

**BIOLOGICAL ASSESSMENT
FOR FEDERALLY LISTED THREATENED OR ENDANGERED
WILDLIFE SPECIES**

AND

**BIOLOGICAL EVALUATION
FOR FOREST SERVICE SENSITIVE WILDLIFE SPECIES**

**for
Big Stump/Redwood Mountain Fuels Restoration Proposed Action
Hume Lake Ranger District
Giant Sequoia National Monument
Fresno & Tulare Counties
California**

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I. INTRODUCTION

Fire has played an important role in the ecology of the Sierra Nevada for thousands of years. Prior to Euro-American settlement, fires were generally frequent throughout much of the range. The frequency and severity of these fires varied spatially and temporally depending upon climate, elevation, topography, and vegetative conditions. These fires changed the dynamics of biomass accumulation and nutrient cycling, and generated vegetation mosaics on a variety of spatial scales.

Management strategies in the nineteenth and twentieth centuries have reduced the influence of fire in the ecosystem and contributed to the forest conditions that encourage high-severity fires. Live and dead fuels have increased with the development of dense brush and mixed conifer forests. The resulting increase in stand densities is concentrated mainly in the small and medium size classes of shade-tolerant, fire-sensitive species. This has caused an increase in the amount and continuity of live and dead forest fuels and provided a ladder from surface to canopy fuels. This arrangement of fuels enables low-intensity surface fires to move into the canopies, and become active crown fires.

The Big Stump/Redwood Mountain Fuels Restoration Proposed Action area covers approximately 3,078 acres immediately downslope of the Big Stump entrance to the Sequoia and Kings Canyon National Parks and the General's Highway (Figure 1). Ninety-five percent of the Proposed Action area has missed the last five to eight fire return intervals (100+ years of fire exclusion), though much of the area has been logged. Within the Proposed Action area, the pre-Euroamerican settlement fire occurrence was between 11 and 16 years. Ninety-four percent of the Big Stump/Redwood Proposed Action area lies within Wildland Urban Intermix (WUI) threat zone; the remaining six percent is in the WUI defense zone (Forester's Co-op 2017).

Terrain in the Proposed Action area is moderate to steep, with mean slopes ranging from 13 to 60 percent. Fuel loads are moderate to heavy. The vegetation overstory in the Proposed Action area consists primarily of giant sequoia, white fir, sugar pine, ponderosa pine, and mixed conifer trees. The understory contains mostly bear clover and greenleaf manzanita. Sapling and pole-sized white fir, ponderosa pine, giant sequoia, cedar, and mixed conifer trees are present in the mid-story. The trees and brush compete with each other for water, nutrients, and growing space. The Proposed Action area contains dense dead and down woody fuels.

The purpose of the Big Stump/Redwood Mountain Fuels Restoration project (Project) is to protect, restore, and maintain the giant sequoia groves, the surrounding forest, and the other objects of interest in the Big Stump and Redwood Mountain portion of the Giant Sequoia National Monument. The need is to reduce fuels in and maintain the adjacent portion of the Logger Point fuel break near the Big Stump and Redwood Mountain Giant Sequoia Groves to:

- Provide for public safety.
- Reduce excessive fuel loads across the landscape, particularly within the giant sequoia groves.
- Re-establish fire in this fire-adapted ecosystem, particularly in and around the giant sequoia groves.
- Reduce the risk of loss of old-growth forest habitat to uncharacteristic large, catastrophic fires.

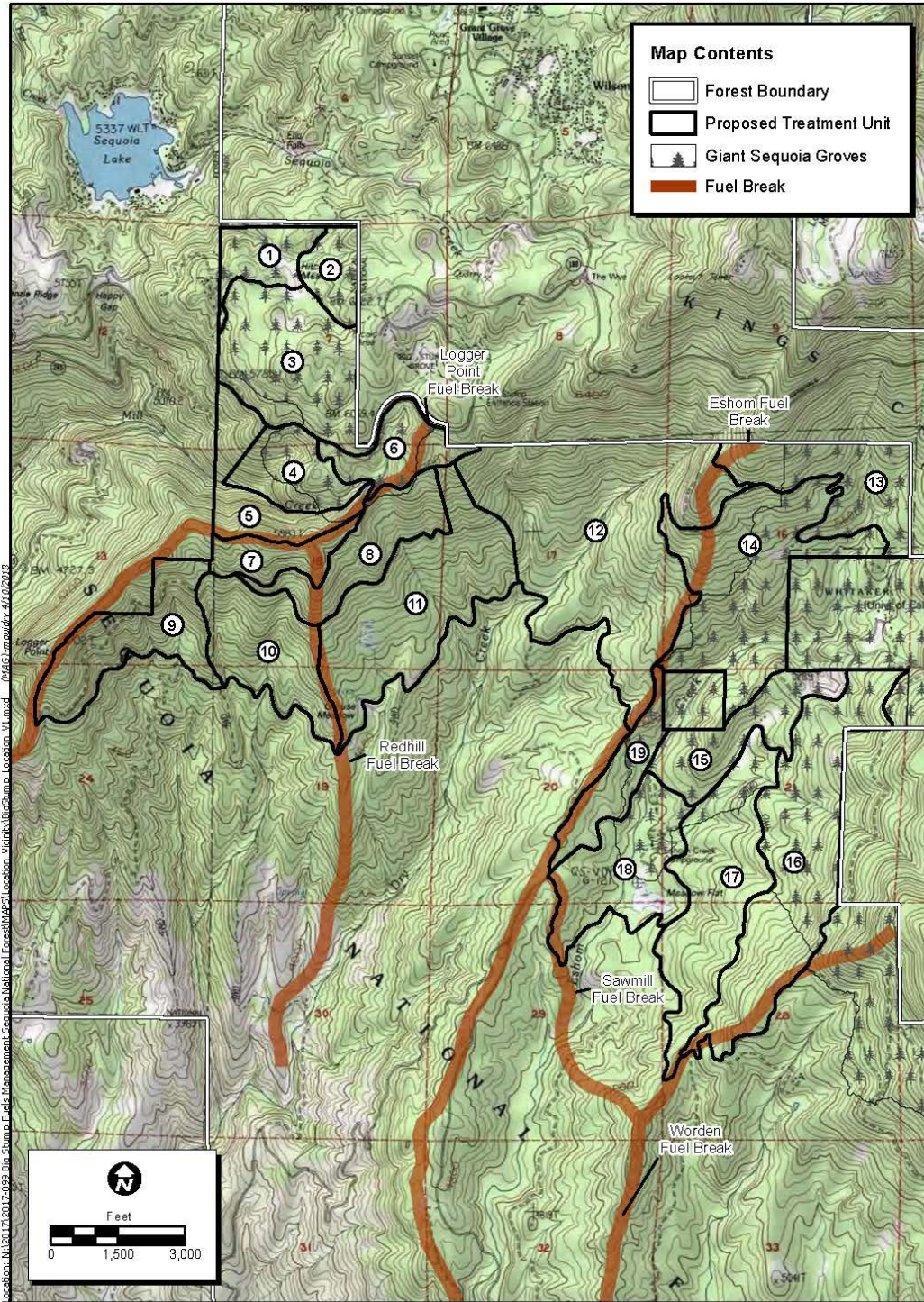


Figure 1. Proposed Action Location

- Establish conditions that allow for a highly diverse vegetation mosaic of age classes, tree sizes, and species composition.
- Reduce the risk of loss of cultural resources to wildfires.

The recent tree mortality event has altered the fuel conditions by drastically increasing the number of snags. The potential increase in fuel levels once the trees start falling has exacerbated the need to treat fuels, maintain or improve old-growth forest habitat, and maintain or improve tree species heterogeneity and health.

The Hume Lake Ranger District proposes to use prescribed fire to reintroduce fire into portions of the Mill Creek, Dry Creek, and Eshom Creek watersheds. The Proposed Action area encompasses approximately 3,078 acres.

The purpose of this biological assessment (BA) and biological evaluation (BE) is to review the proposed Project in sufficient detail to determine the potential effects on Threatened, Endangered, and Sensitive (TES) wildlife species. Specifically, the BA will document effects on proposed, threatened, or endangered species and/or critical habitat; and determine whether formal consultation or conference is required with the United States Department of Interior, Fish and Wildlife Service (USFWS), pursuant to the Endangered Species Act. The BE will analyze effects on Forest Service sensitive wildlife species in order to determine whether the proposed action will result in a trend toward a sensitive species becoming Federally listed. This BA/BE was prepared in compliance with standards and direction established in Forest Service Manual (FSM) 2670.3 and 2672.42 and conforms with legal requirements set forth under Section 7 of the Endangered Species Act (19 U.S.C. 1536 (c), 50 CFR 402.12 (f) and 402.14 (c)).

No federally proposed or listed wildlife species are expected to occur in the Project area.

The Forest Service Sensitive wildlife species for the Sequoia National Forest considered in this BE are:

- Northern goshawk (*Accipiter gentilis*);
- Great gray owl (*Strix nebulosa*);
- California spotted owl (*Strix occidentalis occidentalis*);
- Pallid bat (*Antrozous pallidus*); and
- Fisher (*Pekania pennanti*).

Please see Appendix A and Species and Habitat Accounts in the Existing Environment section of this BA/BE for the rationale behind including and dismissing specific federally listed and Forest Service sensitive wildlife in this analysis.

II. CONSULTATION TO DATE

No formal consultation with the USFWS has been conducted. On February 14, 2014 a scoping letter was sent out to 139 individuals and organizations, including the USFWS. No response from the USFWS has been received to date.

An official species list for the Proposed Action was generated from the USFWS' Information for

Planning and Conservation (IPaC) Proposed Action planning tool on December 15, 2017 (Consultation Code 08ESMF00-2018-SLI-0685, USFWS 2017). The following wildlife species listed as endangered, threatened, or candidate species pursuant to the federal Endangered Species Act (ESA) were included in the IPaC species list.

- California condor (*Gymnogyps californianus*);
- California red-legged frog (*Rana draytonii*);
- mountain yellow-legged frog (*Rana muscosa*); and
- Delta smelt (*Hypomesus transpacificus*).

There is neither potential habitat nor likelihood for these species to exist within the analysis area for the Project; therefore, they may be eliminated from further consideration and preparation of a BA for these species is not required.

