs, and slow moving portions of creeks and rivers (Nussbaum et al. 1983). Pond turtles may also be found in abandoned gravel pits, stock ponds, and sewage treatment plants (Holland 1994). In the Rogue River drainage, records of pond turtle sightings are almost equally divided amongst rivers, larger-order streams, and small ponds (Holland 1994).

The size of habitats used by northwestern pond turtles is quite variable from place to place. Turtles have been observed using small ephemeral ponds only a few square meters in size (Holland 1994). On the other hand, turtles are also known to live in Upper Klamath Lake which covers an area of several dozen square kilometers. In areas where water is present only part of the year, turtles aestivate in the mud in the watercourse or in upland areas during late summer or early spring (Holland 1994). Pond turtles seem to prefer areas that possess some type of refugia such as undercut banks, submerged vegetation, rocks, logs, or mud (Nussbaum et al. 1983, Holland 1994). Areas containing basking sites for thermoregulation such as rocks, logs, or emergent vegetation are also preferred (Nussbaum et al. 1983, Holland 1994). Partially submerged logs, vegetation mats, mud banks, rocks, and tree branches provide areas for sunning (Nussbaum et al. 1983, Stebbins 1985).

**OREGON SPOTTED FROG** (*Rana pretiosa*)

The Oregon spotted frog was recently split into two separate species, with the closest species retaining the original common and scientific name (USGS 2005). The Oregon spotted frog ranges into southern Oregon along the east side of the Cascades (Jones et al. 2005, Corkran and Thoms 1996). This places the Forest outside the range of the spotted frog.

This species was once common on the west side of the Cascades but has disappeared from former habitats that have been altered or infiltrated by bullfrogs (*Rana catesbiana*). High lakes in the Cascades are considered potential habitat west of the Cascade crest (Nussbaum et al. 1983). Lakes and ponds are their preferred habitat, and they can even lay their egg masses in shallow, flooded wetlands.

On the Rogue River-Siskiyou National Forest, the High Cascades Ranger District has the most likely potential habitat based on proximity to the current range. Surveys were conducted on the Cascades RD in 2006, no spotted frogs were found.

**FOOTHILL YELLOW-LEGGED FROG (*Rana boylei*)**

The foothill yellow-legged frog lives in or near streams with rocky or gravel substrates (Nussbaum et al. 1983, Cockran and Thoms 1996). Streams with sandy or muddy bottoms are occasionally used as are moist, rocky outcrops (Nussbaum et al. 1983). Adults commonly live amongst sedge clumps at the edges of deep pools, amongst cobbles on the bottom of pools, or in bedrock at the edge of the main stream channel (Cockran and Thoms 1996). Eggs are deposited during late spring or early summer in clusters attached to rocks on the bottom or edges of streams (Nussbaum et al. 1983, Cockran and Thoms 1996). Tadpoles live in pools for three to four months before metamorphosing into adults (Nussbaum et al. 1983, Cockran and Thoms 1996).

There are several known sites on the Forest in the Applegate, Illinois, Elk Creek, and lower Rogue River and Coquille watersheds.

**SISKIYOU MOUNTAINS SALAMANDER (*Plethodon stormi*)**

The Siskiyou Mountains salamander (PLST) is closely associated with rocky environments (talus, rock crevices, etc.), and in periods of very wet weather, individuals may be found under surface debris, but will always be near sheltering rocks (Nussbaum et al. 1983). Talus occurring on well-forested north slopes supports the highest populations of this species. Ollivier et al. (2001) found that the species was closely associated with late-successional forest and high canopy closures. In the dry summer season they retreat into the substrate (Olson et al. 2007). The Siskiyou Mountains salamander is only found in an approximately 150,000 ha area of northwestern California and southwestern Oregon. It occurs primarily in northern Siskiyou County, California, southern Jackson County, Oregon, and extreme southeast Josephine County, Oregon. It has been found from 488 to 1830 m (1,488-6,000 ft) elevation; recent surveys have found new locations and extended the range.

The US Fish and Wildlife Service has received a petition to list the Siskiyou Mountains salamander as Threatened or Endangered. A Conservation Strategy (Olson et al. 2007) has been developed that describes the management actions necessary to manage the Siskiyou Mountains salamander to maintain well-distributed populations across the known range and to avoid a trend towards listing as described in USFS Sensitive Species direction (FSM 2672.1, FSM 2670.22, FSM 2670.45, FSM 2621.2).

The Conservation Strategy (Olson et al. 2007) would be applied in the Applegate Watershed on federal lands administered by Forest Service, Rogue River-Siskiyou National Forest, Siskiyou Mountains Ranger District, and the Bureau of Land Management, Medford District, Ashland and Grants Pass Resource Areas. Using habitat associations' research, a high potential habitat map has been developed for this species in the northern portion of its range, the Applegate Valley 4<sup>th</sup> field watershed (PLST CS 2007).

**CALIFORNIA SLENDER SALAMANDER (*Batrachoseps attenuatus*)**

In Oregon, the California slender salamander is only found along the southern Oregon coast (Cockran and Thoms 1996). This species is confined to humid, relatively low elevation coastal forests (Nussbaum et al. 1983, Cockran and Thoms 1996). California slender salamanders are most abundant in the redwood belt of northern California (Nussbaum et al. 1983, Cockran and Thoms 1996). During wet weather, individuals can be found on the forest floor under surface debris (Nussbaum et al. 1983, Cockran and Thoms 1996). During dry weather, individuals retreat to burrows in the ground or under or in partially-decayed logs (Nussbaum et al. 1983, Cockran and Thoms 1996). The range and habitat type for this species is located entirely on the Gold Beach RD within the Chetco river watershed.

**BLACK SALAMANDER** (*Aneides flavipunctatus*)

The black salamander ranges from a limited distribution in southern Oregon into Santa Cruz and Santa Clara Counties, California. In Oregon, the few records available indicate a small range in extreme southern Jackson and southeastern Josephine Counties (Leonard et al. 1993). Black salamanders are found in coniferous forests, mixed deciduous-coniferous forests, and open hillsides from sea level up to at least 1,700 meters in elevation (Nussbaum et al. 1983). Black salamanders are most likely to be found in the moist crevices of decaying logs or stumps, within moist to wet talus slopes, or under surface objects during wet weather (Leonard et al. 1993).

Three specimens residing in the Southern Oregon College Reptile and Amphibian collection were tentatively identified as black salamander by Dr. Stephen Cross. These specimens were taken in May 1971 from a mine shaft along the eastern border of the Asland RNA (Cross 1973). Six individuals (1 adult male, 2 adult females, 1 subadult, and 2 juveniles) were located by Forest Service and FWS biologists conducting herpetological surveys for the AFR project in April 2004. The adults and sub-adult were located under a large boulder and the juveniles were found under debris associated with a large downed log. All of the individuals were found within a 10 meter radius within a dry, fairly open site.

**SISKIYOU SHORT-HORNED GRASSHOPPER** (*Chloealtis aspasma*)

Distribution of this specie is in two general areas, one from southern Oregon, near the California border and the other in Benton County. The type locality is in the Siskiyou Mountains of Jackson County, Oregon (T41S R1E Sec13) where specimens were collected on a ridge between 5,000 and 5,800 feet elevation in a treeless summit bald covered with an almost impenetrable brushy scrub through which were scattered grassy areas (Rehn and Hebard 1919).

This species occurs in grassland/herbaceous habitats. It appears to be associated with elderberry plants. Females may lay their eggs in the pith of blue elderberry plants, *Sambucus caerulea* Raf. (Foster 1974). This plant is native from Alberta, Canada to Mexico. It grows in gravelly, rather dry soils on stream banks, margins of fields, woodlands. Blue elderberry is a deciduous plant with handsome showy clusters of white flowers, and the attractive dark blue berries.

Females lay eggs in the pith of elderberry stems in the summer (Foster 1974). The eggs hatch the following year. Juvenile stages forage in open meadows near the ground. Juveniles look similar to the adults except the wings are much shorter and the individuals are smaller.

**CORONIS FRITILARY** (*Speyeria coronis coronis*)

A relatively large (~3in.) butterfly that occurs in lower Rogue & Illinois River valleys of Jackson and Josephine counties. It is expected in Coos, Curry and Douglas counties. This species is locally distributed in the Siskiyou.

The Coronis fritillary inhabits lower elevation canyons and grasslands as well as mid-montane meadows and forest margins and openings (Pyle 2002). Caterpillars spend winter in first instar before feeding (Pyle 2002). In spring larvae feed mostly on *Viola hallii*, found in rocky serpentine habitats. Adults seem to move uphill shortly after emerging, probably in search of nectar (Warren 2005). Adult's nectar on bull thistle, other composites, and chokecherry (Pyle 2002). Females, at least, apparently return to basin habitats later in the season to deposit eggs. The single annual brood flies from mid-May to mid-September.

**MARDON SKIPPER** (*Polites mardon*)

Mardon skippers use a variety of early successional meadow habitats which appear to vary by region (Kerwin 2007). Populations in southern Oregon occupy small (less than 0.25 to 4 ha (0.5 to 10 ac)), high-elevation (1,372 to 1,555 m (4,500 to 5,100 ft)) grassy meadows within mixed conifer forests.

Seven or eight locations were known from the Cascade Mountains in Southwest Oregon, most bordering the Cascade-Siskiyou National Monument, with populations ranging from a few to approximately 200 individuals (Kerwin 2007). In 2005, searches and surveys of populations on BLM and Forest Service lands in southern Oregon discovered several new sites. There are now a total of 23 known sites in southern Oregon. One site is on the RRSNF and is approximately 8 km north of the nearest site on BLM lands. Another locality is a complex of sites on both BLM and Forest Service lands north of Dead Indian Memorial Road. Several more sites were located adjacent to known sites on BLM lands. One day counts at sites ranged from one butterfly to over 70 butterflies (Kerwin 007).

Surveys for various alpine butterflies were conducted from May thru August 1996 along the Siskiyou Crest, including the Mt. Ashland area (Nice and VanBuskirk 1996). Mardon skippers were not detected along the Siskiyou Crest with this effort.

#### **INSULAR BLUE BUTTERFLY** (*Plebejus saepiolus littoralis*)

This butterfly is a subspecies of the common Greenish Blue that occurs across much of Oregon. Pyle (2002) states that the colony found on the coast of Curry and Coos Counties is this subspecies. It is unclear from the wording if this is the only location of that subspecies. The blues, as a whole, are difficult for even the experts to identify, so separating one subspecies from another of the Greenish Blue makes field surveys extremely difficult.

Habitat described here is for the Greenish Blue species, as a whole. It is unknown if *P.s. littoralis* has unique preferences. This species prefers “lush wet meadows” (Pyle 2002). They nectar and lay eggs on various clovers and the caterpillars feed on the clover.

The greatest threat to this species at the Forest level is the isolation of the small Coastal population. If it does occur on Forest Service lands local populations should be managed to maintain wet meadows through tree removal, and clover seeding. No surveys have been carried out for this species on the Rogue River-Siskiyou National Forest.

#### **HOARY ELFIN** (*Callophrys polios maritima*)

This gray-brown butterfly occurs in isolated pockets in Oregon and Washington that are separated from the widespread population in British Columbia. On the Rogue River-Siskiyou, range maps show a single small population on the coast of Curry County near Pistol River, that probably does not reach Forest Service lands (Pyle 2002). Globally the species is found from coast to coast and from Alaska to New Mexico. Hoary elfins prefer open, exposed rocky habitats (coastal bluffs, mountains, heaths, etc.). Pyle indicates a tie to kinnikinnick where they overwinter in the chrysalis stage.

