

**A Biological Assessment of Impacts to
Terrestrial Threatened Species
from Bald Hills Conifer Cutting- Mainstem Unit in
Redwood National and State Parks (RNSP)**

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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 “parks”) action, Bald Hills Conifer Cutting- Mainstem Unit, 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 obtained a list from the Arcata Fish and Wildlife Service Office website, identifying the endangered, threatened, proposed and candidate species that may be present or may be affected by park activities, dated February 4, 2010 (Document Number 444308846-16415). This list included 22 species currently listed as threatened or endangered, two species listed as proposed threatened or endangered, and four species that are candidates for listing in Humboldt and Del Norte Counties.

Endangered

Western Lily (*Lilium occidentale*)
Beach Layia (*Layia carnosa*)
Tidewater Goby (*Eucyclobius newberryi*)
Leatherback Turtle (*Dermochelys coriacea*)
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*)
Green Sturgeon (*Acipenser medirostris*)
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*)
Marbled Murrelet (*Brachyramphus marmoratus*)
Western Snowy Plover (*Charadrius alexandrinus nivosus*)
Steller Sea Lion (*Eumetopias jubatus*)

Proposed Endangered

Black Abalone (*Haliotis cracherdii*)

Proposed Threatened

Southern Eulachon DPS (*Thaleichthys pacificus*)

Candidate

Mardon Skipper (*Polites mardon*)

Xantu's Murrelet (*Synthliboramphus hypoleucus*)

Yellow-billed Cuckoo (*Coccyzus americanus*)

Fisher (*Martes pennanti*)

The California state endangered species occurring in the parks includes the Bald Eagle (*Haliaeetus leucocephalus*).

Critical habitat was designated for 10 species on RNSP's list of threatened and endangered species. Critical habitat for coho and Chinook salmon, steelhead, and the marbled murrelet occurs within the parks. Proposed revised critical habitat for the leatherback turtle also includes the parks. 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, Oregon silverspot, northern spotted owl, western snowy plover, and Steller sea lion are not designated within the parks.

Two species on the list, Xantu's murrelet and Yellow-billed cuckoo, do not occur in the park except as extremely rare vagrants. Eulachon has been extirpated within the park for at least 30 years due to alteration of lower Redwood Creek and the estuary. The green sturgeon southern Distinct Population Segment is listed in California south of the Eel River. These species will not be addressed in RNSP assessments.

This project was discussed at an Interagency Consultation Team meeting on 12 May 2009. Preliminary effects determinations for the spotted owl were "may affect but not likely to adversely affect" or "may affect and likely to beneficially affect". Preliminary determinations for North Coast steelhead were "no effect" or "...not likely to adversely affect". A field review of the action area by National Park Service and US Fish and Wildlife Service staff took place on 24 Jun 2009. During that field trip we walked through the action area and discussed the sub-units relative to protecting the Coyote Rock spotted owl activity center and those Douglas-fir trees functioning as potentially suitable spotted owl habitat including fir trees growing on drainage slopes.

Subsequently, the project manager decided to leave (not treat) all Douglas-fir growing in drainages, below the break in slope. Due to this revision, there will be no impacts to NC steelhead and this species will not be considered further.

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.

Restoration and preservation are the primary guiding principles for land management activities in the Bald Hills. The parks's General Management Plan/General Plan EIS/R (USDI and CDPR 1999) called for vegetation management in the Bald Hills to be implemented according to the *Bald Hills Vegetation Management Plan* (RNP 1992). The plan states "[t]he Park's goal for the Bald Hills is to maintain the diversity of plants and animals that prevailed when the area was first visited by European[s]" and addresses the need for manual removal of Douglas-fir trees that have invaded the prairies and oak woodlands and grown too large to be killed by prescribed fire.

IV. DESCRIPTION OF THE PROPOSED ACTION

This project is located within the Bald Hills, Coyote Creek drainage within the 153 ac prescribed burn unit called Mainstem. The burn unit is comprised of both open grassland and Oregon white oak (*Quercus garryana*) woodland. The intent of this project is to preserve the dominance of the Oregon white oak woodland alliance. Project activities would take place within 6 woodland areas (sub-units) totaling 80 ac, or approximately 53% of the burn unit. Most, if not all, Douglas-fir (*Pseudotsuga menziesii*) trees that have encroached into the 6 sub-units shown in Fig. 1 would be felled or girdled. The encroaching Douglas-fir targeted for removal range in size from 1 to 24 inches diameter at breast height (dbh), however, most of the trees to be removed would be under 18 inches dbh with the majority between 4 and 12 inches dbh. The action area includes the 6 sub-units and all potentially suitable spotted owl nesting, roosting, and foraging habitat within 0.25 mi of the sub-units.

