

***Appendix D:  
Biological Opinion United  
States Fish and Wildlife  
Service***



## United States Department of the Interior

FISH AND WILDLIFE SERVICE  
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In reply refer to:  
1-1-04-F-0181

May 28, 2004

### Memorandum

**To:** Superintendent, Point Reyes National Seashore, National Park Service, Point Reyes Station, California

**From:** <sup>Fob</sup> Acting Field Supervisor, Sacramento Fish and Wildlife Office, Sacramento, California *Chf Nagano*

**Subject:** Formal Consultation on the Fire Management Plan, Point Reyes National Seashore and Golden Gate National Recreation Area in Marin County, California

This is in response to your April 1, 2004, request for formal consultation with the U.S. Fish and Wildlife Service (Service) on the Fire Management Plan at Point Reyes National Seashore and the Golden Gate National Recreation Area in Marin County, California. Your letter was received by this Field Office on April 5, 2004. This document represents the Service's review of the effects of the action on the endangered Myrtle's silverspot butterfly (*Speyeria zerene myrtleae*), endangered Sonoma alopecurus (*Alopecurus aequalis* var. *sonomensis*), endangered Sonoma spineflower (*Chorizanthe valida*), endangered Tiburon paintbrush (*Castilleja affinis* ssp. *neglecta*), endangered beach layia (*Layia carnosa*), endangered Tidestrom's lupine (*Lupinus tidestromii*), threatened Marin dwarf flax (*Hesperolinon congestum*), endangered California freshwater shrimp (*Syncaris pacificus*), threatened California red-legged frog (*Rana aurora draytonii*), threatened Pacific Coast Population of the western snowy plover (*Charadrius alexandrinus nivosus*), threatened northern spotted owl (*Strix occidentalis caurina*), and proposed critical habitat for the California red-legged frog. This biological opinion is issued pursuant to section 7 of the Endangered Species Act of 1973, as amended (Act).

The Service considers the protection of human life and safety to be of the utmost importance and highest priority; the Act contains provisions for conducting emergency actions that involve listed species (50 CFR § 402.05). We recommend the National Park Service review the Act and/or contact us for further details regarding these procedures.

This biological opinion is based on your April 1, 2004, letter, to the Service; *Draft Fire Management Plan Environmental Impact Statement Point Reyes National Seashore and North District of Golden Gate National Recreation Area* (DEIS) dated January 2004, that was prepared by the U. S. National Park Service; *Point Reyes National Seashore Threatened and Endangered Species Locations as of 2001*, undated, that was prepared by the National Park Service; a meeting between Robert Gerson and Chris Nagano of the Service, and you and your staff on March 3, 2004; a letter from the National Park Service to the Service dated April 28, 2004; and other information available to the Service.

The Service concurs with the determination by the National Park Service that the proposed project is not likely to adversely affect the Sonoma alopecurus, Sonoma spineflower, Tiburon paintbrush, beach layia, Tidestrom's lupine, Marin dwarf flax, California freshwater shrimp, and the Pacific Coast Population of the western snowy plover. This is because the proposed project will not be implemented in the areas or habitats utilized by these species, or because the specific measures described in the DEIS will result in the avoidance of adverse effects to these listed taxa.

The Service concurs with the determination that the proposed project is not likely to adversely affect the threatened northern spotted owl because of the avoidance measures that will be implemented by the National Park Service. The measures include the following:

1. National Park Service staff will annually identify and map areas where northern spotted owls are nesting.
2. To the greatest extent possible, National Park Service staff will protect occupied and previously used nest sites from unplanned ignitions.
3. Activities described in the Fire Management Plan, such as prescribed burning, mechanical treatment, debris chipping or other noise generating actions, will not occur within 0.40-kilometer (km)(0.25-mile) of a known occupied, or previously used northern spotted owl nest site between February 1 and July 31 (breeding season).
4. National Park Service staff will conduct post-treatment monitoring of owls to ascertain any impacts associated with the Fire management Plan.
5. Mechanical fuel reduction activities will not alter the percent cover of canopy overstory and will preserve a multi-layered structure according to the Fire Management Plan that states that 60% of the canopy cover will be preserved. Mechanical fuel reduction projects will be implemented to remove stands of flammable non-native tree and shrub species, and to strategically reduce overall fuel densities and ladder fuels in shaded fuel breaks. Mechanical fuel reduction activities may include cutting, chipping and burning of slash piles. Fuel reduction would be accomplished by removing a) non-native shrubs and trees (such as French broom, Scotch broom, Spanish broom, eucalyptus, black acacia, and green wattle acacia), b)

native shrubs with more flammable tendencies (such as coyote bush or chamise), and c) native trees greater than 25.4 centimeters (cm)(10 inches [in]) diameter at breast height only if the trees are dead or structurally unstable and within falling distance of homes, drives, roads or trails or other public use areas.

6. Fuel reduction actions to construct shaded fuel breaks will selectively remove vegetation to achieve a strategically sited, linear zone of reduced fuels. Multi-layered structure would be reduced but only within the width of the shaded fuel break and only to a height of 1.83 to 2.44 meters (m)(6 to 8 feet [ft]). Trees will be limbed up to 1.93 to 2.44 m (6 to 8 ft) from the ground to reduce overall ladder fuels and the potential for a ground fire to spread into the tree canopy. Typically a linear fuel break feature can range from 9.15 to 61 m (30 to 200 ft) wide and usually buffers a fire road, an interface with development, expands upon an area with existing low fuels, or other strategic feature that presents an opportunity to slow the spread of a fire.

The Service does not concur that the proposed project will result in effects to the threatened California red-legged frog, proposed critical habitat for the California red-legged frog, and endangered Myrtle's silverspot butterfly that will be insignificant, discountable, or entirely beneficial. However, based on our analysis, the Service has determined that the proposed project will result in significant long-term benefits to these two listed animals and the proposed critical habitat, and any adverse effects will be minor and temporary in nature. This biological opinion analyses these effects of the project on the California red-legged frog, the proposed critical habitat for the California red-legged frog, and the Myrtle's silverspot butterfly.