The greatest threat to this species at the Forest level is the extreme isolation of the small Pistol River population. If it does occur on Forest Service lands local populations should be managed to maintain a healthy Kinnikinnick population. No surveys have been carried out for this species on the Rogue River/Siskiyou National Forest.

#### **JOHNSON’S HAIRSTREAK** (*Callophrys johnsoni*)

This small brown butterfly occurs in isolated pockets in the western mountains of California up into British Columbia. On the RRSNF, range maps indicate a population in the coastal mountains of Coos, Curry and Josephine counties. A second population is in northern Jackson County around Crater Lake National Park.

This butterfly is an old growth obligate and spends much of its time in the tops of mature conifer forests, making survey efforts extremely difficult. They do nectar on some plants, like Oregon grape and males come into damp earth sites, such as seeps and springs. Caterpillars feed on Pine dwarf mistletoe (*Arceuthobium campylopodum*) which grows on pines and others conifers.

It is also known to use coastal hemlock mistletoe. Timber harvest of mature forests may be a potential threat to this species. Other threats include spraying BT for tussock moth and other pests.

**FRANKLIN'S BUMBLEBEE** (*Bombus franklini*)

Franklin's Bumble Bee is a typical primitively eusocial bumble bee. Females are generalist foragers for pollen, especially from lupine (*Lupinus*) and California poppy (*Eschscholzia*), and for nectar, especially from horsemint (*Agastache*) and mountain penny-royal (*Monardella*). They may collect both pollen and nectar from vetch (*Vicia*) and rob nectar from it (P. Schroeder personal communication). Its nesting biology is unknown, but it probably nests in abandoned rodent burrows as is typical for other members of the subgenus *Bombus*. Its flight season is from mid-May to the end of September (Thorp et al. 1983).

Franklin's Bumble Bee has the most limited geographic distribution of any bumble bee in North America and possibly the World (Williams 1998). It is known only from southern Oregon and northern California between the Coast and Sierra-Cascade Ranges. Stephen (1957) recorded it from the Umpqua and Rogue River Valleys of Oregon. Thorp et al. (1983) also recorded it from northern California and suggested its restriction to the Klamath Mountain region of southern Oregon and northern California. Its entire distribution, including recent range extensions (Thorp unpublished), can be covered by an oval of about 190 miles north to south and 70 miles east to west between 122° to 124° west longitude and 40° 58' to 43° 30' north latitude.

It is known from Douglas, Jackson, and Josephine counties in Oregon and Siskiyou and Trinity counties in California. Elevations of localities where it has been found range from 540 feet (162 m) in the north to above 7800 feet (2340 m) in the south of its historic range. There is a known site located on the south side on Mt. Ashland. Recent surveys by Dr. Thorpe have failed to detect any individuals at any historical sites except for one lone individual located at the Mt. Ashland site in 2006.

Threats include exotic diseases introduced via trafficking in commercial bumble bee queens and nests for greenhouse pollination of tomatoes (Thorp 2003, Thorp et al. 2003), habitat loss due to destruction, degradation, conversion; and pesticides and pollution.

**SISKIYOU HESPERIAN** (*Vespericola sierranus*)

The Siskiyou hesperian can be found in riparian and other perennially moist habitats, in deep leaf litter and under debris and rocks. It has been collected from lower portions of slopes, but not in areas subject to regular flooding. It may occur along running water, such as small-order streams, or around permanent ponds and springs. Vegetation at sites includes Rorippa and skunk cabbage.

**PRISTINE SPRINGSNAIL** (*Vespericola sierranus*)

Small, 2-3 mm height Elongate, pupilliform, white, translucent shell, Last whorl disjunct, reflected lip all around aperture. This genus has been recorded from California, Idaho, Oregon and Washington. This is a species of small springs and seeps and adjacent headwater streams. Currently only a single species known. This species is not known from the Rogue River Basin.

**CRATER LAKE TIGHTCOIL** (*Pristiloma arcticum crateris*)

Members of this subspecies are in the subfamily *Zonitinae*, subgenus *Pristiloma*. They are very minute, solitary snails, up to 2.75 mm in diameter as adults, and best viewed under a dissecting microscope. The shell is depressed-globular in shape, has no umbilicus (imperforate) and has 5 1/2 tightly coiled whorls. The periphery of the shell is symmetrically rounded, with no angular shoulder. The live shell is pink or buff in color, smooth and very glossy.

The subspecies *P. a. crateris* differs from *P. arcticum* species in several ways. The periphery or shoulder of *P.a. crateris* is more symmetrically rounded, it is pinker in color than the normal golden or tawny shell color, it slightly less tightly whorled (5 1/2 whorls in 2.75 mm diameter for PRARC vs. 5-1/2 - 6 whorls in 2 mm for PRAR) the lip is thickened and reflected where it meets the base and the aperture is crescent-shaped when viewed from below, and flatter on the base. Several similar species are found in the Pacific Northwest, of which *P. lansingi* is the most closely related.

*Pristiloma arcticum crateris* may be found sparsely distributed throughout the Oregon Cascades, at moderate to high elevations, over 610 meters (2000 feet). It has been found from Winema National Forest in southern Oregon to the Bull Run Watershed in northern Oregon.

This species may be found in perennially moist situations in mature conifer forests and meadows among rushes, mosses and other surface vegetation or under rocks and woody debris within 10 m. of open water in wetlands, springs, seeps and streams, generally in areas which remain under snow for long periods in the winter. Riparian habitats in the Eastern Oregon Cascades that are suitable for this species, limited to the extent of permanent surface moisture, are often much less than 10 m. from open water. Essential habitat components include un-compacted soil, litter, logs, and other woody debris in a perennially wet environment.

#### **PACIFIC WALKER (*Pomatiopsis californica*)**

The Pacific walker is a small semi-aquatic snail found in wet leaf litter and vegetation beside flowing or standing water in shaded and humid areas. There are two documented sites for this species in Oregon. One site is in the Lower Millicoma River sub-basin in northern Coos County. This site is approximately 6 miles from Coos Bay District BLM land, Umpqua Field Unit. The second site is near the Pacific Coast in Lane County, on the Waldport Ranger District of the Siuslaw National Forest land, in the Cape Creek sub-watershed of the Alsea River subbasin. The historic range of this species included all of the Pacific Coast, from southwestern Oregon to San Mateo County, CA. The range has also been described as being confined to within a half-mile of the coast (USDI Bureau of Land Management, 2008).

#### **ROBUST WALKER (*Pomatiopsis californica*)**

The robust walker is a small semi-aquatic snail found in high flow protection areas of perennial seeps, rivulets, mud banks and marsh seepages. Sites for this species have been documented in southern Curry and Jackson Counties, on federal land in the Chetco and Winchuck River basins in the Chetco Ranger District and in the Josephine Creek watershed of the Illinois River basin in the Illinois Valley Ranger District, of Siskiyou National Forest. The Chetco River sites are within 3 miles of Coos Bay District BLM land, Myrtlewood Field Unit (USDI Bureau of Land Management, 2008).

**CHACE SIDEBAND AND TRAVELING SIDEBAND (*Monadenia chaceana* and *Monadenia fidelis celeuthia*)** The chace sideband may be found within 30 m (98 ft.) of rocky areas, talus deposits and in associated riparian areas in the Klamath physiographic province and adjacent portions of the southwestern Oregon Cascades. Areas of herbaceous vegetation in these rocky landscapes adjacent to forested habitats are preferred (Duncan et al. 2003).

Two individual specimens of *M. chaceana* were located by a contractor conducting herptile surveys for Ashland Forest Resiliency in 2004. These individuals were positively identified by Nancy Duncan (Region 6 mollusk expert). Protocol surveys were conducted on approximately 1,500 acres of the Ashland Watershed Protection Project (AWPP) in 1999. No Survey and Manage mollusks were identified during that effort. The RRSNF contracted with Siskiyou Co-op Inc. to conduct protocol surveys within the AFR Analysis Area. Surveys were conducted in 2006 and 2007, and completed by November, 2007. A total of 8,731 acres were surveyed. Five *M. chaceana* and 19 *M. fidelis celeuthia* were collected and identified within the surveyed area.

**GREEN SIDEBAND** (*Monadenia fidelis beryllica*)

All known sites of this terrestrial snail currently occur in Curry County, Oregon. The type locality is in a patch of trees and brush near the mouth of the Pistol River, Curry Co., OR. Other areas with reported locations for this species include Port Orford, and “between the Sixes River and Winchuck River, mostly in sites near the Coast or west side of southern Oregon Coast Range. This is the dominant *Monadenia* on the west side of the Coast Range from Pistol River to the Winchuck River.

It does not appear in adjacent California where *Monadenia fidelis pronotis* and *Monadenia fidelis smithiana* replace this taxon. Specimens which may be *M. f. beryllica* have also been collected in the Roseburg District BLM, in the Middle Fork Coquille River watershed. (Duncan, teaching collection). Another taxonomic entity, *Monadenia fidelis baxteriana* has been described from the immediate vicinity of Sisters Rocks, north of Ophir, in Curry County, OR., but it has a dark brown base, and is smaller (<30 mm).

Habitat generally occurs in stands with deciduous trees (including alder) and brush in wet, relatively undisturbed forest, at low elevations; also in low coastal scrub” (<http://web.or.blm.gov/Mollusks/>). Habits include seasonal climbing of trees in riparian areas and shelter in deep forest floor litter. Site from Roseburg BLM was in a proposed thinning unit, in a mixed conifer/hardwood community with heavy accumulations of residual down wood; the oldest live Douglas fir trees were approximately 80 years of age. This site was not in a riparian community.

**SCALE LANX** (*Lanx klamathensis*)

Type locality is the south end of Upper Klamath Lake, Klamath County, OR. The species occurs at a few spring-influenced sites in the Upper Klamath Lake area including the Link River and localities in the Winema NF and Upper Klamath Lake National Wildlife Refuge. The species may also occur in large streams and rivers draining into the Klamath Basin in the High Cascades RD of the Rogue River NF, and in Medford and Klamath Falls BLM. The Tule Lake National Wildlife Refuge, CA had historic sites that may no longer be extant.

**HIGHCAP LANX** (*Lanx alta*)

The highcap lanx is a limpet like snail found in large rivers and major tributaries with stable cobble-boulder substrate and high water quality. Historical locations for highcap lanx include the counties Josephine, Jackson, and Curry along the Rogue River, including sites within the Siskiyou National Forest. However, sites on the Rogue River National Forest may be extirpated (Frest and Johannes 1995).

**OREGON SHOULDERBAND** (*Helminthoglypta hertleini*)

The shell of this species is thin and delicate, pale golden brown, with a very narrow band of a darker shade, bounded below by an equally narrow band of a lighter shade; whorls five, regularly increasing in size; surface marked with fairly coarse growth ridges, and very irregularly scattered papillae; nuclear whorl with faint growth lines and a finely roughened surface; aperture not expanded; peristome simple and scarcely reflected (except in umbilical region) and slightly thickened interiorly; umbilicus narrow, half covered by the reflected basal wall. Maximum diameter, 18.5 mm.; minimum diameter, 15.3 mm.; altitude, 12.5 mm.; diameter umbilicus, about 2 mm.