The Douglas-fir trees would be cut, lopped in place, and left to decompose on site. Any isolated large tree between 18 and 24 inches dbh would be treated if it occurs within a sub-unit. "Isolated" refers to a tree not having any of its canopy in contact with adjacent Douglas-fir trees. Isolated trees may be girdled as an alternative to felling in order to create snags in the unit depending on site conditions and surrounding vegetation. If any large tree has any crown contact with adjacent live Douglas-fir trees, it will be considered a Douglas-fir stand. These stands would be protected; no Douglas-fir would be cut in these stands. The intent of designating Douglas-fir stands is to ensure that potential spotted owl roosting/foraging habitat is preserved without compromising the project goal of preserving and restoring the oak woodlands. None of the encroaching trees targeted for removal have habitat characteristics (e.g., branch and canopy structure) suitable for spotted owl nesting and/or roosting. Many of the acres targeted for treatment consist of densely spaced fir trees, making it minimally suitable as foraging habitat.

Within the action area drainages of varying size convey water down slope through three of the sub-units. All of these drainages are extremely well-defined watercourses with steep banks. Within drainages (between the creek bed and break in slope) no Douglas-fir would be cut. Douglas-fir protection measures in drainages will be applied to the features displayed as dark

blue lines on Fig. 1.

All trees will be felled with chainsaws. No heavy mechanized equipment will be used on site. This project does not incorporate activities associated with the prescribed burn program, which were addressed in the *2010 Redwood National Park Fire Management Plan* and associated BA and BO (USFWS No. 8-14-2008-356281331-2009-I-0070 dated 9/15/2009). No burning is being proposed in the Mainstem unit in 2010, however, it is included in the Fire Management Plan and may be burned sometime in the period between 2011 and 2015. The Mainstem conifer cutting project would be implemented beginning in late July and continue through September of 2010.

Measures to Minimize Impacts to the Northern Spotted Owl

In addition to stand designation/protection, and no treatment within designated drainages to minimize impacts on potentially suitable spotted owl habitat, other impact minimization measures would include:

- Spotted owl surveys to protocol will be completed prior to the onset of project activities. A minimum of three complete visits will be conducted unless a barred owl is present. If a barred owl is detected survey methods described in the draft *2010 Protocol for Surveying Proposed Management Activities that May Impact Northern Spotted Owls* will be used. If no spotted owls are detected or no spotted owls are detected within the action area project activities may be started upon validation of the survey results.
- If spotted owls are detected and are confirmed “non-nesting” project activities may be started upon validation of the survey results.
- If spotted owls are confirmed nesting by either locating a nest or detecting fledglings a buffer of protected habitat around the nest area will be designated by the wildlife biologist. This buffer may be up to 70 ac, if sufficient habitat exists, and would be the best quality nesting, roosting, and foraging habitat available. There will be no entry into this area which would occur outside of treatment sub-units. If 70 ac of contiguous nesting, roosting, and foraging habitat are not available around the nest area, some oak stands in adjacent sub-units may be included among the acres of suitable habitat in the buffer for the purpose of protecting fledglings. Entry into these sub-unit acres will be restricted until after 15 September. A 500 ft (or greater if necessary) noise restriction buffer to protect nesting adults and young from noise-generating activities would be in place through 9 July.
- If spotted owls are located within the action area, but their reproductive status is inconclusive, a buffer of protected habitat will be designated by the wildlife biologist based on the location(s) of adult birds. This buffer may be up to 70 ac, if sufficient habitat exists, and would be the best quality nesting, roosting, and foraging habitat available. There will be no entry into this area which would occur outside of treatment sub-units. If 70 ac of contiguous nesting, roosting, and foraging habitat are not available around the adults’ location, some oak stands in adjacent sub-units may be included

among the acres of suitable habitat in the buffer for the purpose of protecting potentially undetected fledglings. Entry into these sub-unit acres will be restricted until after 15 September. A 500 ft (or greater if necessary) noise restriction buffer to protect potentially nesting adults and young from noise-generating activities would be in place through 9 July.