#### **Consultation History**

March 1, 2004: Chris Nagano and Roberta Gerson of the Service met with Don Neubacher, Sara Allen, Roger Wong, Jane Rodgers, and Wendy Poinset of the National Park Service regarding the proposed project.

March 4, 2004: Chris Nagano of the Service sent an e-mail to Sarah Allen of the National Park Service requesting additional information on the project.

March 4, 2004: Sarah Allen of the National Park Service sent information on the proposed project to Chris Nagano of the Service.

April 5, 2004: Sarah Allen of the National Park Service and Chris Nagano of the Service discussed the potential effects of the proposed project in the California red-legged frog, Myrtle's silverspot butterfly, and Sonoma Alopecurus.

April 28, 2004: Sarah Allen of the National Park Service sent information on the northern spotted owl to Roberta Gerson of the Service.

April 28, 2004: Sarah Allen of the National Park Service sent additional information on the northern spotted owl to Roberta Gerson of the Service.

May 24, 2004: The Service sent Point Reyes National Seashore and the Golden Gate National Recreation Area a draft of the biological opinion for their review and comment.

May 28, 2004: The National Park Service sent the Service comments and suggestions on the draft biological opinion.

## **BIOLOGICAL OPINION**

### **Description of the Proposed Action**

The purpose of the Fire Management Plan is to provide a framework for all fire management activities for Point Reyes National Seashore and the North District of the Golden Gate National Recreation Area, including suppression of unplanned ignitions, prescribed fire, and mechanical fuels treatments. It is intended to guide the Fire Management Plan for approximately the next 10-15 years. The plan includes concise program objectives, details on staffing and equipment, and comprehensive information, guidelines, and protocols relating to the management of unplanned wildfire, prescribed burning, and mechanical fuels treatment. The Fire Management Plan is described in detail in the DEIS.

Alternative C, the preferred alternative in the DEIS, and the alternative whose effects on listed species is analyzed in this biological opinion, would include increase reduction of hazardous fuels in high priority areas (e.g., along road corridors, around structures, and in strategic areas to create fuel breaks). According to the DEIS, up to 8648.5 hectares (ha)(3,500 acres) could be treated per year using prescribed fire and mechanical treatments. Page 106 of the DEIS states that there are a total of 52129.7 ha (21096.6 acres) in the Fire Management Units. Under Alternative C, research efforts would be expanded to determine the effects of fire on natural resources of concern (e.g., rare and non-native species) and to determine the effectiveness of various fuels treatments. Research results would be used adaptively to guide the Fire Management Plan in maximizing benefits to natural resources, while protecting lives and property.

### **Proposed Conservation Measures**

Fuel reduction actions described in the DEIS would be implemented in conjunction with avoidance measures designed to minimize or avoid potential environmental effects to listed species. In many cases, specific avoidance measures have been developed for the protection of individual listed species. The following general avoidance measures have been developed and would be applied to each fire management action with potential to affect a listed species or its habitat:

1. To ensure that implementation of fire management plan actions conforms to findings of this impact assessment, subsequent fire year plans and individual projects would be subject to National Park Service project review. Prior to approval, all projects would be submitted through a National Park Service internal review process wherein an interdisciplinary team would evaluate if the potential effects of the proposed projects were adequately addressed through the Fire Management Plan National Environmental Quality Act process. Conformance to the conclusions in the Fire Management Plan Environmental Impact Statement will be documented for the National Environmental Quality Act record by a memorandum to the file. If the interdisciplinary team finds that the project has the potential for new environmental effects not addressed in the Environmental Impact Statement (EIS) or effects greater than those assessed in the EIS, a separate environmental process would be conducted.
2. Known populations of special-status plant and animal species would be monitored to ensure long-term impacts are avoided. Geographic information system maps of population locations will be kept current and available for consultation in case of uncontrolled wildland fire and for planning prescribed burns. To the extent possible, known populations of special status species would be avoided when locating fire lines, helispots or spike camps during wildfire suppression actions. If new populations are discovered or existing populations expanded, species-specific measures described in the DEIS will be applied. Similarly, new information will be incorporated through the individual project review process.

#### Species-Specific Conservation Measures for The Two Listed Species

##### Myrtle's Silverspot Butterfly

The DEIS includes a number of specific conservation measures for the endangered Myrtle's silverspot butterfly. During the pre-project analysis within the Tomales Fire Management Unit, the prescribed fire and mechanical treatment will include surveys for western dog violet (*Viola adunca*), the larvae foodplant, within grassland communities between March 1 and August 31. If the foodplant is found within proposed project areas, then surveys for adults will be done between July 1 and August 31 on a three-week rotation. If the surveys locate the butterfly, further analysis will be done to determine if the project can go forward without harassment to the species. The projects may be either cancelled or reconfigured to accommodate the species; burning and mechanical treatments will not occur during the flight season of Myrtle's silverspot butterfly (June 1 through August 31). The project will proceed if Myrtle's silverspot butterfly are not located during the surveys; additional monitoring will be conducted for *Viola adunca* and the listed animal. The project may go forward if *Viola adunca* is not found; burning and mechanical treatments will not occur during the flight season of the listed butterfly.

##### California Red-legged Frog

According to the DEIS, areas inhabited by the California red-legged frogs that will be treated by

mechanical means or prescribed fire would have a buffer area of 9.15 m (30 ft) established around known breeding habitat. This buffer will be established 9.15-m (30-ft) from the outer edge of riparian vegetation.

### Status of the Species

#### Myrtle's silverspot butterfly

Myrtle's silverspot butterfly was listed as an endangered species in 1992 (57 FR 27848). A detailed account of the taxonomy, ecology, and biology of the species is presented in the *Recovery Plan for Seven Coastal Plants and the Myrtle's Silverspot Butterfly* (Service 1998). This butterfly is one of four related coastal subspecies of *Speyeria zerene* that occur from Washington to California: the threatened Oregon silverspot butterfly (*Speyeria zerene hippolyta*), endangered Behrens' silverspot (*Speyeria zerene behrensii*), gloriolus silverspot (*Speyeria zerene gloriosa*) and Myrtle's silverspot. All three listed silverspot butterflies occupy restricted habitat types close to the coast, and have been seriously impacted by human activities.