The range is Southwestern Oregon to Siskiyou, Shasta, and Tehama counties in California. The species is rare and known from a total of 16 sites. The Type Locality is along Route 66 east of Ashland, Oregon. It is known from the Klamath Province, including Jackson County, Oregon, on BLM Medford District, and Siskiyou County, California, with Shasta River sites on or adjacent to BLM land and near the eastern border of the Klamath National Forest. The species is expected to be found as far north as Douglas County, Oregon.

Rocky areas such as talus slopes, but also suspected of being found in areas with permanent ground cover or moisture, including rock fissures or woody debris. Oregon shoulderband may utilize rocky talus in open exposed slopes. Oregon shoulderbands were found in rocky areas associated with damp grassy areas, oak woodlands, and shrub lands, or in conifer forests closely associated with these habitat types. Shoulderband survey data analysis determined that they were not late-successional or old growth habitat dependent. Basalt talus, under rocks and woody debris in moist forests and shrubby riparian corridors.

Given that little information is available about the habitat needs of the species, the following statements can be applied: In general, land snails cannot tolerate extremely dry (xeric) conditions, have restricted ranges, and are slow to disperse. Consequently, they may be very vulnerable to management activities that increase temperature, decrease moisture, or decrease food supplies available in populated sites. Habitat alteration by either human or natural means (including fire, herbicide use, recreation development, quarry development, road construction and major maintenance), over-collecting, and disturbance during aestivation may constitute a major threat to this species.

**KLAMATH RIM PEBBLESNAIL** (*Fluminicola* sp.)

This is a genus of tiny aquatic snails in the order Prosobranchia, family Hydrobiidae. Since many of these taxa do not currently have published scientific names, it is recommended that references to the common name are more reliable than the use of any particular numbering system for the scientific name. The numbers listed above reflect the scientific name for the taxon used in the ISMS database and other Survey and Manage documents.

Range: Klamath – middle and upper Klamath river basin including upper Klamath lake and tributaries, Klamath Co., OR and Siskiyou Co., CA. known sites on Winema and Rogue River National Forests, upper Klamath lake national wildlife refuge and Medford BLM. Keene creek - middle Klamath drainage (jenny creek drainage), Jackson Co., OR site on Medford BLM. Lake of the Woods – SW side of upper Klamath lake drainage and lost river basin, Klamath Co., OR sites near the lake of the woods, Klamath BLM.

This species occurs in the Klamath River Valley, it is not expected for the Forest, no further discussion will occur for this species in this analysis.

**EVENING FIELD SLUG** (*Deroceras hesperium*)

One of the least-known slugs in the western United States, the evening fieldslug once had an extensive range in the West but is now distributed only in northwestern Oregon, the northern Olympic Peninsula, and the northeast coast of Vancouver Island. Called “a truly rare species” in the 2004 Survey and Manage species assessment, this slug is included in both the Bureau of Land Management and the Forest Service’s Special Status Species Program, but it has experienced drastic declines of 50 to 75 percent.

Scattered sites have been documented for this species in several provinces in Oregon, including both sides of the Oregon Cascades from Hood River to the Klamath River basin in Jackson County; and from the Elliot State Forest north in the northern Coast Range. The majority of currently documented sites occur on the eastern slopes of the Oregon Cascades. The type locality was in Oswego, OR, the paratype locality in Hood River. The range extends through western Washington and on to Vancouver Island, B.C. Low to mid elevations in the western Cascade Range to the Pacific Ocean and from northwestern Oregon through western Washington and onto Vancouver Island, B.C. No currently extant sites are known.

Habitat is largely unknown but, based on limited information, includes varied low vegetation, litter, and debris; rocks may also be used. The Evening Fieldslug is associated with perennially wet meadows in forested habitats; microsites include a variety of low vegetation, litter and debris; rocks may also be used as refugia. Little detail is known about exact habitat requirements for the species, due to the limited number of verified sites.

Within the range of the species, loss or degradation of wetland habitat leading to loss of populations at occupied sites is considered to be the major threat to the species. The trend in condition of the habitats at the sites where it has been found is uncertain. Activities that lower the water table, alter the available moisture, compact soils, reduce litter and/or vegetative cover, or impact potential food sources (i.e., spring development or diversions, livestock grazing, heavy equipment use, ORVs, and camping on occupied habitats) could be deleterious to the survival and productivity of this and similar species. Natural porous soils and litter provide cover necessary for protection against temperature and humidity extremes, as well as for hiding or escape from predators.

#### **WESTERN RIDGED MUSSEL (*Gonidea angulata*)**

The western ridged mussel occurs in all sizes of streams within mid to low elevation watersheds, inhabiting mud, sand, gravel, and cobble substrates. They can tolerate moderate amounts of sedimentation, but are usually absent from habitats with highly unstable or very soft substrates (<http://web.or.blm.gov/Mollusks/>). Western ridged mussels have been found in the Rogue, Umpqua and Willamette rivers of Oregon, however, it most abundant in the large tributaries of the Snake River and Columbia River in Washington, Idaho, and Oregon.

### **MIS SPECIES ACCOUNTS**

Five forest wildlife species and one group were selected as Management Indicator Species (MIS), as detailed in the 1990 Rogue River Land and Resource Management Plan (USDA Forest Service 1990). Indicator species were intended to serve as habitat surrogates used to suggest qualitatively the condition of the habitat they represent. These species include:

- ❖ Black-tailed deer
- ❖ Roosevelt elk
- ❖ American marten
- ❖ Northern spotted owl
- ❖ Pileated woodpecker and other woodpeckers

In addition to these species, the Siskiyou NF LRMP (USDA Forest Service 1989) identified the bald eagle and osprey as MIS.

MIS and habitats include bald eagle (habitat along major rivers), osprey (habitat along large rivers), spotted owl (old growth forest), pileated woodpecker and American marten (mature/interior forest), black-tailed deer and Roosevelt elk (early successional forest stages, and woodpeckers/cavity nesters (wildlife trees [snags])).

#### **Black-tailed Deer (*Odocoileus hemionus columbianus*)**

Black-tailed deer are year-round residents of the Forest and rely upon several different successional stages of vegetation to meet their life needs. Areas with heavy canopy closure are used during all seasons. In summer, areas of heavy canopy closure are used to facilitate thermal regulation during periods of high temperatures. During winter, heavy canopy closure moderates temperatures and intercepts snowfall during winter storms. The reduction of snow depth under heavy canopy reduces energetic expenditure during movements of deer and provides areas of browse that would normally be under the snow surface. Areas with little or no overstory canopy cover are important for deer as forage areas. Forest gaps and natural openings provide optimal conditions for shrubs and forbs to grow, which deer depend on for forage.

Quality deer ranges provide both forested conditions for thermal regulation and hiding/escape cover interspersed with open areas for optimal foraging conditions.

**Roosevelt Elk** (*Cervus elephus roosevelti*)

Elk typically prefer a grass and forb diet during spring and early summer then include more browse species after herbaceous plants become senescent. Elk requirements for thermal cover and forage areas are similar to black-tailed deer.

Deer and elk are considered MIS for early successional forest habitat stages. Some neo-tropical migratory bird species, as well as other vertebrate species (bear, quail, rodents, etc.) require habitat conditions similar to those of deer and elk. Providing for deer and elk habitat should therefore provide habitat and population viability for other vertebrates. Habitat elements for deer are present throughout the entire Forest. Current deer populations are below Oregon Department of Fish and Wildlife management objectives, however buck to doe ratios populations are increasing in the Applegate unit (ODFW 2008).

**American Marten** (*Martes americana*)

Hargis et al. (1999) stated that in North America, American martens are closely associated with mature conifer stands with complete canopy closure, and small (<100m), limited, and interspersed openings that are used as forage areas. However, during helicopter surveys for wolverine in Sky Lakes and Thielsen Wilderness areas, marten tracks are frequently seen at and near timberline and in areas of more open (<60%) canopy closure. In Oregon, martens are distributed in the portions of the Coast Range and throughout the Cascade Range. A single marten was detected near Rough and Ready Creek on the Illinois Valley Ranger District of the RR-SNF in 2001 (Slauson and Zielinski 2001). Martens have been documented on numerous occasions in areas above 4,000 ft. elevation during forest carnivore surveys on the High Cascades Ranger District of the RRSNF. Marten have been documented south of Highway 140 by USFS personnel and near Howard Prairie Lake during carnivore surveys conducted by the Medford District BLM (J. Stephens, pers. com.).

In the western United States in winter, most prey are captured beneath the snow surface, but squirrels may be caught in trees (Buskirk and Ruggiero 1994). Snags, downfall, and large woody material provide cover, denning sites, and access points to forage areas below the snow (subnivean habitat).

Diet of American marten is highly diverse. Zielinski and Duncan (2004) found that in the southern Sierra Nevada, diets of both marten and fisher were more diverse than previously reported for North America. Of the major taxonomic groups, mammals were most common followed by insects and plants (mostly fruits).

**Northern spotted owl** (*Strix occidentalis caurina*) is discussed as part of the Threatened species section of this Appendix.

**Woodpeckers/Cavity Nesting Birds:**

**Acorn woodpecker** (*Melanerpes formicivorus*). An associated and important habitat element is oak trees and snags.

**Black-backed woodpecker** (*Picoides arcticus*). This species is moderately associated with the major Mixed Conifer-Hardwood Forest habitat however this species occurs primarily in the Cascade Mountains.

**Downy woodpecker** (*Picoides pubescens*). This species is generally associated (feeds and breeds) with the Mixed forest habitat type, and occasionally present in the Grasslands type. There is not a strong association with a particular structural condition. It may feed and breed in the project area providing that deciduous trees are present for feeding, and decadent, deciduous trees are present for nesting. It may also nest in snags. Important habitat elements are hardwood trees, and snags. The species may feed and breed in project area providing that decadent trees are present. The species may nest in snags. Important habitat elements are decadent trees, and snags.

**Hairy woodpecker** (*Picoides villosus*). This species is generally associated (feeds and breeds) with the Mixed forest habitat type, and occasionally present in the Grasslands type. There is not a strong association with a particular structural condition.

**Lewis' woodpecker** (*Melanerpes lewis*). This species is closely associated with the oak habitat type though not strongly with any structural condition. Important habitat elements are hardwood trees, and snags.

**Northern flicker** (*Colaptes auratus*). This species is generally associated (feeds and breeds) with the Mixed forest and the Grasslands habitat types. High canopy closure is negatively associated with this species presence. Snags or decadent trees are essential habitat components for breeding and feeding. Important habitat elements are hardwood trees, and snags. This is a relatively common species across the forest.

**Pileated woodpecker** (*Dryocopus pileatus*). This species is generally associated (feeds and breeds) with the Mixed forest habitat type, and present in the Oak habitat type. This species feeds and breeds in a variety of structural conditions especially in a landscape mosaic of habitat types. Decadent wood and snags are essential habitat components. This species is present across the forest.

**Red-breasted sapsucker** (*Sphyrapicus ruber*). This species is generally associated with Mixed forest and the Oak habitat types. It is not strongly associated with any structural condition. For Oregon, the species is considered a fairly common permanent resident from western slope of the Cascades westward. Important habitat elements are hardwood trees, and snags.

**White-headed woodpecker** (*Picoides albolarvatus*). This species is generally associated (feeds and breeds) with the Mixed forest habitat type but require a ponderosa pine component. In the Siskiyou Mountains they are generally found above 5,000 feet in elevation. There is not a strong association with a particular structural condition. Important habitat elements are pine trees and snags.