No critical habitats for wildlife species were included in the IPaC species list.

In addition, there are currently two federally listed wildlife species which are known to occur within the Sequoia National Forest: western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) and California wolverine (*Gulo gulo*).

Western yellow-billed cuckoo is listed as threatened pursuant to the ESA. There is neither potential habitat nor likelihood for this species to exist within the analysis area for the Project; therefore, it may be eliminated from further consideration and preparation of a BA for this species is not required.

California wolverine is proposed to be listed as threatened pursuant to the ESA. Native populations of this species have been extirpated from California and, while suitable habitat types are present, this species is not expected to occur within the analysis area for the Project. Therefore it may be eliminated from further consideration and preparation of a BA for this species is not required.

A summary of all species analyzed for this BA/BE is provided in Appendix A, for reference sake.

III. CURRENT MANAGEMENT DIRECTION

Existing management direction for federally listed or candidate species and Forest Service Pacific Southwest Region sensitive animal species is summarized as follows:

FSM 2672 –Provides standards for biological evaluations and provides a list of all Regional Forester designated sensitive wildlife and plant species occurring on National Forest System lands. FSM 2672 is supplemented by: 2006 *Region 5 Revised Sensitive Plant and Animal Lists* (FSM 2600).

Sequoia National Forest Land and Resource Management Plan - Sensitive species and their habitats are managed to ensure conservation or enhancement of their populations and habitats so that the species do not become federally listed or suffer loss of viability (FSM 2670.2 and 2670.3).

2012 Giant Sequoia National Monument Final Environmental Impact Statement and Monument Management Plan (USDA Forest Service 2012) – The Project area is within the Giant Sequoia National Monument and subject to the 2012 Management Plan. Applicable standards and

guidelines (S&Gs) for the management of Wildlife Habitats in the 2012 Monument Plan are found on pages 90 to 93 of the Monument Plan:

- When activities are planned within or adjacent to a protected activity center (PAC) and the location of the nest site or activity center is uncertain, conduct surveys to establish or confirm the location of the nest or activity center. (p. 90, S&G #16).
- Maintain a limited operating period (LOP), prohibiting activities within approximately ¼ mile of the nest site during the breeding season (March 1 through August 15) unless surveys confirm that California spotted owls are not nesting (p. 90, S&G #18). The LOP may be waived, where necessary, to allow for early season prescribed burning in up to 5 percent of the California spotted owl PACs on a national forest per year (p. 90, S&G #20)
- Maintain a LOP, prohibiting activities within approximately ¼ mile of the nest site during the breeding season (February 15 through September 15) unless surveys confirm that northern goshawks are not nesting. (p. 92, S&G #35). The LOP may be waived, where necessary, to allow for early season prescribed burning in up to 5 percent of the northern goshawk PACs on a national forest per year (p. 92, S&G #37)
- Apply a LOP, prohibiting vegetation management activities and road construction within ¼ mile of active great gray owl nest stands during the nesting period (typically March 1 to August 15). (p. 92, S&G #42).
- Prior to vegetation treatments, identify important wildlife structures, such as large diameter snags and coarse woody material within the treatment unit. For prescribed fire treatments, use firing patterns, fire lines around snags and large logs, and other techniques to minimize effects on snags and large logs. Evaluate the effectiveness of these mitigation measures after treatment. (p. 93, S&G #48).
- Protect fisher den site buffers from disturbance with a LOP from March 1 through June 30 for all new Proposed Actions as long as habitat remains suitable or until another regionally approved management strategy is implemented. (p. 93, S&G #50).

Southern Sierra Nevada Fisher Conservation Strategy (Spencer et al. 2016) - The Project site is also located within the Southern Sierra Fisher Conservation Area (SSFCA) which has specific guidelines for managing projects in fisher habitats. The Southern Sierra Nevada Fisher Conservation Strategy recommends the following LOPs in fisher habitat (Table 7, p.60):

- Maintain a LOP of March 1 to May 1 restricting prescribed fire (unless carefully designed to minimize potential harm to fishers, including smoke accumulation in denning habitat)
- Maintain a LOP of March 15 to May 1 for burning large slash or woody debris piles (>0.1 acre), piles adjacent to possible den structures, or in situations where simultaneous lighting would create intense smoke; also for hand thinning within natural stands with California Wildlife Habitat Relationships diameter class 12 in or greater.

IV. DESCRIPTION OF PROPOSED ACTION

The Proposed Action would use prescribed fire to reintroduce fire into the Mill Flat, Mill, Dry,

and Eshom Creek drainages in the northern portion of the Monument. The Project area encompasses approximately 3,078 acres divided into nineteen treatment units. A detailed description of the proposed treatments by treatment unit is provided in the Alternatives section of the Environmental Assessment for the Project (USDA Forest Service 2018).

The Proposed Action is to burn the treatment units in the project area once over the next five to seven years. Prescribed burning would begin in the giant sequoia groves and progress toward the center of the project area, building from prior years' treatments to provide fire breaks between Kings Canyon National Park, private land holdings, and the adjacent forest area.

Burning operations in the project area would not be limited to certain seasons. Prescribed fire operations could be implemented during either, or both, spring and fall burn seasons. Restrictions or mitigations may be necessary due to wildlife or smoke management concerns in individual units.

The treatments are designed to reintroduce fire and produce a mosaic of tree size, age classes, and species composition across the landscape. The 2017 Sequoia Creek Prescribed Burn created fire lines in the vicinity of and including Hitchcock Meadow trail (Unit 2 of this project). Portions of three fuelbreaks would be maintained as part of this Project. Any felled trees would be hand-piled and burned, or would remain on the site. No mechanical treatments or removal of logs or other forest products is proposed with this Project.

Hand piling and pile burning

To help reduce the heavy concentration of dead and down woody material and small diameter ladder fuels, hand crews would use chainsaws to limb trees fell small trees, and hand pile the cut material in Units 1, 2, 3, 7, 9, 14, 15, 17, 18, and 19. No trees greater than 10 inches in diameter would be felled. The piles then would be burned. Hand piles would be created no more than 100 feet from unit boundaries, private land and national park boundaries, and recreation sites. This would decrease the fire intensity and behavior around objects of interest. The piles would be located to minimize the scorching of overstory trees or surrounding vegetation.

Fireline construction

Fireline would be constructed in each of the units in which understory burning occurs. Natural barriers would be used where appropriate. In units where fireline construction is necessary, crews would limb vegetation adjacent to the fireline only to the extent needed to prevent fire spread. Felling of small trees (less than 6 inches in diameter) and removal of brush would only occur when the fireline could not be routed around heavy concentrations of fuel to prevent direct flames, radiant heat, or convective heat, or any combination of the three, from igniting fuel across the line. Generally, the width of a fireline should be 1.5 times the height of the dominant fuels. Hazard trees within two tree lengths of fire control lines may have to be felled for firefighter safety prior to prescribed burning operations.

Fuel break maintenance

To maintain fuel breaks, hand crews would use chainsaws to limb trees and then hand pile heavy concentrations of dead and down woody material and small diameter ladder fuels. Fuels would be removed by burning the piles and/or hand ignition understory burning. An estimated two tons per acre of dead and down material would remain throughout the fuel break.

Remaining vegetation in the fuel break would retain species diversity and uneven-aged cover, while maintaining the ability of the fuel break to slow or stop fire spread. These live fuels consist of both understory and mid-story vegetation. Understory fuels over one foot high would be removed to develop vertical separation and low horizontal continuity of fuels. Individual plants or shrubs would be retained if there is a horizontal separation between them of three to five times their height, and they are not within the drip line of an overstory tree.

Mid-story trees up to 10 inches in diameter may be felled to create horizontal distances between tree trunks of up to 20 feet and 8 to 15 feet between drip lines. Larger overstory trees (greater than 10 inches in diameter) would be left but, to reduce ladder fuels, vegetation under their drip lines would be removed. To increase the canopy base height, branches on all residual trees would be pruned eight to 10 feet from the forest floor.

Snags that are 18 inches in diameter or larger, that do not exceed 30 feet in height, are at least 100 feet from the nearest snag, and which are not capable of falling on a road or structure, would be retained in the fuel breaks.

Hand ignition understory burning

Understory burning would be used to protect life, property, and the objects of interest that would be degraded or destroyed by wildfire; to re-establish fire in the ecosystem; to alter, maintain, or restore vegetative communities; and to achieve desired resource conditions. Hand crews would initiate burning operations using a backing strip firing method. Specific firing techniques, patterns, and sequences may be adjusted as needed during Proposed Action implementation.

V. DESIGN FEATURES FOR SENSITIVE WILDLIFE

The Proposed Action avoids all ground disturbing activities with the exception of fireline construction. This will minimize potential negative impacts to sensitive wildlife species. Various measures (or criteria), based on the management direction, will be implemented that guide the Proposed Action through the implementation phase. These criteria are integral to the Proposed Action and provide details on the way in which specific aspects of the Proposed Action will be implemented to ensure resources are protected and Proposed Action objectives are met. Additional criteria may be developed as the Proposed Action progresses and will be fully analyzed in the environmental document.

The document provides a discussion on individual species impacts for the species mentioned above, and provides measures to be implemented to reduce or minimize impacts. In addition, the current management direction within the forest (see Section III above) provides protections to these species. All of the measures, collectively termed as Best Management Practices, are summarized in Appendix B.

V. EXISTING ENVIRONMENT

The Big Stump/Redwood Mountain Fuels Restoration project is located in Giant Sequoia National Monument, but specifically within the Mill Flat Creek, Mill Creek, Dry Creek and Eshom Creek watersheds. Plant communities in the Project area include mixed conifer forest, ponderosa pine forest, California black oak forest, canyon live oak forest, giant sequoia forest, white leaf manzanita chaparral, annual grassland, and montane meadow. Dominant overstory plant species include giant sequoia (*Sequoiadendron giganteum*), white fir (*Abies concolor*), sugar pine (*Pinus*

lambertiana), ponderosa pine (*Pinus ponderosa*), incense cedar (*Calocedrus decurrens*), California black oak (*Quercus kelloggii*), canyon live oak (*Quercus chrysolepis*), white leaf manzanita (*Arctostaphylos viscida*). The Project area also includes a variety of aquatic habitats, including perennial and seasonal creeks, wet meadows, and seeps.