Myrtle's silverspot butterfly inhabits coastal dunes, coastal prairie, and coastal scrub at elevations ranging from sea level to 300 m (1,000 ft), and as far as 5 kilometers (km)(3 miles) inland (Laurer *et al.* 1992). The adult butterflies prefer areas protected from onshore winds, but can be observed in exposed areas when winds are calm.

Critical factors in the distribution of Myrtle's silverspot butterfly include presence of the presumed larval host plant, western dog violet, and availability of nectar sources for adults. Although alternate larval host plants have neither been confirmed nor ruled out for the Myrtle's silverspot butterfly, other subspecies of *Speyeria zerene* and other species of silverspot butterflies can feed on more than one species in the genus *Viola*. Seeds of *Viola* are often dispersed by ants. Violets sometimes bear self-pollinating flowers, and are also cross-pollinated by insects. Adult Myrtle's silverspot butterflies have been observed nectaring on non-native species such as bull thistle (*Cirsium vulgare*) and rarely Italian thistle (*Carduus pycnocephalus*). In dune scrub habitat, these butterflies seek nectar from several native species such as gum plant (*Grindelia* sp.), western pennyroyal (*Monardella undulata*), yellow sand verbena (*Abronia latifolia*), seaside daisy (*Erigeron glaucus*), and mule ears (*Wyethia* sp.). Other flowering plants that might serve as good nectar sources for the opportunistic adults, such as brownie thistle (*Cirsium quercetorum*) and groundsel (*Senecio* sp.). The related threatened Oregon silverspot butterfly has been observed to visit yarrow (*Achillea millefolium*), goldenrod (*Solidago* sp.), beach aster (*Aster chilensis*), the non-native rough cat's-ear (*Hypochaeris radicata*), and pearly everlasting (*Anaphalis margaritacea*).

Female Myrtle's silverspot butterflies lay their eggs singly on or near dried leaves and stems of violets. Within a few days after the eggs are laid, the larvae (caterpillars) hatch, feed on the lining of the egg, crawl a short distance into the surrounding foliage or litter, and spin a silk pad on which they spend the summer, fall, and winter. The period of inactivity is a resting state

called diapause, during which time the animals do not feed. The larvae may be able to extend their diapause for more than one year. Upon termination of diapause in the spring, the caterpillar finds a nearby violet and begins feeding. Feeding may be difficult to observe, and occurs at dusk and possibly at night. The larval feeding stage lasts about 7–10 weeks, after which the larvae form their pupae within a chamber they make with leaves spun together with silk. The adult butterfly emerges from the pupa after about a few weeks or possibly months.

The flight season for Myrtle's silverspot butterfly extends from mid-June to early October (Launer *et al.* 1992), during this time period they mate, lay eggs, and die. Adult activity is closely tied to weather conditions: they are active during calm weather and inactive during windy periods. Both sexes are good flyers and can travel kilometers in search of nectar, mates, or violets. Following the flight season, eggs and active larvae are present for an additional week or two in the fall, and then the larvae then enter their diapause. The larvae resume activity and begin feeding at some point during the spring that varies depending on the weather.

Historically, Myrtle's silverspot butterfly was recorded from the north-central coast of California, including San Mateo County as far south as Pescadero (in 1950), north to the vicinity of Black Point in northern Sonoma County. By the late 1970s, populations of silverspot south of the Golden Gate Bridge were believed to be extinct and extant populations were known only from Marin County at the Point Reyes National Seashore. In 1990, an additional population was discovered at a site in northernmost coastal Marin County, on property proposed for a golf resort and residential development. The proposal for the golf course was withdrawn and later replaced with a proposal for low density residential development and open space at the same site. This site was estimated to support between 2,500 and 5,000 adult silverspots in 1991. Two apparently separate populations in Point Reyes National Seashore were estimated at less than 5,000 individuals and several hundred individuals, respectively, in 1993. No trends over time are discernable in the limited population data. In summary, this butterfly is currently known from three occurrences with a probable total of fewer than 10,000 individuals. Population sizes of the species can be expected to fluctuate widely.

The listing of the Myrtle's silverspot was based on its extirpation from the southern third of its historical range (south of the Golden Gate Bridge) and adverse effects of urban development, invasive non-native vegetation, livestock grazing, and other human influences throughout its range. Myrtle's silverspot butterfly occurs in separate populations whose long-term persistence may depend upon movement between populations. Habitat degradation resulting in the loss of intervening populations, larval food plants, and adult nectar sources may make movements between populations more difficult. Illegal collection is also a threat to Myrtle's silverspot. Specimens of Myrtle's silverspot butterfly are known to have been illegally collected in Point Reyes National Seashore. Illegal collection of adults is likely to continue at a level that is difficult to quantify. Substantial areas of habitat and potential habitat for Myrtle's silverspot are protected in the Point Reyes National Seashore and the northern unit of the Golden Gate National Recreation Area.

There are recent sightings of Myrtle's silverspot butterfly within the Tomales Point Fire Management Unit at Point Reyes National Seashore, although suitable habitat elsewhere at this National Park and possibly the Golden Gate National Recreation Area (California Department of Fish and Game 2004; DEIS; Service files). In addition, adult Myrtle's silverspot butterflies are highly mobile and, like other silverspot butterflies, may fly considerable distances (Nagano pers. obs). Suitable habitat is found in and adjacent to the action area. Areas of containing larvae and adult food sources exist within the action area. The action area contains components that can be used by Myrtle's silverspot butterfly for feeding, resting, mating, movement corridors, and other essential behaviors. Therefore, the Service believes that Myrtle's silverspot butterfly is reasonably certain to occur within the action area because of the biology and ecology of the animal, the presence of suitable food sources and habitat in and adjacent to the action area, as well as the recent observations of this listed species.

#### California red-legged frog

The California red-legged frog was listed as a threatened species on May 23, 1996, (61 FR 25813). Please refer to the final rule and the Recovery Plan for this animal for additional information. This species is the largest native frog in the western United States (Wright and Wright 1949), ranging from 4 to 13 cm (1.5 to 5.1 in) in length (Stebbins 1985). The abdomen and hind legs of adults are largely red; the back is characterized by small black flecks and larger irregular dark blotches with indistinct outlines on a brown, gray, olive, or reddish background color. Dorsal spots usually have light centers (Stebbins 1985), and dorsolateral folds are prominent on the back. Larvae (tadpoles) range from 14 to 80 millimeters (mm)(0.6 to 3.1 in) in length, and the background color of the body is dark brown and yellow with darker spots (Storer 1925).