**Williamson's sapsucker** (*Sphyrapicus thyroideus*). This species is moderately widespread in Oregon and typically found on the east side of the Cascade Mountains. Its habitat association is not with those of the proposed project. There is not a strong association with a particular structural condition.

**Bald Eagle** (*Haliaeetus leucocephalus*) is discussed as part of the Sensitive species section of this Appendix.

**Osprey** (*Pandion haliaetus*). This species is closely associated with open water (lakes, rivers, and streams). It breeds in major habitat types but only when adjoining open water. Osprey are regularly observed along the major rivers across the forest.

### **Surveys and Monitoring MIS on the RRSNF**

The Rogue River-Siskiyou National Forest uses a variety of methods to document MIS species, their population trends, and their habitats. These include field reconnaissance, in-house surveys, contract surveys, regional surveys, and surveys conducted by the Oregon Department of Fish and Wildlife and private entities.

**Northern spotted owl** (*Strix occidentalis caurina*) is discussed as part of the Threatened species section of this Appendix.

### American marten

On the Rogue River-Siskiyou National Forest, marten are only known to occur on the High Cascades, Wild Rivers, Gold Beach and Powers Ranger Districts. ODFW maintains records on Oregon furbearer harvest and catch/unit effort. These records include information on marten in the southern Oregon Cascades. Catch/unit effort and total kill is widely variable since 1990, with peaks in the late 1990's. We recognize no apparent trend (positive or negative) in population numbers based on this information (see Table 1).

Table 1. Annual County Harvest Summary from ODFW – Siskiyou NF & Rogue River NF

Forest	County	Total # of martens harvested (1969-present)	Range of years harvest was reported	Range of harvested marten/ year
Rogue River NF	Douglas	167	1971-1992	2-47 /year
	Jackson	47	1973-1994	1-12 /year
	Josephine	0	0	0
	Klamath	525	1969-1995	1-66 per year
	Subtotal	739		
Siskiyou NF	Coos	10	1969-1988	1-4 /year
	Curry	11	1969-1989	1-3 /year
	Josephine	0	0	0
	Subtotal	21		

The High Cascades R.D. conducted numerous presence/absence surveys for forest carnivores throughout the District during the 1990's and 2000's. This included approximately 150 baited camera stations and four years of helicopter tracking surveys in an attempt to locate wolverine. In addition, a 5 year fisher telemetry study was conducted by Keith Aubry of Pacific Northwest Research Station. Throughout these efforts, marten have been found to be prevalent at elevations  $\geq 4,000$  ft. These include numerous camera detections near Blue Rock on the eastern edge of the Rustler planning area and multiple track detections near the summit of Rustler peak during helicopter and ground surveys. Because martens are found at high-elevation habitats along the Cascade Crest, habitat for dispersal and population connectivity is maintained by the designated Wilderness system along the Cascade Crest and Crater Lake National Park.

On the Siskiyou National Forest, the Chetco & Gold Beach R.D.'s. conducted line trigger camera surveys at three locations (1992 & 1993), remote video camera surveys at 3 locations (1996), and snow track road transects on 218 miles (1994, 1997, 1998 & 1999) which detected martin at 4 locations. Powers R.D. conducted camera bait station surveys for marten and fisher at 53 locations between 1991 and 1998 which detected marten at 5 locations.

Thirty four survey sample units (track plate, camera and snow track) were conducted on the Siskiyou National Forest from 1989-1998 (Slauson et al, 2001); 6 of 35 sample units detected marten, but excluded detections by snow track survey. This resulted in a 17.1% detection rate.

The NRIS database contains 96 records for the Forest on marten occurrence ranging from 1963 to present. These records include visual observations, snow track surveys, scat identification and successful trapping efforts. The Wild Rivers R.D. has 18 records, the Gold Beach R.D. has 60 records, and Powers R.D. has 18 records.

Marten seem to prefer late-mature, old-growth and serpentine habitat types (Slauson 2004). The Siskiyou National Forest Plan (1989) estimated mature and old-growth habitat at 443,000 acres (41%) of the 1,092,000 acres on the Forest. Currently, there is an estimated 368,400 acres (34%), the greatest loss of habitat occurred during the Biscuit Fire of 2002.

## Black-tailed deer

Black-tailed deer are found throughout the entire Rogue River-Siskiyou National Forest. The Forest falls within portions of six wildlife management units, see Tables 2 and 3. ODFW maintains annual records on Oregon ungulate harvest as well as annual population survey data.

Table 2 - Management Benchmarks for Black-tailed deer in Oregon by Wildlife Management Unit or Sub-unit.

Forest	Wildlife Management Unit (Name)	Data				
		Post season buck ratio benchmark (bucks per 100 does)	3-year average buck ratio 2004-2006	Population benchmark	Spring population benchmark (deer per mile)	3-year average deer/mile 2004-2006
Siskiyou	Sixes					
Siskiyou	Powers	20	11	15,000	1.5	2.3
Siskiyou	Chetco	20	10	6,500	1.6	2
Siskiyou / Rogue River	Applegate	15	19	15,000	1.5	--
Rogue River	Dixon	20	29	12,000	5.7	3.0
Rogue River	Rogue	25	25	33,000	3.0	3.6

\*\* Two year average (2005-2006)

Table 3 - Oregon Department of Fish and Wildlife 2010 Big Game Statistics publication reported the following information for black-tailed deer.

Forest	Unit	Bucks Per 100 Does				Benchmark
		2008	2009	2010	Prior 3 year Average	
Siskiyou	Sixes	10	20	18	16	20
Siskiyou	Powers	6	10	12	9	20
Siskiyou	Chetco	24	30	25	27	15
Siskiyou / Rogue River	Applegate	33	23	31	29	20
Rogue River	Dixon	27	23	17	22	25
Rogue River	Rogue	47	28	33	39	15

Table 4 - 2010 Black-tailed Deer Population Trends

Forest	Unit	Deer Per Mile				Benchmark
		2008	2009	2010	3 year average	
Siskiyou	Sixes	2.8	2.2	3.8	2.9	1.5
Siskiyou	Powers	2	1.7	2	1.9	1.6
Siskiyou	Chetco	0.9	1.2	1.4	1.2	1.5
Siskiyou/ Rogue River	Applegate	4.8	6.5	3.6	5.0	5.7
Rogue River	Dixon	4.3	5.0	4.5	4.6	3.0
Rogue River	Rogue	10.2	12.1	10.4	10.9	11.5

In the Cascades, The majority of deer migrate out of the High Cascades R.D. to escape heavy snow cover and are found at lower elevation habitats during the winter months; deer are not as migratory in the Siskiyou Mountains. ODFW conducts surveys across the Forest for black-tailed deer including on the High Cascades R.D and on the Siskiyou Mountains R.D. The Central Point office of ODFW conducts spotlight surveys on the District during the spring/summer months, and camera detection stations along major migration routes in the fall. ODFW maintains herd composition ratios as well as population estimates for deer by Wildlife Management Units (WMU's). The Oregon Black-tailed Deer Management Plan identifies declines in the overall population across the State, though not necessarily in individual WMU's. The overall declines are suspected to be related to quality and quantity of habitat, higher incidences of disease, and higher rates of predation (ODFW 2008). ODFW's annual spring deer counts show no significant change in deer/mile counted since the early 1970's. Counts range from 4 to 15 deer/mile with peaks in the late seventies thru early nineties. From 1993 thru 2004 deer counts declined somewhat, but have shown a relatively steady increase thru 2009 (Oregon Department of Fish and Wildlife, unpublished data).

The Siskiyou Forest Plan (1989) estimated 47% of the Forest (505,000) would be managed for timber production and to provide a sustainable supply of forage. Thermal cover was estimated to be 57%, hiding 9% and forage 12% in 1987. Herd size was estimated at 28,300 and was expected to average 28,500 animals for 5 decades. The Northwest Forest Plan amended the Siskiyou Forest Plan in 1994 and designated 16% of the Forest as Matrix (managed for timber production). However, Matrix is estimated to have 52% unmapped riparian reserves which leaves an estimated 7% (78,713 acres) of the Forest to be managed for timber production & provide a sustainable supply of forage.

Biscuit Fire (2002) converted approximately 140,000 acres of formally dominated forest habitat to brush/sapling (pioneer) plant communities which provide forage for deer & elk. Meadow habitat on the Forest is estimated at 7,000 acres.

Current deer populations on the Siskiyou N.F. are below Oregon Department of Fish and Wildlife management objectives. Populations are stable within the Biscuit Fire (2002) perimeter. Outside the Biscuit Fire perimeter, populations are showing a downward trend due to loss of early seral habitat and other factors including disease, parasites and predation (personal communication Curtis Edwards, Wildlife Biologist, Oregon Department of Fish & Wildlife, January 2010).

## Roosevelt's elk

Elk are found throughout the Rogue River-Siskiyou National Forest, except within the Applegate Management Area.

On the Rogue side of the Forest, elk are found throughout the High Cascades R.D. Elk on the District migrate seasonally to lower elevations on the Forest and corporate timber lands during winter to avoid heavy snow pack during winter. However, they may still be found on portions of the Rustler planning area during some winters depending on severity. ODFW conducts helicopter surveys annually to count elk numbers and determine bull/cow and calf/cow ratios. These flights include areas over the Rogue River-Siskiyou National Forest. Flights are generally conducted during February and March. Counts of elk by ODFW are variable by year and are highly influenced by snow loads. During winters with heavy snow loads, elk are more concentrated and are more easily detected by helicopter. During winters with low snow loads, elk are more dispersed and they are more difficult to locate. Data from ODFW's elk census (Oregon Department of Fish and Wildlife, 2010b) shows annual fluctuations, but in general, show a steady increase in elk numbers throughout the 1980's. Elk numbers peaked in the early 1990's and remained relatively stable until the early 2000's when they show a slight decline.

Current elk populations on the Siskiyou N.F. are below Oregon Department of Fish and Wildlife management objectives. Populations are stable within the Biscuit Fire (2002) perimeter. Outside the Biscuit Fire perimeter, populations are showing a downward trend due to loss of early seral habitat and other factors including disease, parasites and predation (personal communication, Curtis Edwards, Wildlife Biologist, Oregon Department of Fish & Wildlife, January 2010).

The Forest falls within portions of six wildlife management units, see Table 5. ODFW maintains annual records on Oregon ungulate harvest as well as annual population survey data.

Table 5 - The 2010 ODFW Big Game Statistics for Roosevelt Elk reported the following:

Forest	Unit	Bulls Per 100 Cows				
		2008	2009	2010	Prior 3 year Average	Management Objective
Siskiyou	Sixes	11	12	17	13	15
Siskiyou	Powers	24	17	18	20	10
Siskiyou	Chetco	16	28	0	14	15
Siskiyou/ Rogue River	Applegate	--	--	--	--	--
Rogue River	Dixon	19	12	15	15	10
Rogue River	Rogue	21	16	16	18	10

Table 6 - Roosevelt Elk Population Trends – Calves per 100 Cows

Forest	Unit	Calves Per 100 Cows			
		2008	2009	2010	Prior 3 year Average
Siskiyou	Sixes	32	36	27	32
Siskiyou	Powers	27	40	29	32
Siskiyou	Chetco	37	40	--	25
Siskiyou/ Rogue River	Applegate	--	--	--	--
Rogue River	Dixon	37	24	32	31
Rogue River	Rogue	34	36	30	33

Table 7 - 2010 Roosevelt Elk Population Trends – Elk per Mile

Forest	Unit	Miles Traveled	Elk Observed	Elk Per Mile			Benchmark
				2008	2009	2010	
Siskiyou	Sixes	500	947	.39	1.6	1.9	1.0
Siskiyou	Powers	650	287	.45	0.4	0.4	1.2
Siskiyou	Chetco	0	242	--	--	--	1.5
Siskiyou/ Rogue River	Applegate	--	--	--	--	--	--
Rogue River	Dixon	--	112	1.26	1.7	--	2.5
Rogue River	Rogue	--	730	--	--	--	2.6

### Pileated Woodpecker

Pileated woodpeckers represent the composite needs of over 160 wildlife species which utilize mature forest (Siskiyou Forest Plan – FEIS, III-102 Rogue River NF LRMP 1990).