Measures to Minimize Impacts to the Fisher

Project activities will begin near the end of the fisher's reproductive season; no additional minimization measures are necessary to protect the fisher.

V. EXISTING ENVIRONMENT

Approximately 2,500 ac of prairie and 1,475 ac of Oregon white oak woodland occur along the ridgetop and southwest facing slopes of the Bald Hills in RNSP. Over thousands of years periodic lightning and Native American burning prevented the encroachment of Douglas-fir into these habitats. Beginning in 1850 fire suppression accelerated the encroachment of Douglas-fir into the oak woodlands and prairies. It is now estimated that over one quarter of former prairie and oak woodland are now coniferous forest (RNP 1992).

RNSP's Vegetation Management branch has implemented a conifer cutting program in the Bald Hills since 1992. Work crews have cleared Douglas-fir from many oak woodland/prairie areas within the Coyote Creek basin, Schoolhouse Peak, Copper Creek, Childs Hill, Williams Ridge, Lower Lyons, and Upper Counts Hill areas. The most recent conifer cutting project was completed in September 2006.

Approximately 53% of the 153 ac Mainstem unit is heavily encroached by young (< 30 year old) Douglas-fir. The portion of the Mainstem unit where activities are proposed has not been prescribed burned to date, allowing Douglas-fir to grow unimpeded. The conifer trees within the proposed sub-units are mostly small (height and dbh) and can be easily managed. However, in some oak stands the young trees are beginning to create "thickets" and, if allowed to continue growing, will eventually overtop the oaks rendering the oak stands unsuitable for use by a variety of wildlife and, ultimately, shade out and replace the oak stands altogether.

Conifer stands within the action area, composed primarily of Douglas-fir, are all second growth, with a few large residual old growth trees and snags present. The ages of these stands are not known.

VI. STATUS AND DISTRIBUTION OF LISTED AND CANDIDATE SPECIES

Potentially suitable habitat for the northern spotted owl and fisher, and a known spotted owl activity center occur within the Mainstem action area. No other species on the parks' list of threatened, endangered, proposed, or candidate species occur within the action area. The spotted owl and fisher will be considered in this document.

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 final recovery plan for the northern spotted owl was published in 2008 (USFWS 2008). The foundation of the recovery plan is a network of Managed Owl Conservation Areas (MOCAs) on federal lands supported by Conservation Support Areas (CSAs) on adjacent non-federal lands. MOCAs are intended to support stable and well-distributed populations of spotted owls over time and allow for movement of spotted owls across the network. Two types of MOCAs were identified by the plan. MOCA 1s have enough suitable habitat to support 20 or more breeding pairs now or in the future and MOCA 2s have habitat to support 1-19 breeding pairs. Redwood National Park south of Prairie Creek Redwoods State Park is designated a MOCA 1. The small portions of Redwood National Park in Del Norte County are designated MOCA 2s. The three state parks in RNSP are designated CSAs.

The first parks-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 39 territories (including three that were not part of the original inventory) in our spotted owl database. After 1995 park staff continued to survey some proportion of the suitable habitat in the parks annually. In each year 2001- 2004 approximately 50% of all suitable spotted owl habitat within the parks was surveyed, with approximately 65% of those acres in old growth and 35% in second growth forests. The amount of suitable habitat surveyed declined beginning in 2005 and in 2007 only 10% of the suitable habitat acres in the parks were surveyed. The reasons for the decline in survey coverage include indications from previous surveys that many of the historic owl territories are no longer occupied by spotted owls, or we are no longer able to detect them in their territories, and many of the historic spotted owl territories are now occupied by one or more barred owl pairs or resident singles.

Surveys of suitable habitat in the vicinity of annual maintenance projects have been conducted annually since 1998. These surveys have detected a few “floater” spotted owls, individuals that could not be relocated during daytime follow up visits. In 2002, territory-wide inventories of “inactive” sites (activity centers where no owls were detected in ≥ 3 consecutive years) were begun. Inventories include a thorough survey of all suitable habitat within 1.0 mi of the historic

activity center to the standards in the two-year protocol (USFWS 1992, RNSP 2003). As of 2008 twenty of 39 territories were inventoried. Spotted owls were relocated in five of these historic sites.