California red-legged frogs have paired vocal sacs and vocalize in air (Hayes and Krempels 1986). Female frogs deposit egg masses on emergent vegetation so that the egg mass floats on the surface of the water (Hayes and Miyamoto 1984). California red-legged frogs breed from November through March with earlier breeding records occurring in southern localities (Storer 1925). Individuals occurring in coastal drainages are active year-round (Jennings *et al.* 1992), whereas those found in interior sites are normally less active during the cold season.

Adult California red-legged frogs prefer dense, shrubby or emergent riparian vegetation closely associated with deep (>0.7 m [2.3 ft]), still, or slow-moving water (Hayes and Jennings 1988). However, frogs also have been found in ephemeral creeks and drainages and in ponds that may or may not have riparian vegetation. The largest densities of California red-legged frogs currently are associated with deep pools with dense stands of overhanging willows (*Salix* spp.) and an intermixed fringe of cattails (*Typha latifolia*) (Jennings 1988). California red-legged frogs disperse upstream and downstream of their breeding habitat to forage and seek sheltering habitat. Sheltering habitat for California red-legged frogs is potentially all aquatic, riparian, and upland areas within the range of the species and includes any landscape features that provide cover, such as existing animal burrows, boulders or rocks, organic debris such as downed trees or logs, and

industrial debris. Agricultural features such as drains, watering troughs, spring boxes, abandoned sheds, or hay ricks may also be used. Incised stream channels with portions narrower than 46 cm (18 in) and depths greater than 46 cm (18 in) may also provide important summer sheltering habitat. Accessibility to sheltering habitat is essential for the survival of California red-legged frogs within a watershed, and can be a factor limiting frog population numbers and survival. During winter rain events, juvenile and adult California red-legged frogs are known to disperse up to 1-2 km (0.54-1.08 mi) (Rathbun and Holland, unpublished data, cited in Rathbun *et al.* 1997). Dispersing frogs in northern Santa Cruz County traveled distances from 0.4 km (0.25 mi) to more than 3 km (2 mi) without apparent regard to topography, vegetation type, or riparian corridors (Bulger, unpublished data).

Egg masses contain about 2,000 to 5,000 moderate sized (2.0 to 2.8 mm [0.08 to 0.11 in] in diameter), dark reddish brown eggs and are typically attached to vertical emergent vegetation, such as bulrushes (*Scirpus* spp.) or cattails (Jennings *et al.* 1992). California red-legged frogs are often prolific breeders, laying their eggs during or shortly after large rainfall events in late winter and early spring (Hayes and Miyamoto 1984). Eggs hatch in 6 to 14 days (Jennings 1988). In coastal lagoons, the most significant mortality factor in the pre-hatching stage is water salinity (Jennings *et al.* 1992); eggs exposed to salinity levels greater than 4.5 parts per thousand result in 100 percent mortality (Jennings and Hayes 1990). Increased siltation during the breeding season can cause asphyxiation of eggs and small larvae. Larvae undergo metamorphosis 3.5 to 7 months after hatching (Storer 1925; Wright and Wright 1949; Jennings and Hayes 1990). Of the various life stages, larvae probably experience the highest mortality rates, with less than 1 percent of eggs laid reaching metamorphosis (Jennings *et al.* 1992). Sexual maturity normally is reached at 3 to 4 years of age (Storer 1925; Jennings and Hayes 1985). California red-legged frogs may live 8 to 10 years (Jennings *et al.* 1992). Populations of California red-legged frogs fluctuate from year to year. When conditions are favorable California red-legged frogs can experience extremely high rates of reproduction and thus produce large numbers of dispersing young and a concomitant increase in the number of occupied sites. In contrast, California red-legged frogs may temporarily disappear from an area when conditions are stressful (e.g., drought).

The diet of California red-legged frogs is highly variable. Hayes and Tennant (1985) found invertebrates to be the most common food items. Vertebrates, such as Pacific tree frogs (*Hyla regilla*) and California mice (*Peromyscus californicus*), represented over half the prey mass eaten by larger frogs (Hayes and Tennant 1985). Hayes and Tennant (1985) found juvenile frogs to be active diurnally and nocturnally, whereas adult frogs were largely nocturnal. Feeding activity probably occurs along the shoreline and on the surface of the water (Hayes and Tennant 1985). Larvae likely eat algae (Jennings *et al.* 1992).

Several researchers in central California have noted the decline and eventual disappearance of California red-legged frog populations once bullfrogs became established at the same site (L. Hunt, in litt. 1993; S. Barry, in litt. 1992; S. Sweet, in litt. 1993). This has been attributed to both predation and competition. Twedt (1993) documented bullfrog predation of juvenile northern red-legged frogs, and suggested that bullfrogs could prey on subadult northern red-

legged frogs as well. In addition to predation, bullfrogs may have a competitive advantage over California red-legged frogs; bullfrogs are larger, possess more generalized food habits (Bury and Whelan 1984), have an extended breeding season (Storer 1933) during which an individual female can produce as many as 20,000 eggs (Emlen 1977), and larvae are unpalatable to predatory fish (Kruse and Francis 1977). In addition to competition, bullfrogs also interfere with California red-legged frog reproduction. Both California and northern red-legged frogs have been observed in amplexus with (mounted on) both male and female bullfrogs (Jennings and Hayes 1990; Twedt 1993; M. Jennings, in litt. 1993; R. Stebbins in litt. 1993). Thus bullfrogs are able to prey upon and out-compete California red-legged frogs, especially in sub-optimal habitat. The urbanization of land within and adjacent to California red-legged frog habitat has also impacted California red-legged frogs. These declines are attributed to channelization of riparian areas, enclosure of the channels by urban development that blocks California red-legged frog dispersal, and the introduction of predatory fishes and bullfrogs. This report further identifies the conversion and isolation of perennial pool habitats resulting from urbanization as an ongoing impact to California red-legged frogs.

