

**A Biological Assessment of Impacts to
Terrestrial Threatened and Endangered Species
from the Alder Camp Road Rehabilitation Project in
Redwood National and State Parks (RNSP)**

Prepared by:
Keith Bensen, Fish and Wildlife Biologist

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I. INTRODUCTION

The purpose of this biological assessment (BA) is to review the proposed Redwood National and State Parks (RNSP or “park”) action, Alder Camp Road Rehabilitation Project, in sufficient detail to determine if the proposed action may affect any threatened or endangered species and/or their critical habitats. This biological assessment is prepared in accordance with legal requirements set forth under section 7 of the Endangered Species Act (19 U.S.C. 1536 (c), 50 CFR 402), and meets the criteria for informal consultation with the United States Fish and Wildlife Service (USFWS).

II. CONSULTATION TO DATE

Redwood National and State Parks received a list from the Arcata Fish and Wildlife Service Office identifying the endangered, threatened, and candidate species that may be present or may be affected by park activities, dated April 2, 2004 (Reference Number 1-14-2004-2026.3). This list included 24 species currently listed as threatened or endangered and three species that are candidates for listing in Humboldt and Del Norte Counties:

Endangered

McDonald’s Rock-cress (*Arabis macdonaldiana*)
Western Lily (*Lilium occidentale*)
Beach Layia (*Layia carnosa*)
Tidewater Goby (*Eucyclobius newberryi*)
Leatherback Turtle (*Dermochelys coriacea*)
California Brown Pelican (*Pelecanus occidentalis californicus*)
Short-tailed Albatross (*Phoebastria albatrus*)
Sperm Whale (*Physeter macrocephalus*)
Blue Whale (*Balaenoptera musculus*)
Humpback Whale (*Megaptera novaengliae*)
Fin Whale (*Balaenoptera physalus*)
Sei Whale (*Balaenoptera borealis*)

Threatened

Oregon Silverspot Butterfly (*Speyeria zerene hippolyta*)
California Coastal Chinook Salmon (*Oncorhynchus tshawytscha*)
Northern California Steelhead (*Oncorhynchus mykiss*)
Southern Oregon/ Northern California Coho Salmon (*Oncorhynchus kisutch*)
Green Turtle (*Chelonia mydas*)
Olive Ridley Sea Turtle (*Lepidochelys olivacea*)
Loggerhead Turtle (*Caretta caretta*)
Northern Spotted Owl (*Strix occidentalis caurina*)
Bald Eagle (*Haliaeetus leucocephalus*)
Marbled Murrelet (*Brachyramphus marmoratus*)
Western Snowy Plover (*Charadrius alexandrinus nivosus*)
Steller Sea Lion (*Eumetopias jubatus*)

Candidate

Black Abalone (*Haliotis cracherodii*)

Mardon Skipper (*Polites mardon*)

Bocaccio (*Sebastes paucispinis*)

Critical habitat was designated for seven species on the list. Critical habitat for coho salmon and the marbled murrelet occurs within the park. Marbled murrelet critical habitat occurs in two units; unit CA-02-a includes Jedediah Smith Redwoods and Del Norte Coast Redwoods State Parks and unit CA-02-b includes Prairie Creek Redwoods State Park. Critical habitat for the marbled murrelet does not occur on federal parklands. Critical habitats for the tidewater goby, leatherback turtle, northern spotted owl, western snowy plover, and Steller sea lion are not designated within the park.

A field trip to the action area (described below in the Status and Distribution of Listed Species section) was made on 9 October 2003 and was attended by Keith Bensen, Robin Hamlin (USFWS), Howard Sakai (RNSP) as well as representatives of the Federal Highways Administration (the funding and co-acting federal agency), the NPS Denver Service Center, NOAA Fisheries, the RNSP maintenance division and private contractors preparing the Environmental Assessment. The road rehabilitation project was described including which actions were occurring where as well as general discussions on threatened and endangered species conservation actions and concerns. Keith Bensen spoke to Robin Hamlin on 18 February 2004 on the telephone about updates on the proposed action and information needs to support potential effects determinations.

Associated Assessments

Existing and future visitor use of Alder Camp Road and the Flint Ridge trailhead parking lot near the Klamath Beach Road/Alder Camp Road junction (described below in the proposed action section) (Appendix 1) are currently being assessed under a separate biological assessment of existing and proposed visitor use developments. Regular annual maintenance of Alder Camp Road and the Flint Ridge trailhead was assessed under a previous assessment (USFWS reference number 1-14-98-24).

Anadromous Fish Species

The National Marine Fisheries Service (NOAA Fisheries) has regulatory jurisdiction over the three listed anadromous fish species (coho and chinook salmon and steelhead trout). The proposed action was determined to have no effect on these species and will not be mentioned further in this document.

III. CURRENT MANAGEMENT DIRECTION

Redwood National and State Parks are located in Humboldt and Del Norte Counties in northwestern California and encompass 105,516 acres of land. Numerous federal and state laws, regulations, and policies guide management.

The National Park Service (NPS) Organic Act of 1916 states that national parks will be managed “to conserve the scenery and the natural and historic objects, and the wild life therein, and to provide for the enjoyment of the same in such a manner and by such means as will leave them unimpaired for the enjoyment of future generations.”

The management of Redwood National Park is guided by the 1968 enabling legislation (PL 90-545) in which Congress established the Park to preserve significant examples of primeval coast redwood forest, and the streams and seashores with which they are associated, for purposes of public inspiration, enjoyment, and scientific study. The 1978 park expansion legislation (PL 95-250) added lands to create a more meaningful park for the use and enjoyment of the visitors, and directed the NPS to implement a watershed rehabilitation program to reduce erosion caused primarily by roads built in association with timber harvest. Title 36, *Code of Federal Regulations*, Parts 1 through 7 give the park Superintendent discretionary authority regarding designations, closures, permits, and miscellaneous restrictions. These items are described in a compendium that provides direction for a wide variety of public activities that may occur within the national park.

The *California Public Resources Code* (sec. 5019.53 et seq.) prescribes general management policies for the state parks that include preservation of “outstanding natural, scenic, and cultural values, indigenous aquatic and terrestrial fauna and flora, and the most significant example of such ecological regions of California as the...coastal strip...redwoods...foothills and low coastal mountains...”. Additionally, the California Park and Recreation Commission established declarations of purpose for each of the three state parks (Jedediah Smith Redwoods, Del Norte Coast Redwoods, and Prairie Creek Redwoods State Parks) that direct that scenic, historic, and scientific values within the parks are to be preserved.