The Project area can be accessed from Highway 180 from the north, Highway 245 from the west, and Eshom Valley Road from the south. Dark Canyon Road, Forest Route 14S45, and Forest Route 14S43 provide access to the interior of the Project area.

Species and Habitat Accounts

The California Department of Fish and Wildlife (CDFW) database program Rarefind 5 (CDFW 2018) was used to retrieve California Natural Diversity Data Base (CNDDDB) records for special-status wildlife species reported to occur within the U.S. Geological Survey (USGS) topographic quadrangle maps included in the Big Stump Fuels Restoration Project area (General Grant Grove Quad). Further, a list provided by USFWS of threatened and endangered species that may be affected by the Proposed Action and the USFS Pacific Southwest Region list of Sensitive Animal Species by Forest for the Sequoia National Forest were also reviewed. Likelihood of species occurrence was determined by evaluating suitable habitat in the Proposed Action area and identifying nearby locations of known species' occurrences.

TES and Sensitive Species were eliminated from further consideration if: 1) they had no known occurrences in or near the Project area; and/or 2) no potential habitat existed in the Project area.

The following Forest Service sensitive species for the Sequoia National Forest were determined to occur or be likely to occur within the Project area:

- Northern goshawk (*Accipiter gentilis*);
- Great gray owl (*Strix nebulosa*);
- California spotted owl (*Strix occidentalis occidentalis*);
- Pallid bat (*Antrozous pallidus*); and
- Fisher (*Pekania pennanti*).

None of the above wildlife species are federally listed as endangered or threatened pursuant to the Endangered Species Act (ESA). The Project area has no potential habitat for any of the federally listed species identified in the USFWS species list or that occur or have potential to occur within Sequoia National Forest.

Because the majority of the Proposed Action does not include ground disturbing activities, the FSM does not require comprehensive TES surveys. Fuel break construction is the only potential ground-disturbing activity. The main source of potential impacts on TES species due to the Big Stump Fuels Restoration Project is disturbance associated with the construction of fuel breaks rather than the effects of controlled burns.

Species Accounts for TES and Sensitive Species with Potential to Occur in the Proposed Action Area

The Forest Service Sensitive wildlife species for the Sequoia National Forest discussed in this section include:

- Northern goshawk;
- Great gray owl;
- California spotted owl;
- Pallid bat; and
- Fisher.

Northern goshawk

Habitat Preferences and Biology: The northern goshawk is the largest accipiter found in North America. It is primarily found in wooded areas where it hunts primarily for birds but will also feed on small mammals (Zeiner et al. 1990a). The preferred habitat of the northern goshawk includes coniferous, mixed, and deciduous forest habitats with a closed canopy of large trees. Occurrences of the northern goshawk are limited by the availability of suitable nesting habitat, foraging habitat and prey availability (Shuford and Gardali 2008). Habitat types frequented by northern goshawk include mixed conifer forest, pine forest, riparian forests, and white and red fir forests. The species requires large mature trees for nesting in areas with closed canopies and open understories.

Distribution: The northern goshawk breeds throughout northern and northwestern North America. In California the northern goshawk is known to breed in the Sierra Nevada, Klamath, Cascade, San Bernardino, San Jacinto, and White mountains and Mt. Pinos (Zeiner et al. 1990a). The species is known to winter in desert and pinyon juniper habitats. Northern goshawk was observed by ECORP biologists in 2017 during botanical surveys in the Proposed Action area and nesting northern goshawk has previously been recorded near the Proposed Action area.

Risk Factors: The primary known threats to northern goshawks are habitat loss and habitat degradation. The harvesting of timber and historical fire suppression have resulted in an alteration of forest structure that has negatively impacted northern goshawks (Shuford and Gardali 2008).

Management and Status: Northern goshawks are listed as a USDA Forest Service Sensitive Species in Region 5. The delineation of over 3,000 acres of PACs for the northern goshawk was included in the Giant Sequoia National Monument Management Plan (USDA Forest Service 2012). One of these designated northern goshawk PACs occurs in the southern portion of the Project area. In addition, the northern Goshawk is considered a species of special concern (SSC) by CDFW.

Great gray owl

Habitat Preferences and Biology: The great gray owl is found in mid to high elevation montane conifer forests. Forest types in California frequented by the great gray owl include ponderosa pine forest, lodgepole pine forest, old growth red-fir forest, and mixed conifer forests. Breeding sites for this species are always within the vicinity of a wet meadow for foraging (Zeiner et al. 1990a).

This species usually nests in habitats with mature trees and forest stands that have broken trees and snags providing a nest platform. The great gray owl is also often dependent on the use of old stick nests of hawks or ravens. Foraging habitat of the great gray owl is classified by natural meadows, open grassy habitats, and open forests. Their diet consists primarily of small mammals but occasional prey items also include small birds and amphibians (Hayward et al. 1994).

Distribution: The great gray owl occurs in the western United States and its breeding range includes the Cascades and Sierra Nevada in California along with portions of Alaska, Minnesota, Michigan, Wisconsin, and New York. In the Sequoia National Forest, the great gray owl is known to be present in red fir forest, mixed conifer forest, and ponderosa pine forest habitats (Hayward et al. 1994).

Risk Factors: Populations of great gray owl are primarily limited by two factors, the availability of nest platforms for breeding, and prey availability. Other risk factors to great gray owl include habitat loss and degradation.

Management and Status: The great gray owl is listed as an endangered species under the California ESA and is considered to be the rarest owl in California. The great gray owl is also a Forest Service Sensitive Species in Region 5. The delineation of 60 acres of great gray owl PACs was included in the Giant Sequoia National Monument Management Plan however none of the PACs are present in or near the Project area (USDA Forest Service 2012).

California spotted owl

Habitat Preferences and Biology: California spotted owl habitat consists of four general but distinct forest types: riparian/hardwood forest, live oak/big-cone Douglas fir forest, mixed conifer forest, and redwood/California laurel forest (USDA Forest Service 2006). The California spotted owl is strongly associated with forests that have a complex multi-layered structure, large-diameter trees, and high canopy closure. While there is variation in the homogeneity of the habitat types that spotted owls occupy, their habitat is consistently characterized by high structural complexity. California spotted owls are highly territorial and have large acreage requirements due to their wide-ranging foraging habits. Nesting and roosting areas are more restricted to areas with high canopy cover and high total live hardwood, softwood, and snag basal areas, and are often adjacent to cliffs, steep-sided wooded canyons, and shaded ravines. Foraging habitat is more variable in complexity and character attributes. California spotted owls nest in tree cavities or abandoned nests of other animals typically in areas of dense old-growth forest (USDA Forest Service 2006).

Distribution: The California spotted owl occurs on the western side of the Sierra Nevada (and very locally on the eastern slope) from the vicinity of Burney, Shasta County south through the southern Cascade Range and Sierra Nevada to Kern County; in the southern part of the Coast Ranges from Monterey County to Santa Barbara County; and in the Transverse and Peninsular Ranges of southern California south to Baja California (USDA Forest Service 2006).

Risk Factors: Wildfire has been considered the primary risk factor to the California spotted owl, due to the buildup of fuels and changes in stand structure, which have increased the risk of high severity fires (USDA Forest Service 2006). The potential for loss of large patches of occupied habitat in a single, catastrophic fire event is the primary threat to California spotted owls that can be addressed through management. Other threats to California spotted owls include decline in habitat quality due to firewood collecting (cutting of snags and logs) that may lower snag

availability for nest sites and log cover for the prey base.

Management and Status: The California spotted owl is a Forest Service Sensitive Species in Region 5 and is considered a SSC by CDFW. The California spotted owl was previously petitioned for listing under the ESA in 2000 and 2004, but it was determined that the petitioned action was not warranted in both instances. The delineation of over 22,000 acres of California spotted PACs was included in the Giant Sequoia National Monument Management Plan along with the delineation of over 44,000 acres of Home Range Core Areas (HRCAs) for the species (USDA Forest Service 2012). One California spotted owl HRCA (TUL0077) is located in the northernmost portion of the Project site. Further, the California spotted owl PAC (TUL0051) is located near the westernmost portion of the Project Action area.

Pallid Bat

Habitat Preferences and Biology: Pallid bats are found in a variety of habitats, including rocky canyons, open farmland, scattered desert scrub, grassland, shrubland, woodland, and mixed conifer forest. Pallid bats appear to be more prevalent within edges, open stands, particularly hardwoods, and open areas without trees. Pallid bats roost in rock crevices, mines, caves, tree hollows, and a variety of anthropogenic structures. Pallid bats frequently use buildings, bridges, and culverts in California. This bat is intolerant of roosts with temperatures in excess of 104 °F (40 °C). Pallid bats primarily glean prey from the ground or surfaces of vegetation, but have also been observed to take prey in flight. Prey items include large insects such as scorpions, crickets, praying mantids, and moths. Pallid bats are known to hibernate but arouse periodically throughout the winter to forage and drink (USDA Forest Service 2006).

Distribution: Pallid bats are found from southern British Columbia to central Mexico and from California east to central Kansas and Oklahoma (USDA Forest Service 2006). The pallid bat is found throughout California except for the high elevation Sierra Nevada and in the northwest between Del Norte and Mendocino county (Zeiner et al. 1990b). This species appears to be most common at elevations below 6,000 feet.

Risk Factors: In general, declines of bat populations can often be attributed to roost site disturbance, loss of foraging habitat and loss of roost sites. Many bats are highly vulnerable to disturbances at roost sites. Disturbance at roost sites can lead to short and long-term abandonment. Generally, bats have high site fidelity to winter and maternity roosts. Low reproductive potential, high longevity and high roost fidelity make populations highly sensitive to roost threats. Disturbance that arouses a bat during their winter hibernation will cause loss of accumulated fat reserves and possible starvation. The availability of roost sites provided by tree and shrub bark or foliage has been reduced by timber harvest and urbanization.

Management and Status: The pallid bat is a Forest Service Sensitive Species in Region 5. Pallid bats have been identified as a Species of High Priority by the Western Bat Working Group in California. High priority species are defined as those that are imperiled or are at high risk of imperilment. In addition, the pallid bat is considered a SSC by CDFW.