### Surveys on the Forest

According to the Breeding Bird Survey (<http://www.mbr-pwrc.usgs.gov/bbs/bbs.html>), approximately 57 percent of all cavity nesting birds observed encountered on more than 14 survey routes, including woodpeckers of all species, across the western US have a positive population trend, including the black-backed, pileated, and white-headed woodpeckers. 18 percent of this group has a significant negative trend, including some of the sapsuckers and the flicker. In Oregon State, the black-backed, sapsuckers spp., and downy woodpeckers all show a declining trend, while the pileated woodpeckers show a slight increasing trend. However due to small sample sizes (9<14 survey routes), low regional abundances, or imprecise data results, these trends are somewhat unclear (<http://www.mbr-pwrc.usgs.gov/bbs/credhm09.html>).

There are two long term Breeding Bird survey routes on the High Cascades RD that have been surveyed annually for the last fourteen years. The Whiskey Springs route bisects the Rustler planning area and extends both north and south of the project area for several miles, while the Prospect route is just west of the project area, extending from Butte Fall up to Prospect.

The Whiskey Springs route shows consistent observations of up to four species of woodpeckers, including pileated woodpecker (3.33/mile). Over the fourteen years of survey observation, this species trend has remained stable on this route.

The Prospect route, just west and slightly lower in elevation than the Whiskey Springs route, shows consistent observations of up to six species of woodpeckers, including pileated woodpecker (1.17/mile). The pileated woodpecker’s trend has been stable on this route.

Another long term survey route on the Forest is in the Applegate Valley. From 1992-2007, the Ruch BBS route shows the pileated woodpecker trends are stable or slightly increasing on that route.

On the Siskiyou side of the Forest, on five long term breeding bird survey routes, the pileated woodpecker is stable on two routes, in decline on two, and there is no data for the species on one route (<http://www.mbr-pwrc.usgs.gov/bbs/bbs.html>).

## Woodpeckers

Woodpeckers are found throughout the Rogue River-Siskiyou National Forest. The composite snag needs of woodpeckers are an indicator for more than seventy five species that use cavities for nesting or denning.

The Siskiyou National Forest LRMP (page IV-35) lists the following species as part of the “woodpecker group”: includes acorn, downy, hairy, pileated and white-headed woodpeckers, as well as northern flickers and red-breasted sapsuckers.

The Rogue River National Forest LRMP lists the following species as part of the “woodpecker group”: downy, hairy, and northern flicker.

According to the Breeding Bird Survey (<http://www.mbr-pwrc.usgs.gov/bbs/bbs.html>), approximately 57 percent of all cavity nesting birds observed encountered on more than 14 survey routes, including woodpeckers of all species, across the western US have a positive population trend, including the black-backed, pileated, and white-headed woodpeckers. 18 percent of this group has a significant negative trend, including some of the sapsuckers and the flicker. In Oregon State, the black-backed, sapsuckers spp., and downy woodpeckers all show a declining trend, while the pileated woodpeckers show a slight increasing trend. However due to small sample sizes (9<14 survey routes), low regional abundances, or imprecise data results, these trends are somewhat unclear (<http://www.mbr-pwrc.usgs.gov/bbs/credhm09.html>).

There are two long term Breeding Bird survey routes on the High Cascades RD that have been surveyed annually for the last fourteen years. The Whiskey Springs route bisects the Rustler planning area and extends both north and south of the project area for several miles, while the Prospect route is just west of the project area, extending from Butte Fall up to Prospect.

The Whiskey Springs route shows consistent observations of up to four species of woodpeckers, including sapsuckers (2.67/mile), Hairy woodpeckers (2.67/mile), and flicker (5.25/mile). Over the fourteen years of survey observation, all four species have remained stable. White-headed woodpecker and black-backed woodpeckers were not detected at anytime on this route.

The Prospect route, just west and slightly lower in elevation than the Whiskey Springs route, shows consistent observations of up to six species of woodpeckers, including sapsuckers (0.92/mile), acorn woodpecker (0.333/mile), downy woodpecker (0.75/mile) Hairy woodpeckers (0.58/mile), and flicker (7.50/mile). White-headed woodpecker and black-backed woodpeckers were not detected at anytime on this route. Four species show a slight negative trend (sapsucker, downy, hairy, and acorn), one species shows a stable trend (pileated) and the flicker is on an increasing trend.

Another long term survey route on the Forest is in the Applegate Valley. From 1992-2007, the Ruch BBS route shows that hairy woodpecker, and flicker trends on this route seem to be stable while downy woodpeckers were only seen twice thus no trend is available for this species.

On the Siskiyou side of the Forest, on five long term breeding bird survey routes, the hairy woodpecker is in decline on three routes and there is no data on the species on two routes.

Of five long term breeding bird survey routes, the downy woodpecker is in decline on two routes and there is no data on the species on two routes.

Of five long term breeding bird survey routes, the flicker is in decline on one route, stable on one route, and there is no data on the species on three routes.

Of five long term breeding bird survey routes, sapsuckers are stable or increasing on two routes, and there is no data on the species on three routes.

The Biscuit Fire burned 499,965 acres on the Forest in 2001. The Siskiyou portion of the Rogue River-Siskiyou National Forest accounts for 467,702 acres impacted by the fire. Forty-three percent of the total Siskiyou National Forest was burned by the Biscuit Fire. The Biscuit Fire was estimated to have created between 12 - 39 million snags (Biscuit Fire Recovery, FEIS Volume II-Appendix G-11).

Table 8 - Amount of Areas Dominated By Dead Wood & Estimated Range of Total Numbers of Snags

Size of Snags	Acres with Dead Over-story	% of Biscuit Fire Area (472,200 acres) with Dead Over-story	Total Snags: Low Range	Total Snags: High Range
9-21" dbh (about 65% of trees are hardwoods)	77,500	16%	11,022,000	37,203,000
21-32" dbh (essentially all trees are conifers)	67,000	14%	986,000	1,897,000
>32" dbh (essentially all trees are conifers)	23,400	5%	187,000	374,000
>9" dbh	168,900	35%	12,195,000	39,475,000

The Siskiyou National Forest contained an estimated 13% managed stands in 1989 and currently, there is an estimated 16% managed stands. Currently, 84% of the National Forest is in a natural stand condition.

Woodpecker populations are expected to increase dramatically for 10-20 years as a result of the Biscuit Fire (Biscuit Fire Recovery, FEIS Volume II-Appendix E-34).

## **Eagle and Osprey**

Eagle and osprey are MIS species only on the Siskiyou side of the Forest.

The Siskiyou National Forest Plan estimated 58,000 of prime bald eagle and osprey habitat (FEIS III-101-2) of which 54,000 was safeguarded (FEIS II-195). Bald Eagle Recovery Plan 1986, pg 28, identified habitat as forests with large trees within 1 mile of a permanent body of water that possesses a good supply of fish and/or waterfowl.

Bald Eagle and Osprey primary habitat is within 1 mile of the: Rogue River; Illinois River below Eight Dollar Mountain; and Chetco River below the Wilderness boundary. (Personnel communication with Lee Webb, retired Forest Wildlife Biologist).

The known bald eagle nest sites on the Siskiyou portion of the RRSNF have been monitored annually since 1982. There were two known nest sites on the lower Rogue River in 1989 when the Siskiyou Forest Plan was completed. One within the Wild Rogue Wilderness and another located on private land 1.5 miles west of the Forest boundary. Currently there are three known nest sites on the lower Rogue River within the Forest as well as the one nest site 1.5 miles west of the Forest boundary. Productivity of these four nest sites average 1.03 young per year which is equal to the 5 year average for the state of Oregon.

A minimum of 22 active Osprey nest sites were located within the Siskiyou portion of the RRSNF in 1988. Most nests occurred along the Rogue River, with a few located on the Illinois, Coquille and Chetco Rivers. Ospreys were monitored annually from 1992 to 2001 on the lower Rogue River (Blossom Bar to the mouth). Active territories increased from 33 to 54 during this time period. Chicks produced per territory, where data was complete, ranged from 1.3 to 2.3 chicks per year.

Currently, there is an estimated 40,000 acres of prime Bald eagle and osprey habitat. Ninety eight percent of which occurs within lands with no programmed timber harvest (i.e. "protected suitable habitat") for nesting eagles and osprey. The majority of the loss in habitat can be attributed to the Biscuit Fire of 2002.

## **NEO-TROPICAL MIGRATORY BIRDS/LANDBIRDS**

In 1918 the Migratory Bird Treaty Act (MBTA) was passed to enforce a treaty between the United States, Mexico, and Canada. This law addressed the issue of poaching migratory birds - Under the M33TA, except as permitted by regulation, it is unlawful at anytime, by any means or in any manner, to pursue, export, import, transport, or carry any migratory bird. It is the position of the Federal Government that the prohibitions of the MBTA do not apply to land management activities of Federal agencies or their employees acting in their official capacities.

In September, 2000, the USDA Forest Service Landbird Strategic Plan was released. This plan set forth goals and actions to assist meeting the Forest Service commitment to provide habitat for sustainable resident and migrant landbird populations and monitor their populations through time. An Executive Order (EO) 13186 was signed in 2001. Provisions within this document directed agencies to integrate bird conservation principles, measures, and practices into agency planning process, restore and enhance habitat of migratory birds as practicable, and ensure that analysis evaluates the effects of actions on migratory birds, especially species of concern.

Analysis is based on neo-tropical migratory birds/landbird focal species identified by Partners in Flight (PIF): Conservation Strategy for Landbirds in Coniferous Forest of Western Oregon and Washington. As per the Partners In Flight Bird Conservation Plan, ... if one provides all of the habitats to some degree over some landscape, then you will probably be taking care of most if not all of the landbirds in that habitat. The conservation emphasis is on ecosystems, habitats, and habitat conditions, not species.” Priority bird species for varying habitats within the fifth-field watersheds are summarized in Table 2.

Bird conservation objectives are tied to focal species that represent habitat attributes and/or ecological functions of various forest age classes. For example, Vaux’s Swifts use large snags in old-growth systems, olive-sided flycatchers use residual canopy trees in early seral stages, and hermit warblers use the closed canopy in young to mature-aged forests. These habitats and their attributes, in certain quantities and combinations, should be maintained on landscapes in a shifting mosaic of conditions. Portions of the project area provide for nesting, dispersal, foraging, and cover for variety of bird species.

