United States Department of the Interior
Redwood National Park
1111 Second Street
Crescent City, California 95531

N1621 - 2015 Redwood National Park Fire Management Plan

December 17, 2015

Mr. Bruce Bingham
Field Supervisor, Arcata Fish and Wildlife Office
U.S. Fish and Wildlife Service
1655 Heindon Road
Arcata, California 95521

Dear Bruce,

Enclosed you will find a biological assessment (BA) that addresses the impacts of the 2015 Fire Management Plan in Redwood National Park. The plan is almost entirely a continuation of similar actions taken over the past decade and consulted upon previously. We propose a set of actions that include continued prescribed burning in grasslands, oak woodlands and second growth conifer forests, fire line preparation for those prescribed fires, second growth forest thinning to create or maintain shaded fuel breaks, and the maintenance of water sources. The BA was prepared in accordance with the requirements set forth under section 7 of the Endangered Species Act (19 U.S.C. 1536 (c), 50 CFR 402).

Informal consultation on the proposed action occurred during phone and email communications between members of your staff and mine in August and December, 2015.

It has been determined that the 2015 Redwood National Park Fire Management Plan may affect, but is not likely to adversely affect, the marbled murrelet, northern spotted owl, and fisher, and may beneficially effect the western lily.

I am requesting a letter of concurrence from you relative to this action. If you have any questions, please contact Fish and Wildlife Biologist, Keith Bensen (707) 465-7777. Thank you for your assistance.

Sincerely,

Stephen Prokop
NPS Superintendent

Enclosure

A Biological Assessment of Impacts to Terrestrial Threatened and Endangered Species from the 2015 Redwood National Park Fire Management Plan

December, 2015

I. INTRODUCTION

The purpose of this biological assessment (BA) is to review the proposed actions of the Redwood National Park (RNP) 2015 Fire Management Plan (FMP) and determine if the proposed action may affect any threatened, endangered or candidate species and/or their critical habitats. All proposed actions in the 2015 FMP are essentially the same as the previously consulted on RNP 2010 Fire Management Plan (USFWS reference number 8-14-2008-3562 and 81331-2009-I-0070). Please note, however, that unlike previous RN P Fire Management Plan consultations, this consultation will only cover National Park Service actions within Redwood National Park. California Department of Parks and Recreation actions taking place in the three California State Parks within the Redwood National and State Parks (RNSP) partnership, have not been included in this consultation. 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). The RNP 2015 Fire Management Plan is expected to be effective through December, 2020.

II. CONSULTATION TO DATE

Redwood National Park obtained a list from the Arcata Fish and Wildlife Service Office website, identifying the endangered, threatened, and candidate species that may be present or may be affected by park activities, dated 12 March, 2015 (Document Number *186489604-102052*). This list included 22 species currently listed as threatened or endangered, one listed as proposed threatened and 4 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 (*Phoebastris albatrus*)
Sperm Whale (*Physeter macrocephalus*)
Blue Whale (*Balaenoptera musculus*)
Humpback Whale (*Megaptera novaengliae*)
Fin Whale *(Balaenoptera physalius*)
Sei Whale (*Balaenoptera borealis*)
Killer Whale, Southern Resident (*Orcinus orca*)*

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*) *
Southern Eulachon DPS (*Thaleichthys pacificus)**
Green Sturgeon (*Acipenser medirostris*)*
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*) *
Western Yellow-billed Cuckoo (*Coccyzus americanus*)*
Steller Sea Lion (*Eumetopias jubatus*) *

Proposed Threatened
Fisher, West Coast DPS (*Martes pennanti*)*

Candidate
Xantu's Murrelet (*Synthliboramphus hypoleucus*)

Critical habitat has been designated or proposed for 15 species on the list (asterisk). However, critical habitats for the tidewater goby, leatherback turtle, Oregon silverspot butterfly, northern spotted owl, western snowy plover, Steller sea lion and killer whale are not designated within the park. Only critical habitat for chinook and coho salmon, and steelhead trout, based on presence in a watershed, southern eulachon 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 within Redwood National Park.

Possible affects from these projects to California coastal chinook salmon, southern Oregon/northern California coasts coho salmon, northern California steelhead trout, and southern eulachon and their critical habitat will be assessed through a separate consultation with NOAA Fisheries and will not be mentioned further in this document. Because this project does not occur within the marine or estuary environment, the whales, turtles, Steller sea lion, short-tailed albatross, tidewater goby, and black abalone will not be addressed further in this document. In addition, no actions will take place on ocean beach habitat occupied by western snowy plover and beach layia. The Xantu's murrelet and Yellow-billed cuckoo do not occur in the park except as extremely rare vagrants. Therefore, these species will also not be addressed further in this document.

Previous Pertinent Consultations

Five past consultations assessed many of the proposed actions described below. Two consultations were not completed due to complexity and management changes. The two unfinished biological assessments were titled "Biological Assessment of the Impacts to

Threatened and Endangered Species From Oak Woodland Restoration and Prescribed Fire in Prairies, Woodlands and Old Growth Forest in Redwood National and State Parks" and "A Biological Assessment of the Impacts to Threatened and Endangered Species From Vegetation Management Program Activities in Redwood National and State Parks." Drafts were completed in 2000 and 1999, respectively. The third, completed consultation was entitled "A Biological Assessment of Impacts to Terrestrial Threatened and Endangered Species From the 2002 Prescribed Burns in Redwood National and State Parks." The subsequent USFWS letter of concurrence was dated 10 June 2002 (USFWS reference number 1-14-2002-1221). That consultation expired and is no longer valid. The fourth completed consultation was entitled "A Biological Assessment of Impacts to Terrestrial Threatened and Endangered Species from the 2004 Fire Management Plan in Redwood National and State Parks." The subsequent USFWS letter of concurrence was dated 25 October 2004 (USFWS reference number 1-14-2005-2389). That consultation expired on 31 December 2009. The fifth, completed consultation was entitled "A Biological Assessment of Impacts to Terrestrial Threatened and Endangered Species from the 2010 Redwood National Park Fire Management Plan and Prescribed Burning in Prairie Creek Redwoods and Jedediah Smith Redwoods State Parks in Redwood National and State Parks." The subsequent USFWS letter of concurrence was dated 15 September, 2009 (USFWS reference number 8-14-2008-3562 and 81331-2009-I-0070). That consultation is set to expire in December, 2015.

A large number of verbal and written communications were associated with the five previous fire management related consultation efforts as well as field trips by USFWS personnel to many of the specific project sites described below. All pertinent recommendations and concerns from those past consultations have been incorporated into the 2015 RNP FMP. No specific meetings were held between RNP and the USFWS in relation to the 2015 FMP because the actions are essentially the same as those consulted upon previously during planning for the 2010 RNP FMP.

Helicopters may be used as part of the proposed activities. Use of helicopters within RNSP, including use during prescribed burning projects, was consulted upon through a previous consultation titled "A Biological Assessment of Impacts to Terrestrial and Aquatic Threatened and Endangered Species from Helicopter Use in Redwood National and State Parks (RNSP)." A biological opinion was issued on 13 May 2011 (USFWS reference number AFWO-11B0077-11F0076) and amendment on 25 May 2011 (USFWS reference number AFWO-11B0077-11F0138), respectively. That consultation is still valid and will expire in May, 2020.

Some other portions of the proposed action described below have also been covered under previous consultations and will be identified accordingly. These actions involve maintenance activities near historic structures and the periodic maintenance of existing roads. The historic structure maintenance activities were analyzed in a biological assessment entitled "A Biological Assessment of the Impacts to Threatened and Endangered Species From Annual Maintenance (Facilities, Roads and Trails) in Redwood National and State Parks." A biological opinion was issued on 24 June 1998 (USFWS reference number 1-14-98-24). That consultation was valid until June, 2008. Periodic maintenance of roads was analyzed in a biological assessment entitled "A Biological Assessment of Impacts to Terrestrial Threatened and Endangered Species from the Watershed Restoration Program in Redwood National and State Parks (RNSP). A biological

opinion was issued on 20 July 1998 (USFWS reference number 1-14-98-134). This consultation expired at the end of 2004. An extension of this consultation lasted until June, 2008. These two consultations have been renewed under a new consultation entitled "A Biological Assessment of the Impacts to Terrestrial and Non Anadromous Federal and State Threatened, Endangered and Candidate Species from Maintenance Programs At Redwood National and State Parks." (USFWS reference numbers 8-14-1998-24 and 81331-2008-F-0130). That consultation is still valid and will expire in January, 2019. Further detailed discussion of these latter three consultations and how they relate to portions of this proposed action is presented in the Proposed Action section as part of the description of the pertinent proposed activities.

Current Consultation

A draft biological assessment was sent to the USFWS in August, 2015 and comments were received on 16 December 2015. The only comment was that there were no major comments.

III. CURRENT MANAGEMENT DIRECTION

Redwood National Park is located in Humboldt and Del Norte Counties in northwestern California and encompass 71,715 acres of land. Numerous federal laws, regulations, and policies guide management.

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

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

The *General Management Plan/General Plan and Environmental Impact Statement/Report for Redwood National and State Parks* (USDI and CDPR 1999) provides comprehensive guidance for managing the national and state parks as one complex with similar resources. The General Management Plan/ General Plan (GMP) provides overall vision and direction for the parks and identifies future planning needs. Under the GMP, the agencies will emphasize the protection of

resources and will also provide a variety of opportunities for visitors to enjoy the parks. New visitor services and facilities will be provided to enhance the visitor experience if these services and facilities do not impact sensitive resources. The park agencies will cooperate with adjacent communities and landowners, local American Indian tribes, and other government agencies to accomplish long-range resource management planning to reduce threats to park resources. Hiking, mountain biking, and camping are currently important components of the activities available to people that visit RNSP. No areas within RNSP are closed to visitor use but many areas are managed to exclude public use of motor vehicles and bicycles.

The GMP identifies individual action plans needed to address specific park actions such as estuary, second growth, trail, fire and fuels, vegetation, back-country visitor use, and transportation management. Relative to management of listed threatened and endangered species the GMP directs park staff to "...avoid, minimize, rectify, reduce, compensate, or otherwise mitigate any potential adverse impacts on state or federally listed or proposed or candidate threatened or endangered species...." in association with construction, visitor use, or restoration activities (GMP p. 37). These actions will be achieved primarily by restricting work temporally and spatially so as not to disturb T&E species and by designating almost one-third of the parks as "primitive" zones where disturbance to all species from human activities would be limited to those "...necessary to restore and maintain ecosystem function" (GMP p. 38).

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

Section 7(a)1 of the Endangered Species Act (ESA) of 1973, as amended, requires that federal agencies utilize their authorities in furtherance of the purposes of the ESA by carrying out programs for the conservation of endangered and threatened species. Section 7(a)2 of the ESA requires that a federal agency, in consultation with and with the assistance of the Secretary of the Interior, ensures that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any listed species or results in the destruction or adverse modification of critical habitat. Specific management direction for each of the listed threatened, endangered, or candidate species considered in this document is reviewed in Section V, "Status and Distribution of Listed Species" as well as Sakai (2003) and the subsequent addenda.

IV. DESCRIPTION OF THE PROPOSED ACTION

Rare plant surveys, including surveys for western lily, will be conducted at all project sites prior to implementation.

A. Redwood National Park 2015 Fire Management Plan

1) Wildfire Suppression

Guidelines were developed as part of the Redwood National Park 2015 Fire Management Plan to potentially reduce or eliminate impacts to threatened, endangered and candidate species as well as non listed fish and wildlife from wildfire suppression activities (Appendix 1). These wildfire suppression guidelines are only guidelines, *not proposed actions*. The unpredictability of wildfires and the subsequent potential threats to human safety and significant resources could possibly dictate wildfire suppression tactics that would possibly overrule some or all of the recommendations in the guidelines. This unpredictability prevents any meaningful analysis from being conducted. *Any wildfire suppression tactics and activities, therefore, will be analyzed under emergency consultation procedures and will not be mentioned further in this document.*

2) Prescribed Burning

Prescribed fire will be used to treat approximately 6,000 acres of grassland, oak woodland, pine woodland, coastal grass and shrubland, and second growth coniferous forest on Redwood National Park lands. Specific areas or "burn units" to be treated are listed below in Table 1.

Table 1. Proposed grassland, oak woodland, pine woodland, coastal grass and scrub, and second growth coniferous forest prescribed fire burn units on Redwood National Park land and their vicinity to threatened, endangered or candidate species habitat. Burn unit locations are shown on a map in Appendix 2.