Fisher

Habitat Preferences and Biology: The fisher is a mid-sized carnivorous mammal in the mustelid family that primarily occurs in intermediate to large-tree coniferous forests and deciduous riparian habitats (Zeiner et al. 1990b). Fishers are associated with low to mid elevation forest habitats from

sea level to up to 9,000 feet in the Sierra Nevada. Forest types inhabited by fisher in California include lodgepole pine, eastside pine, red fir, and subalpine conifer. Highly structured forests with diverse successional stages provide optimal habitat for fishers. Fishers are generalist and opportunistic carnivores that primarily feed on rodents, squirrels, hares, and birds but will also consume carrion and berries (USFWS 2016). Fisher dens are found in tree cavities, snags, brush piles, and logs (Zeiner et al. 1990b).

Distribution: The fisher is a rare, permanent resident of the Sierra Nevada, Cascade, and Klamath Mountain ranges (Zeiner et al. 1990b). In California, the fisher is distributed from the Oregon border south through the coast range, east through the Klamath Mountains and throughout the Sierra Nevada to northern Kern County (USFWS 2016). Fishers are believed to be well-distributed in the Sequoia National Monument which represents one of the last refugia for the fisher in the Sierra Nevada portion of its range (USDA Forest Service 2012).

Risk Factors: Risks to the viability of fisher populations include habitat loss and fragmentation. Further, the quality of fisher habitats is in decline in many locations due to a reduction in structural elements within forest habitats resulting from timber harvest, fuels reduction, and fire suppression (USFWS 2016).

Management and Status: The fisher is a Forest Service Sensitive Species in Region 5. The fisher is a candidate for threatened status under the California ESA; it is designated as a SSC by CDFW. The designation of over 3,000 acres of furbearer den sites (for fisher and marten) was included in the Giant Sequoia National Monument Management Plan however none of the den sites are present in or near the Project area. Further, over 300,000 acres within the Giant Sequoia National Monument have been designated as SSFCA. The Project area is located within the designated SSFCA, therefore essential habitat structures for fishers such as canopy cover and large trees must be maintained during Project activities (USDA Forest Service 2012).

VI. EFFECTS OF THE ALTERNATIVES

The effects section discusses effects to known occurrences as well as suitable habitat and any possible undiscovered sensitive wildlife that might occur in the Proposed Action area.

Alternative 1 - No Action

With the No Action Alternative, no prescribed burning, hand piling and pile burning, or fuel break maintenance would be implemented. In the short term, fire would not be reestablished into this fire-adapted ecosystem, specifically within the Big Stump and Redwood Mountain Sequoia Groves. Because there is no action proposed, no direct effects to sensitive wildlife species are expected with the No Action Alternative.

With the No Action Alternative, the Fire Return Interval Departure (FRID) will continue to move away from Pre-Euromerican settlement historic fire return intervals. Fire return interval describes how often fires occurred historically (pre-European settlement) in a particular location and vegetation type. FRID is a temporal (time-related) attribute of the fire regime that is measured by determining when the fire occurred last in the area and comparing this with the fire return interval for the location and vegetation type.

With the No Action Alternative, fire would not occur in its characteristic pattern and resume its ecological role. Lower, manageable levels of flammable materials would not be maintained.

Wildfire severity and fire hazards adjacent to human communities and surrounding forest types would continue to increase over time as the arrangement and quantity of fire fuels characteristics change. Forest fuels would not be maintained to achieve desired flame lengths. The potential for crown fires occurring would not be reduced from the current level of 70 percent. Wildlife would be affected by these factors in that their populations would likely shift in response to changing habitat distributions across the Project area. As downed logs and dead snags increase, wildlife populations that use such features would be expected to benefit and these species would increase. However, other species that favor more forested areas that have had more time to develop would subsequently decrease in number.

With this alternative, current and future fuel loading would not be reduced to meet the desired conditions and without fire, these conditions would be further increased over time as snags begin to decay and fall and contribute to current levels of surface fuels. Brush species coverage would remain at current levels or increase over time. Live and dead surface fuels would only be reduced in the event of an unplanned wildfire. The numerous snags would eventually fall and contribute to the increasing fuel loads in the area. Although snags and increased downed timber provide habitat for many fossorial species, such as snake species or certain species of mammals, reduced forest cover would have consequences of reducing populations of species that rely on live tree cover and deeper forest habitats.

By not implementing the Big Stump/Redwood Mountain Fuels Restoration Project, indirect effects to sensitive animal habitat and species (if present) may occur in the form of reduction of species diversity, shifting in animal distribution throughout the Project area, and losses of species that prefer deeper forest habitats.

The No Action Alternative exacerbates the risk of high severity wildfire within the Project area and would result in continued change in the fire return intervals for the area, which would lead to changes in habitat for TES or sensitive species, including northern goshawk, great gray owl, California spotted owl, pallid bat, and fisher. Although these species' habitats within the Project area would be expected to re-grow over time, the suite of species associated with burned areas would be temporarily displaced until their habitat becomes suitable once again. Long-term losses of TES or sensitive species is a potential effect of the No Action Alternative.

Alternative 2 - Proposed Action

Alternative 2 proposes to use prescribed fire to reintroduce fire into the Mill Flat Creek, Mill Creek, Dry Creek and Eshom Creek drainages in the northern portion of the Monument. The Project area encompasses approximately 3,078 acres, bounded on the north and east by Kings Canyon National Park; on the south by Forest Roads 14S37, 14S74, 14S53, and 14S43; on the west by Logger Point fuel break and private property (see Figure 1). Fuel load reduction plans have been completed for the Big Stump and Redwood Mountain Giant Sequoia Groves and have been used to develop the Proposed Action.

The proposal is to burn the outlined units in the Project area once over the next five to seven years. Prescribed burning would begin in the giant sequoia groves and progress toward the center of the Project area, building from prior treatments to provide fire breaks between Kings Canyon National Park, private land holdings, and the adjacent forest area.

Burning operations in the Project area would not be limited to certain seasons. Prescribed fire

operations could be implemented during either, or both, spring and fall burn seasons. Restrictions or mitigations may be necessary due to wildlife or smoke management concerns in individual units.

The treatments are designed to reintroduce fire and produce a mosaic of tree size, age classes, and species composition across the landscape. The 2017 Sequoia Creek Prescribed Burn created fire lines in the vicinity of and including Hitchcock Meadow trail. This trail, natural barriers, and existing road systems would be used where possible to define the individual unit boundaries within the Project area to minimize the amount of fireline needed for the Proposed Action. The Hitchcock Meadow trail and road systems would be repaired as needed for use as fireline. Portions of three fuelbreaks would be maintained per shaded fuel break standards as part of this Proposed Action: Logger Point, Redhill and Eshom (Figure 1). Any felled trees would be hand-piled and burned, or would remain on-site. No mechanical treatments or removal of logs or other forest products is proposed under this Proposed Action.

The proposed treatments by unit are summarized in Table 1.

Table 1. Summary of Proposed Treatments

Unit¹	Proposed Treatments	Total Unit Acres²
1	Hand piling and pile burning, fireline construction, hand ignition understory burning	60
2 ³	Hand piling and pile burning, fireline construction, hand ignition understory burning	50
3	Hand piling and pile burning, fireline construction, hand ignition understory burning	204
4	Fireline construction, hand ignition understory burning	82
5	Fireline construction, hand ignition understory burning	94
6	Fireline construction, hand ignition understory burning	74
7	Hand piling and pile burning, fireline construction, fuel break maintenance, hand ignition understory burning	57
8	Fireline construction, hand ignition understory burning	114
9	Hand piling and pile burning, fireline construction, fuel break maintenance, hand ignition understory burning	146
10	Fireline construction, hand ignition understory burning	147
11	Fireline construction, hand ignition understory burning	267

Unit¹	Proposed Treatments	Total Unit Acres²
12	Fireline construction, hand ignition understory burning	478
13	Fireline construction, hand ignition understory burning	144
14	Hand piling, pile burning, fireline construction, hand ignition understory burning	278
15	Hand piling, pile burning, fireline construction, hand ignition understory burning	113
16	Fireline construction, hand ignition understory burning	312
17	Fireline construction, hand ignition understory burning	220
18	Hand piling, pile burning, fireline construction, hand ignition understory burning	164
19	Hand piling, pile burning, fireline construction, hand ignition understory burning	74
Total		3,078

Notes: ¹See Figure 1 for a graphic depiction of unit boundaries

²The acres treated within the individual units would be less than or equal to the total unit acres

³Sequoia and Kings Canyon National Parks completed a prescribed burn in September 2017 that overlaps this unit. Post-burn fuel conditions have not been assessed; however, it is likely that a portion of Unit 2 will still need fuel reduction using the listed methods.

Direct and Indirect Effects of Proposed Action

No federally listed Threatened or Endangered wildlife are known to occur or have the potential to occur in the Project area. It is my determination that there will be **No Effect** to any federally-listed Threatened or Endangered wildlife or their proposed/designated critical habitat.

The following Forest Service Sensitive wildlife species are known to occur or have suitable habitat in the Proposed Action area.

- Northern goshawk;
- Great gray owl;
- California spotted owl;
- Pallid bat; and
- Fisher.

Impacts common to all Forest Service Sensitive wildlife species

During implementation, the Proposed Action would have some short-term negative effects on some forest species, including some sensitive species. Use of small machinery (chainsaws), presence of crews and losses of trees used for maintaining fire lines and fuel breaks will result in modification of existing conditions, which would temporally displace animals that regularly forage, den, or nest in the area. Disturbance impacts on wildlife species have been fairly well documented for a number of species including deer, small mammals, reptiles, and nesting and perching birds. Most species exhibit a "flight" response to disturbance resulting in temporary, or if disturbance is constant, permanent displacement. Flight responses and/or disturbances can negatively affect animal health by requiring increased energy expenditures. Depending on an animal's ability to replenish that energy nutritionally, if frequent enough, this can significantly:

- Interfere with an individual animal's ability to forage;
- Decrease breeding success (e.g., lower densities of animals reduces probability of finding a mate; disturbances can interfere with incubation, nesting, or parenting activities); and,
- Increase predation because of distractions or displacement.