**Table C-1: Partners in Flight Focal Migrant Bird Species and Habitat**

Habitat	Condition	Habitat Attribute	Bird Species
Coniferous forest	Old-growth / Mature	Large snags	Vaux’s swift, pileated woodpecker
Coniferous forest	Old-growth / Mature	Large trees; conifer cones; mid-story tree layers	Brown creeper; red crossbill; varied thrush
Coniferous forest	Mature / Young	Varied canopy closure; deciduous canopy & understory; complex forest floor	Hermit warbler; Hammond’s flycatcher; Pacific-slope flycatcher; Wilson’s warbler; winter wren
Coniferous forest	Young / Pole	Deciduous canopy	Black-throated gray warbler
Coniferous forest	Pole	Deciduous subcanopy / understory	Hutton’s vireo
Coniferous forest	Early-seral	Residual canopy trees, snags, deciduous vegetation; nectar-producing plants	Olive-sided flycatcher; western bluebird; orange-crowned warbler; rufous hummingbird
Coniferous forest	Unique	Mineral springs	Band-tailed pigeon
Oak woodlands (including non-forested prairie)			California quail, western screech-owl, Nutall’s woodpecker, oak titmouse, wrentit, California thrasher, black-chinned sparrow

The Klamath Bird Observatory (KBO) used standardized bird and vegetation monitoring methods (Ralph et al. 1993) to survey birds in the Ashland Watershed. To measure bird abundance and distribution during the breeding season (May-June) point counts were conducted at 136 stations within the Ashland Watershed between 2005-2007 (Stephens and Alexander 2005, Stephens and Alexander 2006, Stephens and Alexander 2008). Vegetation composition and structure were measured at each station. To measure abundance and distribution during the fall dispersal and migration season (September and October) KBO conducted 20-minute area searches at 70 stations in 2007 (Stephens and Alexander 2008).

In 2007 KBO also began monitoring population demographics using constant effort mist netting techniques from May through October at an ecological monitoring station in the analysis area (Frey and Alexander 2008).

Partners in Flight focal species for Oregon coniferous forest and species of continental importance were detected in the Ashland Watershed during Klamath Bird Observatory's monitoring efforts from 2005 through 2007 (Table 3). KBO has also predicted the response of these species to the proposed activities. The response to fuels reduction over the near and mid-term is predicted based on published literature (Seavy 2006, Rich et al. 2004, Marshall et al. 2003, Alexander 1999, Altman 1999) and KBO personnel's expert opinion.

## **OTHER RARE OR UNCOMMON SPECIES**

**Flammulated owl** (*Otus flammeolus*). This species is closely associated with the Mixed forest habitat type but it requires ponderosa pine in its habitat. This species is closely associated with multi-story, moderate-closed canopy closure structural conditions. Trees with cavities are an important habitat element for this species.

**Great gray owl** (*Strix nebulosa*). The great gray owl in North America is found from Alaska south to the Sierra Nevadas in California, and east to Ontario and Maine. They are known to occur within the range of the northern spotted owl. Winter range is similar to the breeding range except for a species tendency to wander irregularly south in winter (Bull and Duncan 1993).

In the Siskiyou Mountains of southern Oregon, great gray owls nest most frequently in late successional stands dominated by Douglas-fir located near forest edges (Fetz et al., 2004 in survey protocol), and predominately on north aspects. Birds tend to select nests near meadows or other openings that have sufficient prey, and will nest in a variety of habitat types as long as the required habitat characteristics exist: large diameter nest trees; forest for roosting cover, and proximity to foraging areas (survey protocol 2004). Voles and pocket gophers comprise the majority of prey items, along with squirrels.

**Pygmy nuthatch** (*Sitta pygmaea*). This species is associated with forest habitat types and is considered to require ponderosa pine as a habitat component.

**Oregon Red Tree Vole** (*Arborimus longicaudus*). The Oregon red tree vole is a nocturnal, arboreal mammal specialized in feeding on needles of Douglas-fir and other coniferous trees (Maser 1998). The species is endemic to western Oregon (Verts 1998) primarily in coniferous forests of western Oregon (Csuti et al. 1997, Maser 1998). Red tree voles are most commonly found in Douglas-fir but may also be found inhabiting Sitka spruce and western hemlock in coastal areas.

Red tree voles are usually associated with old-growth forests; however, they may occur in younger stands and may not be dependent on old growth for survival (Corn et al. 1988, Aubry et al. 1991, Corn and Bury 1991, Gilbert and Allwine 1991). Nests are constructed of twigs and discarded resin ducts in the canopy of larger trees (Csuti et al. 1997, Maser 1998). Larger trees, at least 25 to 30 years old, are selected because they can provide the structural support for nests as well as adequate protection from inclement weather. In southwestern Oregon, the largest available trees are selected for nesting, even in old growth (Carey 1991). Abandoned nests of birds and other small mammals are also used (Maser 1998). The home range of the red tree vole is one or more trees (Brown 1985) and they can spend their entire lives in the forest canopy (Carey 1991).

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### **Personal Communications**

Oredson, Vince. 2005. Personal Communication Wildlife Biologist, Oregon Dept. of Fish and Wildlife.

Edwards, Curtis. 2010. Personal Communication Wildlife Biologist, Oregon Dept. of Fish and Wildlife.

Stephens, Jeff. 2005. Personal Communication Wildlife Biologist, Medford District Bureau of Land Management.



# United States Department of the Interior



## FISH AND WILDLIFE SERVICE

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Reply To: 8330.I0004(10)  
File Name: RSF Travel Management LOC  
Tracking Number: 09-1875  
Tails #: 13420-2010-1-0004

November 5, 2009

Scott Conroy  
Forest Supervisor  
Rogue River – Siskiyou National Forest  
3040 Biddle Road  
Medford, Oregon 97504

Re: Informal Consultation on Travel Management Plan proposed by the Rogue River–  
Siskiyou National Forest.

Dear Mr. Conroy:

This responds to your September 21, 2009 request for the U.S. Fish and Wildlife Service's (Service) written concurrence for travel management activities proposed by the Rogue River-Siskiyou National Forest (Forest), which may affect, but are not likely to adversely affect the threatened northern spotted owl (*Strix occidentalis caurina*) (spotted owl), threatened marbled murrelet (*Brachyramphus marmoratus*) (murrelet), and designated critical habitat for the spotted owl and the murrelet; and which may affect, but are not likely to adversely affect Gentner's fritillary (*Fritillaria gentneri*), McDonald's rockcress (*Arabis macdonaldiana*) or Cook's lomatium (*Lomatium cookii*). Those activities and the basis for your determination are discussed in your September 21, 2009, Biological Assessment (Assessment) (USDA FS 2009). We received your request for the Service's concurrence regarding these findings on September 24, 2009. This response was prepared in accordance with the implementing regulations for section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1536 *et seq.*) (Act), as amended; and is based on information provided in the Assessment, meetings, e-mail and phone discussions between Service and Forest staff.

### INTRODUCTION

As described in the Assessment, the Forest plans to institute a forest-wide access and travel management program. Currently, the all roads which occur on federal lands managed by the Forest (including all roads, off-road areas and trails), are considered open for motorized use unless specifically identified as closed by Forest order. The proposed Travel Management Plan would reverse this situation. Under the new plan, any areas across the Forest not specifically

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identified as open to motorized use would be considered closed to all motorized traffic and any motorized use would be prohibited.

### **DESCRIPTION OF THE ACTION AREA**

The action area has been defined as all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action (50 CFR 402). In this case, the action area includes all treatment units as well as all adjacent areas subject to increased ambient noise levels caused by activities associated with the proposed action.

The proposed projects (actions) are located mostly within the Oregon Klamath and Oregon Western Cascades Physiographic Provinces and to a lesser extent, the California Klamath Province. As described in the Assessment, only those federal lands managed by the Forest were analyzed in association with the proposed action. Forest managed lands occur 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 all lands within the Rogue River Basin. 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. 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.

### **DESCRIPTION OF THE PROPOSED ACTION**

The proposed action is described in its entirety in the Assessment (USDA FS 2009), which is herein incorporated by reference. The proposed action includes activities the Forest plans to implement under the Forest Land and Resource Management Plans (LRMP) (USDA FS 1988 and USDA FS 1990), as amended by the Access and Travel Management Record of Decision. As described in the Assessment, the Forest practices adaptive management as described in the Northwest Forest Plan (NWFP) (USDA FS/USDI BLM 1994), which allows minor project variations to meet site-specific conditions or landscape objectives. Therefore, there may be minor deviations in the description of the proposed action over the life span of this proposed action. The Forest will consider potential deviations as being consistent with the analysis provided in the Assessment as long as the following conditions are met:

- Activities comply with the NWFP.
- Proposed action complies with the LRMP (USDA FS 1989 and USDA FS 1990) to which it is tiered.
- Impacts and extent of the proposed action are within parameters of described activities in the Assessment.
- Minor deviations are reviewed by the Level 1 team to ensure impacts to listed species remain the same or less than those described within the Assessment.
- Minimization measures proposed for the proposed action are consistent with the intent and impacts of actions described in this the Assessment.
- Any proposed action impacts are reported to the Service in annual monitoring reports.

If the proposed action cannot be revised to comply with the analysis in the Assessment, or if the Level I team cannot reach consensus that the proposed action deviation meets the intent, extent and impacts addressed in the Assessment and response document from the Service, the Forest will initiate additional consultation to comply with the Act.

As detailed in the Assessment the proposed action includes the following activities.

- Approximately 53 miles of trails that are currently open to motorized vehicles would be closed.
- Approximately 10 miles of roads currently closed to all motorized traffic would be converted to motorized trails.
- Off-road vehicles use will be prohibited on 24 miles of roads where mixed use by off-road and highway vehicles currently occurs.
- Mixed use would be allowed on 0.1 mile of road currently open to highway vehicles.
- Up to 1.2 miles of new motorized trail would be constructed.
- The Forest Management Plan would be amended to allow motorized use on an existing trail.

It is our understanding that the Forest's proposed decisions under the new travel management plan to specifically identify areas across the Forest that are already open to motorized use were not analyzed in the Assessment. The Service recommends that the Forest evaluate those decisions under the new plan to determine if consultation is required under section 7 of the Act to address the effects of motorized use on listed species and critical habitat; unless such use has already been the subject of a completed consultation and those effects are part of the environmental baseline.

### **Project Design Criteria**

Project Design Criteria (PDC) are conservation measures developed to reduce impacts to listed species. Conservation measures may include implementation of seasonal restrictions that reduce impacts during critical breeding seasons, retention of known nest trees and/or restricting activities within a certain distance of know sites to reduce impacts of disturbance. Mandatory PDC will be applied to all activities associated with this proposed action. Recommended PDC will be incorporated during project implementation when practical. Detailed descriptions of the PDC are provided in Appendix A.

## **EFFECTS OF THE ACTION**

### **Spotted Owl**

The Forest analyzed potential affects to spotted owl associated with the implementation of the proposed action based upon the impacts to suitable spotted owl NRF and dispersal habitats as well as potential disturbance to spotted owls. The interagency Methodology for the Estimation of Effects to Spotted Owls was utilized to assess potential impacts at the provincial home range, core area, and nest site scales (USDI/USDA 2008).

### Effects to Spotted Owl NRF Habitat

As described in the Assessment, construction of 1.2 miles of trail in the Applegate watershed will result in the treatment and maintenance of up to 0.5 acres of spotted owl NRF habitat. The proposed trail would be approximately 36 inches wide and only undergrowth and small trees (less than eight inches) would be removed. The Forest has determined the treating and maintaining of up to 0.5 acres of spotted owl NRF habitat is insignificant and *may affect, is not likely to adversely affect* the spotted owl because:

- Trees that would constitute potential spotted owl nest trees would not be felled.
- This proposed trail occurs within the home range of one spotted owl site but is not within the nest patch or core area of this site.
- The treatment area equals less than one percent of the 126,383 acres of spotted owl NRF habitat within the Applegate watershed (Table 1).