Survey results from the 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 all but two of the inventoried territories. At four of these sites we have evidence that spotted owls may be remaining in the territories, however, we have been able to confirm pair occupancy in only one of these sites. Territories with completed inventories and no spotted owls detected are classified as “extirpated”. 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 parks pre-date 1993, however, the initial spotted owl inventory began documenting barred owls in RNSP with regularity. By 1995 barred owls were documented at or near ten of the newly located spotted owl activity centers (Tanner unpub. data). As of 2008 barred owls have been observed in 28 (72%) of the known spotted owl territories within the parks. An additional 17 barred owl sites have been located apart from any known historic spotted owl activity centers. Barred owls routinely out-reproduce spotted owls, with numerous sites producing 2-3 fledglings each year compared to a few spotted owl sites producing 1, occasionally 2, fledglings.

Within the Action Area

The action area occurs within the Coyote Rock spotted owl territory. This territory is one of the few remaining, consistently occupied, spotted owl territories within the parks and to our knowledge has not been impacted by the presence of a barred owl. In 17 years of annual monitoring the pair has been located in 14 of those years and is known to have produced 5 fledglings in four of those years. To our knowledge 2003 was the last year that the Coyote Rock pair successfully nested within the park. The pair was not located in 2004 or 2005, in 2006 the resident male only was detected, in 2007 and 2008 the pair was confirmed not nesting and appeared to have “moved” south across Coyote Creek onto private land. In 2009 the pair was observed on numerous occasions on both sides of the creek; they did not nest.

All of sub-unit 3 and portions of sub-units 1, 2, 4, and 6 occur within the 0.25 mi radius core area around the activity center (see Fig. 2). All of sub-unit 5 and portions of sub-units 1, 2, 4, and 6 occur within the 0.7 mi radius circle beyond the core, and a small portion of sub-unit 1 falls in the outer 1.3 mi radius area. The activity center, the nest site located in 2003, is immediately outside the boundary of sub-unit 4.

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 Guitierrez 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 FEIS/R GMP/GP (USDI and CDPR 1999) 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. 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 41,000 ac (16,600 ha) of old growth forest, all of which is considered suitable nesting, roosting, and foraging habitat. An additional 35,000 ac (14,164 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 Green Diamond Resource Company (GDRC) 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 GDRC stands were usually dominant trees in the canopy or residual trees that were very large and older than the surrounding stand (Foliard 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 GDRC 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.

Within the Action Area

The Coyote Rock territory is atypical when compared to other spotted owl territories within RNSP. Redwood trees are virtually absent from the site, there is no old growth or late mature conifer forest, and other than a few large residual old growth trees near the base of Coyote Rock the largest trees in the area are hardwoods. There is contiguous coniferous forest on the south side of Coyote Creek on private timberland, although this too, is second growth of varying stand age.

The 0.25 mi core area and the 0.7 mi radius circle around the 2003 activity center occur entirely on park land. Approximately one-third of the 1.3 mi “ring” of the territory occurs on private lands. Acres of potentially suitable habitat within the various radius circles around the activity center are displayed in the table below. These include habitat acres within the park only.

Circle Radius (miles)	Acres of Potentially Suitable Nesting, Roosting, and Foraging Habitat
0.25	39.8
0.7	280.9
1.3	381.2
Total	381.2

None of the sub-units contain potentially suitable nesting, roosting, or foraging habitat, with the possible exception of the small stands of larger Douglas-fir trees that have grown up in the oak woodland stands. The perimeters of the sub-units were ground-truthed and mapped with a GPS unit to ensure that only encroached woodlands were included within the unit boundaries.

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 were U.S. Forest Service 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 few 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-sponsored 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, but reliable sightings are recorded from 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 western U.S. 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 in late 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 near Newton B. Drury parkway, and near Alder Camp, Howland Hill Road, and Bald Hills Road. 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 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 (2004) 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.

Within the Action Area

We do not have any records in our Wildlife Observation database of fisher occurring in the Mainstem project area or anywhere else within the larger Coyote Creek basin. The closest fisher observation within the park was about 4 linear miles to the west in Maneze Prairie, a rather unusual location for a fisher due to the lack of any overhead vegetative cover.

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. 2004a). In one study (Zielinski et al. 2004a) 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, L. 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. 2004b). 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. (2004b) 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. 2004b). 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 ha occurred at these sites along with a mean number of 55 logs >90 cm diam per ha. 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 ha occurred at second growth sites along with a mean number of 12 logs >90 cm diam per ha. 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.