The *General Management Plan/General Plan and Environmental Impact Statement/Report for Redwood National and State Parks* (USDI and CDPR 1999) provides comprehensive guidance for managing the national and state parks as one complex with similar resources. The General Management Plan/ General Plan (GMP) provides overall vision and direction for the parks and identifies future planning needs. Under the GMP, the agencies will emphasize the protection of resources and will also provide a variety of opportunities for visitors to enjoy the parks. New visitor services and facilities will be provided to enhance the visitor experience if these services and facilities do not impact sensitive resources. The park agencies will cooperate with adjacent communities and landowners, local American Indian tribes, and other government agencies to accomplish long-range resource management planning to reduce threats to park resources. Hiking, mountain biking, and camping are currently important components of the activities available to people that visit RNSP. No areas within RNSP are closed to visitor use but many areas are managed to exclude public use of motor vehicles and bicycles.

The GMP identifies individual action plans needed to address specific park actions such as estuary, second growth, trail, fire and fuels, vegetation, back-country visitor use, and transportation management. Relative to management of listed threatened and endangered species the GMP directs park staff to “...avoid, minimize, rectify, reduce, compensate, or otherwise

mitigate any potential adverse impacts on state or federally listed or proposed or candidate threatened or endangered species....” in association with construction, visitor use, or restoration activities (GMP p. 37). These actions will be achieved primarily by restricting work temporally and spatially so as not to disturb T&E species and by designating almost one-third of the parks as “primitive” zones where disturbance to all species from human activities would be limited to those “...necessary to restore and maintain ecosystem function” (GMP p. 38).

The National Park Service signed the Interagency Memorandum of Understanding implementing the *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (USDA and USDI 1994; Northwest Forest Plan ROD). National Park lands within the range of the northern spotted owl are designated as congressionally reserved. Redwood National and State Parks are managed using an ecosystem management strategy, similar to the strategy presented in the Northwest Forest Plan ROD. Implementation of RNSP operations consistent with federal and state enabling legislation (i.e., to preserve, and restore where needed, the old-growth forest ecosystem) will augment the lands designated as Riparian and Late Successional Reserves on other nearby federal lands. Redwood National and State Parks policies and guidelines relative to watershed restoration are similar to those outlined by the Aquatic Conservation Strategy in the Northwest Forest Plan ROD.

Section 7(a)1 of the Endangered Species Act (ESA) of 1973, as amended, requires that federal agencies utilize their authorities in furtherance of the purposes of the ESA by carrying out programs for the conservation of endangered and threatened species. Section 7(a)2 of the ESA requires that a federal agency, in consultation with and with the assistance of the Secretary of the Interior, ensures that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any listed species or results in the destruction or adverse modification of critical habitat. Specific management direction for each of the listed threatened, endangered, or proposed species considered in this document is reviewed in Section V, “Status and Distribution of Listed Species”.

IV. DESCRIPTION OF THE PROPOSED ACTION

Alder Camp Road is 2.2 miles long and connects the Coastal Drive to the Klamath River Road (Appendix 1). The project proposes to fully rehabilitate the length of the roadway and associated structures in order to prevent a potential catastrophic mass wasting event due to failing or inadequately sized drainage structures, prevent further damage to the roadway from slumping fill, repair damaged roadway surfaces, reroute the junction at the Klamath River Road and repair the junction with the Coastal Drive. Work will occur between July 11th and October 15th, 2005. The timing of the proposed work is described in the “Measures to Lessen Impacts to Threatened Species” section below.

Drainage Structures –

Work will include the replacement, rehabilitation, or extension of drainage structures all along

Alder Camp Road. There will be 28 drainage structures (Appendix 1) repaired consisting of four different types: culverts, ditch relief pipes, drop inlet ditch relief pipes, and storm drains. Specifically 17 drainage structures will be replaced, three culverts will be extended, five culverts will be rehabilitated and three new culverts will be installed. Drainage structure improvements will include a total fill excavation of approximately 10,000 cubic yards distributed across the various structures. The length of time required to replace or repair each drainage structure is primarily tied to the amount of fill to be excavated (Table 1). The road will be closed to traffic during the entire project.

Table 1. Types and volumes of excavated fill for each proposed drainage structure to be repaired along Alder Camp Road. Locations are shown in Appendix 1.

Drainage Structure Identification Number	Drainage Structure Type	Treatment Type	Volume of Excavation in Cubic Yards
1	Storm Drain	Replacement	670
2	Culvert	Replacement	1,310
3	Culvert	Replacement	240
4A	Culvert	Replacement	1,400
4B	Ditch Relief Pipe	New Installation	1,000
5	Culvert	Replacement	980
6	Drop Inlet Ditch Relief Pipe	Replacement	170
7A	Drop Inlet Ditch Relief Pipe	Replacement	400
7B	Culvert	Clean	0
8A	Culvert	New Installation	400
8B	Culvert	Clean	0
9	Drop Inlet Ditch Relief Pipe	Replacement	200
10	Drop Inlet Ditch Relief Pipe	Replacement	200
11	Culvert	Replacement	650
12	Culvert	Clean and Slip Line	0
13	Culvert	Clean	0
14	Culvert	Replacement	300
15	Culvert	Clean and Extend	0
16	Culvert	Clean and Extend	0

17	Culvert	Clean	0
18	Drop Inlet Ditch Relief Pipe	Replacement	400
19	Culvert	Clean and Extend	0
20A	Drop Inlet Ditch Relief Pipe	Replacement	400
20B	Drop Inlet Ditch Relief Pipe	Replacement	400
21A	Drop Inlet Ditch Relief Pipe	Replacement	400
21B	Culvert	Replacement	400
21C	Ditch Relief Pipe	New Installation	400
22	Drop Inlet Ditch Relief Pipe	Replacement	400

Storm drain and culvert replacement will involve cutting the existing asphalt road surface into small one square foot pieces with a hardened radial saw and removing the pieces with an excavator and placing it in a dump truck. All asphalt will be hauled out of RNSP. The excavator will then dig a narrow trench straight down to the existing drain/culvert and remove it. A new drain/culvert will be put in its place and the fill will be replaced with the excavator. The area will then be hardened with a vibrating compactor. Existing culvert inlet structures will remain. Rip rap will be placed with an excavator at all outlets to prevent erosion. New culvert installation will involve the exact same set of steps except no old culverts will be removed and new culvert inlet structures (metal or plastic “wings” that direct stream flows into the culvert) will be placed at the inlet. Culvert cleaning simply involves the removal of accumulated debris (soil, rocks and plant material) from inlets and outlets using hand tools or mini excavators. “Slip lining” is the process of sliding a plastic sleeve into an existing corroding metal culvert in order to prevent it from completely rusting through and collapsing and will be used on at least one drainage structure. An excavator or winch is used to slide the tubing through the existing culvert.

Any vegetation growing in the fill directly in line of the trench will be removed. Shrubs common to the coastal redwood region (e.g. salmonberry, huckleberry, sword fern, salal) and large, mature (>24” DBH, > 30 years old) red alder trees are the types of vegetation growing on the road fill that could potentially be removed. A small number (< 5) of alders may be removed during excavation. The amount of shrubs that would be removed is directly proportional to the volume of fill to be excavated (Table 1) but is not expected to be more than a quarter acre’s equivalent.