Burn Unit Name	Total Area (acres)	Vegetation Type	Within, immediately adjacent to or within 500 feet of suitable endangered, threatened or candidate species habitat? (acres within suitable habitat to be burned)			
			Northern Spotted Owl	Marbled Murrelet	Pacific Fisher	Other
1) Airstrip, Lower	110	grassland and oak woodland	N	N	N	N
2) Airstrip, Upper	102	grassland and oak woodland	N	N	N	N

Burn Unit Name	Total Area (acres)	Vegetation Type	Within, immediately adjacent to or within 500 feet of suitable endangered, threatened or candidate species habitat? (acres within suitable habitat to be burned)			
			Northern Spotted Owl	Marbled Murrelet	Pacific Fisher	Other
3) C-10	339	second growth coniferous forest	Y	Y	Y	N
4) Child's Hill	561	grassland and oak woodland	Y	N	Y	N
5) Copper Creek	148	grassland and oak woodland	N	N	N	N
6) Counts, Upper	118	grassland and oak woodland	N	N	N	N
7) Counts, Lower	220	grassland and oak woodland	Y	Y	Y	N
8) Coyote Creek	1,063	grassland and oak woodland	N	N	N	N
9) Davison	10[a]	grassland	Y	Y	Y	N
10) DeMartin	5	grassland	N	N	N	N
11) Dolason, Lower	220	grassland and oak woodland	Y	Y	Y	N
12) Dolason, Upper	94	grassland and oak woodland	Y	N	Y	N
13) Dooleyville	111	grassland and oak woodland	Y	Y	Y	N
14) Eastside	107	grassland and oak woodland	N	N	N	N
15) Elk Camp, Lower	244	grassland and oak woodland	Y	Y	Y	N
16) Elk Camp, Upper	37	grassland and oak woodland	Y	N	Y	N
17) Enderts	109	coastal grass and scrub	N	N	N	Oregon silverspot butterfly and western lily (109)
18) Gans, Lower	32	grassland and oak woodland	Y	Y	Y	N
19) Gans, Upper	17	grassland and oak woodland	Y	Y	Y	N

Burn Unit Name	Total Area (acres)	Vegetation Type	Within, immediately adjacent to or within 500 feet of suitable endangered, threatened or candidate species habitat? (acres within suitable habitat to be burned)			
			Northern Spotted Owl	Marbled Murrelet	Pacific Fisher	Other
20) Holter Ridge Beargrass	5	second growth coniferous forest	Y (5)	N	Y (5)	N
21) Lagoon Creek	68	coastal grass and scrub	N	N	N	western lily (68)
22) Little Bald Hills	1,470[a]	grassland and pine woodland	N	N	N	N
23) Lyons, Lower	143	grassland and oak woodland	N	N	N	N
24) Lyons, Upper	208	grassland and oak woodland	N	N	N	N
25) Mainstem	166	grassland and oak woodland	Y	N	Y	N
26) Major Creek	7	coastal grass and scrub	N	N	N	western lily (7)
27) Maneze	226	grassland and oak woodland	Y	N	Y	N
28) Mid Basin	129	grassland and oak woodland	N	N	N	N
29) School House	300	grassland and oak woodland	N	N	N	N
30) South Boundary	86	grassland and oak woodland	Y	N	Y	N
31) Upper K&K	40	second growth coniferous forest	Y (40)	N	Y (40)	N
32) Wildcat	300	second growth coniferous forest	Y (300)	Y	Y (300)	N
33) Williams Ridge	118	grassland and oak woodland	N	N	N	N
34) Wooden Gate	243	grassland and oak woodland	N	N	N	N
Total Acres To Be Burned Within Suitable Habitat			1,099	0	1,099	OS Butterfly = 109 Western Lily = 191

[a] Only a portion of these units will be burned. Estimated amounts are described in text below.

Seven of the burn units, Enderts, Little Bald Hills, Lagoon Creek, Major Creek, Upper K&K, Holter Ridge Beargrass and Wildcat are within listed or candidate species habitat. None of the other units contain any suitable listed or candidate species habitat within their boundaries that will be burned. The Upper K&K, Holter Ridge Beargrass and Wildcat units have suitable spotted owl and fisher habitat within a portion of their boundaries. Preparation activities taking place between 1 February and 15 September in these burn units will not use equipment or techniques that generate above ambient noise levels (generally meaning no use of mechanized equipment unless immediately next to a high use road or high use visitor facility) or possibly cause direct harm through the felling of trees. All mechanized preparation and burning within these units will occur between 16 September and 31 January. The noise restriction period may be shortened to 1 March through 15 June (fisher only noise restriction period) if protocol surveys determine that spotted owls are not present. Burning and mechanical preparation will take place in these units after 15 September and before 31 January if no spotted owl surveys have been conducted in order to protect any unknown spotted owl fledglings that may be roosting within an unknown nest stand.

The Enderts burn unit contains suitable habitat for Oregon silverspot butterflies. Silverspots have never been detected in the park during past surveys, but a survey will be done again in the burn unit prior to unit preparation and ignition and again after the burn the following year. If silverspots are detected prior to the prescribed burn, then the park will not burn the unit and will reconsult with the USFWS.

The C-10, Davison, Dolason Lower, Dooleyville, Elk Camp Lower, Gans Lower, and Gans Upper burn units are located within 500 feet but outside of suitable spotted owl, marbled murrelet and fisher habitat. Preparation activities taking place between 1 February and 15 September in these burn units will not use equipment or techniques that generate above ambient noise levels (generally meaning no use of mechanized equipment unless immediately next to a high use road or high use visitor facility). All mechanized preparation and burning within these units will occur between 16 September and 31 January. The noise restriction period may be shortened to 1 March through 15 September if protocol surveys determine that spotted owls are not present. It is assumed that all suitable fisher habitat (which is essentially the same as suitable spotted owl habitat) within RNP is occupied. The seasonal noise restriction period for fisher in RNP is 1 March through 15 June for natal den protection or until 31 July for maternal den protection (RNSP 2004) and thus a combined marbled murrelet/fisher seasonal noise restriction period is 1 March through 15 September.

Child's Hill, Dolason Upper, Elk Camp Upper, Maneze and South Boundary burn units are located within 500 feet but outside of suitable spotted owl and fisher habitat. Preparation activities taking place between 1 February and 31 July in these burn units will not use equipment or techniques that generate above ambient noise levels (generally meaning no use of mechanized equipment unless immediately next to a high use road or high use visitor facility). All mechanized preparation and burning within these units will occur between 1 August and 31 January. The noise restriction period may be shortened to 1 March through 15 June (fisher only noise restriction period) if protocol surveys determine that spotted owls are not present.

The Major Creek, Lagoon Creek, and Enderts prescribed burn units may contain suitable western lily habitat. Surveys will be conducted for western lily previous to any work beginning within the prescribed burn units. If any western lily is discovered within the units then RNP will exclude those areas from the burn units by altering unit boundaries.

The following burn units are located greater than a quarter mile from any suitable northern spotted owl, marbled murrelet, or Pacific fisher: Airstrip Upper, Airstrip Lower, Copper Creek, Counts Upper, Coyote Creek, DeMartin, Eastside, Enderts, Lagoon Creek, Lyons Lower, Lyons Upper, Major Creek, Mid Basin, School House, Williams Ridge (see map Appendix 2). Preparation activities can occur at anytime in these burn units but will generally occur in early summer. Burns will occur between the time the grass or brush cures, generally mid July, and the end of the burn season when ignition is prevented due to damp fuels.

Preparation methods will include cutting grass with line trimmers and mowers along fire lines, fire line construction with chainsaws and hand tools, installation of fire hoses and setting up and filling portable water tanks at strategic locations. Felling of trees in preparation areas may be done using either chainsaws or feller bunchers (along accessible roads). Fire line construction will vary according to fuel type and time of year to ensure firefighter safety and allow for control of the prescribed fire. Burns completed late in the year that are dependent upon precipitation will utilize "wet" lines of either naturally occurring forest edge fuel moisture changes or through the direct application of water to vegetation prior to ignition. Where fire lines are constructed they will be dug to mineral soil to a width of no more than four feet. These will be rehabilitated after the prescribed burn by replacing the topsoil. In grasslands additional mowing of fuels adjacent to the fire line may occur, while in oak woodlands or areas bordered by dense, young conifers, adjacent ladder fuels will be cleared (i.e. brush cut back, lower limbs removed, small diameter - <18 inches DBH - trees cut).

Treatment prescriptions will vary among unit prescribed fire plans in order to meet specific unit objectives. Prescriptions will include flame lengths between 1 and 27 feet, and rates of spread between 3 and 60 chains per hour. Ignition will be accomplished using drip torches, fusees, and aerial ignition (particularly in the Wildcat unit). The personnel committed to each burn may include up to 15 to 20 overhead positions, two handcrews, four engines, one helicopter, one water tender, portable tanks and pumps, hose and related equipment.

Helicopter use will adhere to general directions outlined by the Department of the Interior's Office of Aircraft Services as outlined in the Departmental Manual 112 DM 12 which primarily describes aircraft and passenger safety guidelines. Helicopter use mitigations and directions related to prescribed fire projects and threatened and endangered species management within RNP places limitations on flight timing, elevation and location. Specifically, helicopters that are used during prescribed burn preparation work or aerial ignition of burn units that are within a quarter mile of suitable marbled murrelet, fisher and spotted owl habitat would stay > 1,000 feet above the forest canopy during applicable noise restriction periods while en route to and from the burn units. Helicopters will not be used on any burn units within a half mile of any known bald eagle nests between 1 January and 31 August or units within a quarter mile of suitable spotted

owl habitat between 1 February and 31 July and marbled murrelet habitat between 24 March and 15 September and fisher habitat between 1 March and 15 July.

A Smoke Management Plan will be filed with the local air quality district as part of the Prescribed Fire Plan for each unit. Wind speed and direction, atmospheric stability, fuel type and amount, ignition pattern and proposed number of acres to be burned will be taken into consideration when clearance to burn is granted. Units will only be burned on "burn days" as declared by the North Coast Air Quality District, unless a variance is obtained. Variances are only granted on a limited basis and for limited reasons. The number of acres and ignition technique will be modified if necessary to ensure adequate air quality is maintained. The Lead Fire Monitor will monitor smoke dispersal during all burns.

RNP has in the past and will make every effort to maintain control of all prescribed fires within the parks using the techniques just described. There is, however, the possibility that a prescribed fire could escape control lines. Emergency consultation procedures will be used to address any fire suppression operations which arise from an escaped prescribed fire because of the unpredictable nature of when and where in RNP these activities might occur. Therefore, there will be no further discussion of these actions within this document.

3) Shaded Fuel Breaks

Five shaded fuel breaks will be created or maintained during the life of the 2015 Fire Management Plan: 1) along Holter Ridge Road (aka Lost Man Creek Trail)/B Line Road from the Bald Hills Road north to US Highway 101, 2) along the Bald Hills Road from the Holter Ridge Road junction to Elk Camp Prairie, 3) the Wolf Creek Education Center Access Road and housing complex/fire cache, 4) around the Hiouchi park housing and fire cache complex, and 5) around the Howland Hills Outdoor School access road and complex (see map Appendix 2) (Table 2). The reason for the thinning is to provide more secure and defendable park boundaries, defendable spaces around park developments and escape routes in the event of a wildfire. Mechanical thinning will involve cutting trees with chainsaws or with mechanical feller bunchers less than 18 inches DBH as well as brush and tree limbs that could provide ladder fuels into the forest canopy along a 100 foot wide strip along either side of roads or around building complexes. All attempts will be made to leave all trees less than 18 inches DBH that have broken or deformed tops as these may develop into future spotted owl nest or roost trees. Canopy cover will be maintained above 60% where it exists. Cut trees and limbs will be piled away from live trees and large logs and snags (i.e. logs >36 inches diameter on the wide end and longer than 10 feet and snags >24 inches DBH) within the units or on the roads and either burned during the wet season outside of the burn timing restrictions or chipped with a mechanical chipper outside of the noise restrictions described below.

Table 2. Shaded fuel break areas to be treated. Locations are described in Appendix 2, Map.

Shaded Fuel Break Name	Total Area To Be Treated (acres)	Adjacent to or within .025 miles of suitable candidate, threatened or endangered species habitat? (acres suitable habitat to be treated)			
		Northern Spotted Owl	Marbled Murrelet	Pacific Fisher	Other
Holter Ridge Road/ B Line Road	368	Y (368)	Y (3)	Y (368)	N
Bald Hills Road	75	Y (75)	Y	Y (75)	N
Wolf Creek Housing/Fire Cache Complex	15	Y	Y	Y	N
Hiouchi Park Housing & Cache	15	N	N	N	N
Howland Hills Outdoor School Access Road & Complex	25	Y (25)	Y	Y (25)	N
Total acres to be treated within suitable habitat		468	3	468	0

Portions of the Holter Ridge Road/B Line Road fuel break are either within, immediately adjacent to or within 0.25 miles of suitable marbled murrelet. The amount of the fuel break within suitable marbled murrelet habitat is very difficult to calculate because the habitat consists of widely spaced, residual old growth trees surrounded by regenerating stands <50 years old. The best estimate is that approximately 3 acres of suitable marbled murrelet habitat will be within the shaded fuel break area (approximately 30 individual residual old growth trees representing 0.1 acres of habitat per tree). All 368 acres of the Holter Ridge Road/B Line Road fuel break is suitable spotted owl and fisher habitat. Spotted owl compliance protocol surveys currently cover the Holter Ridge Road portion of the Holter Ridge/B Line Road fuel break. No surveys currently cover the B Line Road portion of this fuel break. If no owls are found during surveys along the Holter Ridge portion of this fuel break, then noise restrictions from 24 March through 15 September will only be implemented in those sections within 0.25 miles of suitable marbled murrelet habitat or from 1 March through 15 June in areas within 0.25 miles of suitable fisher habitat only. If spotted owls are found, then no work of any kind will occur from 1 February through 15 September in those sections within 0.25 miles of suitable marbled murrelet and/or spotted owl and fisher habitat. No work will occur along the B Line Road portion of this fuel

break from 1 February through 15 September in those sections within 0.25 miles of suitable marbled murrelet and/or spotted owl and fisher habitat (see map, Appendix 2).

