

**A Biological Assessment of Impacts
to Terrestrial Threatened and Endangered Species
from Port Orford Cedar Management
in Redwood National and State Parks (RNSP)**

Prepared by:
Kristin Schmidt, Wildlife Biologist

30 June 2004

I. INTRODUCTION

The purpose of this biological assessment (BA) is to review the proposed Redwood National and State Parks (RNSP or “park”) action, Port Orford Cedar Management, 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 (AFWO) 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 physalius*)
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*)

In addition to the above 27 species, the USFWS determined on 8 April 2004 that the petition to list the fisher (*Martes pennanti*) as threatened or endangered was warranted, but precluded at that time due to higher priority actions. The fisher thus became a candidate for listing and will be included in RNSP biological assessments when a project occurs in or near potentially suitable fisher habitat.

Critical habitat has been designated for seven species on the park's list of threatened and endangered species. 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.

One of the actions proposed in the Port Orford Cedar Management Plan was discussed on 19 August 2003 during an Interagency Consultation Team (ICT) meeting held at South Operations Center in Orick. That action would reroute a segment of the Little Bald Hills (LBH) Trail out of an area infested with Port Orford Cedar root disease (*Phytophthora lateralis* [PHLA]). The main topic of discussion regarded the potential for the habitat in the project area to be suitable and occupied by spotted owls. We agreed that a field review was necessary to determine the habitat's suitability for nesting and roosting. In the event that suitable habitat was present, the question was raised as to whether it would be possible to survey the area to determine its use by spotted owls, in order for a July 10th start date to be possible.

A field review took place on 11 September 2003 for the purposes of assessing the proposed trail reroute in terms of its location relative to the infected stand of Port Orford Cedar (*Chamaecyparis lawsoniana*) (POC), and to assess the suitability of the habitat for spotted owl nesting and roosting. Staff from RNSP maintenance, vegetation management, environmental compliance, and fish and wildlife management attended this trip.

Since the initial discussion of this project during the ICT meeting, actions proposed under the POC management plan have expanded beyond those associated with the LBH trail reroute. This fact was discussed via telephone conversation with Robin Hamlin of AFWO on 24 March 2004. A draft of the environmental assessment's preferred alternative with the proposed actions outlined was provided to AFWO, per request, on that date.

In 1998, park staff consulted on our roads, trails, and facilities annual maintenance program (USFWS Ref No. 1-14-98-24). Some of the activities described in the BA for that program are relevant to POC management. The relevant actions are:

- Brushing the portion of the LBH trail corridor through second growth, removing down trees in second growth, and mowing vegetation at the primitive horse camp annually between April and June (or "when necessary" in the case of down tree removal). There was a determination of "no effect" for these activities (for both spotted owl and marbled murrelet) in the assessment, mainly due to a lack of suitable habitat.

- Brushing, grading, and culvert replacement on Pacamo Road. The determinations for those activities were “no effect” for spotted owl (due to regular surveys), and “likely to adversely affect” for the marbled murrelet because some portions of Pacamo Road are within 0.25 mi of old growth habitat.
- Brushing the trail corridor and down tree removal along the Hiouchi Trail. The determination was “no effect” for both spotted owl and marbled murrelet due to seasonal restrictions on noise-generating equipment.

III. CURRENT MANAGEMENT DIRECTION

Please refer to *A Conservation Strategy for Managing Threatened and Endangered Species in Redwood National and State Parks* (Sakai 2003) for a detailed summary of laws and policies that influence management direction in RNSP.

Port Orford Cedar Management

The Little Bald Hills trail passes through U.S. Forest Service (USFS) land, as well as national and state park lands, and in 2000 was the subject of a condition assessment conducted by RNSP staff and a Forest Service plant pathologist. The section of trail that passes through a stand of infested POC serves as a source from which other areas along this trail, or areas in other watersheds, could become infected. Because of this the park superintendents closed the trail during the wet months (November through May) beginning in 2001. Also, due to the infection site in the park, the Little Bald Hills trailhead on the Six Rivers National Forest was closed and an auxiliary trail was built to access the Little Bald Hills trail near the National Park Service boundary. This was done to ensure that hikers passing through the RNSP portion of the trail bypass uninfested POC stands in the Rock Creek drainage. The Forest Service has chosen to keep its section of the Little Bald Hills Trail closed until the trail is rerouted out of the infested stand in the park (M. McCain pers. comm.).

Although management of POC was not addressed in the park’s GMP, due to the issues surrounding POC root disease a Port Orford Cedar Management Plan is in the process of being developed. The primary action under this plan will be rerouting the Little Bald Hills Trail out of the infection site. Additional POC management options are being developed because of other small infestations occurring in RNSP, the potential for additional infestations to occur or be discovered in the future, and the need to protect healthy POC inside and outside the park. Port Orford Cedar disease experts from the USFS have assisted park staff in the development of management options which will be similar, in part, to those options identified in the final supplemental environmental impact statement for managing POC in southwest Oregon (USDA and USDI 2004).

IV. DESCRIPTION OF THE PROPOSED ACTIONS

Port Orford Cedar trees become infected by the fungal pathogen, PHLA, when tree roots come

into contact with fungal spores in wet soil, or by root grafting of infected trees to uninfected trees. Infection by PHLA almost inevitably results in the death of the host tree(s). Vectors for the disease include humans that may transport PHLA spores when wet mud clings to vehicle tires, equipment, or footwear, or wildlife or domestic animals walking through infected areas. The activities described in this document were designed to prevent the transmission of PHLA within and outside of the park, and reduce PHLA spore load where complete elimination of the disease from a site is not feasible.

This BA would cover implementation of actions proposed under the POC management plan during the period from mid-2004 through calendar year 2009. The affected area would include all of RNSP lands within the range of POC, but does not include California State Parks' Mill Creek acquisition. Specific sites where projects would occur, due to known areas of POC infestation, and methods that would be used to manage POC are described below (also see Fig.1 for locations of known infections sites proposed for treatment). However, management strategies identified below would apply to additional POC infection sites discovered in the future.

Any POC infection sites discovered in the future in or within 0.25 mi of suitable spotted owl, marbled murrelet, or fisher habitat would be subject to the minimization measures described below under the various forms of treatment. It was estimated that POC management could result 6.2 ac of forested habitat being impacted per year by treatment activities, or 31.0 ac over the five year life span of this BA.

A. Little Bald Hills Trail Reroute

Approximately one-half mile of the Little Bald Hills (LBH) trail traverses through a stand of timber with dead and dying (diseased) POC. During wet weather a portion of the LBH trail through the infected area carries water, thus, humans, horses, or other animals using the trail may pick up PHLA spores from the infection site and transport them to uninfected areas.

For these reasons, RNSP vegetation management and trail maintenance staff propose to construct a new trail segment, approximately 0.65 mi long, to bypass the existing area of infection. This would result in approximately one mile of existing trail being eliminated (Fig 2). The location of the rerouted segment would be uphill and away from the existing infection site. Rerouting the trail outside of the infected POC stand would allow the LBH trail to remain open year round.

The project is proposed to begin after 9 July 2004, when the ground becomes dry and the risk of transporting PHLA spores is reduced. It is estimated that a 15-person trail crew, working for approximately four months, would be required to complete the project. During the trail construction phase of the project the LBH trail would remain open to the public.

The proposed trail would be constructed to a four-foot width and armored with four inches of $\frac{3}{4}$ minus gravel. The maximum width of disturbance due to construction would be eight feet, resulting in one acre of ground disturbance in the project area. Trail construction would remove small herbs, sword ferns, and shrubs (e.g., evergreen huckleberry and rhododendron) in some places. Much of the proposed reroute would easily avoid major obstacles such as large trees; at most four or five trees <14" diameter at breast height (dbh) would need to be removed during

trail construction.

Chainsaws, hand tools, and a trail dozer would be used to remove vegetation along the rerouted trail and for trail tread construction. Gravel, used to armor the trail, would be brought to the project site using a trail tractor and then spread manually along the trail. Noise-generating activities are expected to occur at the construction site daily, for approximately 6 hours per day for up to four months.

Precautions to be taken against spreading the root disease during trail construction would include:

- beginning work in July when the ground is dry;
- beginning trail construction on the upper end of the rerouted segment, with crews and equipment (trail dozer and trail tractor) accessing the new segment at the upper end, thereby avoiding the infection site;
- thoroughly cleaning mud and dirt off boots and hand tools (if necessary) using standard (POC disease) washing procedures;
- following other procedures for prevention outlined in the POC disease “Risk Key” (see Appendix A).