Fill Failure Repair –

Many areas along Alder Camp Road have experienced underlying roadbed fill failures. The fill failures along Alder Camp Road exhibit classic fill failure features with cracks extending in an arc across the roadway with a discernable lowering of the roadway, beginning and ending in the fill slope. Work entails cutting the asphalt with a water cooled radial saw with a hardened saw blade and removing it in same manner described above, excavating the underlying base to a depth of up to 5 feet, and rebuilding the roadway template with fill composed of aggregate and/or recycled asphalt pavement. An excavator and bulldozer will be used for all base removal and

aggregate replacement work. Above the base layer of the road, the fill failure repair areas will be overlain with approximately 3 inches of hot asphalt concrete pavement and recycled asphalt pavement to the 24-foot design width (including shoulders). A motor roller will be used to compact the aggregate and asphalt. Excess recycled asphalt pavement will be removed from RNSP in a dump truck; aggregate will also be moved in a dump truck. The total length of fill failure areas is approximately a half-mile in dispersed areas all along Alder Camp Road. The fill failure repair area is approximately 9,200 square yards. No vegetation will be removed during this work because all work will occur on the road prism and not on fill.

Roadway Surface Rehabilitation –

All roadway work will occur within the existing disturbed roadway corridor and along the entire 2.2 mile length of Alder Camp Road. Roadway surface rehabilitation will include pulverizing all the existing asphalt to an approximate depth of 3 inches using an asphalt mill. The roadway will be overlain with approximately 3 inches of hot asphalt concrete pavement and recycled asphalt pavement to the 24-foot design width (including shoulders) using an asphalt paver. Recycled asphalt pavement from surface rehabilitation would be used to rebuild the profile and fill in fill failure repair areas (see Fill Failure Repair, above). Excess recycled asphalt pavement will be removed from the park. Existing cut bank slopes along Alder Camp Road will not be disturbed. Existing rock-fall areas along the side of Alder Camp Road will be removed from the roadway prior to roadway rehabilitation using a front end loader and a dump truck. Vegetation extending over the road surface would be trimmed to attain a clear height of 20 feet.

Klamath Beach Road Intersection Reroute/Flint Ridge Trailhead Parking Lot East –

Alder Camp Road intersects Klamath Beach Road at the eastern end of the roadway (Appendix 1). Alder Camp Road will be realigned and straightened to intersect with Klamath Beach Road at an approximately 90 degree angle in front of the former Klamath bridge abutment site. The existing Flint Ridge Trailhead east parking lot would be relocated east of the realigned Alder Camp Road. The new parking lot will provide approximately the same amount of parking as the existing parking lot. All road and parking lot construction activity will occur within the existing disturbed roadway corridor. No vegetation will be removed.

MEASURES TO LESSEN IMPACTS TO THREATENED SPECIES

All contractors will adhere to strict garbage disposal procedures in order to ensure that no human food items are left on site or made available to wildlife in order to prevent the attraction of potential marbled murrelet predators. The roadway surface rehabilitation work and Klamath Beach Road intersection work will all occur between September 16th and October 15th in order to eliminate the use of concussive sound generating equipment during the marbled murrelet breeding season. The drainage structure and fill failure repair work will occur between July 11th and October 15th. Work will not begin until after July 11th because soils in this area are not dry enough for excavation and are difficult to move before this date. Work occurring between July 11th and September 16th will be restricted to the time period from two hours following sunrise to

two hours prior to sunset in order to minimize disturbance of adult marbled murrelets attending eggs or chicks on nests.

No concussive types of equipment or procedures (e.g. jackhammers, asphalt grinders, breaking asphalt with excavator buckets) will be utilized between July 11th and September 16th. Radial saws (described above) will be used instead to cut the asphalt because they are significantly quieter than concussive equipment - the loudest component of the saw is its small engine. The blade makes little noise because it is lubricated and cooled by water as it cuts through the pavement, which significantly dampens the noise. The loudest component of the vibrating compactor (described above) is also its small engine. The vibrating plate of the compactor vibrates very quickly and does not cause a concussive noise but instead generates a humming sound on par or less than the machine's engine noise.

V. EXISTING ENVIRONMENT

Alder Camp Road was classified as a “high use road” during a previous consultation on RNSP’s annual maintenance program (USFWS reference # 1-14-98-24) due to the volume of traffic regularly traveling on it. Alder Camp Road links the popular Coastal Drive with the Klamath River Road which connects to nearby US Highway 101. Traffic increases substantially during the summer months between June and September when visitation to RNSP is at its peak. These months also correspond to when this project is scheduled to occur (July 11th through October 15th). RNSP maintains vehicle use statistics for Coastal Drive which also provide an indication of the vehicular traffic on Alder Camp Road and Klamath River Road (Table 2). The average amount of traffic on these roads during the months of July through September is 135 (range 46-172) vehicles per day.

Table 2. Number of vehicles measured by an automatic counter placed on Coastal Drive near the junction with Alder Camp Road.

Month	Number of Vehicles by Year					
	2001		2002		2003	
	monthly	average/day	monthly	average/day	monthly	average/day
June	5302	176	6044	201	4215	141
July	5078	163	5331	172	4820	161
August	3178	102	4134	133	3936	131
September	1384	46	5750	192	3489	116
October	2326	75	4966	160	2212	74

In addition to visitor traffic, Alder Camp Road is regularly traversed by inmate buses and supply trucks going to and from the California Department of Corrections minimum security prison (named “Alder Camp”) located near the western terminus of the road. These vehicles are not detected by the park’s sensor on Coastal Drive. Alder Camp is a prison work camp and thus inmates housed at the facility are regularly taken to various work projects throughout Del Norte and Humboldt counties on a near daily basis.

The eastern terminus of Alder Camp Road (the Klamath River Road junction) is located within 50 to 100 yards of the Klamath River. Boat traffic increases significantly during summer months on the Klamath River because of regular jet boat tours and recreational fishing. Vehicular traffic also increases on the Klamath River Road itself and nearby US Highway 101 during the summer months as indicated above (Appendix 1).

VI. STATUS AND DISTRIBUTION OF LISTED SPECIES

Only three species, northern spotted owl, marbled murrelet and bald eagle have the potential to be affected by the proposed action and/or could occur within the action area. Therefore, all other listed species that potentially occur within RNSP will no longer be mentioned in this document.

The “action area” for this project covers approximately 751 acres. The action area extends one quarter mile along either side of the entire length of Alder Camp Road and corresponds to the maximum extent of potential effects to terrestrial threatened and endangered species (Appendix 1).