Juvenile and adult frogs, including California red-legged frogs, have been found in human-created habitats such as golf course ponds, but these habitats may not be suitable for the long-term survival or successful reproduction of local frog populations, especially near urban areas where predators such as bullfrogs and raccoons are able to build up large populations (Service 2002). In the Central Coast area of California, which contains the largest known California red-legged frog populations, California red-legged frogs are known from three golf courses (Froke pers. comm.). Two of these golf courses are also inhabited by bullfrogs, and the two species are found in separate ponds. Within Alameda and Contra Costa counties we are not aware of California red-legged frogs inhabiting ponds within golf courses. In Solano County, red-legged frogs were found in large numbers immediately after the construction of water features within one golf course, however this population has been nearly eliminated by a substantial bullfrog population, and perhaps by water chemistry manipulation by the golf course in a pond used as a watering source.

California red-legged frogs have been extirpated or nearly extirpated from over 70 percent of their former range. Historically, this species was found throughout the Central Valley and Sierra Nevada foothills. As of 1996, California red-legged frogs have been documented in approximately 240 streams or drainages from 23 counties, primarily in central coastal California. Monterey, San Luis Obispo, and Santa Barbara counties support the largest extent of currently occupied habitat. The most secure aggregations of California red-legged frogs are found in aquatic sites that support substantial riparian and aquatic vegetation and lack non-native predators. Several researchers in central California have noted the decline and eventual local disappearance of California and northern red-legged frogs in systems supporting bullfrogs (Jennings and Hayes 1990; Twedt 1993), red swamp crayfish (*Procambarus clarkii*), signal crayfish (*Pacifastacus leniusculus*), and several species of warm water fish including sunfish (*Lepomis* spp.), goldfish (*Carassius auratus*), common carp (*Cyprinus carpio*), and mosquitofish (*Gambusia affinis*) (L. Hunt, in litt. 1993; S. Barry, in litt. 1992; S. Sweet, in litt. 1993). Habitat

loss, non-native species introduction, and urban encroachment are the primary factors that have adversely affected the California red-legged frog throughout its range.

The recovery plan for the California red-legged frog identifies eight recovery units. Each recovery unit reflects areas with similar conservation needs. The strategy for recovery of California red-legged frogs includes promoting and protecting populations that are geographically distributed in a manner that allows for the continued existence of viable metapopulations. The establishment of these recovery units is based on the recovery team's determination that various regional areas of the species' range are essential to its overall survival and recovery because these units will ensure that the strategy for recovery of the species will be implemented. The draft recovery plan specifies that the status of the California red-legged frog should be considered within the smaller scale of recovery units as opposed to the overall range of the species because these units reflect areas with similar conservation needs. Furthermore, this strategy will promote and protect the continued existence of viable metapopulations. These recovery units are delineated by major watershed boundaries, as defined by U.S. Geological Survey hydrologic units and California Department of Fish and Game's Ichthyological Provinces, and the limits of the range of the California red-legged frog. The goal of the recovery plan is to protect the long-term viability of all extant populations within each recovery unit. Within each recovery unit, core areas have been delineated and represent contiguous areas of moderate to high California red-legged frog densities that are relatively free of exotic species such as bullfrogs. The goal of designating core areas is to protect metapopulations that, combined with suitable dispersal habitat, will allow for the long term viability within existing populations. This management strategy will allow for the recolonization of habitat within and adjacent to core areas that are naturally subjected to periodic localized extinctions, thus assuring the long-term survival and recovery of the California red-legged frog.

The historic range of the red-legged frog extended coastally from the vicinity of Point Reyes National Seashore, Marin County, California, and inland from the vicinity of Redding, Shasta County, California, southward to northwestern Baja California, Mexico (Jennings and Hayes 1985; Hayes and Krempels 1986). The California Red-legged frog was historically documented with 46 counties but the taxa now remains in 238 streams or drainages within 23 counties, representing a loss of 70 percent of its former range (Service 2002, 61 FR 25813). Red-legged frogs are still locally abundant within portions of the San Francisco Bay area and the central coast. Within the remaining distribution of the species, only isolated populations have been documented in the Sierra Nevada, northern Coast, and northern Transverse Ranges. The species is believed to be extirpated from the southern Transverse and Peninsular ranges, but is still present in Baja California, Mexico (California Department of Fish and Game 2002).

The recovery plan for the California red-legged frog identifies eight recovery units (Service 2002). The establishment of these recovery units are based on the Recovery Team's determination that various regional areas of the species' range are essential to its survival and recovery. The status of the California red-legged frog will be considered within the smaller scale of Recovery Units as opposed to the overall range. These recovery units are delineated by major

watershed boundaries as defined by U.S. Geological Survey hydrologic units and the limits of the range of the red-legged frog. The goal of the recovery plan is to protect the long-term viability of all extant populations within each recovery unit. Within each recovery unit, core areas have been delineated and represent contiguous areas of moderate to high California red-legged frog densities that are relatively free of exotic species such as bullfrogs. The goal of designating core areas is to protect metapopulations that, combined with suitable dispersal habitat, will allow for the long term viability within existing populations. This management strategy will allow for the recolonization of habitat within and adjacent to core areas that are naturally subjected to periodic localized extinctions, thus assuring the long-term survival and recovery of California red-legged frogs.

The Fire Management Plan is located within the North San Francisco Bay/North Coast recovery unit which includes portions of watersheds at Point Reyes National Seashore and Golden Gate National Recreation Area. Within this recovery unit, California red-legged frogs are threatened primarily by water management and diversions, non-native species, livestock, and urbanization. Populations of the California red-legged frog in this region are relatively robust where habitat is available. California red-legged frogs have been observed extensively within the boundaries of grazed and ungrazed lands within Point Reyes National Seashore and Golden Gate National Recreation Area. A number of created breeding ponds within Point Reyes National Seashore and Golden Gate National Recreation Area are at risk due to deteriorating dams.