In addition to the above precautions “no entry” buffers would be established along the existing trail on either end of the infected POC stand that would be a minimum of 100 ft on the upper end and 200 ft on the lower end. The first 50 to 100 ft of each end of the closed section of trail would be dug up and replanted with vegetation salvaged from the trail reroute or cuttings or seeds taken from plants in the project vicinity. The closed sections may be blocked with logs or other material placed across the trail to discourage use by the public. These activities would not occur within the no-entry buffers identified above.

Interdependent and Interrelated Actions

Maintenance- Annual maintenance activities for the rerouted section of the LBH trail would include actions similar to those currently taking place on the existing portion of the trail. Specifically, power tools would be used to brush the trail corridor annually, if necessary, and remove down trees as needed. Noise generating activity in or within 0.25 mi of suitable spotted owl habitat would not occur from 1 February through 9 July, unless spotted owl surveys indicate work can begin earlier.

Access- The project area would be accessed through California State Parks’ Mill Creek acquisition. Approximately 0.7 mi of Upper First Gulch Road would be re-opened by brushing and blading north of its junction with Teran Road to gain access by truck (Fig. 2). Trucks would deliver gravel to a location just past the NPS boundary. From there a trail tractor would be used to haul the gravel the remaining 0.7 mi to the construction site, along an existing road and across approximately four acres of Jeffrey pine grassland. During this phase of the project, estimated to take 2-3 weeks, the existing trail would be used and the entire LBH trail would be closed to the public for visitor safety.

Disposal- All vegetation removed by trail construction would be disposed of on site, by scattering in the vicinity of the project area, or used to replant sections of the closed trail.

Measures to Minimize Impacts on the Northern Spotted Owl

To ensure that nesting spotted owls would not be harmed by trail construction activities, particularly vegetation removal associated with trail construction, all suitable spotted owl habitat within 0.25 miles of the proposed trail reroute would be surveyed to protocol (Fig 2). If spotted owls are detected and determined to be nesting in this area or if survey results are inconclusive, and this consultation has not been completed, the BA would be adjusted as necessary. Otherwise consultation would be reinitiated to determine appropriate mitigation and/or seasonal restrictions prior to proceeding with construction activities.

To determine whether nesting spotted owls may be impacted by visitor use along 0.22 mi of rerouted trail through suitable nesting and roosting habitat, the visual disturbance zone would be surveyed to protocol, as necessary, until completion of the park's trail and backcountry management plan consultation. If spotted owls select a nest site within this zone prior to completion of that BA, consultation would be reinitiated.

To ensure that nesting spotted owls would not be impacted by noise disturbance from project activities, all noise generating activities within 0.25 mi of suitable habitat, including those actions required to open the access road, access the site, and maintain the trail in the future would be restricted until 10 July.

Measures to Minimize Impacts to the Fisher

To ensure that denning female fishers would not be impacted by noise disturbance from project activities, all noise generating activities within 0.25 mi of suitable habitat, including those actions required to open the access road, access the site, reroute the trail, and maintain the trail in the future, would fall under a noise restriction period designed to protect the spotted owl, from 1 February through 9 July. These dates would encompass recommended noise restriction dates to protect female fishers with kits in natal dens (from 24 March through 31 May).

Measures to Minimize Impacts to the Mardon Skipper

To minimize impacts on the mardon skipper that may be caused by access to the work site over suitable and potentially occupied grassland habitat, equipment and crews would be instructed to use the same route to and from the work site (as opposed to taking a different path across the meadow each time) and to minimize the number of trips across this habitat patch to extent possible.

B. Trail and Road Improvements

Trail improvements would be implemented where there is a moderate to high risk of trail users moving PHLA spores between infected and uninfected areas. Trail improvements would include

one or more of the following:

- Trail armoring- the trail surface would be modified with rock or other material to minimize mud production and prevent surface water concentration.
- Water bypass structures- sewer pipes (small culverts) would be installed in wet areas to direct water beneath or away from trails.
- Raised crossings- raised crossings or bridges would be constructed where trails cross streams and other watercourses.

A known site that may require one or more of these improvements is adjacent to the Hiouchi Trail in Jedediah Smith state park where it is above the Smith River and approaches Hwy 199. A social trail connects the river bar with the Hiouchi Trail through an area that is wet and muddy and passes through infected POC. Currently, the Mill Creek Trail is the only trail other than the LBH and Hiouchi trails that may require minor trail improvements in the future due to the occurrence of POC along that trail.

Road improvements would include culvert installation or upgrades along roads with POC where water is diverted over the road bed during storm events. A road improvement may be necessary at Pacamo Road due to a nearby infection site.

It is anticipated that minimal vegetation removal (e.g., on the order of 0.1 ac or less) would be required to implement trail and road improvements. A backhoe and dump truck may be needed for improvements but much of the work would most likely be done manually by crews with hand tools. The POC risk key (Appendix A) would be used to ensure that project activities do not exacerbate the spread of disease.

Measures to Minimize Impacts on the Northern Spotted Owl

To ensure that nesting spotted owls would not be disturbed by trail or road improvement, all activities within 0.25 mi of suitable habitat that would generate noise above ambient background levels would not occur from 1 February through 9 July. At some locations on-going annual maintenance compliance surveys (with negative results) would allow improvement activities to proceed without a seasonal restriction. This would include the infection site at Pacamo Road. The Hiouchi Trail site is in an area of high ambient background noise, therefore, work could occur at any time of year at that site.

Vegetation to be removed from sites requiring sewer pipe installation or bridge construction would be limited to herbs, small shrubs, and saplings growing in the immediate vicinity of the work site. No potential nest trees would be removed.

Measures to Minimize Impacts on the Marbled Murrelet

To ensure that nesting marbled murrelets would not be disturbed by trail or road improvement, all activities within 0.25 mi of suitable habitat that would generate noise above ambient background levels would not occur from 24 March through 15 September.

Vegetation to be removed from sites requiring sewer pipe installation or bridge construction would be limited to herbs, small shrubs, and saplings growing in the immediate vicinity of the work site. No potential nest trees or trees meeting the one-half site potential tree height criterion of critical habitat would be removed.

Measures to Minimize Impacts on the Fisher

To ensure that denning female fishers would not be impacted by noise disturbance from road and trail improvements, all noise generating activities within 0.25 mi of suitable habitat that are above ambient background levels would not occur from 24 March through 31 May.

C. Host Tree Eradication

This eradication technique entails the cutting or girdling of infected and healthy POC trees ($\leq 15''$ dbh), within a localized area of infection, with a high potential for disease spread due to close proximity to a road or trail. The intent of this method is to control small infections while they are still small and not to create large gaps in the canopy. Localized sanitation would only be used in areas meeting all of the following criteria:

- Trees are less than or equal to fifteen inches in diameter.
- The infestation covers less than 5 acres.
- Healthy trees have a high probability of being killed by the disease in the absence of treatment due to their close proximity to diseased trees. This distance is generally 25 to 50 ft, depending on crown characteristics, slope characteristics and drainage situation. Healthy POC trees that are more than 50 ft from an infected tree would not be removed.
- The infestation site is close to a trail, road, or park facility that encourages human use and therefore increases the potential for spread of the disease.

A maximum of five acres would be treated at any particular location. Trees less than 15 inches in diameter would be cut, limbed, and bucked and the debris placed in contact with the ground for faster decomposition. Girdling would be used in place of cutting when possible. Once the hosts and potential hosts are removed or girdled the disease spore load in the soil will slowly decrease until it eventually dies out. Spore die-off can take up to seven years and would require continued removal of POC seedlings for that period. Seedlings would be pulled by hand or with hand tools as necessary.

The infection site along the Hiouchi Trail may require host tree eradication. Appendix B describes in greater detail the criteria for girdling or tree removal.

Interrelated or Interdependent Actions

Debris piles generated from tree cutting would be burned during the winter (from 16 September through 31 January or 23 March depending on habitat and spotted owl surveys) if it was determined this was necessary to reduce fuel loadings and avoid hazardous fuel build-ups.