Behaviors that may be affected by disturbance include:

- **Habitat Use:** Individuals may avoid use of a treatment area for the duration of the Proposed Action activities, even beyond the areas being directly affected. If the noise is brief and adequate cover exists, differences in home-range size may not be detectable, but if the animals are exposed repeatedly to the same stimulus without harassment, the response declines.
- **Social Communication:** Wildlife may stop acoustic communication to listen to unusual noises, including human-made noises. Noises caused by light equipment may partially obscure vocalizations. This interruption of acoustic communication may negatively affect breeding activities or territorial activity.
- **Prenatal Care:** When young are present, parents tend to minimize their time away from the natal area. However, noise/disturbance can result in temporary displacement of the adults leaving eggs/young at an increased risk of predation or exposure to adverse environmental conditions especially by opportunistic predators that are drawn to disturbance areas.

Pile burning has a risk of modifying wildlife habitat, as piles will be large and there will be many of them (i.e., they will cover a large portion of the Proposed Action area). In that some may be left for years, animals will adapt to using them and the animals using the piles may be subject to increased mortality if wildlife are trapped in the piles during a fire. Underburning would reduce the existing level of shrub and understory cover. Reductions in structural diversity of a forest results in reduced prey, reduced cover for ground-foragers, and localized decreased soil moisture.

Some direct losses of individual animals nesting or denning in trees are likely due to the various activities associated with the Proposed Action such as brush cutting, pile burning, broadcast, and burning. The potential for death or injury of animals depends on time of year, activity patterns of the individual species, individual species mobility, and the activity taking place on the ground. Animals may also be directly killed or injured during burning of slash piles and underburning.

Ideally, piles would be burned as soon as possible after piling to limit the potential animal use of these piles. However, due to potential logistics of suitable burn windows, it is likely that piles would be left on the ground for months or years before being burned. Although these piles may provide habitat (see discussion above), they may present a new risk to wildlife as well.

The Proposed Action would also result in changes in forest structure due to fuel reduction and burning. The treatments are intended to lower existing fuel concentrations and decrease ladder fuels. These are long-term beneficial effects due to changing the fire return interval - fires in the future would be more likely to be a surface fire, be less severe, and be of lower intensity than under current conditions. Fire return intervals are expected to more closely mimic those of the past ecological history of the area, encouraging an ecosystem that promotes more overall diversity. Indirect effects of opening the forest up and removal of dead and down will change the habitat suitability long term for certain wildlife species that have become accustomed to those areas. Within areas that become treated, those species that require early successional habitat stages will initially, and after periodic maintenance, benefit. While in those same areas, those species that require denser, more mature, and/or complex habitat associations may be negatively impacted.

One of the purposes of the Proposed Action is to establish conditions that allow for a highly diverse vegetation mosaic of age classes, tree sizes, and species composition. This would be a generally be a net beneficial effect on sensitive wildlife that rely on specific microhabitats and conditions. Below is a list of the sensitive species evaluated for this Proposed Action, along with species-specific effects of the Proposed Action on them and a determination on how the Proposed Action will effect each one of them.

Northern goshawk

Direct Effects

There is a very small risk of mortality of or injury to adult or juvenile northern goshawks if they are in roost or nest trees when tree felling occurs. Direct impacts do not seem very likely for adults since they would probably abandon the site prior to tree felling; direct losses would be more likely for unfledged or recently fledged juveniles. However, LOPs and pre-implementation surveys are expected to eliminate the potential for death or injury of juveniles or nests by avoidance of those areas until after fledging.

Potential negative impacts to the northern goshawks from this Proposed Action include noise disturbance from chainsaws and presence of prescribed fire. Noise may cause disruption of courtship and nesting behavior or abandonment of nest sites if conducted during the nesting season. The LOP will limit the likelihood of disturbance to individuals during the nesting season (February 1 through September 15) including: northern goshawks establishing territories and nests, breeding pairs, nestlings, and fledglings. The LOP is based on a ¼-mile buffer around known nest trees (or may be around the NS where the nest tree locations are not known). Based on the number and timing of surveys needed to determine that the territory is unoccupied, the LOP may be lifted as early as mid-July in territories that are determined to be vacant.

Where a pair has established a new nest tree that has not been detected by biologists, the LOP buffer may not be centered on the right area. Under that circumstance, individuals may be disturbed by noise and Proposed Action activities, and direct losses may occur or nesting activities may be interrupted and/or abandoned. We believe that this risk is relatively low and that the ¼-

mile buffer allows some insurance since the noise levels of many of the Proposed Action activities do not actually result in significantly higher decibel levels that carry across the landscape. However, this small risk does exist.

The LOP is designed to limit disturbance that would interrupt breeding efforts. Because it is only during the nesting season, activities are allowed within one-quarter mile of nests during the non-breeding season. While individuals may be disturbed during non-breeding, it is expected that they could and would temporarily move to another portion of the northern goshawk territory or into nearby suitable habitat. It is important that there are portions of each territory that are not being treated at any given time so that northern goshawks have areas to roost and forage free of disturbance. Use of existing Forest Service roads and trails through northern goshawk habitat is not affected by the LOPs; thus, there is also some potential for disturbance due to increased levels of traffic during implementation.

The level of disturbance and potential to cause territory abandonment may depend on the duration of activities in each territory. Because some areas have several activities planned (e.g., understory thinning, pile burning, etc.), some sites may have activities spread out over a period of two to three years before all of the operations would be completed. It should also be noted that reentry into these areas will likely occur for maintenance operations every 5 to 10 years. Although northern goshawks are likely to accommodate gradually to these conditions and often habituate to low level disturbance, repeated entries and long-term disturbance is more likely to cause abandonment of a territory than a single short-term disturbance. As such, it is important to complete fuels reduction efforts in as short a period as feasible especially within PACs.

Prey availability and distribution in northern goshawk habitat is expected to be negatively affected in the understory burn areas. Such treatment activities may enhance habitat for some prey species by stimulating shrub growth and opening some of the stands. However, it is likely that future maintenance Proposed Actions similar to this one may lead to a long-term local decline in prey abundance for northern goshawks. It is also possible that northern goshawk prey species will flourish between maintenance treatments.

Indirect Effects

Indirect effects may include a temporary reduction in canopy cover, a loss of existing snags, and a loss of down woody debris. However, the prescribed fire activities would be expected to contribute new snags and woody debris to the Proposed Action area. The Proposed Action will result in changes in horizontal and vertical structural components of the forested habitat as trees and brush are removed. A total of 201 acres of a northern goshawk PAC is located within Unit 18.

The treatments in northern goshawk habitat are designed to retain habitat quality in terms of multi-storied stands, tree species diversity (including hardwoods), canopy closure, snags, and downed woody material. Though this Proposed Action will likely not result in any currently suitable northern goshawk habitat becoming unsuitable, it will by design maintain and/or create more open less complex habitat which is less suitable for northern goshawk prey and, therefore, foraging. Additional fragmentation of the northern goshawk habitat across the landscape is not expected. The Proposed Action may improve the ability of the forest to handle future wildfire. Careful implementation planning and coordination would help ensure that the impacts would be as low as feasible while implementing the Proposed Action.

Determination

It is my determination that the Proposed Action may affect individuals, but is not likely to result in a trend toward federal listing or loss of viability for the northern goshawk.

Great gray owl

Direct Effects

There is a very small risk of mortality of or injury to adult or juvenile great gray owls if they are in roost or nest trees when tree felling occurs. Direct impacts do not seem very likely for adults since they would probably abandon the site prior to tree felling; direct losses would be more likely for unfledged or recently fledged juveniles. However, LOPs and pre-implementation surveys are expected to eliminate the potential for death or injury of juveniles or nests by avoidance of those areas until after fledging.

Potential negative impacts to the great gray owl from this Proposed Action include noise disturbance from chainsaws and presence of prescribed fire. Noise may cause disruption of courtship and nesting behavior or abandonment of nest sites if conducted during the nesting season. The LOP will limit the likelihood of disturbance to individuals during the nesting season (February 1 through August 15) including: great gray owls establishing territories and nests, breeding pairs, nestlings, and fledglings. The LOP is based on a ¼-mile buffer around known nest trees (or may be around the NS where the nest tree locations are not known). Based on the number and timing of surveys needed to determine that the territory is unoccupied, the LOP may be lifted as early as mid-July in territories that are determined to be vacant.

Where a pair has established a new nest tree that has not been detected by biologists, the LOP buffer may not be centered on the right area. Under that circumstance, individuals may be disturbed by noise and Proposed Action activities, and direct losses may occur or nesting activities may be interrupted and/or abandoned. We believe that this risk is relatively low and that the ¼-mile buffer allows some insurance since the noise levels of many of the Proposed Action activities do not actually result in significantly higher decibel levels that carry across the landscape. However, this small risk does exist.

The LOP is designed to limit disturbance that would interrupt breeding efforts. Because it is only during the nesting season, activities are allowed within one-quarter mile of nests during the non-breeding season. While individuals may be disturbed during non-breeding, it is expected that they could and would temporarily move to another portion of the owl territory or into nearby suitable habitat. It is important that there are portions of each territory that are not being treated at any given time so that owls have areas to roost and forage free of disturbance.

A limitation on night operations will prevent Proposed Action operations from disturbing owls during important foraging and breeding activities. Use of existing FS roads and trails through owl habitat is not affected by the LOPs; thus, there is also some potential for disturbance due to increased levels of traffic during implementation.

The level of disturbance and potential to cause territory abandonment may depend on the duration of activities in each territory. Because some areas have several activities planned (e.g., understory thinning, pile burning, etc.), some sites may have activities spread out over a period of 2 to 3 years before all of the operations would be completed. It should also be noted that reentry into these

areas will likely occur for maintenance operations every 5 to 10 years. Although owls are likely to accommodate gradually to these conditions and often habituate to low level disturbance, repeated entries and long-term disturbance is more likely to cause abandonment of a territory than a single short-term disturbance. As such, it is important to complete fuels reduction efforts in as short a period as feasible especially within PACs.

Prey availability and distribution in great gray owl habitat is expected to be negatively affected in the understory burn areas. It is likely that future maintenance Proposed Actions similar to this one may lead to a long-term local decline in prey abundance such as voles and pocket gophers for the great gray owl. It is also possible that great gray owl prey species, which favor transitional habitats, will flourish between maintenance treatments. This could lead to an increase in great grey owl populations.