Portions of the Bald Hills Road shaded fuel break are within 0.25 miles of suitable marbled murrelet habitat. Portions of the Bald Hills Road fuel break are within, adjacent to or within 0.25 miles of suitable, unsurveyed spotted owl foraging habitat that is not suitable nesting or roosting habitat (>30 year old but < 40 year old densely regenerating conifer stands). The entire road is a high use public road commonly traversed by commercial logging trucks which extensively use engine compression or "jake" brakes along the entire length of the shaded fuel break project area (see map, Appendix 2) which creates a "very high" ambient noise level. Therefore, no noise restrictions will be implemented on this project.

The Wolf Creek housing/fire cache complex is within 0.25 miles of suitable marbled murrelet, spotted owl and fisher habitat but no suitable habitat exists within or adjacent to the unit's boundaries. Spotted owl compliance protocol surveys cover the housing and fire cache complex. If no owls are found during surveys, then noise restrictions from 24 March through 15 September will only be implemented in those sections within 0.25 miles of suitable marbled murrelet habitat while areas within 0.25 miles of only suitable fisher habitat will have a 1 March through 15 June noise restriction period implemented. If spotted owls are found, then no work of any kind will occur from 1 February through 15 September throughout all of this unit (see map, Appendix 2).

Hiouchi park housing and fire cache is not in or within 0.25 miles of any suitable listed species habitat and so no noise restrictions will be implemented for this project (see map, Appendix 2).

The Howland Hill Outdoor School complex and access road (see map, Appendix 2) are in suitable spotted owl/fisher habitat and the far western portion of the access road is within 0.25 miles of suitable marbled murrelet habitat. The entire outdoor school complex and access road are covered by compliance protocol surveys and the area is currently occupied by barred owls. No operating restrictions will be implemented in this portion of the project area. The far western portion of the access that is within 0.25 miles of suitable marbled murrelet habitat will be completed outside of the marbled murrelet noise restriction period (24 March through 15 September).

4) Historic Structure Annual Hazard Fuel Reduction

Seven historic structures, Elk Camp Barn, Dolason Barn, Lyons Ranch Barn and Bunkhouse, Dooleyville Line Shack, Long Ridge Sheepshead, Coyote Creek Barn, and Coyote Creek Cabin have hazardous fuel accumulations (overgrown grass and brush within 40 feet of structures) cleared annually in order to provide some wildfire protection for the structures. No suitable listed or candidate species habitat exists within any of the units' boundaries, adjacent to any of the units' boundaries or within 0.25 miles of any of the units' boundaries. Work may occur at any time of the year.

5) Pond Maintenance

Four existing, human-made ponds (formerly used as water sources for livestock or logging operations) will have vegetation cleared in and around them to improve access and maintain them as firefighting water sources (Table 3) for either prescribed fires, wildfires or both. The M-Line pond will only be used during wildfire firefighting emergencies. The Elk Camp Upper and Lower ponds may be used during prescribed fires and are within 0.25 miles but outside of 500 feet of suitable owl and fisher habitat. The small pumps that would be used at the ponds only generate moderate levels of noise and so will not be restricted as to the time of use. The vehicles that will receive the water will be parked on the Bald Hills Road, a public access high use road with high ambient noise levels.

Table 3. Existing ponds to be maintained as firefighting water sources.

Pond Name	Total Area To Be Cleared (acres)	Adjacent to or within a ¼ mile of suitable candidate, threatened or endangered species habitat? (acres within suitable habitat)			
		Northern Spotted Owl	Marbled Murrelet	Pacific Fisher	Other
1) M-Line	0.5	Y (0.5)	N	Y (0.5)	N
2) Elk Camp Upper	0.1	Y	N	Y	N
3) Elk Camp Lower	0.1	Y	N	Y	N
4) Coyote	.01	N	N	N	N
Total acres to be treated within suitable habitat		0.5	0	0.5	0

The Upper and Lower Elk Camp ponds are within 500 feet of suitable spotted owl and fisher habitat but do not have suitable habitat within the actual unit boundaries. Current spotted owl compliance protocol surveys cover the entire Elk Camp ponds suitable habitat area. Noise restrictions will be employed from 1 March through 15 June to protect fishers only if surveys continue to find no spotted owls present in the area. No other suitable habitat exists within a quarter mile of the unit. If spotted owls are found, no above ambient noise producing work will occur from 1 February through 31 July. Work will entail clearing small, three foot wide paths

through underbrush and sapling trees with chainsaws to provide access for water suction hoses, portable pumps and associated hoses and operators.

The Coyote pond is not within 500 feet of any suitable listed or candidate species habitat. No noise restrictions will be placed on work at this pond. Work will entail pulling fallen trees out of the pond.

Suitable spotted owl and fisher foraging habitat is found immediately adjacent to the M Line pond unit boundary. Suitable nesting, roosting and denning spotted owl and fisher habitat is located within 500 feet of the unit boundary. No spotted owl compliance protocol surveys currently cover this project area. Protocol surveys may be used to determine spotted owl presence. Noise restrictions will be employed from 1 March through 15 June to protect fishers only if surveys find no spotted owls present in the area. If spotted owls are found to be present or if no surveys are conducted then no work will occur from 1 February through 9 July. The pond is planned to be used both as a water source for fire engines and water tenders as well as helicopters in the event of a wildfire only. Maintenance work will entail clearing only sapling red alder (*Alnus rubra*) trees and brush growing along the banks of the pond and along a swath of sapling alders and brush extending from the pond to the nearby Upper B Line Road. The total area of the swath is approximately 20 feet wide by 150 feet long. This maintenance clearing will enable a helicopter carrying a water bucket to safely dip water from the pond and approach and leave the pond without becoming ensnared in the re-growing alders.

V. STATUS AND DISTRIBUTION OF LISTED SPECIES

Proposed actions will only occur at specific terrestrial locations within the park, therefore, no threatened, endangered, or candidate species which occur only in marine or coastal beach habitats will be included in this assessment.

Description of Action Area –

The action area for this analysis is approximately 0.25 miles beyond the boundary of any project area (see map, Appendix 2). The action area is estimated to be approximately 14,500 acres.

The status and distribution of listed and candidate species and their critical habitat that may occur in the action area are described below.

a. Western Lily

The Enderts, Lagoon Creek, DeMartin and Major Creek prescribed burn units (see map, Appendix 2) are within the coastal scrub zone and contain potentially suitable western lily habitat within the action area.

RNP staff believes that the current habitat in RNP's coastal scrub and grasslands are not suitable

to sustain populations of western lily, due primarily to meadow encroachment by spruce and shrubs (L. Arguello pers. comm.). Although a systematic survey of RNP's coastal scrub and grasslands has not been conducted for the lily, a substantial amount of habitat, especially in the northern half of RNSP, has been surveyed in association with projects (L. Arguello pers. comm.). As of this date, this species has not been documented in RNP. No western lily surveys have been conducted in any of the coastal scrub prescribed burn units.

b. Oregon Silverspot Butterfly

Potentially suitable habitat in RNP occurs in the Crescent Beach/Endert's Beach area south of Crescent City (see map, Appendix 2). At this location there are 240 acres of coastal prairie containing a wetland. Early blue violets occur in this area, as do many of the adult nectar sources (L. Arguello pers. comm.). The coastal grasslands adjacent to Crescent Beach, Endert's Beach Road and Endert's Beach were surveyed by researchers working under a NPS scientific permit at various times in the early 1990's and as recently as 2004 but the this species was not detected. It is suspected that the microclimate of this area may be too cool for silverspots (S. Matoon pers. comm.).

c. Northern Spotted Owl

Four known historic activity centers are within the action area, Coyote Rock, Maneze, South Fork Little Lost Man Creek and Bobcat Creek (RNSP 2013, 2015).

A pair was first discovered at Coyote Rock in 1993. One fledgling was produced in 1994, 1999, and 2003 while two fledglings were produced in 2000. No productivity was recorded for any of the intervening or subsequent years. A non-nesting pair was last found in the activity center in 2009, a single female was last seen in 2012 and a single male was found as recently as 2014. Suitable habitat (e.g. Forsman et al. 1984, Hunter et al. 1995) does not, technically speaking, exist within 0.7 miles or 1.3 miles of this activity center despite the obvious reproductive success of the owls occupying it. This activity center is an anomaly in RNP.

A single male was first discovered at Maneze in 1993 and was detected again in 1994 and 1996. The activity center has been vacant since 1997 and is now considered inactive.

South Fork Little Lost Man Creek was first discovered in 1993. One fledgling was produced in 1993, 1994 and 1998, respectively. The activity center was unproductive in the intervening years. The activity center was vacant between 1999 and 2001. In 2002 a barred owl (*Strix varia*) pair was discovered in the activity center while a single male spotted owl was found in 2003 and a single female was found in 2005. A barred owl was found in the activity center in 2006. A single detection of a spotted owl was discovered using a continuously monitoring automated recording device in 2012 but never recorded again or seen. Barred owls still occupy the activity center.

Bobcat Creek was first discovered in 1993. Two fledglings were produced in 1997 and one fledgling was produced in 1999 , 2001, and 2004 respectively. Non-reproductive spotted owl pairs were in the activity center from 2005-2007. A reproductive barred owl pair was found in the activity center in 2002 while a single male spotted owl and an unproductive barred owl pair was found in 2003.

d. Marbled Murrelet

All suitable habitat within the action area is assumed to be occupied but the total number of murrelets, their distribution and their reproduction within the action area are currently impossible to estimate.

e. Pacific Fisher

No specific surveys have been conducted for fisher within the action area. A random-systematic, park wide survey was conducted by Slauson (2003). Fishers were found to be well distributed throughout all suitable habitat areas of RNP; therefore, all suitable habitat within the action area is assumed to be occupied. The total number of fishers, their distribution and their reproduction within the action area are currently unknown.

VI. IMPACTS TO THREATENED AND ENDANGERED SPECIES

A. Direct Effects

a. Western Lily

Activities of the proposed action have the potential to temporarily modify 306 acres of suitable western lily habitat or injure individual plants within the DeMartin, Lagoon Creek, Endert's, and Major Creek prescribed burn units (see map, Appendix 2). Listed and sensitive plant surveys conducted within the proposed prescribed burn units will determine the plant's presence. If any individual plants are discovered within the burn units then those portions of the units will have fire excluded from them by changing unit boundaries. Prescribed burning in the coastal scrub areas of RNP may beneficially affect this species by improving habitat conditions through the reduction of encroaching over story vegetation and the retention of more open, coastal scrub type habitat.

b. Oregon Silverspot Butterfly

The only suitable habitat for Oregon silverspots identified in RNP is the marine influenced grasslands immediately to the east of Crescent Beach where the Endert's burn unit is located. Silverspots will not be harmed by the prescribed burn because no silverspots are present in the

action area based on past surveys. Surveys will again be conducted during the same year but previous to the burn to ensure that the species is not present in the action area. The burn may improve habitat suitability by improving conditions for host plants through the reduction of competitive exotic plants (L. Arguello pers. comm.).

c. Northern Spotted Owl

Disturbance

None of the activities described in the proposed action are expected to adversely disturb spotted owls. All potentially above ambient noise producing or visually disturbing activities as well as prescribed burning that will be taking place within, adjacent to or within either 500 feet or 0.25 miles (depending on the noise intensity of activity) of suitable spotted owl habitat will either be limited to periods of time outside of the noise and visual restriction period (1 February through 9 July), limited to periods of time outside of the early noise and visual disturbance/habitat alteration disturbance restriction period (1 February through 15 September) if occurring within suitable unsurveyed habitat and that habitat will be altered, or the action area near the project will be covered by protocol surveys which will determine owl presence. If owls are discovered during protocol surveys, then noise and visual restriction periods will be placed on those activities occurring within 500 feet or 0.25 miles of the detection, depending on the level of noise the particular project will generate. Please refer to the Proposed Action section above for a unit by unit description of restriction periods and distances.