Measures to Minimize Impacts on the Northern Spotted Owl

To ensure that juvenile spotted owls would not be harmed by host tree eradication, no work would occur in unsurveyed suitable nesting and roosting habitat from 1 February through 15 September.

Trees to be removed from eradication sites would be limited to POC trees $\leq 15''$ dbh. No potential nest trees would be removed. Any pile burning to reduce fuels generated by tree cutting in or within 0.25 mi of unsurveyed suitable habitat would be done in the winter, prior to 1 February.

Measures to Minimize Impacts on the Marbled Murrelet

To ensure that nesting marbled murrelets would not be disturbed by host tree eradication, chainsaw use within 0.25 mi of suitable habitat that would generate noise above ambient background levels would not occur from 24 March through 15 September.

Trees to be removed from eradication sites would be limited to POC trees $\leq 15''$ dbh. No potential nest trees or trees meeting the one-half site potential tree height criterion of critical element would be removed.

Measures to Minimize Impacts on the Fisher

To ensure that denning female fishers would not be impacted by noise disturbance from host tree eradication, all noise generating activities within 0.25 mi of suitable habitat that are above ambient background levels would not occur from 24 March through 31 May.

V. EXISTING ENVIRONMENT

A. Port Orford Cedar in RNSP

Port Orford Cedar in the park is most often found as a component of coast redwood (*Sequoia sempervirens*) forests in the Smith River watershed and on ultramafic soils in Douglas-fir (*Pseudotsuga menziesii*) and tanoak (*Lithocarpus densiflorus*) dominated second-growth forests in the Little Bald Hills. There also are pockets of native POC in Prairie Creek Redwoods State Park and along Coastal Drive, just south of the Klamath River (Jimerson and Jones 2001). Non-native POC was introduced into the Bald Hills in post-timber harvest seed mixes.

Stands of native POC in RNSP were mapped and ground-truthed by staff from Six Rivers National Forest. A stand polygon was mapped (to the vegetation subseries level) as POC if it contained $\geq 10\%$ POC in the canopy. A POC stand was mapped as infested if one or more trees in the polygon was infected with PHLA (T. Jimerson pers. comm.).

The mapping effort resulted in the identification of 1,095 ac in the POC subseries in RNSP. Of that, 313 ac (28%) were determined to be infested with the disease and 100% of the 1,095 ac were classified as “high risk” for contracting the disease, based on their proximity to roads and trails (T. Jimerson pers. comm.).

B. Little Bald Hills Trail

The Little Bald Hills trail begins on Howland Hill Road near Stout Grove in Jedediah Smith Redwoods State Park and ends on the Smith River National Recreation Area at Rock Creek, a tributary of the South Fork of the Smith River. The RNSP portion of the trail is approximately five miles long and the Forest Service portion is approximately 6.5 mi long. In the state park, the trail begins in old growth redwood and traverses through old growth approximately one mile as it climbs in elevation. At the state park/national park boundary the vegetation changes from old growth redwood to second growth mixed-evergreen forest. The trail continues through this vegetation type for the next 1.5 mi until it enters a mosaic of Jeffrey pine grasslands and mixed-evergreen forest that ultimately give way to open areas of Jeffrey pine grasslands on the ridge top.

The LBH trail is considered a “horse trail” and leads to a backcountry “horse camp” with four sites, however, the trail also is used by bicyclists and hikers. Based on the number of permits issued to campers, there was an average of 97 (range 68-142) individual overnight stays per year at the LBH horse camp between 1998 and 2001. The numbers of hikers, bikers, and equestrians using the trail for day use only are unknown, as there is no trail counter at the LBH trailhead.

The infested stand of POC through which the LBH trail traverses (as well as the seasonally wet area on the trail) is just below the first Jeffrey pine/grassland opening, about 2.5 miles from the beginning of the trail. Because the criterion for mapping a polygon as infested is the presence of *any* infected trees within the polygon, 36.0 ac were mapped as infested. The area of infestation along the Little Bald Hills trail currently is less than the entire polygon. The trail reroute as proposed is upslope from the infected trees.

C. Other Known Infection Sites

The infection site on the Hiouchi Trail is estimated to cover approximately one to two acres and is on the edge of a contiguous stand of old growth redwood forest, bounded by Hwy 199 and the Smith River.

The site at Pacamo Road consists of a number of dead and dying POC in the drainage below the road. The area around the potential road improvement site is older second growth, mixed conifer forest.

VI. STATUS AND DISTRIBUTION OF LISTED SPECIES

Potentially suitable habitat for McDonald’s rock-cress, northern spotted owl, marbled murrelet, fisher, and mardon skipper occurs within the POC management action area. These species will

be considered in this document. Please refer to *A Conservation Strategy for Managing Threatened and Endangered Species in Redwood National and State Parks* (Sakai 2003) for detailed northern spotted owl and marbled murrelet species accounts, habitat status backgrounds, and literature summaries.

1. McDonald's Rock-cress (*Arabis macdonaldiana*), Endangered

A. Species Account

McDonald's rock-cress, a member of the Brassicaceae, is known from three disjunct populations, one near Laytonville in Mendocino County, another in the Smith River watershed in Del Norte County, and one from Preston Peak in Siskiyou County. Surveys in the High Plateau area of the North Fork Smith River located approximately 4,200 plants (Newton 1987), however, the actual number of individuals is difficult to assess because reproduction is asexual, via rhizome production. Populations are patchily distributed due to the species' association with ultramafic barrens, which is a naturally fragmented habitat type. Elevation of known sites varies from 1200-5200 ft (366-1585 m).

Activities that potentially could impact McDonald's rock-cress if it were to occur in the park include fire suppression resulting in encroachment by woody vegetation and other plant competitors into suitable habitat. Surveys for this species were conducted in potentially suitable habitat in the Little Bald Hills, as recently as June 2003, with negative results (L. Arguello pers. comm.).

B. Habitat Status

Rock crevices and bare, steep slopes (40-90%), dry ridges, and serpentine soils characterize habitat for this species. Populations also are known from Jeffrey pine (*Pinus jeffreyi*) grasslands on relatively flat topography. Vegetation cover is very sparse, with overhead cover typically less than 5%. Common associates include Jeffrey pine, incense cedar (*Libocedrus decurrens*), knobcone pine (*P. attenuata*), huckleberry oak (*Quercus vaccinifolia*), Siskiyou mat (*Ceanothus pumilus*), and Idaho fescue (*Festuca idahoensis*) (Imper 1983, Newton 1987, Jimerson et al. 1995). Potentially suitable habitat for McDonald's rock-cress is limited to the Little Bald Hills in RNSP, where the only extensive serpentine soils in the park occur.

The proposed trail reroute does not go through potentially suitable habitat for this species. Access to the work site would cross a 4.1 ac patch of Jeffrey pine/fescue grassland. No other known POC infestations occur within potentially suitable habitat for this species, therefore, no other actions proposed for POC management would occur in potentially suitable habitat.

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

A. Species Account

Historically one spotted owl territory, Cedar Creek, occurred in the vicinity of the four known infection sites considered in this document. The activity center for this territory was about 2.5 mi northwest of the proposed LBH trail reroute, and between 0.5 and 1.5 mi distant from the other known infection sites. The activity center was in old growth, redwood-dominated forest. Spotted owls have not been detected at Cedar Creek since 1995; this pair's core area recently became occupied (in 2002) by a reproductive pair of barred owls (*S. varia*). All suitable nesting and roosting habitat within a one-mile radius of this historic activity center was surveyed to protocol in 2002 and 2003. These surveys along with compliance surveys at Jedediah Smith campground have effectively covered the two localized POC infection sites.

Spotted owl surveys are in progress in the vicinity of the proposed LBH trail reroute. To date, there has been one nighttime detection of a single male, east of the proposed reroute, greater than 0.25 mi away from the project site. There also was a detection of barred owl very close to the upper end of the proposed reroute. Other surveys to protocol, in the area of the primitive horse camp, were completed in 1999-2001 with no responses; the horse camp is approximately 0.5 mi east of the proposed reroute junction with the existing LBH trail.