Northern Spotted Owl (*Strix occidentalis caurina*), Threatened

A. Species Account

The northern spotted owl historically was distributed throughout mature and old-growth conifer forests of western Washington and Oregon, and northwestern California from sea level to approximately 5,000 feet. Since 1850, the amount of mature and old growth forest in this region has been significantly reduced, primarily by logging in recent decades (Thomas et al. 1990). As a result, the spotted owl has been extirpated or is uncommon in certain portions of its historic range, particularly in areas in Washington and Oregon where federal and state lands are intermingled with private lands. Habitat loss due to timber harvest, exacerbated by natural events such as fire and windstorms, was cited as the primary reason for which this species was listed as threatened in 1990 (USDI 1990).

Critical habitat for this species was designated on January 15, 1992 (USDI 1992b). No RNSP lands were designated as critical habitat for the northern spotted owl. A recovery plan for the northern spotted owl was drafted in 1992 (USFWS 1992) but was never issued in a final format. The draft recovery plan stated that RNSP should be managing for a goal of 24 territories in Prairie Creek Redwoods State Park and Redwood National Park south of Prairie Creek, and three territories north of Prairie Creek Redwoods State Park (USFWS 1992). These recovery goals currently are not being met. As of 2003, survey data indicate that only one territory is occupied north of Prairie Creek Redwoods State Park and 18 territories are occupied (i.e., with one or more owls within the last three years) in the southern recovery zone.

Since inventory and monitoring began in 1993 much of the suitable spotted owl habitat in RNSP has been surveyed.

Acres of suitable habitat surveyed vary only slightly among years although the some of the areas surveyed may change from year to year. For example, in 2001 and 2002, 29,600 ac (12,000 ha) or 49% and 32,337 ac (13,086 ha) or 50% of the suitable spotted owl nesting and roosting habitat in RNSP was surveyed each year, respectively, by park staff. Of these totals, 20,400 ac (8,200 ha) surveyed in 2001 were in old growth redwood and 9,200 ac (3,700 ha) were in suitable second growth habitat. Proportionally similar acres were surveyed in each of these habitat types in 2002.

The first park-wide inventory of suitable habitat was conducted between 1993 and 1995 (Tanner 1999). Thirty-seven spotted owl territories were identified in RNSP during that original inventory. We currently track activity centers at 36 of these territories in our spotted owl database. Since 1995 park staff have monitored between 75% and 100% of these 36 activity centers, annually. Since 1993 the number of activity centers occupied by one or more owls has ranged from a high of 30 in 1995, to a low of 11 in 2000. One to seven territories fledged young per year during that same period.

Surveys of suitable habitat in the vicinity of annual maintenance projects have been conducted annually since 1998. These surveys have detected a few “floaters”, individuals that could not be relocated during daytime follow up visits. In 2002, inventories of “inactive” territories (activity centers where no owls have been detected in ≥ 3 consecutive years) were begun. Inventories included a thorough survey of all suitable habitat within 1.0 mi of the historic activity center in seven territories. As of 2003 ten territories were inventoried (seven completely and three in process).

Survey results from the completed home range inventories indicate that spotted owls no longer occur within the majority of territories with persistently unoccupied activity centers. We have documented high levels of barred owl (*Strix varia*) activity at five inventoried territories that apparently are no longer occupied by spotted owls. Additionally, a territory (not inventoried) in which both members of the spotted owl pair were killed (at Skunk Cabbage Creek- the male probably by a barred owl and the female by a car) is now occupied by a barred owl pair that reproduced in 2003. Given the apparent absence of spotted owls, coupled with the persistent presence of barred owls, these six territories have been classified as “no longer existent”. Thus, the baseline number of owl territories originally documented within RNSP should be reduced from 36 to 30. These six sites will be revisited on an intermittent basis to check for the presence of barred owls. As long as barred owls persist at these sites, we believe it is unlikely that spotted owls will re-occupy their former territories in the near future.

Barred owl records in the park pre-date 1993, however, the initial spotted owl inventory began documenting barred owls in RNSP with regularity. Already by 1995 barred owls were documented at or near ten of the original spotted owl activity centers (Tanner unpub. data). As of 2003 barred owls have been observed in 17 (47%) of the known spotted owl territories within the parks; at least ten of these territories (including the six mentioned above) appear to be no longer occupied by spotted owls although additional inventories are needed to confirm this. An additional 15 barred owl sites have been located outside of spotted owl core areas (e.g., > 0.7 mi distant). As of 2003 we have documented seven reproductive barred owl pairs with one or two young, four of which were at, or close to, an historic spotted owl activity center.

Action Area Specific

The Richardson Creek spotted owl activity center is located within a half mile of Alder Camp Road. A nesting pair was first discovered in 1995. The nest failed. The activity center has been monitored annually ever since its discovery but has been vacant since 1995. A complete inventory, to protocol, of all available suitable habitat within a one mile radius was conducted in 2002 and 2003. This inventory completely encompassed the entire 234 acres of the Action Area. No spotted owls were detected during the inventory surveys. A single barred owl was found in 2003 within a half mile of the activity center. RNSP considers this activity center to no longer exist and all suitable habitat within the action area to be vacant (Schmidt 2004).

B. Habitat Status

Suitable northern spotted owl nesting, roosting, and foraging habitat has been well described in the literature (e.g.,

Forsman et al. 1984, Carey et al. 1990, Solis and Gutierrez 1990, Ripple et al. 1991, Blakesley et al. 1992, Hunter et al. 1995). Spotted owl home ranges are known to include structurally complex mature and old growth (>200 year old) conifer forest in greater amounts and with less fragmentation than that available over the landscape (Hunter et al. 1995). Likewise, spotted owl nest, roost, and foraging sites show the same trend of being in the largest patches of old forest available (e.g., Solis and Gutierrez 1990 and Ripple et al. 1997). Dominant and codominant overstory canopy closure in suitable spotted owl habitat tends to be >60% with well-developed intermediate and shrub canopy layers.

In the coastal redwood (*Sequoia sempervirens*) forests of northern California spotted owls show a similar pattern of using mature and old forests. The RNSP GMP defined suitable spotted owl nesting and roosting habitat as old-growth forested stands with canopy closures $\geq 70\%$, with at least 40% of the canopy contributed by trees ≥ 21 inches diameter at breast height (dbh). Stands with conifers ≥ 18 inches dbh or with less than 40% overstory canopy may be suitable if large hardwoods fill in the canopy to 60% total closure (USDI and CDPR 1999). Second growth stands >40 years of age are considered suitable habitat, especially if large residual trees occur in the stand.

In the original inventory of spotted owl habitat in RNSP spotted owls were found roosting in old growth forests more often than expected, and second growth less often than expected, when compared to the proportional availability of these cover types (Tanner 1999). Spotted owl roost sites also were shown to have greater structural complexity and a higher basal area of old growth redwood relative to random sites. All but two spotted owl nests in RNSP have been located in large old redwood trees, while the remaining nests were in a large Douglas fir (*Pseudotsuga menziesii*) tree and Douglas fir snag (both in the same territory). Spotted owls in RNSP have used cavities, platforms on tree limbs, tree deformities, and other animal nests for nesting (Tanner 1999).