Loss and Modification of Habitat

Three of the prescribed burn units (Holter Ridge Beargrass, Upper K&K, Wildcat,) are located either wholly or partially in suitable spotted owl nesting, roosting and foraging habitat. Four of the shaded fuel breaks (Holter Ridge Road/B Line Road, Bald Hills Road, Wolf Creek Housing/Fire Cache Complex, Howland Hills Outdoor School Road and Complex) are located either wholly or partially in suitable spotted owl nesting, roosting and foraging habitat (see map, Appendix 2). Thinning prescriptions for the burn unit preparation work and the shaded fuel breaks are the same so they will be analyzed together.

In the shaded fuel breaks, the entire unit (a one hundred foot wide swath on either side of roads or around buildings) will be treated. In the burn units, only areas within 50 feet of handlines will be treated. All of the handlines and the shaded fuel breaks have been previously treated. Proposed thinning work will be only for maintenance purposes and so will involve the cutting of less than10 to 20 trees per acre. Only subdominant less than 18 inches DBH trees are targeted for removal in these units. None of these size class trees provide suitable nesting habitat but could conceivably be used as roost or foraging perches. Canopy cover will not be lowered below 60% where it exists and so sufficient cover will remain to maintain the stands as suitable spotted owl habitat, but the habitat will be mildly degraded. Over the longer term, the continued mechanical thinning should reduce competition within the stands and cause the stands to move towards greater tree growth more quickly than if left to mature without mechanical thinning.

Lower tree densities will improve flyways for owls in many of these densely stocked, regenerating stands. Greater numbers of larger trees should produce larger numbers of suitable nesting and roosting trees thereby improving the quality of the habitat. Pile burning of the slash created will not harm remaining trees because it will be burned during the wet season when the threat of escape is minimized. The quality of the habitat within these units will be temporarily degraded but will still be suitable over the short term.

Prescribed burning will take place within the three burn units that contain spotted owl habitat. Prescribed burning within these stands calls for a cool under burn that will target small ground fuels and may consume some sapling to pole sized trees, burn some logs and snags and kill the occasional over story tree (creating new snags) in second growth. Canopy cover will not be lowered below 60% across areas larger than 0.25 acres in the units. The canopy openings will be rare and widely spaced. Past prescribed burns using the same prescription as those proposed reduced overall over story tree density by less than four percent and reduced basal area less than three percent (Appendix 3) – indicating little to no change in the overall large tree and canopy structure in the stands. The prescribed broadcast burns are expected to degrade the suitability of the stands temporarily by consuming some potential prey food sources (e.g. small herbaceous vegetation and shrubs) and perhaps some potential prey den/resting/cover habitat (e.g. stick piles, small logs, duff layers). Greater overall light penetration and nutrient release caused by the moderate to low intensity burn could produce more young, nutritious herbaceous vegetation and shrub growth which in turn could positively influence prey populations in the longer term Habitat quality within these stands will degrade over the short term. Suitable habitat will not be removed. Habitat quality over the medium and long term will improve due to the thinning effect caused by the prescribed burn. Large tree recruitment should increase and new cavities will be created or existing cavities will be enlarged in logs and snags, improving prey habitat and potentially creating suitable owl nesting habitat.

Only two of the units (a portion of the Holter Ridge/B-Line shaded fuel break and Airstrip Lower burn unit) are within the home ranges of known spotted owl activity centers. Neither of the units are within the core area (0.7 mile radius) but are within 1.3 mile home range of the activity centers. All the other units are outside the home range of any known activity centers. The amount and type of suitable habitat to be degraded within the two activity centers is shown in Table 7.

Page intentionally left blank

Table 7. Amount of suitable nesting, roosting and foraging spotted owl habitat to be degraded by proposed action unit per known activity center. Proposed Action unit locations are shown in Appendix 2.

Proposed Action Unit Name (associated spotted owl activity center)	Acres of Suitable Nesting, Roosting and Foraging (NRF) Habitat Within Unit To Be Degraded	Acres of Suitable Habitat Within 0.7 Miles of Known or Hypothetical Activity Center (% to be degraded)		Acres of Suitable NRF Habitat Within 1.3 Miles of Known or Hypothetical Activity Center (% to be degraded)	
		Nesting, Roositing, Foraging	Foraging Only	Nesting, Roosting, Foraging	Foraging Only
Airstrip Lower (Bobcat Creek)	18	not within 0.7 miles of Bobcat Creek activity center		1,560 (1%)	611
Holter Ridge/B-Line Road Shaded Fuel Break (SFLLMC*)	368 – 35 of which are within the activity center**	not within 0.7 miles of SFLLM Creek activity center		2,517 (1%)	271

*SFLLMC = South Fork Little Lost Man Creek spotted owl activity center.
** Due to the extreme linearity of this shaded fuel break, only a small portion of the habitat degradation is within the home range of the South Fork Little Lost Man Creek activity center.

As stated, only the Airstrip Lower burn unit and a small portion of the Holter Ridge/B-Line shaded fuel break unit fall within the home range of a known spotted owl activity center. The 18 and 35 acres of habitat degradation (1% of the total suitable habitat within 1.3 miles of the activity centers) within the Bobcat and South Fork Little Lost Man Creek activity centers is expected to only have a negligible effect on the quality and suitability of the territories. No spotted owls have been found within the rest of the Holter Ridge Road portion of the Holter Ridge/B-Line Road shaded fuel break during biannual compliance survey efforts for annual road maintenance (USFWS reference number 1-14-1998-24). RNP has no spotted owl survey record for the B-Line Road portion of the Holter Ridge/B-Line shaded fuel break or the Lower Airstrip unit area. It is unknown if the unsurveyed, suitable habitat area has ever been occupied. The small amount of narrow (200 feet wide), long (approximately 11 miles) habitat degradation along the fuel break will be spread over such a large area thus will not impact any one block of suitable habitat significantly. The same is true of the Airstrip Lower burn unit. The area to be maintained is a narrow strip approximately 100 feet wide extending from the edge of the grassland. The effect, therefore, will be negligible.

The amount of suitable habitat outside of the two known activity centers that will be temporarily

degraded due to prescribed burning or shaded fuel break creation can only be estimated due to inexact habitat typing throughout the various units (i.e. age of stands was used to determine the difference between foraging only and nesting, roosting and foraging suitable habitat). Approximately ***344 acres of nesting, roosting and foraging habitat*** will be temporarily degraded and approximately ***369 acres of foraging only habitat*** will be temporarily degraded.

The M-Line and Upper and Lower Elk Camp Ponds (see map, Appendix 2) are all immediately adjacent to suitable nesting, roosting and foraging spotted owl habitat. The maintenance work will only entail mowing grass, cutting sapling trees and trimming brush with line trimmers, and so will have no effect on habitat quality or suitability.

All of the other prescribed burn or mechanical treatment units are outside of suitable spotted owl habitat. Ten of the prescribed burn units, however, are immediately adjacent to suitable spotted owl habitat (i.e. Boyes, C-10, Lower Counts, Little Bald Hills, Dolason, Lower Elk Camp, Upper Elk Camp, Gans, Child's Hill, Pig Pen, Wildcat) (see map, Appendix 2). All RNP prescribed burn plans mandate that sufficient fire fighting staff, holding lines and contingency personnel and equipment are present to prevent an escape into suitable habitat areas. These prescribed burn units, therefore, are not expected to present a threat to the surrounding habitat areas.

In summary, some portions of the proposed action may degrade approximately 969 acres of suitable spotted owl foraging habitat and 344 acres of suitable nesting, roosting and foraging suitable spotted owl habitat. The habitat areas that will degraded will be dispersed across the landscape with large areas of unaltered habitat around and between the treated areas. The habitat degradation will be temporary and will not render the areas unsuitable because only non essential habitat components will be altered. Canopy cover will remain at or above the suitability threshold, all live trees above 18 inches DBH will remain post treatment, and almost all logs and large snags will remain post treatment. In the moderate to long term, spotted owl habitat will be improved because the treatments (either mechanical thinning from below or under burning) will improve owl flight paths in stands that are currently densely stocked, improve forest floor productivity by allowing more light penetration and thus possibly increase prey productivity, and by creating or enlarging cavities in snags and logs through burning which may provide more prey denning and resting habitat. Additionally, the thinning treatments should accelerate the restoration of late seral stage forest conditions more quickly than if left untreated, which should improve spotted owl habitat quality at a faster rate than if left untreated.

Direct Injury Or Mortality

The possibility for spotted owls to be injured or killed by the proposed mechanical or prescribed fire treatments within suitable habitat areas is negligible to none. Any treatment taking place in surveyed suitable habitat areas will occur during the breeding and post fledging season only if owls are determined to not be present. If owls are present, treatment will occur between 16 September and 31 January. Any treatment activities that will take place in unsurveyed suitable habitat areas will also take place between 16 September and 31 January. Any adult or subadult owls in the treatment areas during this time of the year will be highly mobile and will be able to

move out of the area before harm could occur. The mechanical treatment operations will take many days or even weeks to move through an area and will be relatively noisy, easily flushing any resident owls from the area. The prescribed burning that will occur in suitable habitat burn units will also take a few days to ignite and the operation will also be noisy, not to mention produce irritating amounts of smoke. The smoke and noise will also flush any resident owls out of the treatment area. The relatively slow ignition rate should provide ample time for mobile owls to move out of harm's way.

d. Marbled Murrelet

Disturbance

None of the activities described in the proposed action are expected to disturb breeding marbled murrelets. All suitable habitat within RNP is assumed to be occupied. All potentially above ambient noise producing or visually disturbing activities as well as prescribed burning that will be taking place within, adjacent to or within either 500 feet or 0.25 miles (depending on the loudness of the noise source) of suitable marbled murrelet habitat will be limited to periods of time outside of the noise and visual restriction period (24 March through 15 September). Murrelets only breed within the action area in suitable habitat areas during the breeding season/noise restriction period. Thus, there is no possibility for disturbance to breeding marbled murrelets from the proposed action.

Loss and Modification of Habitat

None of the proposed actions include the felling or possibility of damaging any suitable nest trees or upper canopy cover trees. Most of the shaded fuel breaks are located within second growth stands which currently contain no trees that provide suitable marbled murrelet nest platforms. The Holter Ridge/B Line shaded fuel break does contain approximately 30 residual trees (representing approximately 3 acres of suitable nesting habitat) within or immediately adjacent to the treatment area. The prescription for the shaded fuel breaks is a thin from below that maintains the upper canopy at or above 60% canopy in order to reduce ladder fuels, break up ground fuel continuity but maintain high canopy cover to prevent shrubby brush growth. Based on the shaded fuel break work done under the auspices of the previous RNP Fire Management Plan along the Wolf Creek Access Road, Holter Ridge Road and along the Bald Hills Road that used the same treatment prescription, no upper canopy trees were removed (pers. obs.). Therefore, any taller trees that may provide some cover to the very lowest branches of the residual old growth trees will be retained. All of the prairie, oak woodland, coastal scrub and Little Bald Hills burn units are outside of suitable marbled murrelet habitat. Any prescribed prescribed burn units immediately adjacent to suitable marbled murrelet habitat (i.e. Counts Lower, Dolason, Elk Camp Lower, Gans) (see map, Appendix 2) will have sufficient firefighting staff, holding lines and contingency personnel and equipment present to prevent an escape into the suitable habitat areas as mandated by all RNP prescribed burn plans.

Direct Injury Or Mortality

All of the mechanical and prescribed burning that will take place adjacent to suitable marbled murrelet nesting habitat, the only proposed actions that could potentially injure or kill murrelets, will occur outside of the breeding season (24 March through 15 September) when vulnerable nesting marbled murrelets are present within suitable habitat stands. Therefore, there is no possibility for any murrelets to be injured or killed by the proposed action.

e. Pacific Fisher

Disturbance

All suitable fisher habitat within RNP is assumed to be occupied and assumed to potentially contain unknown natal and maternal dens. Any potentially above ambient noise producing activities as well as prescribed burning that will be taking place within, adjacent to or within a ¼ mile of suitable fisher habitat will be limited to periods of time outside of the natal den noise restriction period (1 March to 15 June). Activities described in the proposed action may disturb fisher females and kits in maternal dens but will not disturb females and kits in natal dens. This effect is not considered to be adverse because both kits and adult females are much more mobile once they have left natal dens and thus much less sensitive to disturbance (RNSP 2004).

Injury and Harm

Prescribed burning will take place within suitable habitat where fisher may be present in the Counts Lower, Holter Ridge Beargrass, Mainstem, Upper K&K, and Wildcat units. None of these units will be burned during the natal and maternal den period (1 March to 31 July) when female fishers and their kits would be the least mobile and thus most susceptible to fire or smoke injury. All of these units will be burned after 15 September, when all age classes are highly mobile. Most healthy fishers should move out of prescribed burn units as the units are being lit due to the disturbance caused by both the fire and the fire crews. In addition, all of the prescribed burn units are lit from the tops of slopes downwards, creating a very slow rate of fire spread downhill; thus giving escaping fishers ample time to move to safe areas. Therefore, it is unlikely that fishers will be harmed by prescribed burning activities.