Within the Action Area

Suitable habitat for the fisher is likely to occur within the action area wherever there are structures large enough to function as den or rest sites and where there is ample overhead cover. Large oaks with cavities, or some of the larger conifers if they have deformities or hollows could provide such structures.

VII. IMPACTS TO THREATENED AND CANDIDATE SPECIES

Disturbance

Spotted owls may be disturbed by project activities if they are nesting or have fledged young within an area adjacent to noise generating activities. They also may be disturbed, or physically harmed, by habitat manipulation (tree cutting) if they have newly fledged young in an area where this activity is occurring. Surveys to determine spotted owl occupancy and reproductive status will be conducted across the entire action area if the pair is not immediately located at or near the activity center. Measures to minimize impacts would include the delineation of a no-entry buffer of up to 70 ac of the best quality habitat around a nest site or fledgling location, or around an adult roost if reproductive status is inconclusive. If 70 acres of contiguous nesting, roosting, and foraging habitat are not available around the nest area or adult roost, some oak stands in adjacent sub-units may be included among the acres of suitable habitat in the buffer for the purpose of protecting known or potentially undetected fledglings. A 500 ft, or greater if necessary, noise disturbance buffer would be established through 9 July to protect a nesting pair/ fledglings from noise-generating activities. Even with thorough surveys there is always a slight possibility that fledged young may go undetected within the action area. However, given the small amount of suitable habitat available for use by spotted owls in this area, if the birds are present there is a high likelihood they will be located and their reproductive status determined.

Loss and Modification of Suitable Habitat

The integrity of the nest grove, which contains all three known nest structures, will remain intact post-treatment as it is outside of any sub-units, thus, there will be no cutting within this core habitat. Other than the inclusions of immeasurably small Douglas-fir stands that may occur within the encroached oak woodlands, no potentially suitable nesting, roosting, and foraging habitat occurs within the 6 sub-units. These stands will not be cut; no habitat will be removed. A minor amount (an estimated few tenths of an acre maximum) of habitat degradation may occur if isolated large Douglas-fir trees are removed that have canopy structure suitable for prey species.

The encroached (and unencroached) woodlands may provide foraging habitat where they are open enough for an owl to fly through. Conifers encroaching on the oaks that would be treated are generally small diameter and densely spaced, making the habitat highly unsuitable for use by spotted owls for any purpose. After treatment it is entirely possible that the oak woodland habitat will be improved for prey, thus, increasing the amount and quality of habitat available for use by spotted owls.

B. 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. The only non-federal action that may impact the Coyote Rock spotted owl territory would be timber harvest of the mature second growth in the private land portion of the territory. The Coyote Rock territory is included in the Green Diamond Resource Company Spotted Owl Habitat Conservation Plan (known in the plan as “Coyote North”). Park staff are not aware of any pending or planned timber harvest plans at this location.

VIII. DETERMINATION

Based on the nature and timing of the proposed action, it is my determination that treating encroaching conifers in oak woodlands in the Mainstem prescribed burn unit will have the following effects on the threatened and candidate species considered in this document:

Due to the small amount of habitat degradation of potentially suitable foraging habitat by removing isolated large Douglas-fir trees in the encroached woodlands, and the potential for noise-generating activities to take place beginning on July 10th in proximity to nesting or recently fledged owls, this project may affect, but is not likely to adversely affect the northern spotted owl.

Restoring the oak woodlands may result in a beneficial effect by increasing the overall amount and improving the quality of foraging habitat within the territory.

This project would not negatively impact the fisher, and may increase the quality of habitat for fisher by preserving denning and resting structures provided by the large oaks.

VIII. MANAGEMENT RECOMMENDATIONS

There are no management recommendations.

VIX. CONTRIBUTORS

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Judy Wartella, GIS Specialist, Redwood National Park