B. Habitat Status

The proposed LBH trail reroute goes through habitat typed as "mixed-evergreen second growth" in the park's GIS vegetation coverage. Habitat polygons have not been mapped to a finer level of resolution, e.g., with tree size classes, canopy closure, and stand age classes. During the field review we determined that approximately 0.22 mi of the eastern-most (uppermost) portion of the proposed reroute traverses through potentially suitable nesting and roosting habitat. Along this section of proposed trail there are Douglas-fir trees >21" dbh, widely spaced, with structural defects in the crowns. There also are a number of large snags, large coarse woody debris, and a fair amount of structural diversity in the stand. The western (lower) 0.43 mi of the proposed reroute traverses a stand that is too young to provide suitable nesting and roosting habitat. The tree diameters are <21" dbh, the stand is dense, and lacks horizontal and vertical diversity. Along this section very few snags were observed and in places the shrub layer consisted of dense patches of shade-tolerant species such as tanoak.

Buffering the portion of the proposed trail reroute within suitable habitat resulted in 190 ac of forested habitat and grasslands occurring within 0.25 mi of this section. Using air-photo interpretation it was estimated that 58 ac (30%) out of the total 190 ac would qualify as potentially suitable nesting and roosting habitat. With the exception of 0.1 mi of rerouted trail at the lower end, the entire proposed reroute falls within the 0.25 mi buffer around the section in suitable spotted owl habitat.

Using air-photo interpretation it was estimated that 165 ac of potentially suitable nesting and roosting habitat occurs in patches within 0.25 mi of the Upper First Gulch access route from the intersection with Teran Road to the existing Little Bald Hills trail. Fifteen of these acres also occur in the 0.25 mi buffer around the proposed trail reroute (see Fig 2). The portion of the road that would be opened for vehicles has approximately 71 ac of potentially suitable spotted owl habitat within 0.25 mi, and the remaining portion of the road to the existing trail has

approximately 145 ac of potentially suitable habitat within 0.25 mi. Fifty-one of these acres are shared (e.g. are overlapping) in the 0.25 mi buffers. Without double-counting the overlapping buffer acres, there is a total of 208 ac of potentially suitable spotted owl nesting and roosting habitat within 0.25 mi of the proposed project area (Table 1).

Table 1. Sub-areas within the Little Bald Hills Trail project area, acres of potentially suitable nesting and roosting spotted owl habitat within a 0.25 mi buffer, buffer overlapping acres, and proposed project activities.

Project Sub-Area	Length (miles)	Suitable N/R Habitat w/in 0.25 mile (acres)	Buffer Overlapping Acres	Proposed Activity
A. Trail Reroute Section	0.22	58	15 (overlap w/ "B.")	Trail Construction and NSPO surveys
B. Upper First Gulch Rd from NPS Boundary to Little Bald Hills Trail	0.7	145	51 acres are shared by the buffers surrounding these road segments.	Trail Tractor Access
C. Upper First Gulch Rd from Teran Jct to NPS Boundary	0.7	71		Brushing, Grading, Access by Vehicles
Total	1.62	274	66 (274-66 acres = 208 acres of suitable habitat in project area)	

The Hiouchi Trail POC site with a PHLA infestation occurs in suitable old growth nesting, roosting, and foraging (NRF) habitat, but this habitat is on the edge of a patch bounded by Hwy 199 and the mainstem of the Smith River. There are 82 acres of suitable spotted owl NRF habitat within 0.25 mi of this site. There are 52 acres of second growth habitat > 40 yr old within 0.25 mi of the Pacamo Road site that may be suitable spotted owl nesting and roosting habitat (Fig 1).

In total there are approximately 8,625 ac (3,490 ha) of old growth habitat and 773 ac (313 ha) of second growth forest that is suitable spotted owl nesting, roosting, and foraging habitat within the action area of the POC management plan.

3. Marbled Murrelet (*Brachyramphus marmoratus*)

A. Species Account

It is assumed that all old growth redwood stands within the park have the potential to be occupied by marbled murrelets. Therefore, habitat within 0.25 mi of the Hiouchi Trail infection site is assumed to be occupied by marbled murrelets. It's also possible that additional infection sites requiring management in the future could occur within potentially occupied habitat.

B. Habitat Status (and Critical Habitat)

With the exception of the project site in the Little Bald Hills, all known infection sites are within a marbled murrelet critical habitat unit.

The Hiouchi Trail POC site occurs in suitable old growth marbled murrelet nesting habitat, but trees that could potentially be removed by POC management actions are not primary constituent elements of critical habitat. There are 82 ac of suitable nesting habitat within 0.25 mi of this site. There is no suitable marbled murrelet habitat within 0.25 mi of the Pacamo Road site or the LBH trail reroute (Fig 1).

4. Fisher (*Martes pennanti*), Candidate

A. Species Account

Prior to European settlement, fishers occurred throughout most conifer forest habitats in the Pacific states (Grinnell et al. 1937), including commercially valuable and easily accessible timber in low-mid elevations. These forests have relatively continuous canopy and complex structure near the forest floor (Aubry and Houston 1992, Powell and Zielinski 1994). Since 1850, the amount of mature and old growth forest in the Pacific states has been significantly reduced, primarily by logging in recent decades (Thomas et al. 1990). Grinnell et al. (1937) determined that overtrapping was the primary initial cause of fisher population decline; even though fisher trapping was regulated or prohibited in the 1930s and 1940s, populations were probably prevented from recovering due to the loss and fragmentation of habitat over a large portion of the range in Washington, Oregon, and California (Aubry and Houston 1992, Powell and Zielinski 1994). As a result, the fisher has most likely been extirpated, or is uncommon, in much of its historic range (Aubry and Lewis 2003, Powell and Zielinski 1994).

Results of standardized fisher surveys show that the geographic distribution in the west is limited to several relatively small disjunct populations. There have been 50 verifiable records of fishers from Oregon between 1954 and 2001, most from southwest Oregon in the vicinity of the Siskiyou Mountains near the California border, and in the vicinity of 1977-1981 translocation sites in the southern Cascades (Aubry and Lewis 2003). Fishers occur in two areas in California: the north coast ranges and Klamath Mountains, and the southern Sierra Nevada (Zielinski et al. 1995). This contrasts with Grinnell et al.'s (1937) assertion that fishers occurred around Mt Shasta and Mt Lassen and throughout the Sierra Nevada. In Del Norte and Humboldt counties fisher populations are consistent with their historic distribution (Zielinski et al. 1995). The fisher population in northwest California is probably the largest in the western United States, although it is isolated (Aubry and Lewis 2003).

To date there have been four separate surveys for forest carnivores in RNSP. Two of these were U.S. Forest Service funded surveys in areas of proposed highway construction at Cushing Creek (Gellman et al. 1993) and Wilson Creek (McKenzie et al. 1994), both in Del Norte county and both within a couple of miles of the coast. In a state-sponsored distribution study, habitats were surveyed within 50 air km of the coast between the Oregon border and southern Humboldt

County (Beyer and Golightly 1995). A park-funded survey took place in 2002 with the main objective of determining presence of the Humboldt marten (*M. americana* ssp. *humboldtensis*) in the parks (Slauson et al. 2003). Fishers were detected in all four of these surveys. Beyer and Golightly (1995) reported a "...high detection ratio...in an area of...[Redwood] National Park...". Slauson et al. (2003) detected fishers in old growth, older second growth, and along the edges of these two types. Sample units with detections were distributed throughout the park, from Jedediah Smith State Park in the north to Devil's Creek (a tributary of Redwood Creek) in the south. There are relatively few fisher observations in the park's wildlife observations database, however, reliable sightings have occurred in the Lost Man Creek, Prairie Creek, Wolf Creek Education Center, and Newton B. Drury parkway areas as well as from the A-9 Road, C-9 Road, Bald Hills Road, and Maneze Prairie. The survey results coupled with the reliable database records indicate that fishers are probably well-distributed throughout the park.

There are no records of fishers breeding within RNSP, although they are known to reproduce in private managed timberlands adjacent to the park (J. Thompson pers. comm.), and it is likely that RNSP harbors a breeding population. Data from studies in the west indicate fishers give birth in mid-March to early April, and breed shortly after. For example, 26 wild caught captive fishers from British Columbia showed a mean parturition date of 31 March (range 23 March- 7 April) and a mean date of 12 April for mating (range 5 April – 27 April) (Hall 1942). Seglund (1995) documented a female entering a natal den on 10 April and moving to a maternal den on 26 April where she remained until 2 June. On managed forests in the redwood and redwood/ Douglas-fir transition zone it appeared that parturition was occurring during the latter part of March (J. Thompson unpub. data). Raley (2002) documented similar dates for radio-collared fishers in the southern Oregon Cascades. In that study females gave birth in late March, bred between late March and early April, and remained in natal dens until kits were about 8 weeks old. Other studies have documented kits remaining in natal dens until 6-10 weeks of age (citations in Powell and Zielinski 1994, Seglund 1995).