Within RNSP there are an estimated 41,921 ac (16,965 ha) of old growth forest, all of which is considered suitable nesting, roosting, and foraging habitat. An additional 20,758 ac (8,400 ha) of second growth forest is now ≥ 40 yrs old and may be suitable nesting, roosting, and foraging habitat. Two hundred and seventy acres (109 ha) of second growth forest contain residual old growth trees in patches between 1 and 5 ac. Some proportion of these stands qualify as suitable nesting, roosting, and foraging habitat. Some proportion of the remaining 30,000 ac (12,140 ha) of second growth <40 yrs of age may be suitable for spotted owl foraging.

It should be noted that spotted owls also are known to successfully nest in previously harvested 30-80 year old redwood forests. Redwood stands are believed to develop characteristics of mature forests (thus, suitable spotted owl habitat) more rapidly than other stand types due to a variety of species-specific and coastal environment conditions (USDI 1990 and Thomas et al. 1990). In precommercially thinned forests on Simpson Timber Company (STC) land, including land adjacent to RNSP, spotted owls nested in stands with a median age of 59 years, with 83% of nesting pairs using stands between 30 and 80 years old. Conifer dominated nest stands tended to have more basal area of large (>90 cm dbh) conifers and more vertical vegetation layers than in randomly sampled stands. Likewise nest trees in STC stands were usually dominant trees in the canopy or residual trees that were very large and older than the surrounding stand (Foliar 1993). In contrast, spotted owls are not known to use second growth stands for nesting in RNSP. Second growth in the parks differs from that on STC land in that almost none of the previously harvested stands have been thinned. Many of the second growth redwood stands in RNSP are extremely dense, and may be passing through a stem exclusion stage which causes mortality of smaller overstory trees and suppression of most understory regeneration and shrub communities (Bailey and Tappeiner 1998). These stands may not support spotted owl prey, supply adequate roost and nest sites, or allow for easy flight due to their high stem densities.

Twenty (55%) of the original 36 RNSP owl territories have >1336 ac and >500 ac (minimum "threshold" acres believed necessary to sustain spotted owls in a territory) of suitable nesting and roosting habitat within the 1.3 mi and 0.7 mi radius home range circles, respectively. An additional five (14%) territories are above threshold in the 1.3 mi radius circle but below in the 0.7 mi radius circle. The amount of old growth within these territories ranges from 36-100% of the suitable habitat acres; 12 territories have >80% of the suitable habitat acres in old growth.

Thirteen of the 25 territories above threshold are currently active, spotted owls in five of these are now sharing territories with barred owls, in two cases with reproductive barred owl pairs. Six of the 25 territories above threshold now appear to be occupied solely by barred owls. Five territories below threshold are currently considered active, and none of these have had barred owls detected within the territory to date. Two territories that have few or

no acres meeting the definition of suitable nesting and roosting habitat have successfully reproduced and fledged young in years past, one as recently as 2003. It may be that the amount of suitable habitat, especially old growth, within the home range does not influence occupancy or productivity of owl pairs in RNSP. Instead, it could be hypothesized that spotted owl presence (and productivity) is inversely related to the level of barred owl activity within 0.7 mi of an activity center (Kelly et al. 2003).

Because of the high level of barred owl activity at many sites within the park, beginning in 2004 we created “barred owl exclusion zones”. Barred owl exclusion zones are 0.5 mi radius circles centered on barred owl pair or reproductive pair site centers in areas with thorough spotted owl surveys. Based on the work by Kelly et al. (2003), and our own observations, we believe suitable habitat within these areas is not available for use by spotted owls as long as barred owls persist within these sites.

Action Area Specific

There are approximately 389 acres of suitable spotted owl habitat within the action area – 234 acres of old growth suitable for nesting, roosting and foraging and 155 acres of second growth (almost entirely red alder) primarily suitable for foraging.

Bald Eagle (*Haliaeetus leucocephalus*), Threatened

A. Species Account

The distribution of the bald eagle extends from central Alaska, throughout much of Canada and the United States and into northern Mexico. The species is increasing in numbers throughout the United States and Canada with breeding activities occurring in areas of low human disturbance.

Nesting habitat, in general, is composed of low elevation, late successional forested stands near permanent lakes and free-flowing rivers. In California, 87% of nest sites were within 1 mi (1.6 km) of water (Zeiner et al. 1990). Platform stick nests are built in large trees with open branches, but some foliage usually shades the nest (Call 1978). Nests are located 50-200 ft (16-61 m) above ground, usually below tree crowns (Zeiner et al. 1990). Tree height and size appear to be more important than species. Other required habitat elements include open hunting perches, often snags or broken-top trees, and communal winter roost areas (dense, sheltered conifer stands).

Historic information indicates that prior to the last few years successful nesting of bald eagles was not documented in RNSP. Detrich and Garcelon (1986) noted historic nest sites on the Trinity River, along the Mad River, on Rowdy Creek (lower Smith River watershed), and near Lake Earl all within 30 km of park lands. Those authors performed a survey to identify suitable nesting habitats throughout coastal California and noted that areas along the coast in Jedediah Smith, Del Norte Coast, and Prairie Creek Redwoods State Parks, along with certain areas in Redwood National Park, offered good to excellent habitat potential. Areas where bald eagles are annually observed include Redwood Creek, Freshwater Lagoon, along the Smith River, coastal areas near the mouth of the Klamath River, along the entire coastline of Del Norte Coast Redwood State Park, and along Gold Bluffs Beach in Prairie Creek Redwoods State Park.

The Pacific bald eagle recovery plan goals for the California/Oregon coast zone include increasing the number of breeding pairs from zero to three along the Del Norte coast (USFWS 1986). No territories are currently known along this segment of the coast. However, throughout the California portion of this management zone, territory occupancy has increased from 6 to 10 since the recovery plan was first completed.

On July 6, 1999 the USFWS published a proposal to remove the bald eagle from the list of endangered and threatened wildlife in the lower 48 states (USDI 1999b). The proposed rule states that bald eagle recovery goals have generally been met or exceeded for the species on a range wide basis. The Service concluded that a widespread reduction in the use of organochlorine pesticides, lack of other threats to the species of sufficient magnitude, knowledge gained through the recovery process to properly manage the bald eagle, and widespread trends in

population increase are all reasons to remove this species from the endangered species list (USDI 1999b).

Field surveys to identify potential nesting activities during the breeding season were begun in 1997 and have continued to the present. A nest was found along the Klamath River in 1996 outside the park boundary, but close enough for the pair to forage in RNSP. A nest was found in 1997 that produced two young in 1999, one young in 2000 and 2001, and two young in 2002. This nest will continue to be monitored annually. It is located approximately 1.25 mi inland from Freshwater Lagoon. The lagoon provides suitable foraging habitat, and indeed is used for foraging by the eagles, most likely including those from the known nest territory.

Action Area Specific

No bald eagle nests or roosts have been detected within the action area.