**Table 1: Effects to Spotted Owl NRF Habitat.**

Section Seven Watershed	Spotted Owl NRF Habitat Baseline	Acres of Spotted Owl NRF Habitat Affected	Percent Spotted Owl NRF Habitat Treated and Maintained
Applegate	126,383	0.5	< 1

For the stated reasons, the Service concurs with the Forest's determination the treating and maintaining of up to 0.5 acres of spotted owl NRF habitat *may affect, is not likely to adversely affect* the spotted owl.

### Effects to Spotted Owl Recovery

The spotted owl recovery plan (USDI FWS 2008) consists of 32 recovery actions. Recovery Action 32 recommends actions that "maintain substantially all of the older and more structurally complex multi-layered conifer forests on all federal lands outside of managed owl conservation areas. At the time the Forest completed the Assessment, a common understanding of "older, structurally complex forest" was not available. The Forest and the Service are currently working on developing this understanding. In the interim, the Forest is currently using a process by which "older, structurally complex forest" stands on the Forest can be identified and maintained per the guidance in recovery action 32. As described in the Assessment, this process involves a first tier of geographic information system mapping using the Forest's remote sensed spotted owl habitat layers to identify potential spotted owl NRF habitat on the Forest. If any part of a planned activity proposes to impact spotted owl NRF habitat which may meet the definition of "older, structurally complex forest", forest personnel visit those stands to determine whether or not they meet the Forest's definition of high quality habitat. The proposed trail construction is not within high quality habitat as determined by the Forest biologist.

### Effects to Spotted Owls Due to Disturbance

According to the Assessment, the proposed action has the potential to disturb spotted owls which may be utilizing up to 32 acres of un-surveyed spotted owl NRF habitat because the action

occurs within the disturbance distances (Appendix A). None of these acres are located within the home ranges of any known or computer produced spotted owl sites (generated based upon the ITS methodology, USDI/USDA 2008). In addition, Forest biologists have determined these 32 acres lack enough spotted owl NRF habitat within 0.5 miles, making it unlikely that undetected spotted owls would be nesting within the disturbance distances of these acres. The Forest has determined the potential disturbance of spotted owls associated with 32 acres of spotted owl NRF habitat *may affect, is not likely to adversely affect* the spotted owl due to disturbance because:

- The Forest will implement mandatory PDC that restrict activities during the critical breeding season (Appendix A), or will conduct protocol surveys to ensure spotted owls are not breeding in the area.

In addition, the proposed action is expected to result in an overall reduction of potential disturbance to spotted owls associated with approximately 479 acres of spotted owl NRF habitat by closing up to 53 miles of currently open roads and trails. Disturbance will be reduced within the core areas or nest patches of seven spotted owl known sites on the Gold Beach and Wild Rivers Ranger Districts. A reduction of disturbance resulting from the closure of 34 miles of motorized roads and trails could have a beneficial effect to small mammal/prey, which in turn could also benefit foraging spotted owls. The Forest has determined the overall reduction of disturbance due to the implementation of the proposed action will be beneficial and *may affect, is not likely to adversely affect* the spotted owl.

For the stated reasons, the Service concurs with the Forest's determination that potential disturbance to 32 acres of spotted owl NRF habitat, as well as the reduction of disturbance to approximately 479 acres of spotted owl NRF habitat *may affect, is not likely to adversely affect* the spotted owl.

### **Marbled Murrelets**

According to the Assessment, the proposed action will not modify any suitable habitat for the murrelet. Therefore, according to the Assessment, the Forest anticipates there are no effects to murrelet suitable habitat from the proposed action.

### **Effects to Murrelets Due to Disturbance**

Little detailed information is available concerning the vulnerability of murrelets to disturbance effects. Research on a variety of other bird species suggests such effects are possible (Henson and Grant 1991; Rodgers and Smith 1995). Studies have shown disturbance can affect productivity. Nest abandonment can cause egg and hatchling mortality due to exposure and predation. Disturbance may cause longer periods of incubation, premature fledgling, or nest evacuation; resulting in depressed feeding rates of adults and offspring that could cause reduced body mass or slower growth of nestlings; and cause avoidance of otherwise suitable habitat. In addition, murrelets may be sensitive to disturbance due to their secretive nature and their perceived vulnerability to predation.

Human created noise associated with the proposed actions has the potential to disturb nesting murrelets and negatively affect productivity. Due to the significant lack of disturbance-related information on this species, the Forest assumes any amount of potential disturbance has the potential to result in negative impacts. Therefore, the Forest conservatively considers the project areas associated with the proposed action as occupied unless protocol surveys indicate non-occupancy.

The proposed action includes the conversion of one road which occurs within the Northwest Coast late successional reserve (LSR) RO 256 (USDA FS/USDI BLM 1994), as well as within murrelet critical habitat unit (CHU) OR-07-b. According to the Assessment, implementation of the proposed action has the potential to cause noise disturbance to no more than 72 acres of un-surveyed suitable murrelet habitat within the recommended disturbance distances (see PDC Appendix A). An additional road, proposed for conversion to motorized trails, is located in murrelet survey zone B where murrelets have not been detected during surveys over the last decade. The Forest has determined it is unlikely murrelets use nine acres of suitable murrelet habitat adjacent to this trail and therefore, are not planning to apply seasonal restriction to use of this converted road. This trail does not occur within any LSR, or critical, or occupied habitat for murrelets.

The Forest has determined implementation of the proposed action *may effect, is not likely to adversely affect* the murrelet due to disturbance because:

- Proposed activities associated with the conversion of one level one road which occurs in LSR RO 256 would be implemented outside of the critical breeding season for murrelets (April 1 through August 5). In addition, a daily timing restriction will minimize the potential that adult murrelets will be disturbed when visiting the nest to feed offspring.
- Based on a decade of negative surveys results for murrelets in survey zone B, the Forest believes it is unlikely murrelets occupy nine acres of suitable habitat which occur adjacent to an existing road proposed for conversion to a motorized trail.

For the stated reasons, the Service concurs with the Forest's determination that implementation of the proposed action *may affect, is not likely to adversely affect* the murrelet due to disturbance.

## Effects to Listed Plants

### McDonald's Rockcress

McDonald's rockcress is known to occur in serpentine areas of southern Curry County, Oregon as well as Del Norte County, California. Within the action area, McDonald's rockcress occurs immediately adjacent to an open road, on a rock outcrop on the road cut slope at a corner along Forest Road 4402. Other individuals are above and below the road, outside of the road prism. According to the Assessment, a small population of a rockcress that appears to be intermediate between *Arabis macdonaldiana* and *Arabis aculeolata* occurs adjacent to a closed and blocked-off (level 1) old road in the East Fork Illinois River watershed on the Del Norte County portion of the Wild Rivers Ranger District. The proposed action does not change the status of this road. Off highway vehicle use is currently prohibited and will remain prohibited. All other known McDonald's rockcress sites, known to occur in the action area, do not occur near roads or trails.

According to the Assessment, the proposed action does not include changes to current use patterns within the known range of McDonald's rockcress. There are some roads in serpentine areas of Wild Rivers Ranger District proposed for closure that might be within a potential range of McDonald's rockcress. The closures are expected to have no effect on McDonald's rockcress because it is assumed to not be present; however, if it were present, it is possible that a beneficial effect would result from the closure.

Based on the information provided above, the Forest has determined implementation of the proposed action *may affect, is not likely to adversely affect* McDonald's rockcress in the action area. In addition, the Forest anticipates beneficial effects to McDonald's rockcress may occur as road closures in the action area have the potential to reduce negative impacts to the species.

For the above stated reasons, the Service concurs implementation of the proposed action *may affect, is not likely to adversely affect* McDonald's rockcress.

#### **Gentner's Fritillary**

According to the Assessment, there are no specific roads or trails proposed for a change of any kind under the proposed action that are within the known or suspected range of Gentner's fritillary. The Forest has made a determination that the proposed action will have a net beneficial effect to Gentner's fritillary due to a prohibition of motorized vehicle use within suitable habitat for Gentner's fritillary. For this reason, the Forest Service has determined that the proposed action *may affect, is not likely to adversely affect* Gentner's fritillary.

For the above stated reasons, the Service concurs implementation of the proposed action *may affect, is not likely to adversely affect* Gentner's fritillary.

#### **Cook's Lomatium**

According to the Assessment, there are no specific roads or trails proposed for a change of any kind under the proposed action that are within the known or suspected range of Cook's lomatium. The Forest has made a determination that the proposed action will have a net beneficial effect to Cook's lomatium due to a prohibition of motorized vehicle use within suitable habitat for Cook's lomatium. For this reason, the Forest Service has determined that the proposed action *may affect, is not likely to adversely affect* Cook's lomatium.

For the above stated reasons, the Service concurs implementation of the proposed action *may affect, is not likely to adversely affect* Cook's lomatium.

#### **Concurrence**

The Service concurs that the above proposed action, as detailed in the Assessment and in the Description of the Proposed Action and Effects section of this letter, *may affect, is not likely to adversely affect* the spotted owl, murrelet, Gentner's fritillary, McDonald's rockcress or Cook's lomatium. This concurrence is based on the fact that all projects comply with the Forest's Land and Resource Management Plans (USDA FS 1989, USDA FS 1990), and will incorporate the mandatory PDC described in Appendix A.

Incidental take is not expected and is not authorized for this consultation. Consultation on this action should be reinitiated if 1) new information reveals effects of the action that may affect listed species or designated critical habitat in a manner or to an extent not considered in this consultation; 2) the action is subsequently modified in a manner that causes an effect to a listed species or designated critical habitat that was not considered in this consultation; 3) and/or a new species or critical habitat is designated that may be affected by this project.

Because the proposed action is not likely to adversely affect Gentner's fritillary, McDonald's rockcress, Cook's lomatium, spotted owls, murrelets; or their designated critical habitats within the action area, it is not necessary to consider whether the action will jeopardize the species or appreciably diminish the value of their designated critical habitats to the recovery of the species.

This response is prepared in accordance with section 7(a)(2) and 7(c) of the Act, and concludes informal consultation on the project pursuant to 50 CFR 402. If new information or project modification reveals that the proposed actions may affect listed species in a manner or to the extent not considered in your Assessment, or if a new species is listed or critical habitat is designated that may be affected by the actions, work should be halted and consultation reinitiated immediately.

If any questions arise concerning the contents of this concurrence letter, please contact Cynthia Donegan at 541-957-3469.

Sincerely,



Jim Thraikill  
Field Supervisor

cc: Office Files, FWS-OFWO, Portland, OR (e)  
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## Appendix A: Project Design Criteria

Project design criteria (PDC) are measures applied to project activities designed to minimize potential detrimental effects to proposed or listed species. PDC 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. Use of project design criteria may result in a determination of no effect for a project which would have otherwise been not likely to adversely affect. In other cases, project design criteria have resulted in a determination of not likely to adversely affect for a project which might have otherwise been determined to be likely to adversely affect. The goal of project design criteria is to reduce adverse effects to listed or proposed threatened or endangered species.