Fishers are known to avoid areas of human disturbance. Seglund's (1995) study showed that fisher rest sites occurred >100 m (328 ft) from roads, homes, and campgrounds. However, fishers are frequently observed near roads in the park (RNSP unpub. data). Slauson et al. (2003) detected fishers at road-side track plate stations, including those placed near Newton B. Drury parkway, and near Alder Camp, Howland Hill and Bald Hills roads. Conversely, Beyer and Golightly (1995) attributed low and high detection ratios at certain sites to proximity of a major highway and limited human access, respectively. From a park management standpoint disturbance to females with young kits is of primary importance. Seglund (1995) indicated that denning females may be especially vulnerable when disturbed by loud noise near a natal den site. However, the mere presence of humans, for example walking on a trail in suitable denning or resting habitat, under most circumstances would not warrant concern (B. Zielinski pers. comm.).

Fishers consume a wide variety of foods. In the southern Sierra Nevada Zielinski and Duncan (in press) noted fisher diets included mammals (mainly sciurids and cricetids), birds, lizards, insects, and plants (including fungi and fruit). Golightly (unpub. data) found gray squirrel, Douglas-squirrel, ground squirrel, chipmunk, woodrat, and voles in the genera *Microtus* and *Clethrionomys* in fisher scats from northwest California. In addition to the prey items

mentioned above, Raley (2002) reported brush rabbit, opossum, striped skunk, porcupine, deer, elk, berries, and yellowjackets in scats from den and rest sites in the southern Oregon Cascades.

B. Habitat Status

Fishers have generally been associated with large unfragmented blocks of late successional conifer forest. Buskirk and Powell (1994) described it as one of the most habitat-specialized mammals in western North America. Fisher home ranges are large; in northwest California female home ranges covered between 5.8 and 10 mi² (1,498 - 2,612 ha) and male home ranges covered between 7.8 and 22 mi² (2,020 - 5,806 ha) (Mullis 1985, Seglund 1995, Zielinski et al. in press a). In one study (Zielinski et al. in press a) mid and late seral Douglas-fir composed 24.5% and 14% of mean proportions of forest cover, respectively, in home ranges of both sexes. White oak and grassland types were poorly represented in these home ranges. Buskirk and Powell (1994) suggested that the species contributing to vegetation cover were not as important as the successional stages and structure of cover; fishers show preference for low and closed but not uniform canopies, and structural complexity near the forest floor. Fishers are known to occur in commercially managed forests in the redwood/ redwood-Douglas-fir zone where stand heterogeneity remained post-harvest, including the presence of residual trees, logs, and hardwoods (L. Diller pers.comm., J. Thompson unpub. data).

Connectivity between preferred habitat patches also is important. Unsuitable forest habitat may be used for travel, and suitable forest patches separated by openings may not be used (Buskirk and Powell 1994). Stand use in northwestern California was determined to be negatively correlated with the amount of stand edge (Rosenburg and Raphael 1986). However, Aubry (pers. comm.) and Diller (pers. comm.) reported instances of rest sites near the edges of clearcuts and indicated that the presence of a structure may be more important than “where” that structure is located. Riparian areas also have been noted as important components of fisher home ranges, and may be used as travel routes (Buck et al. 1994, Seglund 1995, Diller pers. comm.).

Fishers require large structures well-distributed throughout the home range for denning and resting; reuse of rest sites is rare (Seglund 1995, Zielinski et al. in press b). In northwestern California 46% of rest sites were in large live trees and 44% were in large snags and logs, with females using snags more often than males (32% of the time for females versus 18% of the time for males). Large black oaks were often used when available. Zielinski et al. (in press b) determined the best predictors of suitable resting habitat include the presence of large trees (averaging 148 cm dbh), high canopy closure (95%), and the presence of one or more large snags >100 cm dbh. Rest sites in Seglund’s (1995) study area on the Shasta-Trinity National Forest were within 100 m of perennial, annual, or ephemeral streams, associated with large amounts of down woody debris <12 cm in diameter, had up to four vertical vegetation layers, and were >100 m from human disturbance (a road, house, clearcut, or campground).

The only information on fisher habitat use in RNSP has been in association with detections at track plates. These sites may represent foraging locations, and in some instances may be in proximity to rest sites (Zielinski et al. in press b). Beyer and Golightly (1996) found that canopy closure at detection sites in coastal habitats averaged 86.8% and tree diameters averaged 52.3 cm

at breast height. Slauson et al. (2003) placed track plate sample units throughout RNSP in old growth and second growth forest and at the edges of these two types. Fishers visited track plates in 39-72 year old second growth more often than expected and stations in old growth less often than expected; most of the sites in second growth appeared to lack any residual old growth trees. However, many of the detections in second growth were within 0.5 mi of old growth. Fishers often were detected at stations on the edge of second growth and old growth. Detection sites in old growth had combined mean over- and understory tree canopy closures of approximately 60% and nearly 100% combined large and small shrub cover. A mean of 11 snags >90 cm dbh per hectare occurred at these sites along with a mean number of 55 logs >90 cm diam per hectare. Detection sites in second growth had a mean of almost 100% combined over- and understory tree canopy closure and an equally high amount of large and small shrub cover. A mean of 4.3 snags >90 cm dbh per hectare occurred at second growth sites along with a mean number of 12 logs >90 cm diam per hectare. Large stumps >90 cm also were present near detection sites in both old growth and second growth.

Within RNSP there are an estimated 41,000 ac (16,600 ha) of old growth forest, all of which may be considered suitable for fishers for denning, resting, and foraging. There are 24,364 ac (9,860 ha) of second growth forest ≥ 40 yrs old that also may be suitable for fisher occupancy. Stands >40 years old with a legacy component (e.g., residual old growth, large snags and downed logs) may provide structures that could be used for resting and denning. Second growth stands <40 yrs of age may be suitable for fishers if they contain residual habitat sufficient to provide structure and habitat heterogeneity.

All of the known POC infection sites and the proposed LBH trail reroute occur within potentially suitable habitat for the fisher. It's likely that most areas where POC infection could occur also would be likely to occur in suitable fisher habitat.

5. Mardon Skipper (*Polites mardon*), Candidate

A. Species Account

The mardon skipper is a small sedentary butterfly that inhabits low growing grassland plant communities. Up until recently the species was known from four widely separated locations. The only known California population occurred in northwestern Del Norte County, on Low Divide ridge on US Forest Service land. In May of 2004, a fifth population was discovered in the Little Bald Hills area of the park. This is now the southernmost known population. Both California populations occur in rocky serpentine meadows containing Idaho fescue. The two California sites are separated by approximately seven air miles, and the Smith River valley.

Mardon skipper larvae feed on *Festuca* spp. for approximately three months (Dornfeld 1980) before pupating in cocoons in the bunch grass (Newcomer 1966). Adults feed on a variety of nectar sources depending on the locale. At one site *Viola adunca* was the preferred nectar source; other preferred sources include *Vicia* spp., *Penstemon* spp., and *Calochortus* spp.

Site conditions where mardon skippers have occurred range from dry, open ridge tops to places associated with wetlands or riparian habitats. The Low Divide population is on a ridge that intercepts coastal fog and may be cool and moist in the summer when adult butterflies are present. The Little Bald Hills population was originally located in a mesic fescue-dominated meadow and a tall-grass horse pasture. An additional search for mardon skippers in early June resulted in a few individuals being detected in ridge top areas, approximately 0.5 mi southeast of the original location. This indicates that the park population could occur extensively throughout the grasslands of Little Bald Hills (S. Mattoon pers. comm., K. Hansen pers. comm.).

Threats to the species include recreational activities including walking, horseback riding, and off-road vehicle use that may kill skippers directly and degrade habitat. The Low Divide population is currently threatened by these activities (USFWS 1999). Grassland habitats required by this species have been severely reduced by development, fire suppression, and invasion by plants not suitable for the species including non-natives (Potter et al. 1999). Scotch broom has been identified as a particular threat due to its ability to form dense stands and exclude native grassland species. Parker et al. (1997) found an inverse relationship between Scotch broom and Idaho fescue, a larval host species. Threats to the Little Bald Hills population could include horseback riding and hiking.