The Holter Ridge/B Line Road, Bald Hills Road, Wolf Creek Access Road and Complex and Howland Hill Outdoor School Access Road and Complex shaded fuel breaks are all located within suitable fisher habitat. It is unlikely that fishers would be injured by falling trees in these project areas for two reasons. First, the commotion caused by the project work should flush any fishers in the area out of harm's way if they were present – the project areas are only 100 feet wide. Second, the project areas will not be treated during the natal and maternal den period when females and kits are the least mobile and thus most susceptible to being struck by falling trees.

Loss and Modification of Habitat

Five of the prescribed burn units (Counts Lower, Holter Ridge Beargrass, Mainstem, Upper K&K, Wildcat) are located partially in suitable fisher habitat. Four of the shaded fuel breaks (Holter Ridge Road/B Line Road, Bald Hills Road, Wolf Creek Access Road and Complex, Howland Hills Outdoor School Road and Complex) are located either wholly or partially in suitable fisher habitat (see map, Appendix 2). Thinning prescriptions for the burn unit preparation work and the shaded fuel breaks are the same so they will be analyzed together.

In the shaded fuel breaks, the entire unit (a one hundred foot wide swath on either side of roads or around buildings) will be treated. In the burn units, only areas within 50 of handlines or in areas of heavy oak woodland or grassland encroachment will be mechanically treated. Only subdominant less than 18 inches DBH trees are targeted for removal in these units. None of these size class trees provide suitable denning or resting habitat. Canopy cover will not be lowered below 60% where it exists and so sufficient cover will remain to maintain the stands as suitable fisher habitat, but the habitat will be mildly degraded. Over the longer term, the mechanical thinning should reduce competition within the stands and cause the stands to move towards greater tree growth more quickly than if left to mature without mechanical thinning. Greater numbers of larger trees should produce larger numbers of suitable denning and resting trees thereby improving the quality of the habitat. Prey habitat should also improve. Pile burning of the slash created will not harm remaining trees because it will be burned during the wet season when the threat of escape is minimized. The quality of the habitat within these units will be temporarily degraded but will still be suitable over the short term.

Prescribed burning will take place within the five burn units that contain fisher habitat. Prescribed burning within these stands calls for a cool underburn that will target small ground fuels and may consume some sapling to pole sized trees, burn some logs and snags and kill the occasional over story tree (creating new snags). Canopy cover will not be lowered below 60% across areas larger than 0.25 acres. The canopy openings will be rare and widely spaced. The prescribed broadcast burn is expected to degrade the suitability of the stand temporarily by consuming some potential prey food sources (e.g. small herbaceous vegetation and shrubs) and perhaps some potential prey den/resting/cover habitat (e.g. stick piles, small logs, duff layers). Greater overall light penetration and nutrient release caused by the moderate to low intensity burn could produce more young, nutritious herbaceous vegetation and shrub growth which in turn could positively influence prey populations in the longer term. Habitat quality within these stands will degrade over the short term. Suitable habitat will not be removed. Habitat quality over the medium and long term will improve due to the thinning effect caused by the prescribed burn. Large tree recruitment should increase and new cavities will be created or existing cavities will be enlarged in logs and snags, improving prey habitat and potentially creating suitable fisher denning habitat.

B. Indirect Effects

a. Northern Spotted Owl

The only indirect effect from proposed activities is the chance of smoke generated during prescribed burns drifting into occupied habitat and causing individual owls or owl prey to be temporarily irritated or exposed to potentially damaging smoke related effects (e.g. lung damage from smoke inhalation). This would be most critical to owlets which would not be able to move outside of the affected environment. No studies to date, however, have demonstrated that smoke is or is not an irritant to spotted owls or their prey. Additionally, no studies to date have demonstrated that burning vegetation produces potentially dangerous levels of smoke for spotted owls or owl prey. Seventeen of the burn units (Airstrip Upper, Airstrip Lower, Counts Upper, Copper Creek, Coyote Creek, Demartin, Eastside, Enderts, Lagoon Creek, Little Bald Hills, Lyons Lower, Lyons Upper, Major Creek, Mid Basin, Schoolhouse, Williams Ridge and Wooden Gate) (see map, Appendix 2) are greater than a quarter mile from suitable habitat and may be burned during the breeding season. These areas, however, will most likely not be burned until mid July or later when conditions are typically dry enough to allow proper ignition (John McClelland pers. comm.). The majority of owlets within RNP have fledged by that time (Childers 1999) and thus should be able to move more readily. In addition, all of these project areas are located upslope of suitable habitat areas. Burn prescriptions require low winds before ignition is allowed (John McClelland, pers. comm.), thus, smoke columns should quickly rise well above the tree canopy and disperse before reaching suitable habitat areas. All of these burn units are also primarily grasslands which produce a very short smoke interval when burned (John McClelland, pers. comm.), which would greatly lessen the smoke's potential impact. Only small amounts of woody debris along unit edges are expected to be burned that could smolder for longer periods. There is, however, the possibility of wind shifts which could move smoke into habitat areas. The effect of this smoke should be short lived for the reasons stated above.

The other burn units are located in, near or predominantly upwind of suitable spotted owl/marbled murrelet habitat and thus will not be burned until after 15 September. All owlets should be fledged by that time and should be able to easily move out of any affected environment. Smoke dispersal from these units should be similar to the units just described.

b. Marbled Murrelet

The only indirect effect from proposed activities is the chance of smoke generated during prescribed burns drifting into occupied habitat and causing individual murrelets to be temporarily irritated or exposed to potentially damaging smoke related effects (e.g. lung damage from smoke inhalation). This would be most critical to nestlings which would not be able to move outside of the affected environment. No studies to date, however, have demonstrated that smoke is or is not an irritant to marbled murrelets. Additionally, no studies to date have demonstrated that burning vegetation produces potentially dangerous levels of smoke for marbled murrelets. Seventeen of the burn units (Airstrip Upper, Airstrip Lower, Counts Upper, Copper Creek, Coyote Creek, Demartin, Eastside, Enderts, Lagoon Creek, Little Bald Hills, Lyons Lower, Lyons Upper, Major

Creek, Mid Basin, Schoolhouse, Williams Ridge and Wooden Gate) (see map, Appendix 2) are greater than a quarter mile from suitable habitat and may be burned during the breeding season. All of these burn units are located upslope of suitable habitat areas. Burn prescriptions require low winds before ignition is allowed (John McClelland, pers. comm.), thus, smoke columns should quickly rise well above the tree canopy and disperse before reaching suitable habitat areas. All of these units are also primarily grasslands which produce a very short smoke interval when burned (John McClelland, pers. comm.), which would greatly lessen the smoke's potential impact. Only small amounts of woody debris are expected to be burned along the edge of units that could smolder for longer periods. There is, however, the possibility of wind shifts which could move smoke into habitat areas. The effect of this smoke should be short lived for the reasons stated above.

The other prescribed burn units are located near or upwind of suitable habitat but will not be burned until after 15 September. All nestlings should be fledged and at sea by that date thus completely avoiding any potential effects from smoke generated at those burn units.

c. Pacific Fisher

The only indirect effect from proposed activities is the chance of smoke generated during prescribed burns drifting into occupied habitat and causing individual fisher or fisher prey to be temporarily irritated or exposed to potentially damaging smoke related effects (e.g. lung damage from smoke inhalation). This would be most critical to kits in natal dens which would not be able to move outside of the affected environment. No studies to date, however, have demonstrated that smoke is or is not an irritant to fishers or their prey. Additionally, no studies to date have demonstrated that burning vegetation produces potentially dangerous levels of smoke for fishers or their prey. Seventeen of the burn units (Airstrip Upper, Airstrip Lower, Counts Upper, Copper Creek, Coyote Creek, Demartin, Eastside, Enderts, Lagoon Creek, Little Bald Hills, Lyons Lower, Lyons Upper, Major Creek, Mid Basin, Schoolhouse, Williams Ridge and Wooden Gate) (see map, Appendix 2) are greater than a quarter mile from suitable habitat and may be burned during the breeding season. These areas, however, will most likely not be burned until mid July or later when conditions are typically dry enough to allow proper ignition (John McClelland pers. comm.). Kits will be out of the natal den and possibly even out of the maternal den by then (J. Thompson pers. comm., Raley 2002) and thus should be able to move out of the affected area more easily. In addition, all of these burn units are located upslope of suitable habitat areas. Burn prescriptions require low winds before ignition is allowed (John McClelland, pers. comm.), thus, smoke columns should quickly rise well above the tree canopy and disperse before reaching suitable habitat areas. All of these burn units are also primarily grasslands which produce a very short smoke interval when burned (John McClelland, pers. comm.), which would greatly lessen the smoke's potential impact. Only small amounts of woody debris are expected to be burned along the edge of units that could smolder for longer periods. There is, however, the possibility of wind shifts which could move smoke into habitat areas. The effect of this smoke should be short lived for the reasons stated above. The other prescribed burn units are located near or upwind of suitable habitat but will not be burned until after 15 September. All kits will

be out of the natal and maternal den by that date and highly mobile, greatly enhancing their ability to avoid any potential negative effects from smoke generated at those burn units.

C. Cumulative Effects

Cumulative effects are those state and private actions that may occur in the future that have the potential to impact listed species in the park. Much private timber company land occurs immediately adjacent to park boundaries that is slated for timber harvest, including some post - timber harvest prescribed burning in preparation for reforestation. Timber harvest and prescribed burning has occurred, and will occur in the future, in stands adjacent to the park. However, this activity has been and most likely will continue to be outside the breeding seasons of the spotted owl, marbled murrelet and fisher if the activity is to occur within the parks' Special Treatment Areas (Greg Bundros pers. comm.). Additionally, the local Northcoast Air Quality Board controls the timing of prescribed burns to reduce the cumulative smoke generated in any one location. Thus, continued timber harvest and prescribed burning associated with timber harvest plans adjacent to RNP are not likely to add to any impacts identified in the effects analyses for this proposed action. Thinning is also expected to occur throughout the surrounding private timber lands but will most likely be using prescriptions which remove much more basal area and open up the canopy more than those being proposed in this plan. The thinning will most likely cause some temporary habitat degradation to some suitable spotted owl and fisher habitat but will most likely result in a more rapid improvement in habitat quality in the long term – at least until the stands are harvested under a clear cut prescription.

VII. DETERMINATION

Threatened and Endangered Species

Based on the nature and timing of the proposed action, it has been determined that the 2015 Fire Management Plan in Redwood National Park will have the following effects on the threatened and endangered species listed in this document: no effect for Oregon silverspot butterfly, may affect but not likely to adversely affect spotted owl due to negligible habitat degradation from mechanical fuel reduction work and broadcast burning as well as potential minor smoke irritation; may affect but not likely to adversely affect marbled murrelet due to potential minor smoke irritation; may affect likely to beneficially affect western lily due to improved habitat quality through prescribed burning.

Candidate Species

The Pacific fisher may be affected but not adversely affected due to negligible amounts of suitable habitat becoming degraded due to mechanical fuel reduction work and broadcast burning

as well as potential smoke irritation.

VIII. MANAGEMENT RECOMMENDATIONS

There are no management recommendations.

VIX. CONTRIBUTORS

Judy Wartella and Josh Van Buskirk, GIS analysis and map production
Rick Young, Proposed Action Review
John McClelland, Proposed Action Review

LITERATURE CITED

Childers, Eddie. 1999. Monitoring the Northern Spotted Owl in Redwood National and State Parks 1993 to 1999. Unpublished report on file at RSNP, Orick, CA. 86pp.

Forsman, E.D., E.C. Meslow, and H.M. Wight. 1984. Distribution and biology of the spotted owl in Oregon. Wildlife Monographs. 87: 1-64.

Hunter, J.E., R.J. Gutierrez, and A.B. Franklin. 1995. Habitat configuration around spotted owl sites in northwestern California. Condor. 97: 684-693.

Pickering, D.L. 1995. The influence of Fire on West Caost Grasslands and Concerns about its use as a Management Tool, A Case Study of the Oregon Silverspot Butterfly, *Speyeria zerene hippolyta* (Lepidoptera, Nymphalidae) in Proceedings: First Conference on Fire Effects on rare and Endangered Species and Habitats, Nov. 13-16, 1995. Couer d'Alene, Idaho. J.M. Greenlee ed. Pp 37-46.

RNSP. 2015. Northern Spotted Owl Surveys in Redwood National and State Parks – 2013 – 2014 Annual Report. Unpub. Report on file at RNSP, Orick, CA. 15 pp.

RNSP. 2013. Northern Spotted Owl Inventory and Monitoring in Redwood National and State Parks – 2012 Annual Report. Unpub. Report on file at RNSP, Orick, CA. 18 pp.