B. Habitat Status

Redwood National and State Parks were identified primarily as winter habitat in the *Recovery Plan for the Pacific Bald Eagle* (USFWS 1986), which forms the basis for management direction and provides recovery goals. Approximately 12,900 ac (5,220 ha) of potential habitat is located within 200 m of streams, lagoons and the ocean. Large trees providing nest sites are located throughout many areas of RNSP.

Action Area Specific

A small amount (less than 10 acres) of potentially suitable nesting and wintering habitat bald eagle habitat is located with the action area.

Marbled Murrelet (*Brachyramphus marmoratus*), Threatened

A. Species Account

The marbled murrelet is a small sea bird in the family Alcidae with a disjunct distribution from Alaska through central California with some birds also wintering in southern California (USDI 1992b). Marbled murrelets nest primarily in large coniferous trees located within 60 km of the coast. In California, the species is restricted to old growth forests in Del Norte, Humboldt, San Mateo, and Santa Cruz Counties and the associated offshore waters. Large geographic gaps in the historic range now occur along 300 mi (480 km) of coastline between central and northwest California (USDI 1992b). Mostly in response to loss of nesting habitat, the marbled murrelet was federally listed as threatened in 1992 in California, Oregon, and Washington, and listed by the state of California as endangered the same year. Critical habitat for the species was designated on May 24, 1996 (USDI 1996). A recovery plan was completed in 1997.

The murrelet breeding season is protracted and occurs from late March through late September (Hamer and Nelson 1995). The majority of hatching occurs by the end of June (Carter and Stein 1995, Hamer and Nelson 1995). Clutch size is one egg, with one clutch laid per year. Eggs are laid on large limbs and crooks of trees covered with moss, lichen and canopy litter. Incubation shifts of 24 hours each are alternated between both parents (Sealy 1972). Parents make daily trips to the nest site to feed young. Primary food sources for marbled murrelets in California are not well documented but appear to consist of small near shore fish species such as sand lance (*Ammodytes hexapterus*), Pacific herring (*Clupea harengus*), smelt (Osmeridae), and anchovy (*Engraulis spp.*) (USFWS 1997).

Based on offshore surveys, the number of murrelets in California has been estimated to be in the range of 1,650 to 6,500 individuals depending upon the source of the data. Recent surveys conducted by a joint Federal agency team monitoring the effectiveness of the Northwest Forest Plan estimated in 2000 and 2001 that 4,876 (95% CI = 4,135 – 8,100) and 3,888 (95% CI = 2,901 – 6,567) murrelets, respectively, are found in the survey zone that encompasses RNSP (Coos Bay, OR to just south of Cape Mendocino, CA) (Bentivoglio et al. 2002, Jodice 2002). The vast majority of the offshore California population (approximately 60%) occurs between the Oregon border and Trinidad,

which roughly corresponds to the areas directly offshore of RNSP (Strong et al. 1997, Ralph et al. 1998, Ralph et al. 2002). If offshore habitat use data gathered by Golightly et al. (2002) on radio marked birds is considered, then many murrelets breeding in RNSP may range south all the way to the mouth of Humboldt Bay. If most of the murrelets found offshore from Humboldt Bay to the Oregon border do utilize RNSP forest habitats then upwards of 70% of the murrelets in California could potentially inhabit the park at some point in their life cycle.

Populations throughout the marbled murrelet's range are declining at an estimated rate of at least 4-6% per year (Beissinger 1995). There are some indications, however, that the density of murrelets occurring off the coast of RNSP is increasing. This apparent increase has tentatively been attributed to habitat loss in other parts of northern California that may be causing murrelets to concentrate breeding efforts within RNSP (Ralph et al. 1998, Ralph et al. 2002). Current estimated recruitment rates, however, are probably insufficient to maintain murrelet populations. In one study only 28% of documented breeding attempts successfully fledged young (Nelson and Hamer 1995). In addition, at-sea surveys noted that only 1-5% of the observed population were juveniles in any given year (Nelson and Hardin 1993, Strong et al. 1997, Ralph et al. 2002). Speculation is that some adults may not be breeding due to lack of suitable habitat. Based on information about other closely related species, not all adults may be nesting every year (Carter 1984). Further compounding the low recruitment rate are oil spills that have occurred in the past and may be expected to occur in the future. Two oil spills, in 1997 and 1999, occurred in or just outside of Humboldt Bay. At least 33 marbled murrelets were known to have died from those spills, however, mortality figures for the local population as a whole from those spills have not yet been made available (L. Roberts pers. comm.).

Besides nesting habitat loss and losses of individuals due to oil spills, the most significant threat that may explain low recruitment rates is an apparent high level of egg/chick mortality due to predation. Of the fourteen known and suspected nest predators, eleven are common in RNSP including the common raven (*Corvus corax*), Steller's jay (*Cyanocitta stelleri*), great horned owl (*Bubo virginianus*), American crow (*C. brachyrhynchos*), sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk (*A. cooperii*), raccoon (*Procyon lotor*), Pacific fisher (*Martes pennanti*), Townsend chipmunk (*Tamias townsendi*), northern flying squirrel (*Glaucomys sabrinus*), and Douglas squirrel (*Tamasciurus douglasii*) (Nelson and Hamer 1995, Marzluff et al. 1996,). Corvids (jays, ravens and crows) are suspected to be primary nest predators based on known murrelet nest failures (USFWS 1997). Increases in some corvid populations, particularly crows (Marzluff et al. 2002), throughout the west have been attributed to increased habitat fragmentation, thus, there may be increased numbers of corvids predating murrelets (Marzluff et al 1996). Marzluff and Neatherlin (under review), however, found that corvids were responsible for only 32% of predation events on dummy murrelet nests. They further postulated that human food sources, not habitat fragmentation, are increasing some corvid species populations. In addition, it appears that among corvids, Stellers jays are the main marbled murrelet nest predators and jays did not show marked density increases because of increasing amounts of anthropogenic food sources. It appears, then, that it is mainly along urban/wildland interfaces that corvid predation markedly increases, and mainly by crows (Neatherlin, and Marzluff under review). The relationships between corvid populations and habitat fragmentation, and potentially increased nest predation rates remain unclear.

Numerous marbled murrelet surveys, including monitoring and research projects, have taken place or are on-going in RNSP. At-sea surveys adjacent to the park also have occurred (e.g., Strong et al. 1997, Ralph et al. 1998, Ralph et al. 2001, Ralph et al. 2002). An initial state-wide inventory of potentially suitable marbled murrelet nesting habitat was conducted in 1988 by Ralph et al. (1990). Included in this inventory were numerous transects with many survey stations in RNSP. Murrelets were detected at stations throughout the park, from Walker Road in northern Jedediah Smith Redwoods State Park to Devil's Creek near the southern boundary of the national park. A transect along the James Irvine Trail in Prairie Creek Redwoods State Park recorded the highest number of murrelet detections anywhere in the state (Ralph et al. 1990). Since 1989 personnel from the USDA Forest Service's Redwood Sciences Laboratory have monitored murrelets during the breeding season at three sites as part of a long term population trend study. Two of the sites are in RNSP, one near the James Irvine Trail and the other in lower Lost Man Creek, and the third is in the Yurok Experimental Forest. The most recent analysis of these data indicates a significant downward trend in murrelet detections at all three sites. In the past 11 years detection rates have declined by 38%, 57%, and 44% at the James Irvine Trail, Lost Man Creek, and Yurok Experimental Forest sites, respectively (S. Miller pers. comm.).