Controlled burning, mowing, and exotic plant management are necessary to maintain suitable mardon skipper habitat, but methods must be implemented in such a way as to not prove lethal to a population. Restoration activities should involve small-scale, site-specific treatments focused on augmenting food and nectar plants. Care must be taken to select habitat enhancement methods, and time activities in such a way, that would minimize impacts to butterfly larvae and pupae (Potter et al. 1999).

B. Habitat Status

It is likely that the only suitable mardon skipper habitat in the park occurs in the Little Bald Hills in the Jeffrey pine and fescue grasslands as the serpentine soils that create this type of habitat are absent elsewhere in RNSP. The Jeffrey pine grassland in the Little Bald Hills covers approximately 346 ac (138 ha). There are approximately four acres of fescue grassland in the area required for access to the proposed LBH trail reroute site. Mardon skippers were not detected at this location on any of the butterfly searches to date.

VII. IMPACTS TO THREATENED AND ENDANGERED SPECIES

McDonald's Rock-cress

Based on descriptions of suitable habitat in the literature, it would appear that the Jeffrey pine grasslands in the Little Bald Hills could qualify as potentially suitable habitat for McDonald's rock-cress. However, sensitive plant surveys in the Little Bald Hills have not detected this species. Therefore, the habitat in the Little Bald Hills is currently considered not occupied. Access across the patch of Jeffrey pine grassland by crews on foot and equipment is not expected

to damage the habitat or render it unsuitable for potential colonization by this species in the future.

Northern Spotted Owl

Disturbance

Little Bald Hills Trail Reroute

In the Little Bald Hills we are in the process of conducting surveys within approximately 0.25 mi of the proposed trail reroute. So far we have detected a single male spotted owl east of the project area that could not be located on the subsequent follow-up visit. This is the only record of a spotted owl occurring in the LBH area. If it turns out that spotted owls are nesting within 0.25 mi of the proposed trail reroute we will reinitiate consultation (or adjust this document if consultation is not yet completed) to determine appropriate measures to reduce impacts that may result from trail construction.

There are 150 ac of potentially suitable nesting and roosting habitat within 0.25 mi of the Upper First Gulch access road to the LBH trail that have not been surveyed, nor will be surveyed (Table 1). Noise-generating activities, including the use of heavy equipment to open 0.7 mi of this road, access along this portion of the road by vehicles, and access along the remaining 0.7 mi of Upper First Gulch Road using a trail tractor, would occur after 9 July. In 2004 any reproductive spotted owls associated with these 150 ac of unsurveyed potentially suitable habitat may be impacted by noise disturbance.

Beyond 2004, in the absence of spotted owl surveys, any reproductive owls associated with 58 ac of potentially suitable habitat within 0.25 mi of the rerouted trail segment may be impacted by noise disturbance due to trail maintenance activities after 9 July. Visitor use of the 0.22 mi portion of the trail through suitable nesting and roosting habitat could cause visual disturbance to spotted owls selecting a nest site within 150 ft on either side of this trail, an area equivalent to eight acres. Eventually, visitor use along this rerouted section of trail may result in an adverse impact to nesting owls. This potentially adverse impact will be analyzed under the RNSP trail and backcountry management plan BA. In the mean time, until that consultation is completed, surveys to protocol will ensure that owls within this eight acre area are detected and, if nesting, consultation would be reinitiated.

Trail and Road Improvements

A known site that would require a trail improvement occurs along Hiouchi Trail. This site is in an area of high ambient background noise due to its proximity to Hwy 199 and the Smith River. Project activities would not result in additional noise levels or disturbance. A known site that would require a road improvement occurs along Pacamo Road. Surveys to protocol have been conducted regularly at this location since 1999 and no spotted owls have been detected. Due to the presence of a barred owl territory in this vicinity it is unlikely that spotted owls will be detected here in the near future. There would be no impacts from activities at this site.

There may be POC infection sites discovered in the future that require road or trail improvement

that fall in areas of suitable habitat without surveys. In the event noise-generating activity would be needed to manage these sites, work would not occur from 1 February through 9 July.

Host Tree Eradication

The known site that may require small tree eradication in order to reduce PHLA spore load and prevent further spread of the disease is along the Hiouchi Trail. As stated above, the Hiouchi Trail is in an area of high ambient background noise and activities at this site would not result in increased noise above ambient background levels.

There may be POC infection sites discovered in the future that require small tree removal that fall in areas of suitable habitat without surveys. In the event noise-generating activity would be needed to manage these sites, work could not occur from 1 February through 9 July.

Direct Injury

Port Orford Cedar management activities would not result in the risk of direct injury to spotted owls. Tree removal- to reroute the Little Bald Hills trail or eliminate POC host trees- in suitable habitat would only take place where survey results are negative or after September 15 and before 1 February. The Hiouchi Trail infection site falls within an area of compliance survey coverage, therefore, no restriction would be needed to protect juvenile spotted owls at this site.

Loss and Modification of Suitable Habitat

No potentially suitable nesting, roosting, or foraging (NRF) habitat would be removed by any of the proposed POC management actions. Some elements of potentially suitable habitat along 0.22 mi of the rerouted LBH trail would be removed during trail construction; this could result in a maximum of one acre of spotted owl NRF habitat degradation. Affected habitat elements in the LBH project area include shrubs and trees ($\leq 14''$ dbh) that may be removed from the trail tread, as well as downed woody debris clearing where necessary. No canopy trees or snags would be removed; the trail would be rerouted around all trees $>14''$ dbh.

Trail and road improvements could remove small amounts of herbaceous and understory vegetation in suitable habitat. Potential impacts would be limited to a maximum of 0.1 acre of vegetation removed in association with improvement activities.

Along the Hiouchi Trail diseased POC trees may be managed by girdling and/or cutting. These trees are on the edge of contiguous stand of old growth (the edge being Hwy 199 and the Smith River). Only trees $\leq 15''$ dbh would be cut or girdled. Girdled trees would become snags that could be used by spotted owl prey. Treating this site for PHLA spore load reduction would result in a maximum of five acres of habitat degradation.

There may be POC infection sites discovered in the future that would require this type of management; however, no more than 6.2 ac per year, or 31.0 ac over a five year period, would be impacted from POC management activities. This is a small portion (0.3%) of the total suitable NRF habitat in the POC management plan area.

Marbled Murrelet

Disturbance

The project area in the Little Bald Hills and the road improvement site on Pacamo Road are not in or within 0.25 mi of suitable marbled murrelet habitat, therefore potential disturbance is not an issue at these sites.

The infection site on the Hiouchi Trail that would require a trail improvement and/or host tree eradication is within suitable marbled murrelet nesting habitat. This infection site is very close to Hwy 199 and the Smith River in an area of high ambient noise levels. Therefore, using power tools or other noise generating equipment to treat this site would not result in increased noise, or disturbance at any time of year.

If infection sites are discovered in the future in areas with low ambient background noise all work would either occur outside of the breeding season (16 September through 23 March) or would be done with hand tools.

Direct Injury

Port Orford Cedar management activities would not cause a risk of direct injury to marbled murrelets.

Loss and Modification of Suitable Habitat

No potentially suitable marbled murrelet nest trees would be removed or modified by any of the proposed POC management actions. Road and trail improvements would remove only herbs and shrubs and host tree eradication would only eliminate (by cutting or girdling) trees $\leq 15''$ dbh.

Marbled Murrelet Critical Habitat

No primary constituent elements of critical habitat would be impacted by any of the proposed POC management actions. Road and trail improvements would remove only herbs and shrubs and host tree eradication would only eliminate trees $\leq 15''$ dbh. Trees of this size are less than one-half site potential tree height, and do not provide nesting opportunities.

Fisher

Disturbance

Little Bald Hills Trail Reroute

There are 208 ac of older second growth, or second growth with legacy, that could be potentially suitable for the fisher within 0.25 mi of the access road and the proposed LBH trail reroute. This includes the presence of large snags and broken-topped trees that are likely to provide cavities for rest sites. Noise-generating activities, including the use of heavy equipment to open 0.7 mi of the

Upper First Gulch Road, access along this portion of the road by vehicles, access along the remaining 0.7 mi of the road using a trail tractor, and running heavy equipment along the rerouted trail section would occur after 9 July. It is possible that fishers may be disturbed or displaced from rest sites, but this would not result in an adverse impact to denning females, as kits would be highly mobile by this time. Visitor use along the rerouted section of trail is not expected to impact fishers.