Physical impacts to habitat and disturbances to individual species will be reduced or avoided with PDC. Listed below are species-specific project design criteria designed for the programmatic impacts discussed in the *Effects of the Action* section of this document. For each species, project design criteria have been separated into those that reduce or avoid habitat removal and those that reduce or avoid disturbance and/or disruption. Under the proposed action, the unit wildlife biologist may increase or decrease the disturbance distance-related project design criteria, based on site-specific conditions, subject to Level 1 concurrence.

The Forest retains discretion to halt and modify all projects, anywhere in the process, should new information regarding proposed and listed threatened or endangered species arise. Minimization of impacts would then, at the least, include an appropriate seasonal restriction; and could include clumping of retention trees around the nest trees, establishment of buffers, dropping the unit(s)/portions, or dropping the entire project.

The seasonal or daily restrictions listed below may be waived at the discretion of the decision maker if necessary to protect public safety (as in the case of emergency road repairs or hazard tree removal). Emergency consultation with the Service will then be initiated in such cases, where appropriate.

Should new information arise that significantly changes impacts to listed threatened or endangered species, the Forest retains 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.

PDC 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 Service will be notified of all such occurrences to determine if emergency consultation is required and to adjust environmental baselines if necessary. The Forest 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 Forest 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 effects (LAA) to listed species – required unless a specific exemption is mentioned in a “recommended” PDC and

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

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

In some cases, application of PDC 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 PDC apply to multiple species although most PDC apply to specific species. PDC are described by project type. The Plant PDC apply to all listed plants unless specifically mentioned.

This consultation effort updates some PDC that were used on projects covered by previous consultation efforts. These updated PDC will be incorporated into actions covered under previous consultations that have not yet been implemented, unless incorporating new PDC is not practical. In those cases, PDC in place under the previous consultation will apply.

The PDC in this consultation will be incorporated into those projects that will be implemented, in FY 2009-2014

Fire firefighter safety must be taken into account at all times when using the PDC. If implementation of PDC might cause human safety risks, the Forest will respond to the human safety threat and will determine if that response is grounds for re-initiation of consultation.

Impacts	Species: Northern Spotted Owl
	Any of the following Mandatory PDCs may be waived in a particular year if nesting or reproductive success surveys conducted according to the Service-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.
Disturbance	1) <b>Work activities</b> (such as tree felling, yarding, road construction, hauling on roads not generally used by the public, prescribed fire, muffled blasting) that produce loud noises above ambient levels, or produce thick smoke that would enter the stand, <b>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. The restricted zone is 1.0 mile for any unmuffled blasting.</b> This distance may be shortened if significant topographical breaks or blast blankets (or other devices) muffle sound traveling between the blast and nest sites. March 1 June 30 is considered the critical early nesting period; the action agency biologist has the option to extend the restricted season during the year of harvest, based on site-specific knowledge (such as a late or recycle nesting attempt). The boundary of the prescribed area may be modified by the action agency biologist using topographic features or other site-specific information. ). The restricted area is calculated as a radius from the assumed nest site (point). See Fuels management PDCs for direction regarding site preparation and prescribed fire.
Disturbance	2) <b>If an active spotted owl nest or activity center is located within or adjacent to a project area, delay the project activity until September 30th or until an action agency biologist determines that young are not present.</b> For a given situation, the “adjacent” distance is determined by the action agency

	biologist – if needed, contact Level 1 team for guidance. If any project activity is so close to a known or suspected owl site that the disturbance would flush a nesting spotted owl, curtail the project activity until September 30. The field biologist has the discretion to conduct surveys and determine fledging activity.
<b>Fuels</b>	3) 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) unless smoke will not drift into the nest stand.
<b>Vegetation management</b>	<p><b>Mandatory: Gopher Baiting</b> Strychnine baiting will not occur within 0.25 mile a of known spotted owl activity center.</p> <p>The following general criteria will be used with Gopher Baiting</p> <ul style="list-style-type: none"> <li>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.</li> <li>b. The baiting projects will be supervised and administered by experienced personnel.</li> <li>c. All baiting will be underground.</li> <li>d. Any spilled bait will be completely removed from the ground surface and buried.</li> </ul>
<b>Restoration projects</b>	<p><b>Mandatory:</b> To minimize the number of potential spotted owl or murrelet nest trees used for instream structures, only the following sources shall be used:</p> <ul style="list-style-type: none"> <li>(I) Trees already on the ground in areas where large woody material is adequate;</li> <li>(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.</li> </ul>
<b>Wildfire</b>	<p><b>Mandatory:</b></p> <p>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.</p>
<b>Wildfire</b>	<p><b>Mandatory:</b></p> <p>(I) From 1 March – 30 June noise disturbance should be minimized inside occupied stands and within 0.25 mile of the edge of these stands. In order to accomplish this objective, minimize repeated aircraft flights that are less than 1,500 feet Above Ground Level (AGL). Also, minimize the use of fire line explosives within 1 air mile of occupied stands during the protection period.</p>
<b>Wildfire</b>	Light Hand Tactics or Minimize Impact Suppression Tactics (MIST) should receive consideration for use within the protection zones for northern spotted owls and murrelets.
<b>Quarries</b>	<p>1) 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).</p> <p><b>Recommended:</b></p> <p>2) 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).</p>

Type of Activity – Prescribed Distances 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	120 yards
Impact pile driver, jackhammer, or rock drill	60 yards
Helicopter or single-engine airplane	120 yards for small helicopters;
Type I or II Helicopters	0.25 miles for Type 1 or 2 helicopters
Chainsaws (hazard trees, tree harvest, etc.)	195 feet
Heavy equipment	105 feet

**Marbled Murrelet**

PDCs apply to two different inland “belts.” 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

*Brief Description of the two Areas (“bands”):* 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 southwest 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.

Species: Marbled Murrelet	
Habitat	(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 Service 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.
Disturbance	(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.
Disturbance	(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).
Disturbance	(IV) Blasting (open air/unmuffled) – No blasting/pile driving activities 1 April through 15 September within 1.0 mile of occupied stands or unsurveyed suitable habitat. This distance may be shortened if significant topographical breaks or blast blankets (or other devices) muffle sound traveling between the blast and nest sites or less than 2 lbs of explosives are used. If so, then use described distance.
Disturbance	1) Recommended: Delay project implementation until after September 15 where possible
Disturbance	2) Recommended: 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).
Restoration projects	<b>Mandatory:</b> 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.
Fuels	<b>Mandatory:</b> (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 unless smoke will not drift into the occupied site. (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. (IV) During helicopter operations, flights over suitable habitat will be restricted (helicopter should be at least 1,500 feet above ground level); if not possible, fly a minimum of 500 feet above suitable habitat (above canopy).
Wildfire	<b>Mandatory:</b> 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.

<b>Wildfire</b>	<p><b>Mandatory:</b></p> <p>(I) From 1 April - 5 August noise disturbance should be minimized inside occupied stands and within 0.25 mile of the edge of these stands. In order to accomplish this objective, minimize repeated aircraft flights that are less than 1,500 feet Above Ground Level (AGL). Also, minimize the use of fire line explosives within 1 air mile of occupied stands during the protection period.</p>
	<p><b>Recommended:</b> Light Hand Tactics or Minimize Impact Suppression Tactics (MIST) should receive consideration for use within the protection zones for northern spotted owls and murrelets.</p>
<b>Quarries</b>	<p><b>Mandatory:</b></p> <p>1) 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).</p>
<b>Quarries</b>	<p>1) 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).</p> <p><b>Recommended:</b></p> <p>2) 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).</p>

Type of Activity – Prescribed Distances 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	120 yards
Impact pile driver, jackhammer, or rock drill	120 yards
Type III-IV Helicopter or single-engine airplane	120 yards
Type I or II Helicopter	0.25 miles
Chainsaws (hazard trees, tree harvest, etc.)	120 yards
Heavy equipment	120 yards

**General and specific PDC's for listed plants**

Unless otherwise noted below, for activities in suitable habitat, qualified botany personnel must survey for and document occurrences of any listed endangered plant species following the listed plant protocol. This must occur prior to signing a decision notice or memo for an action. Effects of the action will be documented in the NEPA document (CE, EA, or EIS). Once the decision is signed, the clearance surveys for that project and those acres are valid, even if implementation does not occur immediately. If new species are federally listed, and were previously surveyed for as Forest Service special status species, then the 10 year interval requirement as explained in the Listed Plant Survey Protocol will apply.

Suitable habitat and dormancy periods for the four species are defined in Section IV. Projects within these ranges, if they could affect any listed plant species, must be surveyed. Surveys do not need to occur outside the range of the species. Certain activities are allowed within occupied habitat during the dormancy period, if the resulting habitat is deemed neutral or beneficial to 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 for the listed plants are not required.

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 where actions are occurring, an occupied polygon (this may be a single plant in a 1 meter square) 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. In cases where there is a string of colony's or patches, separated by less than a few hundred feet, in suitable habitat, this might all be delineated as a single population on the ground and buffered accordingly.

If indeterminate *Fritillaria* vegetative leaves are found after a protocol survey (1 or 2 year), while the area is deemed cleared, if the botanist determines that there is a high likelihood that the plants could be Gentner's fritillary based on the proximity of other populations and/or the suitability and condition of the habitat, then the following discretionary PDC's are recommended to be implemented:

- Buffering patches of vegetative plants or
- Changing the prescription or timing of the action to reduce any potential impact and/or
- Monitoring of the site during and after the action (identified in the NEPA document)

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

#### ***Tree Harvest - PDC's***

- Two year surveys required for Gentner's fritillary following the protocol for Timber sales. Salvage sales and incidental tree harvest under permit only require a 1 year survey in suitable habitat.
- Buffer sizes: a minimum of 25 feet from the population boundary (a site, or the outer edge of a polygon encompassing the population). No harvest activity within the buffer.
- No heavy equipment, skidders, yarders, etc., within 75 feet of a buffer (100 feet from the occurrence).
- No tree falling into or yarding through buffered sites.
- 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.
- Do not locate anchor trees within known sites. This includes anchor trees on Federal land requested by private landowners.
- 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).

- 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).
- Hazard trees. No surveys are required for hazard trees that are documented as a safety hazard in campsites, trailheads, roadsides, property lines, power line 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).
- Commercial thinning, oak woodland and riparian thinning, and wildlife habitat improvement projects; Buffer sizes for thinning: a minimum of 25 feet from the population boundary. For these actions, buffers can be treated manually during the dormancy period. Directional falling of trees out of the buffer will occur with minimum soil disturbance. No cable yarding or skidding through buffers. 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.

#### *Watershed Restoration Projects - PDC's*

- One year surveys required for watershed restoration projects in suitable habitat
- 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 for construction or replacement is not new, then no survey is required.
- Bridge construction (see Roads/Engineering section).
- 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.
- If equipment corridors for in stream work pass through suitable habitat, surveys and buffering of occurrences by 100 foot buffer required. No heavy equipment in known population buffers.
- No riparian or tree planting within 75 feet of the edge of the buffer (100 feet from occurrence), so as to maintain edge and more open habitat.
- No tree falling into or yarding through buffered sites

#### *FS road maintenance, construction – PDC's*

##### **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.

#### *Exceptions to PDC's*

Exceptions to PDC's are occasionally necessary, usually for ecological emergency's or safety reasons. An example would be emergency vegetation treatments to control new pathogenic fungi like Sudden Oak Death, or eminent failure of a dam requiring immediate actions. Exceptions for other reasons may require reinitiation of consultation or amendments to the Assessment. Involvement by the level 1 team to determine if emergency consultation or reinitiation is necessary is required.

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