Indirect Effects

Indirect effects may include a temporary reduction in canopy cover, a loss of existing snags, and a loss of down woody debris. However, the prescribed fire activities would be expected to contribute new snags and woody debris to the Proposed Action area. The Proposed Action will result in changes in horizontal and vertical structural components of the forested habitat as trees and brush are removed.

The treatments in great gray owl habitat are designed to retain habitat quality in terms of multi-storied stands, tree species diversity (including hardwoods), canopy closure, snags, and downed woody material. Though this Proposed Action will likely not result in any currently suitable great gray owl habitat becoming unsuitable, it will by design maintain and/or create more open and less complex habitat which is less suitable for great gray owl prey and, therefore, foraging. Potential for fragmentation of the great gray owl habitat across the landscape was analyzed but is not expected. The Proposed Action may prove beneficial to the great gray owl by improving the ability of the forest to handle future wildfire, thus limiting the owl's vulnerability to fire events. Careful implementation planning and coordination, as well as implementation of project Best Management Practices, would help ensure that the impacts would be as low as feasible while implementing treatments.

Determination

It is my determination that the Proposed Action may affect individuals, but is not likely to result in a trend toward federal listing or loss of viability for the great gray owl.

California spotted owl

Direct Effects

There is a very small risk of mortality of or injury to adult or juvenile California spotted owls if they are in roost or nest trees when tree felling occurs. Direct impacts do not seem very likely for adults since they would probably abandon the site prior to tree felling; direct losses would be more likely for unfledged or recently fledged juveniles. However, LOPs and pre-implementation surveys are expected to eliminate the potential for death or injury of juveniles or nests by avoidance of those areas until after fledging.

Potential negative impacts to the California spotted owl from this Proposed Action include noise disturbance from chainsaws and presence of prescribed fire. Noise may cause disruption of courtship and nesting behavior or abandonment of nest sites if conducted during the nesting season. The LOP will limit the likelihood of disturbance to individuals during the nesting season (March 1 through August 15) including: spotted owls establishing territories and nests, breeding pairs, nestlings, and fledglings. The LOP is based on a ¼-mile buffer around known nest trees (or may be around the NS where the nest tree locations are not known). Based on the number and timing of surveys needed to determine that the territory is unoccupied, the LOP may be lifted as early as mid-July in territories that are determined to be vacant.

Where a pair has established a new nest tree that has not been detected by biologists, the LOP buffer may not be centered on the right area. Under that circumstance, individuals may be disturbed by noise and Proposed Action activities, and direct losses may occur or nesting activities may be interrupted and/or abandoned. We believe that this risk is relatively low and that the ¼-mile buffer allows some insurance against unforeseen impacts because the noise levels of many of the Proposed Action activities do not actually result in significantly higher decibel levels that carry across the landscape.

The LOP is designed to limit disturbance that would interrupt breeding efforts. Because it is only during the nesting season, activities are allowed within ¼ mile of nests during the non-breeding season. While individuals may be disturbed during non-breeding, it is expected that they could and would temporarily move to another portion of the owl territory or into nearby suitable habitat. It is important that there are portions of each territory that are not being treated at any given time so that owls have areas to roost and forage free of disturbance.

A limitation on night operations will prevent Proposed Action operations from disturbing owls during important foraging and breeding activities. Use of existing Forest Service roads and trails through owl habitat is not affected by the LOPs; thus, there is also some potential for disturbance due to increased levels of traffic during implementation.

The level of disturbance and potential to cause territory abandonment may depend on the duration of activities in each territory. Because some areas have several activities planned (e.g., understory thinning, pile burning, etc.), some sites may have activities spread out over a period of 2 to 3 years before all of the operations would be completed. It should also be noted that reentry into these areas will likely occur for maintenance operations every 5 to 10 years. Although owls are likely to accommodate gradually to these conditions and habituate to this disturbance, repeated entries and long-term disturbance is more likely to cause abandonment of a territory than a single short-term disturbance. As such, it is important to complete fuels reduction efforts in as short a period as

feasible especially within PACs. A total of 175 acres of a PAC and a Home Range Core Area (HRCA) is present within the Project area.

Prey availability and distribution in spotted owl habitat is expected to be negatively affected in the understory burn areas. Such treatment activities may enhance habitat for woodrat and other prey species by stimulating shrub growth and opening some of the stands. However, it is likely that future maintenance Proposed Actions similar to this one may lead to a long-term, but localized, decline in prey abundance for the spotted owl. It is also possible that spotted owl prey species will flourish between maintenance treatments due to increased shrub and herbaceous cover in the understory.

Indirect Effects

Indirect effects may include a temporary reduction in canopy cover, a loss of existing snags for perching, and a loss of down woody debris that could harbor prey. However, the prescribed fire activities would be expected to contribute new snags and woody debris to the Project area. The Proposed Action will result in changes in horizontal and vertical structural components of the forested habitat as trees and brush are removed, potentially leading to less suitable habitat for spotted owls in a localized basis.

However the treatments in spotted owl habitat are designed to retain overall habitat quality in terms of multi-storied stands, tree species diversity (including hardwoods), canopy closure, snags, and downed woody material. Though this Proposed Action will likely not result in any currently suitable spotted owl habitat becoming unsuitable, it will by design maintain and/or create more open less complex habitat which is less suitable for spotted owl prey and, therefore, foraging. Additional fragmentation of the spotted owl habitat across the landscape is not expected. The Proposed Action may improve the ability of the forest to handle future wildfire. Careful implementation planning and coordination, along with implementation of Best Management Practices, would help ensure that the impacts would be as low as feasible while implementing treatments.

Determination

It is my determination that the Proposed Action may affect individuals, but is not likely to result in a trend toward federal listing or loss of viability for the California spotted owl.

Pallid Bat

Direct Effects

Pallid bats will use a range of roost sites including rock crevices, caves, mines, buildings and tree hollows. Removal of an occupied roost tree could result in injury, death or displacement of individuals. If individuals are roosting in the immediate vicinity of the Project area they may be disturbed by the noise or vibration generated by Proposed Action activities. This could result in temporary displacement of individuals. Impacts resulting from displacement would be greatest during the maternity and the winter roosting seasons.

If present, roosting bats may experience some noise disturbances during implementation. Mortality of bats occupying hollow trees or located behind loose bark will occur if animals are not flushed prior to prescribed fire implementation. It is expected that most bats would fly away prior to prescribed fire operations; this, however, may not be the case if fire operations occur prior to

young animals being able to fly. Daytime flying caused by disturbance could cause an increased rate of predation. Overall, impacts to pallid bats are expected to be localized and short-term but will be repeated with maintenance.

Indirect Effects

Buildings, caves, mine adits and cliff roosting habitat will not be modified or removed as a result of Proposed Action implementation. However, if roost trees are damaged or removed, this may result in displaced individuals and reduced roosting opportunities. There may be an increased risk of predation if individuals are displaced and unable to locate suitable alternate roosting habitat. Inadvertent removal of a small number of dead and dying trees through prescribed fire will reduce the amount of suitable roosting habitat within the Project area. However, there are abundant snags in the nearby areas that may provide alternate habitat. Additionally, prescribed burn treatments will modify foraging habitat. Shifts in the amount of vegetative cover will impact insect populations and foraging opportunities.

Determination

It is my determination that the Proposed Action may affect individuals, but is not likely to result in a trend toward federal listing or loss of viability for the pallid bat.

Fisher

Direct Effects

There is a very small risk of mortality of or injury to adult or juvenile fishers if dens are located in snags, logs, or debris piles when prescribed burns occur. Direct impacts do not seem very likely for adults since they would probably abandon the site prior to tree felling; direct losses would be more likely for young fisher kits with limited mobility. However, LOPs identified by the SSFCA are expected to eliminate the potential for death or injury of kits by avoidance of den areas until after kits leave the natal den.

The LOP is designed to limit disturbance that would interrupt breeding efforts. Because it is only during the denning season, restricted activities are allowed during the non-denning season. While individuals may be disturbed during non-denning, it is expected that they could and would temporarily move into nearby suitable habitat. It is important that there are portions of suitable habitat that are not being treated at any given time so that fishers have areas to forage free of disturbance.

Potential negative impacts to fisher from this Proposed Action include noise disturbance from chainsaws and presence of prescribed fire. If individuals are denning in the immediate vicinity of the Project area they may be disturbed by the noise or vibration generated by Proposed Action activities. The level of disturbance and potential to cause den abandonment may depend on the duration of activities in each area. Because some areas have several activities planned (e.g., understory thinning, pile burning, etc.), some sites may have activities spread out over a period of 2 to 3 years before all of the operations would be completed. It should also be noted that reentry into these areas will likely occur for maintenance operations every 5 to 10 years. It is important to complete fuels reduction efforts in as short a period as feasible especially within den site buffers. The LOP will limit the likelihood of disturbance to individuals during the denning season (March 1 through May 1).

Prey availability and distribution in fisher habitat is expected to be negatively affected in the understory burn areas. Such treatment activities may enhance habitat for some prey species by stimulating shrub growth and opening some of the stands. However, it is likely that future maintenance Proposed Actions similar to this one may lead to a long-term local decline in prey abundance for fishers. It is also possible that fisher prey species will flourish between maintenance treatments.

Indirect Effects

Indirect effects may include a temporary reduction in understory canopy cover, a loss of existing snags, and a loss of down woody debris. However, the prescribed fire activities would be expected to eventually contribute new snags and woody debris to the Project area. The Proposed Action will result in changes in horizontal and vertical structural components of the forested habitat as trees and brush are removed.

The Proposed Action is in the SSFCA, therefore essential habitat structures for fishers such as canopy cover and large trees must be maintained during Proposed Action activities. The treatments in fisher habitat are designed to retain habitat quality in terms of multi-storied stands, tree species diversity (including hardwoods), canopy closure, snags, and downed woody material.

Careful implementation planning and coordination, along with implementation of Best Management Practices, would help ensure that the impacts would be as low as feasible while implementing treatments.

Determination

It is my determination that the Proposed Action may affect individuals, but is not likely to result in a trend toward federal listing or loss of viability for the fisher.