In 1999 surveys were conducted in an old growth stand in Miller Creek, a tributary to Redwood Creek. Occupied behavior was recorded during this survey (Mad River Biologists 1999). In 1999-2001 the park contracted surveys of

all suitable habitat within 0.25 mi of roads proposed for restoration in the northern portion of the Lost Man Creek drainage. The habitat surveyed included old growth, second growth stands with residual predominant trees that could provide nesting opportunities (“residual old growth”), and second growth stands without residual old growth. The surveys confirmed occupied behaviors in all three stand types. The contractor determined the below-canopy behaviors in the second growth sites were most likely fly-throughs to the adjacent old growth stand (LeValley 2001). Murrelets appeared to be using residual old growth habitat along the main tributary of Lost Man Creek as evidenced by numerous occupied behaviors recorded in this area. However, it is as yet unclear what value second growth and residual old growth habitats possess for the species.

In 2001 RNSP became a cooperator in a multi-agency research project led by scientists from Humboldt State University and the U.S. Geological Survey/Biological Resources Division. The primary objectives of this study were to locate marbled murrelet nests in RNSP, determine the relationship between nesting success and proximity to park trails and highways, and measure behavioral responses of murrelet adults and chicks at the nest to noise disturbance caused by trail users and maintenance activities. Five nests were located in the first year of this study (Golightly et al. 2002).

Because of these and other studies within the park, we assume that all stands with trees providing nesting opportunities for marbled murrelets have the potential to be occupied, including old growth stands or residual trees within the action area.

The recovery plan for the marbled murrelet outlined a number of recovery objectives that include stabilizing and then increasing population size throughout the range and gathering information necessary for the development of delisting criteria. Recovery actions for the Siskiyou Coast Range Zone (including RNSP) include preventing the loss of occupied nesting habitat, minimizing the loss of unoccupied habitat, and- most pertinent to the park- decreasing the time for development of new suitable habitat. The recovery actions for this zone also speak to minimizing impacts from recreational use including nest disturbance, facility construction and use (campgrounds, picnic areas, parking lots), and trash disposal (USFWS 1997).

B. Habitat Status

In RNSP there are approximately 41,000 ac (16,592 ha) of old growth forest occurring in contiguous stands greater than 0.5 ac in size that would be presumably suitable marbled murrelet nesting habitat. The old growth stands in RNSP are fragmented with only a few large contiguous blocks of nesting habitat existing. There also are an additional 362 ac (146 ha) of residual old growth forest (i.e. stands with isolated old growth trees surrounded by residual mature tree buffers) occurring within RNSP which may provide lower quality suitable nesting habitat.

The following table shows the number and size of suitable marbled murrelet nesting habitat stands in Redwood National and State Parks:

Suitable Marbled Murrelet Nesting Habitat Stand Size (in acres)	Number of Stands
Less than 5	38
5 to 100	63
100 to 1,000	13
1,000 to 5,000	5
Greater than 5,000	3

Approximately 50,000 ac (20,234 ha) of second growth coniferous forest exists in RNSP that is currently unsuitable marbled murrelet nesting habitat. It is reasonable to expect that some, if not most, of the stands making up this younger forest will eventually obtain suitable nesting habitat characteristics. All of these second growth stands were cut within the last century with over 90% having been harvested since 1940 utilizing a clearcut prescription. Habitat recovery rates will vary greatly from stand to stand depending on how the stand was harvested, site capacity,

reseeding method, and post harvest manipulation. Unfortunately, even under the best of circumstances, it is not expected that these disturbed stands will become suitable nesting habitat for more than a century.

Action Area Specific

There are approximately 234 acres of suitable nesting habitat available within the action area (Appendix 1).

VII. IMPACTS TO THREATENED AND ENDANGERED SPECIES

A. Direct Effects

Disturbance

Spotted Owl

Protocol surveys conducted during 2002 and 2003 encompassing the entire 234 acre action area have found no spotted owls. The entire project is to be completed by October 15th, 2005, within the two year survey window that the protocol surveys cover; therefore, spotted owls will not be disturbed by the proposed action.

Bald Eagle

Past monitoring and survey efforts, including those done in 2003 and during the beginning of 2004, have detected no bald eagles nests within the action area. The entire project is to be completed by October 15th, 2005 therefore, bald eagles will not be disturbed by the proposed action.

Marbled Murrelet

No project work will be occurring between October 16th and July 10th and thus there is no potential for disturbance during this period.

The effects of noise disturbance on marbled murrelets is not well understood. Only a few studies have concentrated on the effects of noise near nesting murrelets. Naslund's (1993) and Singer et al. (1992, 1995) reported successful murrelet nesting occurring in the presence of significant visitor use of campgrounds and heavily trafficked roads and trails. Recent research of nesting murrelets in RNSP indicate murrelets may habituate to high levels of ambient noise. One of the few successful study nests (most nests appeared to fail due to predation) was within a few hundred yards of US Highway 101. In addition, these studies did not observe any significant behavioral responses (i.e. nest abandonment) by murrelets during above ambient noise experiments conducted over three years at various nests within RNSP (Golightly et al. 2002, Golightly and Hebert pers. comm.). Nelson and Hamer (1995), however, note that there may be some effect caused by above ambient noises. They postulate that loud, above ambient noise

levels may cause adult murrelets to abandon nests or abort a chick feeding bout.

The regular traffic flow along Alder Camp Road and surrounding roads such as Coastal Drive and Klamath Beach Road and constant traffic on Highway 101 as well as boat traffic along the Klamath River creates high levels of constant ambient noise during the marbled murrelet breeding season. The proposed action will cause similar levels of noise at the same time of the year, primarily because of engine noise from dump trucks, excavators, mechanized rollers and bull dozers operating at the drainage structure and fill failure repair sites. The primary source of ambient noise on Alder Camp Road is vehicular engine noise. The proposed action will close the road to vehicular traffic but heavy equipment engine noise will replace the vehicular noise. The amount of noise generated by the proposed action should be similar to the ambient levels present within the action area during regular traffic periods, particularly in light of the contract provision that states no concussive noise generating work will be allowed during the murrelet breeding season. Monitoring by RNSP staff has shown that vehicular traffic along high use park roads generates noise levels in the mid 50 – 60 decibel range (Holm 2003) and excavators and bulldozers generate similar levels of noise at similar distances (40 – 70 decibel range) (Wallen et al 1999). In addition, the daily limited operating period restrictions (no work done before two hours after sunrise or two hours before sunset between July 11th and September 16th) described in the “measures to lessen impacts” section will prevent loud noises during the most sensitive morning and evening nest switching/chick feeding periods. The daily limited operating period will also decrease the duration of noise normally generated within the action area as compared to when the road is open to visitors (i.e. vehicles can normally drive on Alder Camp Road at any time).