Trail and Road Improvements

A known site that would require a trail improvement occurs along Hiouchi Trail. This site is in an area of high ambient background noise due to its proximity to Hwy 199 and the Smith River. Project activities would not result in additional noise levels or disturbance. A known site that would require a road improvement occurs along Pacamo Road. The habitat within 0.25 mi of this site is older second growth that is of questionable suitability for the fisher.

There may be POC infection sites discovered in the future that require road or trail improvement that fall in areas of potentially suitable fisher habitat. In the event noise-generating activity would be needed to manage these sites, and a seasonal restriction is not already in place for the spotted owl or marbled murrelet, work would not occur from 24 March through 31 May.

Host Tree Eradication

The known site that may require small tree removal in order to reduce PHLA spore load and prevent further spread of the disease occurs along the Hiouchi Trail. As stated above, the Hiouchi Trail is in an area of high ambient background noise.

There may be POC infection sites discovered in the future that require small tree removal that fall in areas of suitable habitat without surveys. In the event noise-generating activity would be needed to manage these sites, and a seasonal restriction is not already in place for the spotted owl or marbled murrelet, work would not occur from 24 March through 31 May.

Direct Injury

Port Orford Cedar management activities would not cause a risk of direct injury to fishers. No trees large enough to contain a fisher rest site would be removed by POC management activities.

Loss and Modification of Suitable Habitat

No potentially suitable fisher habitat would be removed by any of the proposed POC management actions. Some elements of potentially suitable habitat along 0.22 mi of the rerouted LBH trail would be removed during trail construction; this could result in a maximum of one acre of fisher habitat degradation. Affected habitat elements in the LBH project area include shrubs and small trees ($\leq 14''$ dbh) that may be removed from the trail tread, as well as downed woody debris clearing where necessary. No canopy trees or snags would be removed; the trail would be rerouted around all trees $>14''$ dbh.

Trail and road improvements could remove small amounts of herbaceous and understory vegetation to be removed in suitable habitat. Potential impacts would be limited to a maximum of 0.1 acre of vegetation removed in association with improvement activities.

Along the Hiouchi Trail diseased POC trees may be managed by girdling and/or cutting. These trees are on the edge of contiguous stand of old growth (the edge being Hwy 199 and the Smith River). Only trees $\leq 15''$ dbh would be cut or girdled, and these would be few in number. Treating this site for PHLA spore load reduction would result in a maximum of five acres of habitat degradation.

There may be POC infection sites discovered in the future that would require these types of management; however, no more than 6.2 ac per year or 31.0 ac over a five year period would be impacted from POC management activities. This is a small portion (0.3%) of the total suitable fisher habitat in the POC management action area.

Mardon Skipper

Direct Injury

Access to the LBH trail reroute site would require that the trail crew and trail tractor cross approximately four acres of potentially suitable mardon skipper habitat. To date, no mardon skippers have been detected in this particular area of Little Bald Hills grasslands. However, there is a possibility that this habitat is occupied and skipper larvae could be impacted by equipment access. Measures to minimize impacts would include requesting that crews and equipment use the same path to and from the work site (as opposed to taking a different path each time) and minimize the number of trips across this habitat patch to extent possible.

Modification of Suitable Habitat

Access to the LBH trail reroute site could cause modification of suitable habitat due to vegetation compaction when crews and equipment cross the habitat patch. However, this would result in a relatively small amount of habitat degradation relative to the amount of suitable habitat available in the LBH. It is also expected that impacted vegetation would recover the following spring when new growth appears.

Cumulative Impacts

There are no state, tribal, local, or private actions that are reasonably certain to occur in the future that have the potential to cumulatively impact listed species in the vicinity of the action area (Jedediah Smith Redwoods State Park and adjacent National Park Service lands).

VIII. DETERMINATION

Based on the nature and timing of the proposed action, it is my determination that the Port Orford Cedar Management in RNSP will have the following effects on the endangered, threatened or candidate species addressed in this document:

Due to a slight amount of habitat degradation and noise-generating activities after 9 July in

unsurveyed suitable habitat, this project may affect, but is not likely to adversely affect, the northern spotted owl.

Due to a slight amount of habitat degradation and the potential for noise-generating activities to disturb fishers at rest sites, this project may affect, but is not likely to adversely affect, the fisher.

Due to possibility that some mardon skipper larvae may be present in an area used for access by equipment and crews, and may be harmed if trampled, this project could adversely affect the mardon skipper.

This project would not affect McDonald's rock-cress, the marbled murrelet, or marbled murrelet critical habitat.

IX. MANAGEMENT RECOMMENDATIONS

To ensure a reduction of risk by humans transporting POC root disease, it is recommended that the Little Bald Hills Trail terminate at the state park/ national park boundary (where the vegetation changes from old growth redwood forest to second growth mixed evergreen forest). Access to the Horse Camp and Little Bald Hills could be through the Mill Creek property and avoid the infected stand of POC altogether.

X. CONTRIBUTORS

Pete Angwin, Plant Pathologist, USFS
Leonel Arguello, Supervisory Botanist, RNSP
Frank Betlejewski, Port Orford Cedar Program Manager, USFS
Tom Jimerson, Forest Ecologist, USFS
Jeff Jones, Biological Technician, USFS
Richard Mayle, Roads and Trails Foreman, USFS
Stassia Samuels, Botanist
Dave Schultz, Entomologist, USFS
Judy Wartella, Computer Specialist
Andrea Williams, Biological Sciences Technician

LITERATURE CITED

- Aubry, K.B. and D.B. Houston. 1992. Distribution and status of the fisher (*Martes pennanti*) in Washington. *Northw. Nat.* 73:69-79.
- Aubry, K.B. and J.C. Lewis. 2003. Extirpation and reintroduction of fishers (*Martes pennanti*) in Oregon: implications for their conservation in the Pacific states. *Biol. Conserv.* 114:79-90.
- Beyer, K.M. and R.T. Golightly. 1996. Distribution of Pacific fisher and other forest carnivores in coastal northwest California. Unpub. Rep. to California Dept. of Fish and Game. Contract # FG-3156-WM. 28 pp.
- Buck, S., C. Mullis, and A.S. Mossman. 1994. Habitat use by fishers in adjoining heavily and lightly harvested forests. In Buskirk, S.W., A.S. Harestad, M.G. Raphael, and R.A. Powell (Eds.). *Martens, sables, and fishers: biology and conservation.* Cornell Univ. Press, Ithaca, New York. Pages 368-376.
- Buskirk, S.W., and R.A. Powell. 1994. Habitat ecology of fishers and American martens. In Buskirk, S.W., A.S. Harestad, M.G. Raphael, and R.A. Powell (Eds.). *Martens, sables, and fishers: biology and conservation.* Cornell Univ. Press, Ithaca, New York. Pages 283-296.
- Dornfield, E.J. 1980. *The butterflies of Oregon.* Timber Press, Forest Grove, OR. 276 pp.
- Gellman, S.T., D.L. Walters, and C.J. Ralph. 1993. Biological assessment of the Cushing Creek realignment project route 101, Del Norte County, California. USDA Forest Service, Redwood Sciences Laboratory, Arcata, CA. 66 pp.
- Grinnell, J., J.S. Dixon, and J. Linsdale. 1937. *Fur-bearing mammals of California.* Vol.1, Univ. of California Press, Berkeley.
- Hall, E.R. 1942. Gestation period in fisher with recommendations for the animal's protection in California. *Calif. Fish and Game* 28: 143-147.
- Imper, D. 1983. Report of the 1983 field inspection for McDonald's rock-cress (*Arabis macdonaldiana* ssp. *macdonaldiana*). Unpub. Rep. 18 pp.
- Jimerson, T.J. and J. Jones. 2001. Port Orford Cedar mapping for Redwood National and State Parks, field write-up. Unpub. Doc. on file. South Operations Center, Orick, CA.
- Jimerson, T.J., L.D. Hoover, E.A. McGee, G. DeNitto, and R.M. Creasy. 1995. A field guide to serpentine plant associations and sensitive plants in northwestern California. R5-ECOL-TP-006. USDA Forest Service, Pacific Southwest Region.
- McKenzie, M., S.T. Gellman, and W.J. Zielinski. 1994. Interim biological assessment of the proposed Wilson Creek realignment project route 101, Del Norte County, California. USDA Forest Service, Redwood Sciences Laboratory, Arcata, CA. 30

pp.