RNSP. 2004. Fisher Management Recommendations for Redwood National and State Parks. Unpub. Report on file at RNSP, Orick, CA. 4 pp.

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.

Slauson, K.M., W.J. Zielinski, and 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.

[USDA] U.S. Department of Agriculture and [USDI] U.S. Department of the Interior. 1994. Record of decision for amendments to Forest Service and Bureau of Land Management planning documents within the range of the northern spotted owl; standards and guidelines for management of habitat for late-successional and old-growth forest related species within the range of the northern spotted owl. Portland, OR: USDA Forest Service and USDI Bureau of Land Management.

[USDI] U.S. Department of the Interior and [CDPR] California Department of Parks and Recreation. 1999. Redwood National and State Parks, Humboldt and Del Norte Counties; final general management plan/ general plan; environmental impact statement/ environmental impact report. Vol. 1. Crescent City, CA: USDI National Park Service and California Department of Parks and Recreation.

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

PERSONAL COMMUNICATIONS

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

McClelland, McClelland. Fuels Technician. Redwood National and State Parks, Orick, CA

Taraoka, Jason. Forester. Redwood National and State Parks, Orick, CA

Appendix 1

Guidelines to Reduce or Eliminate Impacts to Threatened and Endangered Species and Non Listed Fish and Wildlife Species During Wildfire or Escaped Prescribed Fire Suppression Efforts in Redwood National Park

*PLEASE NOTE!

Never allow these fire suppression guidelines to obstruct any actions when human lives are at stake. Never utilize these guidelines if by their use human safety could be compromised. In addition, the potential risk to property or significant resources may also preclude the implementation of any or all of these fire suppression guidelines.

Emergency Consultation with USFWS and NOAA Fisheries - The Redwood National Park (RNP) Fish and Wildlife Branch will initiate emergency consultation with both regulatory agencies within at least 48 hours, preferably within 24 hours, of initial attack on any wildfire or escaped prescribed fire. The assigned RNP biologist(s) will work with the incident command team both during and after the incident on gathering pertinent information necessary for the consultation.

I. Terrestrial Species Protection Measures

1) General Guidelines -

- A wildlife biologist or fish and wildlife biologist (preferably one with local knowledge) should serve as a resource advisor with the incident command team (ICT). The biologist(s) will coordinate with the ICT about listed terrestrial species and their critical habitat and incorporate recommendations within the Incident Action Plan to minimize adverse effects.

- If a wildlife biologist or fish and wildlife biologist is not available, assure that someone with local wildlife knowledge provides the ICT with information about the location of listed species habitats, nest or den sites, critical habitat, and recommendations to minimize adverse effects summarized below.

2) Aircraft Flight Guidelines -

*PLEASE NOTE!

These guidelines are for aircraft flying over RNP lands away from any active wildfire location and are not intended to influence approach or exit flight lines during aerial water/retardant drops or low elevation reconnaissance of fire activity. At no time should the helicopter or air tanker pilot-in-command fly in such a way as to endanger the aircraft, other aircraft, or structures, or compromise ground personnel safety in order to implement these guidelines.

- Please refer to further guidelines concerning aerial retardant drops near lakes, streams, rivers and ponds in the Anadromous and Other Aquatic Species Protection Measures section below.

- When flying over forested regions of RNP between Janurary 1st and September 15th, restrict flight elevations to at least 500 feet, preferably 1000 feet, above the canopy of suitable marbled murrelet, spotted owl, and fisher habitat.

- When flying over known active spotted owl nests between February 1st and July 9th, restrict flight elevations to at least 1000 feet above the canopy within 0.25 miles of the nest site. Consult with the assigned ICT biologist for information on known active owl nest locations.

- When flying over known active bald eagle nests between January 1st and August 31st, restrict flight elevations to at least 500 feet above the canopy within 0.5 miles of the nest site. Consult with the assigned ICT biologist for information on known active eagle nest locations.

- When flying over the Steller's sea lion colony during any time of the year, restrict flight elevations to at least 1000 feet above sea level and a distance of 0.25 miles from the colony.

- When flying over ocean beaches and offshore rocks between March 1st and September 30th, restrict flight elevations to at least 500 feet, preferably 1000 feet, above sea level. If the aircraft appears to cause seabirds or marine mammals to flush, gain elevation by at least 500 feet during future passes.

3) Direct Attack, Fire Line Construction and Mop Up Guidelines –

- When fire is found in the canopy of single or multiple isolated large (>36 inch DBH) old growth trees, it is always preferable to extinguish the fire with a "bucket drop" from a helicopter and to avoid, if at all possible, felling the tree or letting it continue to burn.

- Where possible, expedient and fire fighter safety will not be compromised or fire suppression activities significantly hindered, avoid felling trees larger than 18 inches DBH when constructing fire lines, particularly trees with broken or deformed tops.

- Where possible, expedient and fire fighter safety will not be compromised or fire suppression activities significantly hindered, avoid felling snags greater than 24 inches DBH.

- Avoid placing fire camps 0.25 miles and heliports within 0.5 miles of suitable spotted owl, marbled murrelet and fisher habitat between February 1st and September 15th. This period would be extended one month earlier to January 1st near known bald eagle nest sites. Where possible, expedient and where fire fighter safety will not be compromised or fire fighting suppression activities significantly hindered, avoid placing spike camps and staging areas within 0.25 miles of suitable spotted owl, marbled murrelet and fisher habitat between February 1st and September 15th. This period would be extended one month earlier to January 1st near known bald eagle nest sites. Consult with the assigned ICT biologist for information on known active eagle nest locations.

- Inform all fire fighting field staff to always pack out all food waste and to never feed any wildlife.

II. Anadromous Fish and Other Aquatic Species Protection Measures

1) General Guidelines -

- A fishery biologist or fish and wildlife biologist (preferably one with local knowledge) should serve as a resource advisor with the incident command team (ICT). The biologist(s) should coordinate with the ICT about listed salmon and trout and their critical habitat and incorporate recommendations within the Incident Action Plan to minimize adverse effects.

- If a fishery biologist or fish and wildlife biologist is not available, assure that someone with local fisheries knowledge provides the ICT with information about the location of listed salmon and trout, their critical habitat, and recommendations to minimize adverse effects listed below.

- Use untreated water to suppress wildland fire within or near riparian habitat where feasible. If fire retardant or foam is used, follow the Guidelines for Aerial Delivery of Retardant or Foam Near Lakes, Rivers, Streams and Ponds detailed below.

- Avoid or minimize disturbance of ground cover and vegetation that exposes mineral soil within riparian areas, including:
    - fire line construction by dozers;
    - grading activities;
    - road reconstruction;
    - stream crossings;
    - ignition of backfires; and
    - staging areas, helibases, base camps, drop-off points, etc.

- Use water sources designated by a biologist for dipping and drafting. If not available, minimize using water sources where there is a risk of entraining listed salmon or trout or reducing in-stream flows, both on and off site. Use Water Drafting Guidelines detailed below.

- Avoid and minimize dam construction to pond water for drafting in streams where listed salmonids or their critical habitat are known or believed to be present.

- Avoid and minimize road and stream crossing construction where possible. If road construction is unavoidable, do so in a manner that prevents or minimizes erosion, sediment delivery to stream channels, and modification of the natural drainage patterns. Minimize the number of crossings, amount of fill, diversion potential, and maintain approaches that are perpendicular to the stream channel.

2) Guidelines for Drafting Water from Streams Containing Federally Listed Salmon and Trout

- Drafting will be restricted to one hour after sunrise to one hour before sunset to avoid attracting fish to the draft hose.

- Pumping rate will not exceed 350 gallons per minute.

- Pumping rate will not exceed 10% of estimated stream flow.

- Use streams and pools where water is deep and flowing, as opposed to streams with low flow and small isolated pools.

- Pumping will be terminated when the tank is full. The effect of single pumping operations, or multiple pumping operations at the same location, should not result in obvious draw-down of either upstream or downstream pools.

- Each pumping operation will use a fish screen (design standards described below). The screen should be oriented parallel to flow for best screening performance. The screen will be designed and used so that it can be submerged with at least one-screen-height-clearance above and below the screen.

- Pump operators will maintain a logbook containing the following information: operator's name, date, time, pump rate, filling time, screen cleaned (yes or no), screen condition, comments. These guidelines should be included as instructions in the logbook and made easily available to every operator.

Fish Screen Construction Criteria

- Surface Area – The total, unobstructed surface area of the screen will be at least 2.5 square feet, based on the upper limit of pumping of 350 gallons per minute. Larger surface areas are recommended where debris buildup is anticipated and where stream depth is adequate to keep the screen submerged at approximately mid-depth.

- Screen Mesh – Screen mesh must be in good repair and present a sealed, positive barrier that effectively prevents the entry of immature (20-30mm) salmon or trout fry. The screen mesh will be: round openings a maximum 3/32 inch diameter, square openings a maximum 3/32 diagonal, slotted openings a maximum 1/16 inch width.

- Screen Design – Water drafting screens may be off the shelf products, but they can be custom made devices appropriate to the scale and duration of the operation. To keep the screen supported and correctly positioned in the water column, adjustable support legs are advised. Screen geometry can be configured either as rectangular or cylindrical. The intake structure must be designed to promote uniform velocity distribution at all external mesh surfaces. This can be accomplished with a simple internal baffle device that distributes the flow evenly across the entire surface of the screen. In order to accomplish this, the designer needs to understand the hydraulic characteristics of these devices. There is a tendency for most of the intake water to enter the screen near the hose end, so a typical internal baffle would consist of a pipe (or manifold set of pipes) which have variable porosity holes at predetermined spacing. It is recommended to start near the hose end with approximately 5-10% average open area and gradually increase the porosity toward the length of the screen. At a point where screen length exceeds three times the diameter of the suction hose, the baffling effect tends to diminish rapidly. At this point the baffle porosity may approach 100%. A successful baffle system will functionally distribute flow areas to all areas of the screen. A poorly designed screen may result in high velocity "hot spots" which could lead to fish impingement on the screen

face. Hydraulic testing of prototype screen designs is recommended where the screen use is on going and extensive.

- Screen Structure – The screen frame must be strong enough to withstand the hydraulic forces it will experience. However, structural frames, braces, and other elements that block the flow, change flow direction, or otherwise decrease the screen surface area should be mimimized.

- Screen Cleaning – The screen must be cleaned as often as necessary to prevent approach velocity from exceeding 0.33 feet per second. Operators should withdraw the screen and clean it after each use or as necessary to keep screen face free of debris. Pumping should stop for screen cleaning when approximately 15% or more of the screen area is occluded by debris. A suitable brush shall be on board the truck for this cleaning operation.

3) Guidelines for Aerial Delivery of Retardant or Foam Near Lakes, Rivers, Streams and Ponds -

*PLEASE NOTE!

At no time should the helicopter or airtanker pilot-in-command fly in such a way as to endanger the aircraft, other aircraft, or structures, or compromise ground personnel safety in order to implement these guidelines. Deviations from these guidelines are acceptable when life or property is threatened and the use of retardant or foam can be reasonably expected to alleviate the threat.

- Avoid aerial application of retardant or foam within 300 feet of waterways. To meet the 300-foot buffer zone guideline, implement the following:

- Airtankers: When approaching a waterway visible to the pilot, the pilot should terminate the application of retardant approximately 300 feet before reaching the waterway. When flying over a waterway, pilots should wait one second after crossing the far bank or shore of a waterway before applying retardant. Pilots should make adjustments for airspeed and ambient conditions such as wind to avoid the application of retardant within the 300-foot buffer zone.

- Helicopters: When approaching a waterway visible to the pilot, the pilot should terminate the application of retardant or foams 300 feet before reaching the waterway. When flying over a waterway, pilots should wait five seconds after crossing the far bank or shore before applying the retardant or foam. Pilots should make adjustments for airspeed and ambient conditions such as wind to avoid the application of retardant or foam within the 300-foot buffer zone.

- When alternative line construction tactics are not available due to terrain constraints, congested area, life and property concerns, or lack of ground personnel, it is acceptable to anchor the foam or retardant application to the waterway. When anchoring a retardant or foam line to a waterway, use the most accurate method of delivery in order to minimize placement of retardant or foam in the waterway (e.g., a helicopter rather than a heavy airtanker).

- When potential damage to natural resources outweighs possible loss of aquatic life, the unit administrator may approve a deviation from these guidelines.

4) Guidelines for Wildland Fire Rehabilitation Actions -

This section provides recommendations for avoiding and minimizing adverse effects on listed salmon and trout and their critical habitat from wildland fire rehabilitation activities. There are two types of emergency rehabilitation associated with wildland fires: fire suppression rehabilitation and burned area emergency rehabilitation (BAER). Fire suppression rehabilitation is any action that minimizes the effects of wildland fire suppression activities. BAER activities are implemented to reduce the effects of the wildland fire prior to the onset of winter precipitation.