There are recent sightings of the California red-legged frog throughout Point Reyes National Seashore, and possibly the Golden Gate National Recreation Area (California Department of Fish and Game 2004; DEIS; Service files; National Park Service undated). In addition, adult California red-legged frogs are highly mobile and may move considerable distances from their breeding ponds. Suitable habitat is found in and adjacent to the action area. Areas of containing aquatic and upland habitat exist within the action area. The action area contains components that can be used by the California red-legged frog for feeding, resting, mating, movement corridors, and other essential behaviors. Therefore, the Service believes that the California red-legged frog is reasonably certain to occur within the action area because of the biology and ecology of the animal, the presence of suitable habitat in and adjacent to the action area, as well as the recent observations of this listed species.

#### California Red-Legged Frog Proposed Critical Habitat

In March 2001, the final rule determining critical habitat for red-legged frogs was published in the Federal Register (66 FR 14626). This rule established 31 Critical Habitat Units based on three primary constituent elements: (a) essential aquatic habitat; (b) associated uplands; and (c) dispersal habitat connecting essential aquatic habitat. In November 2002, the U.S. District Court for the District of Columbia vacated most of the 2001 designation and ordered the Service to publish a new critical habitat proposal. On April 13, 2004, the Service re-proposed 4.1 million acres in 28 California counties as critical habitat for the frog (69 FR 19620). This proposed rule basically re-proposes the same areas designated critical habitat in the 2001 final rule. The

proposed Fire Management Plan is located within one of the proposed critical habitat units.

In determining which areas to designate as critical habitat, the Service considers those physical and biological features (primary constituent elements) that are essential to the conservation of the species, and that may require special management considerations and protection (50 CFR § 424.14). The Service lists the known primary constituent elements together with the proposed critical habitat description. Such physical and biological features include, but are not limited to, space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, rearing (or development) of offspring; and habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

Due to the complex life history and dispersal capabilities of the California red-legged frog, and the dynamic nature of the environments in which they are found, the primary constituent elements described below are found throughout the watersheds that are proposed as critical habitat. Special management, such as habitat rehabilitation efforts (*e.g.*, removal of nonnative predators), may be necessary in the area designated. The proposed critical habitat for the California red-legged frog provides for breeding and nonbreeding habitats and for dispersal between these habitats, as well as allowing for expansion of frog populations vital to the recovery of the subspecies. The proposed critical habitat includes: (a) essential aquatic habitat; (b) associated uplands; and (c) dispersal habitat connecting essential aquatic habitat.

Aquatic habitat is essential for providing space, food, and cover, necessary to sustain all life stages of red-legged frogs. It consists of virtually all low-gradient fresh water bodies, including natural and man-made (*e.g.*, stock) ponds, backwaters within streams and creeks, marshes, lagoons, and dune ponds, except deep lacustrine water habitat (*e.g.*, deep lakes and reservoirs 123.55 ha [50 acres] or larger in size) inhabited by nonnative predators. The subspecies requires a permanent water source to ensure that aquatic habitat is available year-round. Permanent water sources can include, but are not limited to, ponds, perennial creeks, permanent plunge pools within intermittent creeks, seeps, and springs. Aquatic habitat used for breeding usually has a minimum deep water depth of 50.8 cm (20 in), and maintains water during the entire tadpole rearing season (at least March through July). During periods of drought, or less-than-average rainfall, these breeding sites may not hold water long enough for individuals to complete metamorphosis, but because they support breeding in wetter years these sites would still be considered essential breeding habitat. Ponds that support a small population of red-legged frogs, but are not surrounded by suitable upland habitat, or are cut off from other breeding ponds or permanent water sources by impassable dispersal barriers, do not have the primary constituent elements for proposed California red-legged frog critical habitat.

To be a primary constituent element for California red-legged frog proposed critical habitat, the aquatic components within the designated boundaries must include two or more breeding sites (as defined above) located within 2.01 km (1.25 mi) of each other; at least one of the breeding

sites must also be a permanent water source; or, the aquatic component can consist of two or more seasonal breeding sites with a permanent nonbreeding water source located within 2.01 km (1.25 mi) of each breeding site. California red-legged frogs have been documented to travel 3.62 km (2.25 mi) in a virtual straight line migration from nonbreeding to breeding habitats (66 FR 14626). In addition, breeding sites must be connected by dispersal habitat connecting essential aquatic habitat, described below.

Associated upland and riparian habitat is essential to maintain California red-legged frog populations associated with essential aquatic habitat. The associated uplands and riparian habitat provide food and shelter sites for California red-legged frogs, and assist in maintaining the integrity of aquatic sites by protecting them from disturbance and supporting the normal functions of the aquatic habitat. Key conditions include the timing, duration, and extent of water moving within the system, filtering capacity, and maintaining the habitat to favor red-legged frogs and discourage the colonization of nonnative species such as bullfrogs. Essential upland habitat consists of all upland areas within 91.5 m (300 ft), or no further than the watershed boundary, of the edge of the ordinary high-water mark of essential aquatic habitat (66 FR 14626).

Essential dispersal habitat provides connectivity among California red-legged frog breeding habitat (and associated upland) patches. While frogs can pass many obstacles, and do not require a particular type of habitat for dispersal, the habitat connecting essential breeding locations and other aquatic habitat must be free of barriers (*e.g.*, a physical or biological feature that prevents frogs from dispersing beyond the feature) and at least 91.5 m (300 ft) wide. Essential dispersal habitat consists of all upland and wetland habitat free of barriers that connects two or more patches of essential breeding habitat within 2.01 km (1.25 mi) of one another. Dispersal barriers include heavily traveled roads (an average of 30 cars per hour from 10:00 p.m. to 4:00 a.m.) that possess no bridges or culverts; moderate to high density urban or industrial developments; and large reservoirs more than 123.55 ha (50 acres) in size. Agricultural lands such as row crops, orchards, vineyards, and pastures do not constitute barriers to California red-legged frog dispersal.

Point Reyes National Seashore and the Golden Gate National Recreation Area occur within the proposed Point Reyes Unit (Unit 12), which consists of watersheds within and adjacent to Bolinas Lagoon, Point Reyes, and Tomales Bay in Marin and Sonoma counties. This proposed unit encompasses approximately 81,168 ha (200,572 acres); 44 percent is managed by the National Park Service, California Department of Parks and Recreation, and the Marin Municipal Water District, and 56 percent is privately owned. The proposed Unit 12 is known to be occupied by several populations of the California red-legged frog. Essential breeding habitat is dispersed throughout the proposed unit. This proposed unit contains one of the largest known populations of the California red-legged frog.