Cumulative Effects of the Proposed Action

This section considers the effects of past, present and future actions that have the potential to combine with effects of the No Action Alternative on wildlife. The analysis areas considered for cumulative effects vary on a species by species basis and are based primarily on the known distribution of each species. For some species that rely on particular microhabitats or very discrete use areas the effects analysis area is relatively small. For other species that use much wider areas, including some of the wide-ranging species, cumulative effects are considered on a wider scale from smaller ranging species. Cumulative effects in these cases may occur on a population scale, having effects on population dynamics, or may have an effect on regional wildlife movement patterns.

Past, ongoing and current activities and their impacts to species and habitats are described in the “Baseline Condition” discussions for each species. “Past” is self-evident. “Ongoing” activities are recurring activities that have occurred over time and will continue to occur. “Current” activities are activities that are occurring currently but that will have a definite limit of action period. Past activities include construction of various roads and improved campgrounds, construction of power lines and other utilities, and other improvements such as residences or other structures. Present and ongoing activities include the effects of recreational uses, such as hunting and camping, road use, and trail use. There is also a hazard tree removal program that is ongoing along several roadsides within the Project area due to the recent drought and subsequent insect infestation, and the 2015 Rough Fire. Ongoing permitted actions (thus heavily controlled) include grazing and maintenance of powerlines and other utilities. Current activities include the removal of hazard trees along roadsides and within recreation sites.

Planned future projects include those planned to occur within the next ten years, depending on availability of funding and the approval process. These activities include the Eshom Fuelbreak Maintenance Project, removal of hazard trees resulting from drought and the 2015 Rough Fire, and prescribed burning within Sequoia and Kings Canyon National Parks located adjacent to the northern and eastern boundary of the Project. Other ongoing activities are expected to occur within the vicinity of the Project area in the foreseeable future, including recreation associated with Eshom Campground, grazing, and power line use and maintenance.

The effects of these various activities vary in impact level based on the type of activity, the timeframe of each activity and the wildlife species being considered. Some of the activities are more passive uses, such as trail use and road use, while other activities are highly limited in extent and impact due to being governed by permitted use levels and practices for each activity. Due to their ongoing status, the wildlife resources of the forest would be expected to have adapted to these uses.

With the No Action Alternative, the current conditions would not change and the area would be

subjected to a potentially uncontrolled, high-intensity wildfire. This would also contribute toward deforestation and loss of mature trees and forest habitat. In combination with the reasonably foreseeable projects and ongoing activities, habitat supporting wildlife, including the sensitive species discussed in this document, could be permanently affected and may result in population shifts or local loss of wildlife due to habitat loss and/or degradation.

The analysis of cumulative effects of the Proposed Action and other ongoing, current, and future actions vary for each species and the level or effect on them directly or on their habitats engendered by additional actions. The effects depend on the time lag between these actions. The longer the time lag between fuel removal actions, the more the habitat affected by the Proposed Action is expected to grow back and become more viable for wildlife.

The analysis of cumulative effects varies for each species and the level or effect on them directly or on their habitats engendered by additional actions. Some species, whose habitats are very specific or smaller in extent, may be affected by habitat alteration directly whereas some species may be unaffected in terms of effects to movement corridors and population dynamics. The former may be the case for the fisher. The latter is likely the case for the larger raptor species such as the northern goshawk or California spotted owls.

Ongoing activities recurring within the Project area include recreation associated with Eshom Campground (hunting, camping, and road and trail use), grazing, and power line use and maintenance. These cumulative effects have altered the present landscape to various degrees in the past. If the intensity of these activities continues at a similar pace as has been witnessed in the past, then the effects on existing populations due to those activities is expected to remain uniform.

Projects expected to occur in the vicinity include hazard tree removal from roadways and recreation sites within the boundaries of the 2015 Rough Fire, the Eshom Fuelbreak Maintenance Project, and small prescribed burning projects near the northern and eastern boundary of the Project within Sequoia and Kings Canyon National Parks. Activities included in these projects are similar to those in the Proposed Action: tree and brush removal, piling and burning vegetation, fuelbreak maintenance activities, and prescribed burning. Planned future activities may further exacerbate the suppression of wildlife local to the areas, if the affected areas overlap with current impact areas. These effects will be analyzed for each of those individual planned projects during their respective approval processes, based on conditions at the time. It is also anticipated that these future activities will utilize similar BMPs as for the Proposed Action to reduce, avoid and minimize localized effects on wildlife species.

The future fuel management activities would likely increase some of the existing effects, at least in the short term, if the activities were conducted in the same timeframe as those for the Proposed Action. Changes in shrub density and canopy cover resulting from the activities are expected to be small and limited when compared to the amount of habitat present within the entire forest. Effects would primarily be anticipated due to the reduction of understory vegetation and increase openings in the canopy created by prescribed fires. The number of large snags available to the goshawk, owls, fisher, bats, and other species as a result of past, present, and reasonably-foreseeable actions combined with the Proposed Action may reduce in the short term due to prescribed burning and hazard tree removal activities; however, large trees and snags available to these species for denning, nesting, and resting habitat will not reduce in number in the long term. Minimal adverse cumulative effects are expected for the Proposed Action.

Regional wildlife movement may be affected by a combination of the Proposed Action and future fuelbreak maintenance activities by cumulative reduction in habitat connectivity. These effects are expected to be most acute at the local scale, along ridgelines and within valley floors. These areas are primary localized movement corridors. However, at the sub-watershed scale, there is expected to be little or no loss of connectivity due to the abundance of alternative geographic features that could be used for regional movement but that are not being proposed for fuel maintenance activities. Minimal adverse cumulative effects are expected for the Proposed Action.

The current hazard tree removal project was analyzed for cumulative effects during its approval process and is expected to be completed prior to implementation of the Proposed Action. Due to its location primarily within and near developed areas, where wildlife populations are expected to be somewhat suppressed already, cumulative effects due to the Proposed Action in these areas is not expected.

These cumulative effects have altered the present landscape to various degrees in the past. If the intensity of these activities continues at a similar pace as has been witnessed in the past, then the effects on existing populations due to those activities is expected to remain uniform, regardless of implementation of the Proposed Action. No new effect is anticipated.

VII. DETERMINATION

Determination For Threatened and Endangered Species

It is my determination that the Big Stump/Redwood Mountain Fuels Restoration Project would have no effect on threatened, endangered or proposed wildlife species.

Determination For Sensitive Species

It is my determination that the Big Stump/Redwood Mountain Fuels Restoration Project may affect individuals, but is not likely to result in a trend toward federal listing or loss of viability for the following Forest Service Sensitive species: northern goshawk, great gray owl, California spotted owl, pallid bat, and fisher.

Other wildlife species listed on the Sequoia National Forest as Forest Service Sensitive Species do not have habitat within the Project area, or do not occur in the vicinity of the Project area, and therefore will not be affected by the Proposed Action.

VIII. REFERENCES

- California Department of Fish and Wildlife (CDFW). 2018. California Natural Diversity Database (CNDDDB). Rarefind 5. Online: <http://www.dfg.ca.gov/whdab/html/cnddb.html>
- Hayward, G. D. and J. Verner, tech. editors. 1994. Flammulated, boreal, and great gray owls in the United States: A technical conservation assessment. Gen. Tech. Rep. RM-253. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 214 p. 3 Maps.
- USDA Forest Service. 2006. Species accounts of animals on Southern California national forests. 1439 p. Available at: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprd3832681.pdf

- USDA Forest Service. 2012. Giant Sequoia National Monument FEIS and Management Plan. Vallejo, California.
- USDA Forest Service. 2018. Environmental Assessment for the Big Stump/Redwood Mountain Fuel Restoration Project.
- United States Fish and Wildlife Service (USFWS). 2016. Final Species Report, Fisher (*Pekania pennanti*), West Coast Population. March 2016. Available from: <https://www.fws.gov/klamathfallsfwo/news/Fisher/Final/SpeciesRpt-FisherFinal-20160331.pdf>
- USFWS. 2017. USFWS Resource Report List. Information for Planning and Conservation. Internet website: <http://ecos.fws.gov/ipac/>. Accessed December 15, 2017.
- Shuford, W. D., and Gardali, T., editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.
- Spencer, W.D., S.C. Sawyer, H.L. Romsos, W.J. Zielinski, C.M. Thompson, and S.A. Britting. 2016. Southern Sierra Nevada fisher conservation strategy. Version 1.0. Unpublished report produced by Conservation Biology Institute.
- Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White (eds). 1988. California's Wildlife, Volume I, Amphibians and Reptiles. California Statewide Wildlife Habitat Relationships System. California Department of Fish and Wildlife, Sacramento, California.
- Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White (eds). 1990a. California's Wildlife, Volume II, Birds. California Statewide Wildlife Habitat Relationships System. California Department of Fish and Wildlife, Sacramento, California.
- Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White (eds). 1990b. California's Wildlife, Volume III, Mammals. California Statewide Wildlife Habitat Relationships System. California Department of Fish and Wildlife, Sacramento, California.