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PERSONAL COMMUNICATIONS

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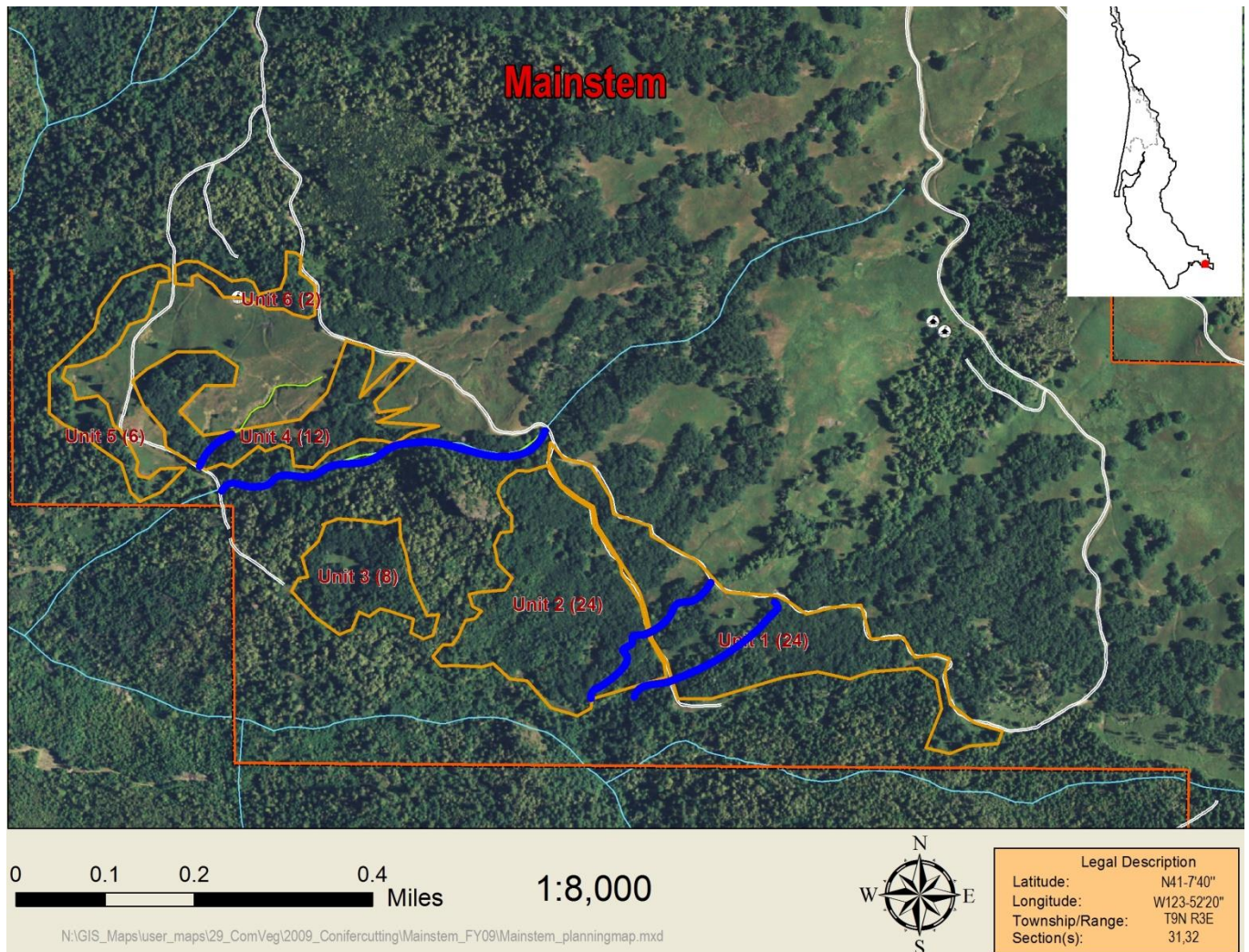


Figure 1. Mainstem prescribed burn unit and six sub-units outlined in yellow. Acre figures are in parentheses. The dark blue lines are no entry zones in drainages.