**Effects of the Proposed Action****Myrtle's silverspot butterfly**

Burning activities within the habitat of the silverspot may result in the incineration of eggs, larvae, and adults, or the injury or death of these life history stages due to smoke inhalation. Insects breathe via spiracles and inhalation of small particles could prevent their respiration and result in their asphyxiation. In addition, the foodplants of the larvae and/or adult nectar plants could be eliminated by burning. Eggs, larvae, and pupae also may be killed as a result of being trampled or killed by during the maintenance of fire roads and trails, and during mechanical treatments. Although surveys will be conducted for the western dog violet, the foodplant of the larvae, between March 1 and August 31, during the remainder of the year the plant dries out and is difficult to locate; in addition, the early stages of this animal are highly cryptic and often overlooked by non-specialists. However, the Fire Management Plan will eliminate invasive exotic plants that compete with native plants utilized by all life history stages of Myrtle's silverspot butterfly and thus result in significant long-term benefits to the survival and recovery of this listed animal in the wild.

**California Red-legged Frog**

Considering Point Reyes National Seashore and the northern unit of the Golden Gate National Recreation Area supports some of the most robust California red-legged frog populations in the State, and fire is an important component of natural ecosystems in this region of California, the Fire Management Plan will result in long-term beneficial effects to the listed amphibian. In fact, fire likely is very important for maintaining the habitats of the California red-legged frog. However, in the short term, heat and smoke from the fires may kill or injure individuals. Adults or early stages of the California red-legged frog may be adversely affected by increased levels of sedimentation into aquatic habitats caused by runoff from burned areas. If heavy sedimentation occurs in pools where California red-legged frogs breed, it is possible that California red-legged frog egg masses will suffocate from being buried under sediments. Without adequate measures, heavy loss of sediments from the streambed may result in down-cutting of channels which could further degrade the stability of banks, and functions of the riparian ecosystem.

The maintenance of fire roads and trails, and mechanical treatments may result in killing or injuring California red-legged frogs which may be present during grading, vegetation removal or clearing, mowing, and other related activities. Clearing of vegetation (i.e., mowing, grubbing, etc.) may result in harm, harassment, or killing of California red-legged frogs. In addition, vehicular use of fire roads and other roads may result in mortality or injury of California red-legged frogs which may disperse across such roads.

**California Red-legged Frog Proposed Critical Habitat**

There will be effects to the proposed critical habitats in the sense that some primary constituent elements, notably upland and dispersal habitat, and perhaps breeding habitat will be disturbed. However, these effects are anticipated to be temporary in nature, and the proposed Fire Management Plan is anticipated to significantly improve the quality of the proposed critical habitat for the threatened California red-legged frog.

**Cumulative Effects**

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Land adjacent to and in the vicinity of Point Reyes National Seashore and the northern units of the Golden Gate National Recreation Area are owned by the California Department of Parks and Recreation, been purchased by non-profit groups for conservation purposes, or are otherwise unlikely to be converted to large scale developments. The Audubon Canyon Ranch includes an inholding on Bolinas Lagoon that connects the Golden Gate National Recreation Area to lands adjoining it. Other Audubon Canyon Ranch holdings on Tomales Bay protect undeveloped Bay frontage adjoining State Park lands. The Vedanta Society holds a 5295.35 ha (2,143 acre) parcel in the Olema Valley bounded by National Parks lands.

In 1971, the Marin County Supervisors enacted A-60 zoning (one house per 148.26 ha [60 acres]) for much of western Marin County, significantly limiting the development of agricultural properties. This zoning covers extensive areas of private lands adjoining public park and watersheds, including San Geronimo Valley, Nicasio Valley, and the northwestern portion of the County. Since 1971, zoning for the west Marin Planning Area has been elaborated to include a variety of zoning densities in areas adjacent to established towns, with minimum lot sizes ranging from one unit per acre to one unit per 148.26 ha (60 acres). The County's Local Coastal Program provides additional protection for streams, lagoons, Tomales Bay, and wetlands. The integrity of ranch and other agricultural lands is addressed in the agricultural element of the Countywide plan.

Agricultural lands in west Marin County have been and continue to be at risk of being broken up into large residential lots. The Marin Agricultural Land Trust has been acquiring development rights to agricultural land since 1980. At present, this non-profit organization holds the rights for over 74130 ha (30,000 acres) on 43 ranches in western Marin County.

The application of pesticides, herbicides, or fertilizers could degrade surface water quality in wetlands, including creeks and streams. Water quality may become impaired when

pesticides/fertilizers or sediment enters the proposed project from the surrounding residential area.

Urban development results in increased numbers of pets. Both feral and domestic cats (*Felis catus*) and dogs (*Canis domesticus*) prey on aquatic and riparian species such as the California red-legged frog. People exploring creeks can harass, collect, and kill California red-legged frogs. Many flood control projects replace natural streams with engineered channels and isolate them from their natural floodplains, disrupting natural hydrologic processes and degrading stream habitat. Flood channel maintenance often requires the removal of emergent aquatic and riparian vegetation, making these channels less suitable for California red-legged frogs.

Non-native species that prey upon, or compete with, California red-legged frogs continue to be released into the environment. Releases are likely to increase with an increasing number of people living in an area. Bullfrogs, goldfish, mosquitofish, and warm water game fish species are all expected to continue to persist in the wild and degrade the quality of California red-legged frog habitat. The introduced animals may also act as disease vectors and impact threatened/endangered species.

### **Conclusion**

After reviewing the current status of the Myrtle's silverspot butterfly and the California red-legged frog, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is the Service's biological opinion that the Fire Management Plan at Point Reyes National Seashore and the northern unit of the Golden Gate National Recreation Area in Marin County, California, as proposed, is not likely to jeopardize the continued existence of these two species. The proposed project is not likely to destroy or adversely modify proposed California red-legged frog critical habitat. Critical habitat has not been designated or proposed for Myrtle's silverspot butterfly; therefore, none will be affected.