- Mullis, C. 1985. Habitat utilization by fisher (*Martes pennanti*) near Hayfork Bally, California. M.S. Thesis. Humboldt State
- Newcomer, E.J. 1966. Life histories of three western species of *Polites*. J. Res. Lepid. 5: 243-247.
- Newton, G. 1987. A field search for *Arabis macdonaldiana* on High Plateau Mountain, Del Norte County, California. Unpub. Rep. 13 pp.
- Parker, I., W. Harpole, and D. Dionne. 1997. Changes in the south Puget prairie landscape. Pages 149-161 in P.V. Dunn and K. Ewing (Eds.). Ecology and conservation of the south Puget Sound prairie landscape. The Nature Conservancy, Seattle, WA. 289 pp.
- Potter, A., J. Fleckenstein, S. Richardson, and D. Hays. 1999. Washington state status report for the mardon skipper. Washington Department of Fish and Game, Olympia. 39 pp.
- Powell, R.A. and W.J. Zielinski. 1994. Fisher. In Ruggiero, L.F., K.B. Aubry, S.W. Buskirk, L.J. Lyon, W.J. Zielinski (Tech. Eds.). The scientific basis for conserving forest carnivores, American marten, fisher, lynx, and wolverine, in the western United States. USDA Forest Service, General Technical Report RM-254. Pages 38-73.
- Raley, C. 2002. Ecological characteristics of fishers in the southern Oregon Cascade range. Final Progress Report. USDA Forest Service, Pacific Northwest Research Station, Olympia, WA. 16 pp.
- Rosenburg, K.V. and M.G. Raphael, 1986. Effects of forest fragmentation on vertebrates in Douglas-fir forests. In Verner, J. M.L. Morrison, and C.J. Ralph (Eds.). Wildlife 2000: modeling habitat relationships of terrestrial vertebrates. Univ of Wisconsin Press, Madison. Pages 263-272.
- Seglund, A.E. 1995. The use of resting sites by the Pacific fisher. M.S. Thesis. Humboldt State University, Arcata, CA. 66 pp.
- Slauson, K.M., W.J. Zielinski, G.W. Holm. 2003. Distribution and habitat associations of the Humboldt marten (*Martes americana*), and the Pacific fisher (*Martes pennanti pacifica*) in Redwood National and State Parks. Unpub. Rep. on file at South Operations Center, Orick, CA. 29 pp.
- Thomas, J.W., E.D. Forsman, J.B. Lint, E.C. Meslow, B.R. Noon, and J. Verner. 1990. A conservation strategy for the northern spotted owl. A report by the Interagency Scientific Committee to address the conservation of the northern spotted owl. USDA Forest Service and USDI Fish and Wildlife Service, Bureau of Land Management, and National Park Service. Portland, OR. 141 pp.

[USDA and USDI] United States Department of Agriculture and United States Department of Interior. 2004. Management of Port-Orford-Cedar in southwest Oregon. Final Supplemental Impact Statement. Coos Bay, Medford, and Roseburg Bureau of Land Management and the Siskiyou National Forest in Southwest Oregon.

[USFWS] United States Fish and Wildlife Service. 1999. Candidate and listing priority assignment form, *Polites mardon*. US Fish and Wildlife Office, Region 1, Western Washington Office, Lacey, WA. 8 pp.

Zielinski, W.J. and N.P. Duncan. in press. Diets of sympatric populations of American martens (*Martes americana*) and fishers (*Martes pennanti*) in California. J. of Mamm.

Zielinski, W.J., R.L. Truex, G.A. Schmidt, F.V. Schlexer, K.N. Schmidt, and R.H. Barrett. in press a. Home range characteristics of fishers in California. J. Mamm.

Zielinski, W.J., R.L. Truex, G.A. Schmidt, F.V. Schlexer, K.N. Schmidt, and R.H. Barrett. in press b. Resting habitat selection by fishers in California. J. Wildl. Mgmt.

Zielinski, W.J., T.E. Kucera, and R.H. Barrett. 1995. Current distribution of the fisher, *Martes pennanti* in California.

PERSONAL COMMUNICATIONS

Arguello, Leonel. Supervisory Botanist. Redwood National and State Parks, Orick, CA

Aubry, Keith. Research Biologist, USDA Forest Service, Olympia, WA.

Diller, Lowell. Research Biologist, Simpson Timber Co., Korb, CA.

Hansen, Ken. Lepidopterist. McKinleyville, CA

Jimerson, Tom. Forest Ecologist. Six Rivers National Forest, Eureka, CA

Mattoon, Sterling. Lepidopterist. Chico, CA

McCain, Mike. Fishery Biologist. Six Rivers National Forest, Gasquet, CA

Thompson, Joel. Wildlife Biologist, Simpson Timber Co., Korb, CA.

Zielinski, Bill. Research Ecologist, USDA Forest Service, Arcata, CA.

Appendix A. Port-Orford-Cedar Risk Key

This is modified from the Risk Key found in the USFS and BLM Supplemental Environmental Impact Statement Management of Port-Orford-Cedar in Southwest Oregon, pages 2-18 through 2-22. It will be further clarified in the final RNSP EA.

Port-Orford-Cedar Risk Key

Site-specific analysis to help determine where risk reduction management practices would be applied.

- 1a. Are there uninfected POC within, near, or downstream of the activity area whose ecological function measurably contributes to meeting resource management plan objectives?
- 1b. Are there uninfected POC within, near or downstream of the activity area that, were they to become infected, would likely spread infections to trees whose ecological function measurably contributes to meeting resource management objectives?

If the answer is no to both questions, then risk is low and no POC management practices are required.

If the answer is yes to EITHER question, then continue.

1. Will the proposed project introduce appreciable additional risk of infection to these uninfected POC?

If yes, apply management practices from the list below to reduce the risk to the point it is no longer appreciable, or meet the disease control objectives by other means, such as redesigning the project so that uninfected POC are no longer near or downstream of the activity area. If the risk cannot be reduced to the point it is no longer appreciable through practicable and cost-effective treatments or design changes, the project may proceed if the analysis supports a finding that the value or need for the proposed activity outweighs the additional risk to POC created by the project.

Management practices are designed to:

- Prevent/reduce the import of disease into uninfested areas (offsite spores picked-up and carried into an uninfested project area);
- Prevent/reduce the export of disease to uninfested areas (onsite spores moved to offsite, uninfested area); and
- Minimize increases in the level of inoculum or minimize the rate of spread in areas where the disease is localized or infection is intermittent.

One to several of the management practices from the list below would be selected and implemented when there is a management need indicated by the POC Risk Key. No priority is assumed by the order listed below; the one or combination of specific practices best fitting the nature of the risk and the site-specific conditions would be applied when indicated by the risk key. Practices can be modified or partially implemented if such changes still meet risk reduction objectives and/or better fit site conditions. A combination of practices may be more effective than single practices, depending on site-specific circumstances.

- 1 Project Scheduling
- 2 Utilization of uninfested water
- 3 Access: Designate access and egress routes to minimize exposure to PL
- 4 Public Information:
- 5 Washing project equipment

Appendix B. Criteria for girdling or removing diseased or potentially diseased POC.

POC trees $\leq 6''$ dbh may be removed or POC trees $\leq 15''$ dbh may be girdled when the following conditions are met:

- Targeted trees are already infected with PHLA, or have a very high probability of becoming infected as a result of their proximity (25' or closer) to other infected trees, AND
- The location is within 25' uphill or 50' downhill of a trail or road that is used regularly by staff or the public, AND
- The girdling of the trees is very likely to reduce the spore load in the soil adjacent to the road or trail and thus reduce the potential for vehicles or foot traffic to pick up infested soil, AND
- Trees to be girdled in this size range are few in number and the extent of the infection site is relatively small.

Disposal of the resulting debris will depend on the amount and size of material generated and the specific project location. Debris will be disposed of in a manner consistent with other management objectives such as fuels management and cultural resource protection. Individual projects will go through a project clearance procedure to ensure that management objectives are met and environmental compliance requirements are satisfied.