- Remove woody debris or slash from stream channels only if it may cause an imminent threat of damage to life or property (e.g., above a culvert inlet that could potentially plug).

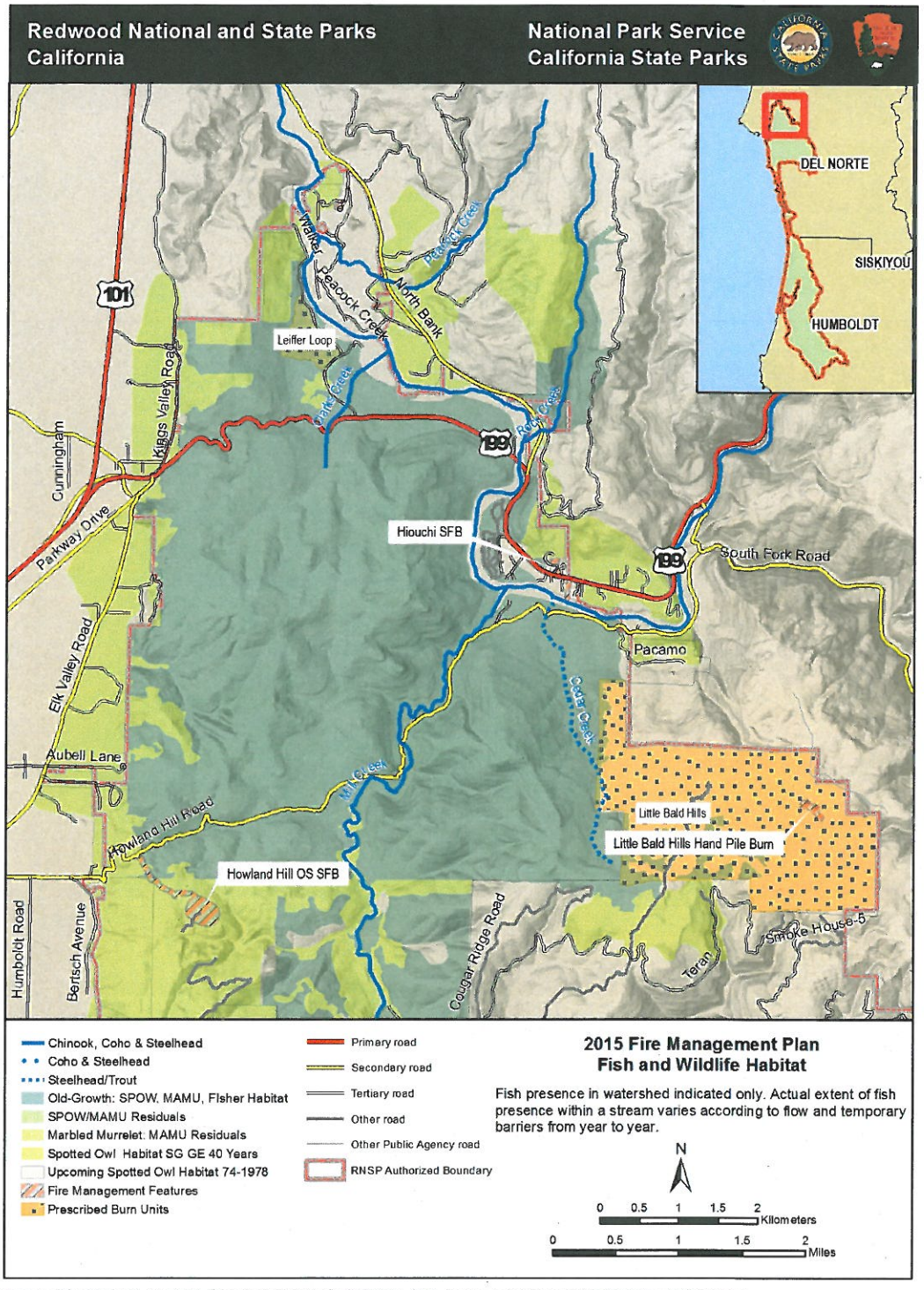
- Implement erosion control measures to restore natural drainage patterns and minimize the amount of exposed mineral soil, thereby reducing sediment delivery to stream channels.

- Decommission roads and stream crossings constructed for fire suppression actions.

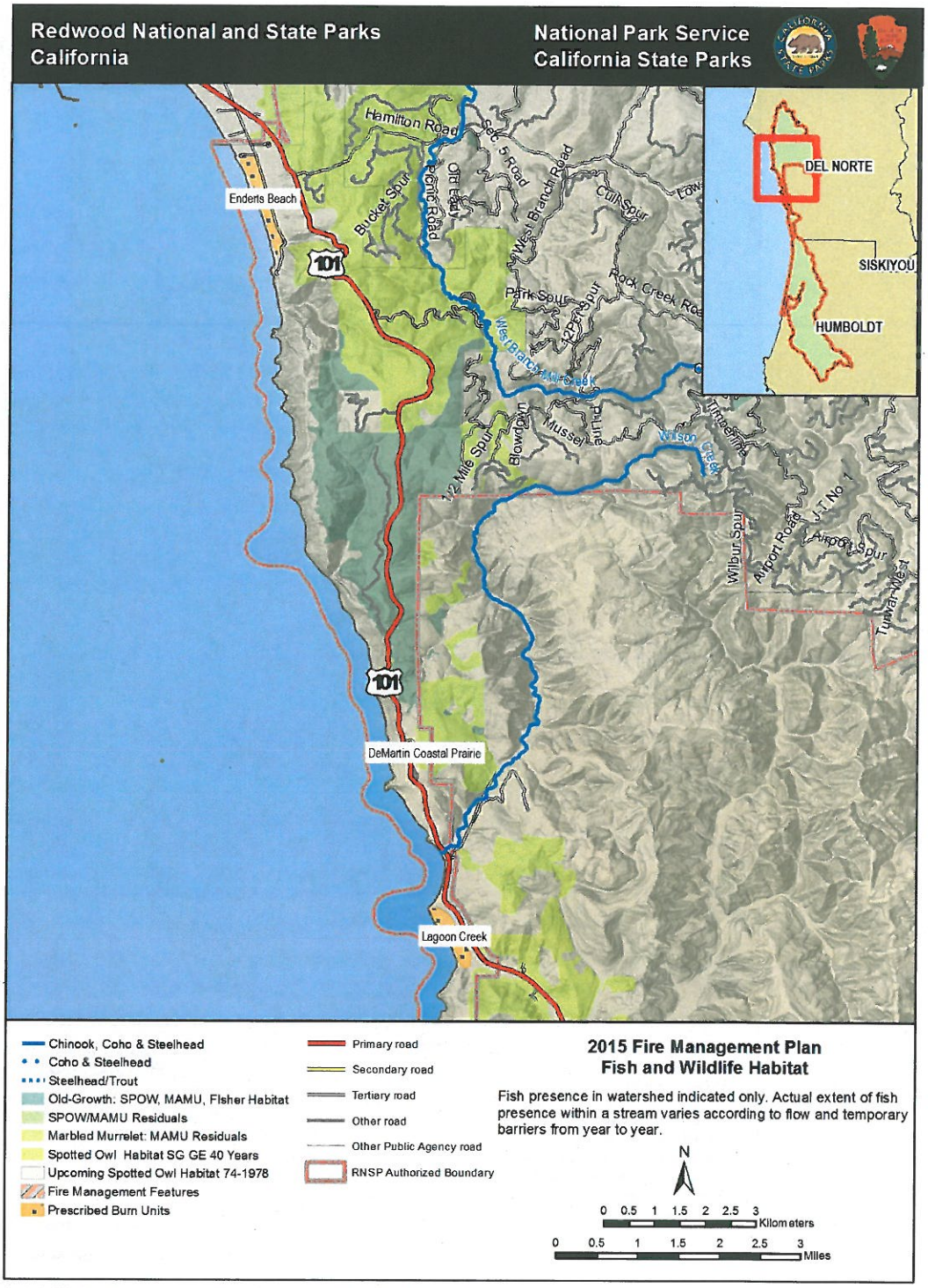
- Decommission dams at drafting sites developed for the Actions.

- Include a fisheries biologist with local knowledge on the wildland fire suppression rehabilitation and BAER teams for identifying activities that benefit listed salmonids and their critical habitat.