### **INCIDENTAL TAKE STATEMENT**

Section 9(a)(1) of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened fish and wildlife species without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not

intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are non-discretionary, and must be implemented by the National Park Service that they become binding conditions of any contract, grant, or permit issued to a contractor or applicant, as appropriate, in order for the exemption in section 7(o)(2) to apply. The National Park Service has a continuing duty to regulate the activity covered by this incidental take statement. If the National Park Service (1) fails to adhere to the terms and conditions of the incidental take statement in this biological opinion, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

#### **Amount or Extent of Take**

The Service anticipates incidental take of Myrtle's silverspot butterfly and the California red-legged frog will be difficult to detect or quantify because of: the elusive nature of these species, relative size, and cryptic coloration which make the finding of a dead specimen unlikely. However, the level of take of each of these two species can be anticipated by the temporal effects to cover, foraging and breeding habitat. Conservation measures proposed by the National Park Service and described above in the *Description of the Proposed Action* will substantially reduce, but do not eliminate, the potential for incidental taking of these listed species. The Service, therefore, anticipates incidental take will result from the proposed project.

Upon implementation of the reasonable and prudent measures, take in the form of injury, death, harm, and harassment of the California red-legged frog and Myrtle's silverspot butterfly on 8648.5 ha (3,500 acres) per year (52130.44 ha [21096.9 acres] total) will become exempt from the prohibitions described under section 9 of the Act for direct and indirect effects associated with the Fire Management Plan.

Incidental take of the California red-legged frog and Myrtle's silverspot butterfly is expected in the form of:

1. thirty-five (35) California red-legged frogs per year may be killed or injured as a result of activities associated with the Fire Management Plan;
2. An unlimited number of individuals of all life history stages of Myrtle's silverspot butterfly will be killed, injured, harassed, or harmed as a result of the Fire Management Plan;
3. An unlimited number of the California red-legged frog will be harassed or harmed as a result of the Fire Management Plan.

### **Effect of the Take**

The Service has determined that this level of anticipated take is not likely to result in jeopardy to the California red-legged frog and Myrtle's silverspot butterfly or result in destruction or adverse modification of proposed critical habitat for the California red-legged frog. Critical habitat for Myrtle's silverspot butterfly has not been designated or proposed, therefore none will be affected.

### **Reasonable and Prudent Measures**

The Service believes the following reasonable and prudent measure is necessary and appropriate to minimize the impact of take on the California red-legged frog and Myrtle's silverspot butterfly:

Minimize the potential for harm, harassment, injury, or mortality of Myrtle's silverspot butterfly and the California red-legged frog.

### **Terms and Conditions**

To be exempt from the prohibitions of Section 9 of the Act, the National Park Service shall ensure compliance with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are nondiscretionary.

The following terms and conditions will implement the Reasonable and Prudent Measure described above:

1. The proposed project shall be implemented as described in the DEIS, and the April 1, 2004, letter from the National Park Service, and the *Project Description* of this biological opinion.
2. An education program for the field personnel involved with the Fire Management Plan shall be conducted prior to the initiation of field activities. The program shall consist of a brief presentation by a person(s) knowledgeable in the Myrtle's silverspot butterfly, the California red-legged frog, and other appropriate listed species. The program shall include the following: a description of these species and their ecology, and habitat needs; an explanation of their legal status and their protection under the Act; and a explanation of the measures being taken to avoid or reduce effects to these species during the Fire Management Plan. The education may be conducted in an informal manner (e.g., ranger and field personnel in a rural setting).

### **Reporting Requirements**

The Service must be notified within 24 hours of the finding of any injured or dead Myrtle's silverspot butterfly or California red-legged frog, or any unanticipated damage to their habitats associated with the proposed project. Notification must include the date, time, and precise

location of the specimen/incident, and any other pertinent information. The Service contact person is the Chris Nagano, Deputy Assistant Field Supervisor (Endangered Species) at the Sacramento Fish and Wildlife Office at 916/414-6600. Any dead or injured specimens should be deposited with Scott Heard, Resident Agent-in-Charge of the Service's Division of Law Enforcement, 2800 Cottage Way, Room W-2928, Sacramento, California 95825, telephone 916/414-6660.

### CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to implement recovery actions, to help implement recovery plans, to develop information, or otherwise further the purposes of the Act.

For the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, we request notification of the implementation of any of the conservation recommendations. We propose the following conservation recommendations:

1. The Service recommends the National Park Service implement the appropriate actions described in the *Recovery Plan for the California red-legged frog (Rana aurora draytonii)*.
2. The Service recommends the National Park Service implement the appropriate actions described in the *Recovery Plan for Seven Coastal Plants and the Myrtle's Silverspot Butterfly*.
3. The National Park Service should continue to encourage or require the use of appropriate locally collected California native plants in the restoration or enhancement of native species diversity and ecosystem functions at Point Reyes National Seashore and Golden Gate National Recreation Area.
4. The law enforcement rangers of the National Park should continue their vigilance for individuals who collect the endangered Myrtle's silverspot butterfly, other listed and rare butterflies without authorization on National Park Service lands. Illegal collection of butterflies has been documented by the Service to have occurred at Point Reyes National Seashore and Fort Baker (Cavallo Point) at the Golden Gate National Recreation Area.

### REINITIATION STATEMENT

This concludes formal consultation on the proposed Fire Management Plan at Point Reyes National Seashore and the northern unit of the Golden Gate National Recreation Area in Marin County, California. As provided in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been

retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

If you have any questions regarding this biological opinion on the proposed Fire Management Plan, please contact Chris Nagano, Deputy Assistant Field Supervisor (Endangered Species) or Roberta Gerson (northern spotted owl), Chief of our Forest-Foothill Branch, at the letterhead address or at 916/414-6600.

cc:

USNPS, GGNRA, San Francisco, CA (Attn: Superintendent B. O'Neill)  
USNPS, PRNS, Point Reyes Station, CA (Attn: Ranger S. Allen)  
USNPS, GGNRA, San Francisco, CA (Attn: Ranger N. Hornor)  
USNPS, GGNRA, San Francisco, CA (Attn: Ranger D. Hatch)  
USNPS, GGNRA, San Francisco, CA (Attn: Ranger D. Fong)  
USGS, Point Reyes Station, CA (Attn: G. Fellers)

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