The non engine noises generated by the drainage structure and fill failure repair work should also mimic the amount of noise normally generated by regular vehicular traffic. Wallen et al. (1999) monitored operating heavy equipment in the field during watershed restoration work – i.e. excavators and bulldozers moving dirt, rocks and logs. The noises generated by the loading of asphalt and the unloading of rip rap rock that will occur during this project would presumably be similar to the amount of noise made by the movement of logs and rocks. Rip rap rock will be placed by excavators, not dumped. The level of noise should not be significantly higher than the ambient noises present in the Action Area.

Murrelets nesting within the action area have most likely become habituated to constant, high levels of ambient noise as evidenced by the few studies addressing noise effects mentioned earlier in this section. Above ambient noise generating work, such as the use of concussive equipment, will be restricted to times outside of the murrelet breeding season and thus will have no effect to nesting murrelets.

Marbled murrelets may or may not be visually disturbed by human presence near their nests. Researchers have come to contrary conclusions on the effects of visual disturbance caused by human presence. Nelson and Hamer (1995) noted that there may be some effects due to human presence near nests (though these were discussed in relation to nest predation and not abandonment) as did the USFWS (1997). In contrast, Singer et al. (1992, 1995) reported observations of successful murrelet nesting occurring in the presence of significant visitor use of

campgrounds, heavily trafficked roads and trails and Golightly et al. (2002) (Golightly and Hebert pers. comm.) research of nesting murrelets in RNSP indicates murrelets may habituate to human presence.

All of the drainage structure and fill failure repair work described in the proposed action will be done on the existing roadway. Current existing use of the road is high with vehicles passing throughout the day, presumably causing some sort of habituation on the part of any murrelet nesting within sight of the roadway. The equipment used during the repair work should present similar visual cues and presumably not be perceived as a new threat by nesting murrelets.

Loss and Modification of Suitable Habitat

Spotted Owl

The Action Area constitutes somewhat contiguous suitable nesting, roosting and foraging spotted owl habitat due to the presence of old growth trees along the entire length of Alder Camp Road (Appendix 1). Large (>24" DBH), mature (> 30 years old) red alder trees have grown in the fill adjacent to the roadway and directly above many of the drainage structures to be installed or replaced. During the course of excavating the trenches to place the new drainage structures, a small number of mature alders (< 5 per drainage structure) will be removed. These large, mature red alders could potentially provide foraging perches to future spotted owls that may reoccupy the vacant Richardson Creek activity center. All surrounding vegetation will remain, including all conifers and other non coniferous trees growing near the road. These surrounding, overarching trees should provide more than sufficient numbers of remaining foraging perches at each respective drainage structure site if any future owls choose to reoccupy the action area. However, there will be a slight, unquantifiable and temporary degradation of spotted owl habitat by the removal of the mature red alders until new alders grow to sufficient size to replace the foraging perches lost during excavation of the old drainage structures.

No vegetation will be removed during roadway surface rehabilitation or fill failure work because all this work is located on the existing devegetated road prism and not on the road fill.

Bald Eagle

No suitable bald eagle habitat will be removed or degraded by the proposed action.

Marbled Murrelet

No trees that provide suitable marbled murrelet nesting habitat or provide any cover to any trees providing suitable nesting habitat will be removed, altered or degraded by the proposed action. The mature red alder trees that will be removed do not provide cover or contribute to any microclimatic conditions of any potentially suitable nest perches because they do not extend high enough into the canopy of suitable nesting trees.

B. Indirect Effects

Spotted Owl

There are no indirect effects to spotted owls from the proposed action.

Bald Eagle

There are no indirect effects to bald eagles from the proposed action.

Marbled Murrelets

The only potential indirect effect to marbled murrelets that could occur would be an increase or attraction of corvids (jays, crows and ravens) and a subsequent increased predation threat to nesting murrelet adults and chicks caused by an increased availability of human food left at the work site by contractors. This potential indirect effect will not occur, however, because of specific language in the project contracts directing that all human food or garbage be disposed of in corvid proof trash containers or removed from RNSP. Therefore, there will be no indirect effects to marbled murrelets from the proposed action.

C. Cumulative Effects

Cumulative effects are those state and private actions that may occur in the future that have the potential to impact listed species in the park. Much private timber company land and other private and tribal land occurs immediately adjacent to park boundaries and the action area. State and county roads and highways also exist immediately adjacent to the park and within the park. Road repair and rehabilitation projects have occurred, and will occur in the future, on roads and highways adjacent to the park. However, these road repair and rehabilitation projects are either too far away from suitable RNSP threatened and endangered species habitat to have an effect or are managed under state and federal environmental planning guidelines. Thus, other road repair projects adjacent to or within RNSP are not likely to add any adverse impacts above and beyond the proposed action. Timber will presumably continue to be harvested on private timber company lands immediately to the south of the Action Area. RNSP engages in consultations with adjacent private land owners if actions are planned that could occur within the Special Treatment Area (STA) which extends 200 feet beyond the boundary of the park as required under the California state forest practice rules. During those consultations the park provides input to timber harvest plans that limits the impacts to RNSP resources, including listed species. RNSP does not have legal jurisdiction to influence actions outside of the STA.

VIII. DETERMINATION

Based on the nature and timing of the proposed action, it is my determination that the Alder Camp Road Rehabilitation Project in RNSP will have the following effects on the threatened and endangered species listed in this document: may affect but not likely to adversely affect spotted owl habitat due to a slight, temporary degradation of foraging habitat; no effect to bald eagle; may affect but not likely to adversely affect marbled murrelets due to noise disturbance generated by heavy equipment operation at ambient levels already present within the action area caused by regular vehicular traffic within and outside of the park.

VIII. MANAGEMENT RECOMMENDATIONS

There are no management recommendations beyond those conservation measures already stated within the proposed action.

VIX. CONTRIBUTORS

Greg Holm, RNSP Wildlife Biologist – GIS analysis and mapping.

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PERSONAL COMMUNICATIONS

Harris, Stan. Professor Emeritus. Humboldt State University, Arcata, CA

Hofstra, Terry. Resources Management and Science Division Chief. Redwood National and State Parks, Orick CA.

Miller, Sherri. Wildlife Biologist, USDA Forest Service, Redwood Sciences Laboratory, Arcata, CA

Page, Gary. Point Reyes Bird Observatory, Point Reyes, CA

Roberts, Lynn. Biologist. US Fish and Wildlife Service, Arcata, CA

Appendix 1

Map