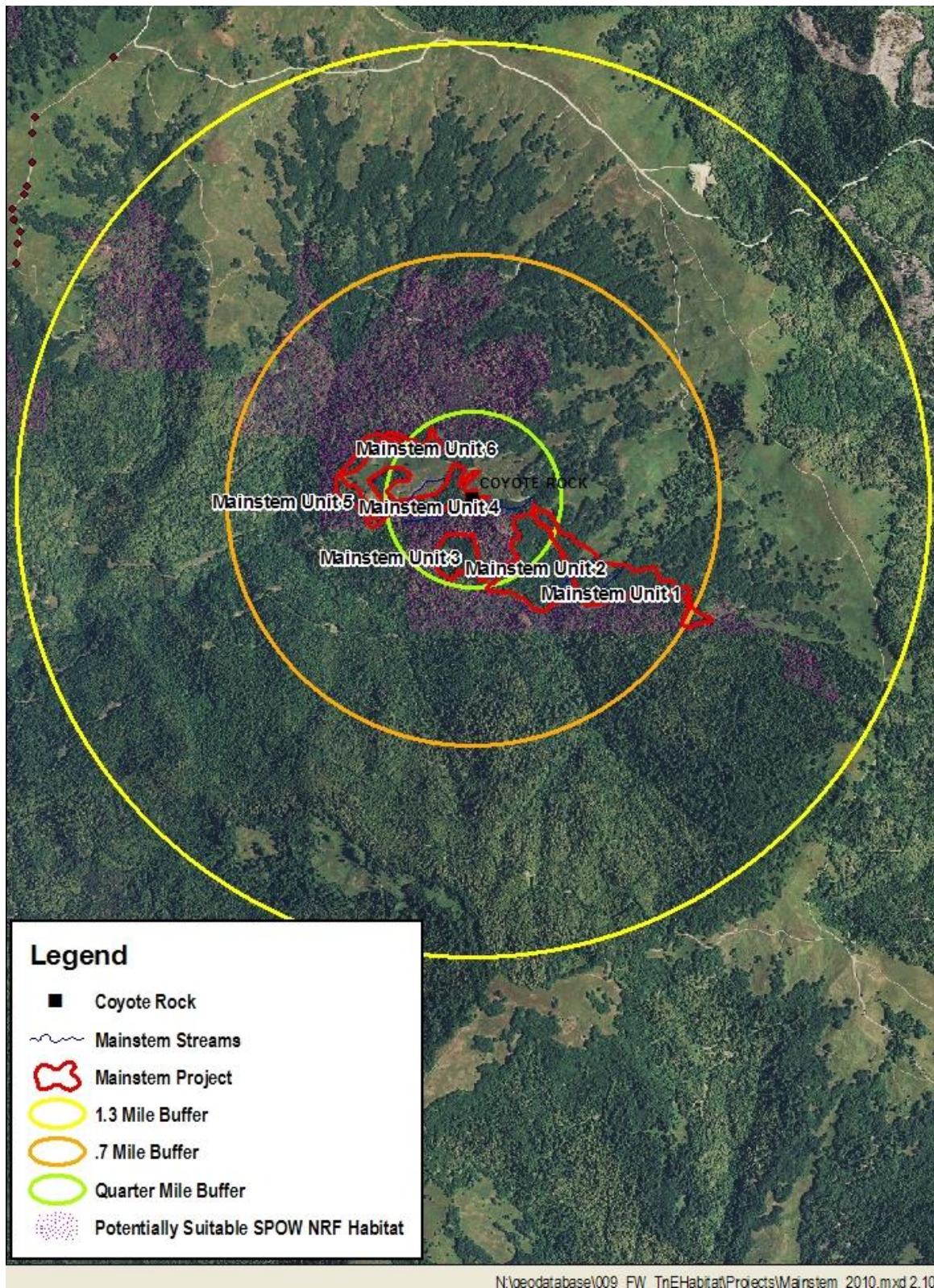


Figure 2. Mainstem sub-units 1-6 in relation to the Coyote Rock activity center and potentially suitable habitat within the territory buffers.



United States Department of the Interior



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In Reply Refer To:
8-14-2007-3161
81331-2010-I-0032

MAY 07 2010

Memorandum

To: Park Superintendents, Redwood National and State Parks
Crescent City, California

From: Field Supervisor 
Arcata, California

Subject: Informal Consultation on Proposed Bald Hills Conifer Cutting in the Mainstem
Unit in Redwood National and State Parks, Humboldt County, California

This memorandum responds to your March 16, 2010, letter requesting the Fish and Wildlife Service's (Service) concurrence with your determination of effects for the proposed Bald Hills Conifer Cutting in the Mainstem Unit in Redwood National and State Parks (Parks). You determined the action may affect, but is not likely to adversely affect the federally threatened northern spotted owl (*Strix occidentalis caurina*). This response is prepared in accordance with the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) (Act) and its implementing regulations (50 CFR §402).

This consultation is based on information provided in your March 12, 2010, biological assessment and information contained in our files. The biological assessment contains a complete description of the proposed action and its effects on the northern spotted owl and is hereby incorporated by reference. Documents related to this consultation are on file in this office.