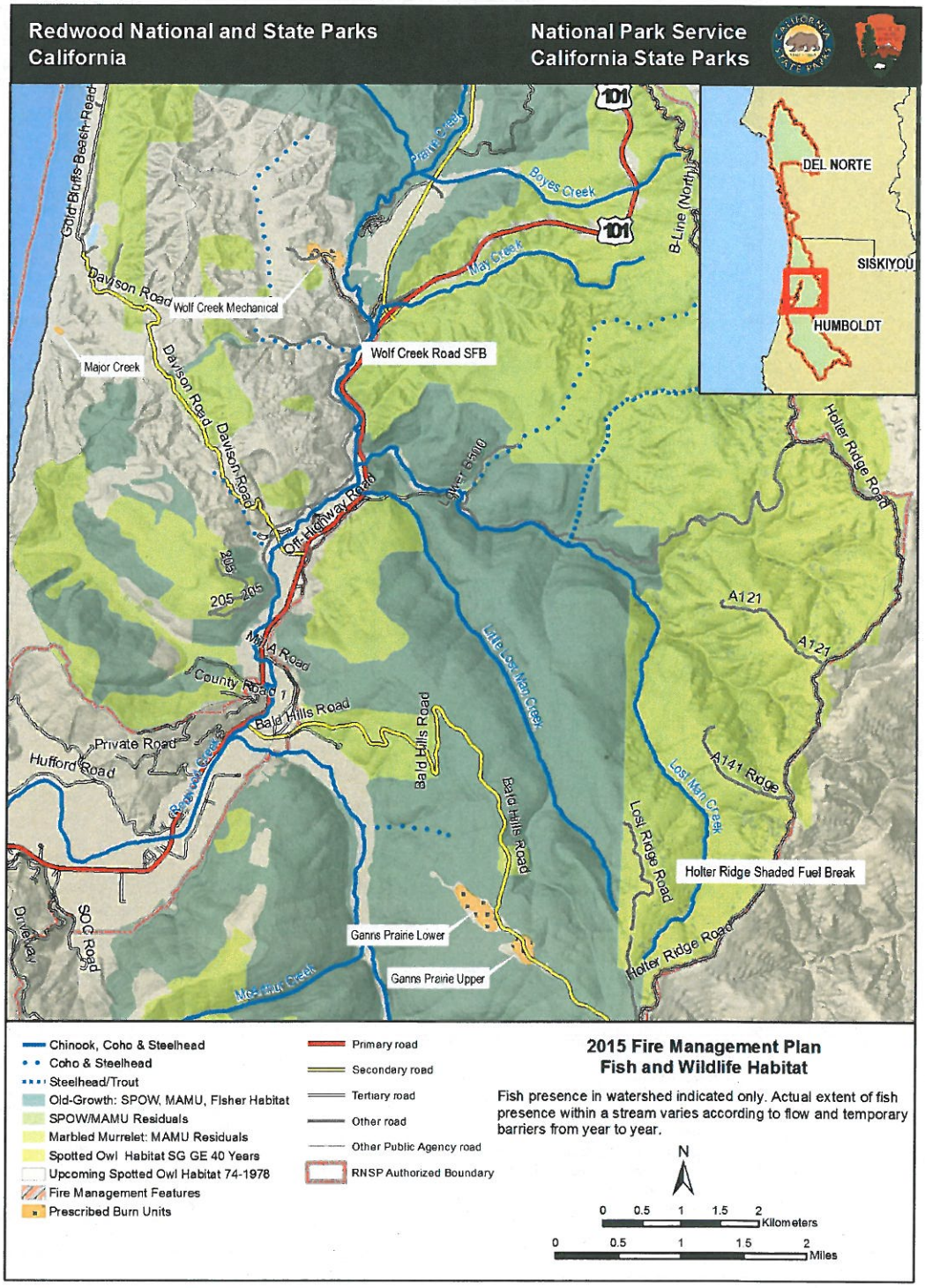
Appendix 2
Maps



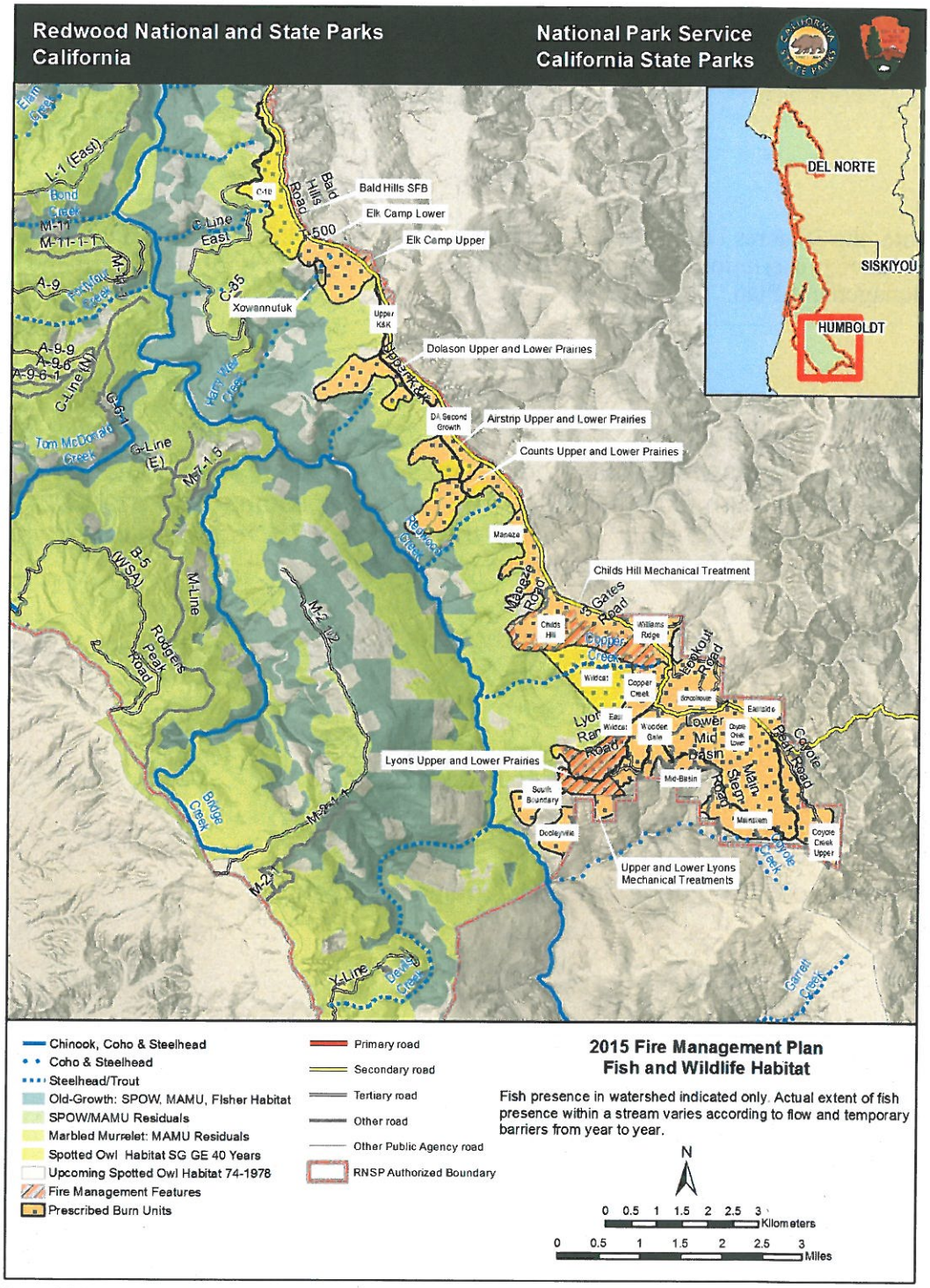
Document Path: N:\GIS_Maps\user_maps\466_SOC_FMP_TnEHabiDraft_BioMap_8x11_Portrait_1.mxd Date: 12/3/2015 Using: ArcGIS Server



Document Path: N:\GIS_Maps\user_maps\486_SOC_FMP_TnEHab\Draft_BioMap_8x11_Portrait_2.mxd Date: 12/3/2015 Using: ArcGIS Server



Document Path: N:\GIS_Maps\user_maps\496_SOC_FMP_TnEHab\Draft_BioMap_8x11_Portrait_3.mxd Date: 12/3/2015) Using: ArcGIS Server



Document Path: N:\GIS_Maps\user_maps\456_SOC_FMP_TnEHab\Draft_BioMap_8x11_Portrait_4.mxd Date: 12/3/2015 Using: ArcGIS Server

Appendix 3

Large Tree Mortality Post Prescribed Fire Monitoring Results
From DA Second Growth Unit

Note, the 30 acres DA Second Growth Prescribed Burn Unit was burned in the fall of 2007 using the same prescription that will be used on all second growth burn units under the 2010 Fire Management Plan.

Hi Keith,

Here is a summary of results from Jason's DA second growth plots. 21 plots were measured preburn (summer 2006) and one year postburn (summer 2008). For overstory trees > 20 cm (7.9") DBH, there was a 3.7% reduction in density, and a 2.1% reduction in basal area. The results are as follows:

Overstory (> 20 cm DBH) tree density (trees/ha)

Preburn:	577.4
1 year postburn:	556

Overstory (> 20 cm DBH) basal area (m2/ha)

Preburn:	67.9
1 year postburn:	66.5

Let me know if you need any additional information.
-Jen

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Arcata Fish and Wildlife Office
1655 Heindon Road
Arcata, California 95521
Phone: (707) 822-7201 FAX: (707) 822-8411

In Reply Refer To:
AFWO-09B0004-16I0097

JAN 15 2016

Memorandum

To: Park Superintendent, Redwood National Park
Crescent City, California

From: Field Supervisor
Arcata, California

Subject: Informal Consultation and Conference on the 2015 Fire Management Plan in Redwood National Park, Humboldt and Del Norte Counties, California

This memorandum responds to your December 17, 2015, letter requesting the Fish and Wildlife Service's (Service) concurrence with your determination of effects for the 2015 Fire Management Plan (FMP) in Redwood National Park (Park), Humboldt and Del Norte counties, California. You determined the proposed action may affect, but is not likely to adversely affect the federally listed as threatened marbled murrelet (*Brachyramphus marmoratus*; hereafter, murrelet) and northern spotted owl (*Strix occidentalis caurina*; hereafter, owl), the endangered western lily (*Lilium occidentale*; hereafter, lily), and the candidate fisher (*Pekania martes*). 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 December 2015, biological assessment and other sources of information. The biological assessment contains a complete description of the proposed actions and their effects on the murrelet, owl, lily, and fisher, and is hereby incorporated by reference. Documents related to this consultation are on file in this office.

The proposed action include prescribed burning, construction and maintenance of shaded fuel breaks, annual fuel reduction around historic structures, and maintenance of ponds. The Park proposes to use prescribed burning to treat approximately 6,600 acres (ac) of grassland, oak woodland, pine woodland, coastal grass and shrub land, and second growth coniferous forest within 36 burn units on Park lands. Prescribed burning would occur on approximately 3,982 ac that occur within 500 feet of habitat suitable for use by the owl and fisher (3,565 ac), murrelet (2,350 ac) or the lily (191 ac). The acres proposed for burning include: 75 ac of coastal grass and scrub; 10 ac of grassland; 2,117 ac of grassland and oak woodland; 1,470 ac of grassland and pine woodland; and 1,438 ac of second growth coniferous forest.

The proposed action will create or maintain five shaded fuel breaks. The fuel breaks will be 100 feet wide on either side of roads and around building complexes, totaling approximately 500 ac. Within

the fuel breaks, the only trees to be cut will be less than 18 inches diameter-at-breast-height (dbh). Canopy cover will be maintained above 60 percent where it exists. All attempts will be made to leave trees less than 18 inches dbh that have broken or deformed tops, as these may develop into future owl nest or roost trees. In addition, brush and tree limbs that could provide ladder fuels will be removed. Mechanical thinning will involve cutting trees less than 18 inches dbh using chainsaws or mechanical feller bunchers, and cutting brush and tree limbs that could provide ladder fuels into the forest canopy along a 100-foot-wide strip along either side of roads or around building complexes. Cut trees and limbs will be piled away from live trees and large logs and snags (i.e., logs greater than 36 inches diameter on the wide end and longer than 10 feet, and snags greater than 24 inches dbh) within the units or on the roads and either burned during the wet season outside of the burn timing restrictions, or chipped with a mechanical chipper outside of the noise restrictions, as described below. Hazard fuel reduction will occur annually around seven historic structures. Maintenance of four existing human-made ponds will involve clearing vegetation from a total of approximately 0.7 acre to improve access as firefighting water sources.

The proposed action occurs within the range of the murrelet, owl, lily, and fisher. Unlike previous Park FMP consultations, this consultation will only cover Park actions within the Park, not including State Park lands commonly included in consultations associated with the Redwood National and State Parks partnership. This concurrence letter is valid from the date of issuance through December 2020.

Concurrence

Murrelet

The Service concurs with your determination that the proposed action may affect, but is not likely to adversely affect the murrelet, based on the following factors:

1. No suitable murrelet nesting habitat will be removed.

2. Most of the shaded fuel breaks are located within second growth stands which currently do not contain trees with suitable murrelet nest platforms.

3. Approximately 3 ac of residual nesting habitat occur within or immediately adjacent to proposed treatment areas; however, since the only trees to be cut will be less than 18 inches dbh, we expect these stands to continue functioning as murrelet nesting habitat.

4. Disturbance to murrelets due to the use of mechanized equipment is not anticipated, because no noise producing equipment that produce sound greater than ambient level will be allowed in or within 500 feet (or 0.25 mile depending on the loudness of the noise source) of nesting habitat from March 24 through September 15.

5. Injury or harm to murrelets is not anticipated, because no mechanical or prescribed burning activities will occur in suitable nesting habitat from March 24 through September 15.

Owl

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

1. No suitable nesting/roosting habitat will be removed.

2. Five of the prescribed burn units and four of the shaded fuel breaks are located either entirely or partially in suitable owl nesting/roosting and foraging habitats (and thinning prescriptions for burn unit preparations work and shaded fuel break are the same). However, only areas within 50 feet of handlines will be mechanically treated. Furthermore, only subdominant trees less than 18 inches dbh will be targeted for removal in these units. Although nesting/roosting and foraging habitat could be degraded, these size class trees generally do not provide suitable nesting habitat. In addition, canopy cover will not be lowered below 60 percent where it exists; therefore, sufficient cover will remain to maintain the stands as suitable owl habitat.

3. The prescribed burns and shaded fuel breaks will temporarily degrade approximately 344 ac of nesting/roosting habitat and 969 ac of foraging habitat. However, no treatments will occur in a nest grove (70-acre core area) of a known owl activity center. Furthermore, this level of degradation is expected to be insignificant, because although the proposed action will reduce the number of small trees, habitat suitability and function will be maintained in the short-term, and, over the long-term, the proposed action will accelerate development of high quality nesting and roosting habitat.

4. Disturbance to owls is expected to be minimal. No noise generating activities will occur in or within 500 feet or 0.25 mile (depending on the noise intensity of the activity) of occupied or unsurveyed suitable habitat from February 1 through July 9, unless surveys determine the site to be unoccupied or the owls to be non-nesting. Noise generating activities may occur during the late breeding season (July 10 through July 31); however, this is after the period when the majority of young owls have fledged from the nest. Burn units located in or within 0.25 mile of nesting and roosting habitat will be burned outside of the period February 1 through September 15. Because of these project design standards, we do not expect any abandonment of breeding efforts.

5. Injury or harm to owls is not anticipated, because no prescribed burning or mechanical treatments will occur from February 1 through September 15 in unsurveyed or occupied habitat, unless surveys determine the site to be unoccupied.

Western Lily

The Service concurs with your determination that the proposed action may affect, but is not likely to adversely affect the western lily, based on the following factors:

1. No suitable habitat will be removed or degraded. Three of the prescribed burn units are located in potential western lily habitat; however, the proposed prescribed burns are expected to be beneficial to western lily because they will improve habitat conditions by reducing encroaching vegetation.

2. Surveys for western lily will be conducted prior to implementation of all projects. If western lily occurs within the project boundaries, then the Park will exclude the occupied areas from the project boundaries.

Fisher

1. No suitable denning habitat will be removed.

2. Five of the prescribed burn units and four of the shaded fuel breaks are located either entirely or partially in suitable fisher habitat (and thinning prescriptions for burn unit preparations work and shaded fuel break are the same). However, only areas within 50 feet of handlines or in areas of heavy oak woodland or grassland encroachment will be mechanically treated. Furthermore, only subdominant trees less than 18 inches dbh are targeted for removal in these units, and none of these size class trees provide suitable denning or resting habitat. In addition, canopy cover will not be lowered below 60 percent where it exists; therefore, sufficient cover will remain to maintain the stands as suitable fisher habitat.

3. Injury or harm to fishers is not anticipated, because no prescribed burning or mechanical treatments will occur from February 1 through September 15, unless surveys determine the site to be unoccupied.

This concludes informal consultation on the Redwood National Park 2015 Fire Management Plan in the Park. 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 action no further action pursuant to the Act is necessary.

If you have questions regarding this response, please contact Bill McIver of my staff at (707) 822-7201.

Sincerely,

for Bruce Bingham
Field Supervisor

cc:
State Parks, Eureka (Attn: Amber Transou)
CDFW, Eureka (Attn: Jennifer Olson)