The proposed action is to cut or girdle Douglas-fir (*Pseudotsuga menziesii*) trees from approximately 80 acres of Oregon white oak (*Quercus garryana*) woodlands in the Bald Hills. Douglas-fir trees, ranging in size from 1 to 24 inches diameter-at-breast height (dbh), will be removed in 6 woodland units in the Coyote Creek drainage. Most of the trees to be removed are under 18 inches dbh, with the majority between 4 and 12 inches dbh. Any Douglas-fir trees, between 18 and 24 inches dbh, with crowns touching adjacent live Douglas-fir trees will be



considered part of a stand and not cut. In addition, trees located in drainages (between the creek bed and the break in slope) will not be removed. Trees will be felled with chainsaws. Cut trees will be lopped and left on-site. No heavy equipment will be used on-site.

The project area occurs within the Coyote Rock northern spotted owl territory. This territory is one of the few remaining northern spotted owl territories in the Parks. The Coyote Rock pair is last known to have successfully nested in the Parks in 2003. In 2007 and 2008, the pair was located across Coyote Creek on private lands, but was determined to be not nesting. In 2009, the pair was observed several times on both sides of the creek; however, they did not nest. The 2003 nest site is not located within the boundaries of any of the proposed units.

This consultation is valid until December 31, 2010.

Concurrence

Northern Spotted Owl

The Service concurs with your determination that the project may affect, but is not likely to adversely affect the northern spotted owl, based on the following factors:

Disturbance

1. Northern spotted owl protocol surveys to determine occupancy and reproductive status will be completed prior to implementing project activities. All suitable nesting and roosting habitat within 0.25 mile of the proposed units will be surveyed.
 - i) If no northern spotted owls are detected, then project activities can be initiated.
 - ii) If northern spotted owls are detected and confirmed to be non-nesting, then project activities can begin.
 - iii) If northern spotted owls are detected and determined to be nesting, then noise-generated activities will not occur within 500 feet (or greater if determined necessary by the wildlife biologist) of nesting northern spotted owls from February 1 through July 9.
 - iv) If northern spotted owls are located in the project area but their reproductive status is unknown, then a 500-foot (or greater if necessary) buffer will be established. No noise-generated activities will occur within the buffer from February 1 through July 9
2. The period from July 10 through July 31 is during the breeding season but after the period when the majority of young northern spotted owls have fledged from the nest. As a result, we anticipate some change in northern spotted owl behavior, but do not expect the proposed activities to result in abandonment of the breeding effort, disruption of nesting activities, or premature dispersal of juveniles.

Habitat Removal and Degradation

1. No suitable nesting, roosting, or foraging habitat will be removed.
2. A minor amount (few tenths of acre maximum) of degradation of foraging habitat may occur if isolated Douglas-fir trees are removed that have structure for owl prey species.
3. None of the proposed units contain potential nesting and roosting habitat, with the possible exception of the small stands of larger Douglas-fir trees. These stands will not be cut.
4. The known 2003 nest grove is not located in any of the proposed units.
5. Restoring the oak woodlands may result in a beneficial effect by increasing the overall amount and improving the quality of foraging habitat.

Injury or Harm

1. If northern spotted owls are confirmed to be nesting, then a no-entry buffer¹ will be established around the nest area.
2. If northern spotted owls are located in the project area but their reproductive status is unknown, then a no-entry buffer, as described above, will be established by the wildlife biologist based on the location of the adult(s) birds.
3. No tree cutting will occur in the units within the buffer from February 1 through September 15.
4. Applying the limited operating period from February 1 through September 15 is expected to avoid potential physical injury or harm to breeding adults and their young from tree cutting activities.

This concludes informal consultation on the Bald Hills Conifer Cutting in the Mainstem Unit in the Parks. Unless new information reveals that the proposed actions: (1) may affect listed species in a manner, or to an extent, not considered in your correspondence; (2) the actions are modified in a manner that causes an effect on the listed species or critical habitat not considered in your correspondence; or (3) a new species is listed or critical habitat is designated that may be affected by the proposed actions no further action pursuant to the Act is necessary.

¹ The no-entry buffer will include up to 70 acres of the best quality nesting, roosting, and foraging habitat available. If 70 acres of contiguous nesting, roosting, and foraging habitat are not available, then some oak stands in adjacent units may be included in the buffer.

If you have any questions or concerns about this consultation or the consultation process in general, please feel free to contact Robin Hamlin at (707) 822-7201.

cc:

RNSP, Orick, CA (Attn: K. Schmidt)

CDFG, Eureka (Attn: W. Condon)