APPENDIX A

SPECIAL STATUS WILDLIFE SPECIES

Common Name (<i>Scientific Name</i>)	Status	Habitat Requirements	Occurrence in Project Area	Effects Determination	Rationale
Terrestrial Invertebrates					
Western bumble bee (<i>Bombus occidentalis</i>)	FSS	Occurs throughout the northwestern United States. Generalist pollinators that occur in a wide variety of habitat types.	P	No effect	Areas of suitable habitat are present but only historic species occurrence records occur in the vicinity of the Project analysis area.
Tehachapi fritillary butterfly (<i>Speyeria egleis tehachapina</i>)	FSS	Occurs in yellow pine forests in Kern County in the Tehachapi and Piute Mountains at around 7,000 and 8,400 feet above mean sea level (msl). Host plant may include pine violet (<i>Viola pinetorum ssp.pinetorum</i>).	N	No effect	Project analysis area is located outside of the narrow range for this species.
Fishes					
Delta smelt (<i>Hypomesus transpacificus</i>)	FT, SE	Occurs in central California in Sacramento-San Joaquin Delta in shallow low-salinity areas of the San Francisco Estuary and open waters of bays, tidal rivers, channels, and sloughs.	N	No effect	Project analysis area is located outside of the narrow range for this species. Project will not impact habitat for this species in the San Francisco Estuary.
Kern Brook lamprey (<i>Lampetra hubbsi</i>)	FSS, SSC	Endemic to the eastern San Joaquin Valley. Occurs in cool freshwater habitats in large rivers in the foothills in silty backwaters with slight flow and sandy or gravelly substrates. Elevations below 1000'	N	No effect	Project area is above the elevation range of this species.
Hardhead (<i>Mylopharodon</i>)	FSS, SSC	Occur in undisturbed large streams at low to mid elevations with clear	P	No effect	Habitat quality for this species would be

<i>conocephalus)</i>		waters, slow velocities, and substrates including boulders, gravel, and sand. Range includes the Sacramento River, Kern River, Pit River, and San Joaquin River.			unaffected by the proposed action.
California golden trout (<i>Oncorhynchus mykiss aguabonita</i>)	FSS, SSC	Range includes the Southern Sierra Nevada in the upper reaches and tributaries of the South Fork of the Kern River and in Golden Trout Creek. Found in clear mountain streams with cool temperatures.	P	No effect	Project will not impact habitat for this species in the Kern River.
Kern River rainbow trout (<i>Oncorhynchus mykiss gilberti</i>)	FSS, SSC	Endemic to the Kern River. Range currently limited to the Kern River from Durrwood Creek upstream to Junction Meadow. Found in benthic habitats in clear cold mountain streams that are moderate to large.	P	No effect	Project will not impact habitat for this species in the Kern River.
Amphibians					
Fairview slender salamander (<i>Batrachoseps bramei</i>)	FSS	Occurs in a small range only within the Upper Kern River Canyon and along the west side of Lake Isabella. Burrows in soil or on fallen logs or debris in shrubland, woodland, and riparian habitats.	N	No effect	Project analysis area is located outside of the narrow range for this species.
Kings River slender salamander (<i>Batrachoseps regius</i>)	FSS	Occurs in a small range only along the Kings River in Fresno County and the Kaweah River in Tulare County. Found in shaded forest and chaparral habitats under rock, logs, and leaf litter.	L	May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability.	
relictual slender salamander (<i>Batrachoseps relictus</i>)	FSS, SSC	Occurs only in to known populations in a small range near Brekenridge Mountain. Occurs in	N	No effect	Project analysis area is located outside of the narrow range for this

		pine-fir forests and are closely associated with water. Often occur within moist logs.			species.
Kern Canyon slender salamander (<i>Batrachoseps simatus</i>)	FSS, ST	Range is limited to the lower Kern River Canyon and Erskine Creek Canyon in Kern County. Found along stream courses under fallen logs/debris.	N	No effect	Project analysis area is located outside of the narrow range for this species.
Yellow-blotched slender salamander (<i>Ensatina eschscholtzii croceater</i>)	FSS	Range is limited to Kern River Canyon, Paiute Mountains, Breckenridge Mountain and the Tehachapi mountains. Occurs under rocks, logs, and debris in evergreen and deciduous forests with woody debris on forest floor.	N	No effect	Project analysis area is located outside of the narrow range for this species.
foothill yellow-legged frog (<i>Rana boylei</i>)	FSS, SSC, SCT	Occurs in the coast ranges from Oregon to the San Gabriel Mountains. Found in rocky streams and rivers with open banks in forest, woodland and chaparral habitats.	P	No effect	Areas of potential habitat are present but only historic species occurrence records occur in the Project analysis area.
California red-legged frog (<i>Rana draytonii</i>)	FT, SSC	Found near water features such as ponds or streams in humid forests, grasslands, coastal scrub, and woodlands. Historic range occurs from Mendocino County south to northern Baja California.	P	No effect	Areas of potential habitat are present but no species occurrence records occur in the Project analysis area.
mountain yellow-legged frog (<i>Rana muscosa</i>)	FE, SE, FSS	Ponds, streams, lakes, and isolated pools in southern Sierra Nevada Mountains and rocky streams within narrow canyons and the chaparral belt in Southern California mountains below 6,000 feet. Isolated populations occur on Breckenridge Mountain and in the	P	No effect	Areas of potential habitat are present but only historic species occurrence records occur in the Project analysis area. No extant populations on the Hume Lake Ranger

		Sierra Nevada in Tulare, Inyo and Fresno counties.			District.
Reptiles					
western pond turtle (<i>Actinemyss marmorata</i>)	FSS, SSC	Ponds, lakes, rivers, streams, marshes, and other water sources with rocky or muddy substrate below 5,000 feet. Basks on logs, rocks, and exposed banks. Occurs from western Washington state south to northwestern Baja California.	P	No effect	Areas of suitable habitat are present but only historic species occurrence records occur in the vicinity of the Project analysis area.
California legless lizard (<i>Anniella pulchra</i>)	FSS, SSC	Range extends from northern Contra Costa County south to Ventura County along the San Joaquin River. Also occurs in parts of the Sierra Nevada, Tehachapi, and San Gabriel Mountains. Occurs in moist habitats with warm loose soil and sparse vegetation including chaparral, woodlands, scrub, and dune habitats.	P	No effect	Project area is outside of known range for this species.
Birds					
Northern goshawk (<i>Accipiter gentilis</i>)	FSS, SSC	Mixed, conifer, or hardwood woodlands and forests. Nests in mature and old-growth forests often near a canopy opening.	Y, B	May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability.	
Western yellow-billed cuckoo (<i>Coccyzus americanus occidentalis</i>)	FT, SE, FSS	Open deciduous riparian woodland habitat, near water, especially with dense willow and cottonwood understory.	U	No effect	No willow or cottonwood riparian habitat is present. Project will not affect suitable habitat. No previous detections of this species within the

					project area.
Willow flycatcher (<i>Empidonax traillii</i>)	FSS, SE	Dense thickets of willow, alder and other deciduous trees and shrubs are essential habitat elements. Often found near water. Commonly found along streams near mountain meadows.	U	No effect	Project will not affect suitable habitat. No previous detections of this species within the project area.
California condor (<i>Gymnogyps californianus</i>)	FE, SE	Occurs in low to moderate elevation mountainous country with cliff sides for nesting and rocky, brushy habitats with steep slopes. Foraging habitats include grasslands, oak savannas, and canyons.	P	No effect	Project will not affect suitable habitat.
bald eagle (<i>Haliaeetus leucocephalus</i>)	FSS, SE	Forested areas, and sometimes dry open uplands, along the coast or near large open bodies of water including lakes. Nests in tall trees or on cliffs or pinnacles near open water.	P, B	No effect	Project will not affect suitable habitat.
great gray owl (<i>Strix nebulosa</i>)	FSS, SE	Occurs in dense forested habitat with coniferous and hardwood trees including pine, spruce, poplar, and birch. Often forages in wet meadows. Nests atop large broken tree tops, often in old bird nests of other species. Occurs between 2,500 and 9,000 feet above msl.	L	May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability. The effects are long-term and beneficial.	
California spotted owl (<i>Strix occidentalis occidentalis</i>)	FSS, SSC	Occurs in dense evergreen forest with multiple layers. Nests in broken tree tops, tree cavities, and on cliff ledges. Prefers habitats with dead woody debris.	P	May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability. The effects are long-term	

				and beneficial.	
Mammals					
pallid bat (<i>Antrozous pallidus</i>)	FSS, SSC	Roosts in rock crevices, caves, mines, buildings, bridges, and in trees. Generally in mountainous areas, lowland desert scrub, arid grasslands near water and rocky outcrops, and open woodlands.	P	May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability.	Presumably forages near the project area. No known maternity roosts on the Hume Lake District. Potential roost trees (snags) may be felled.
Townsend's big-eared bat (<i>Corynorhinus townsendii</i>)	FSS, SSC	Pine forests and arid desert scrub. Roosts in mines, caves, buildings, or other crevices. Most common in moist areas or those with access to water.	L	No effect	No known roost sites near the project area. Species and habitat not impacted by the proposed action.
North American wolverine (<i>Gulo gulo luscus</i>)	FPT, ST, FSS	Occurs in alpine habitats in conifer forests and woodlands, grasslands, tundra, and shrubland habitats. Native population in California apparently extirpated although a single male individual was observed in 2008-2010. Occurs between 4,000 and 13,000 feet above msl.	P	No effect	Project will not affect suitable habitat. No confirmed presence on the Hume Lake District in 50+ years.
Pacific marten (<i>Martes caurina</i>)	FSS	Associated with dense forest habitats in mixed or coniferous upland and lowland forests. Often found in old-growth forests.	L	No effect	Project area outside of the expected elevation range of this species.
Fisher (<i>Pekania pennanti</i>)	FSS, SCT, SSC	Associated with upland and lowland coniferous and mixed forests with dense cover. Generally avoid human disturbance area and prefer large continuous areas of undisturbed forest. Occur only in mid to low elevations with dense large trees.	Y	May affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability.	

fringed myotis (<i>Myotis thysanodes</i>)	FSS	Roosts in cliff faces, rock crevices, mines, caves, tree snags, and in man-made structures. Most common at mid elevations in deserts, riparian areas, woodlands, and grasslands.	P	No effect	Species and habitat not impacted by the proposed action.
FE = Federally Listed Endangered FT = Federally Listed Threatened FPT = Federally Proposed Threatened FSS = USFS Sensitive SE = State Listed Endangered ST = State Listed Threatened SCT = State Candidate Threatened SSC = California Species of Special Concern		<u>*Occurrence Information:</u> N = Outside known distribution/range of the species. U = Occurrence of the species is unlikely based on habitat present. P = Occurrence of the species is possible; suitable habitat exists. L = Occurrence of the species is likely; suitable habitat exists and the species is known for nearby locations. Y = Species is known to occur. H = Part of the historical range but the species has been extirpated. B = Species is known or likely to nest in the area. M = The species uses the area during migration as a stopover.			

APPENDIX B

MITIGATION MEASURES AND BEST MANAGEMENT PRACTICES

Based on law, regulation and policy, and in response to public comments on the proposal, the proposed action includes Best Management Practices or mitigation measures to reduce the potential for negative effects on wildlife from implementing the action alternative.

2012 Giant Sequoia National Monument Final Environmental Impact Statement and Monument Management Plan (USDA Forest Service 2012) – The Project area is within the Giant Sequoia National Monument and subject to the 2012 Management Plan. Applicable standards and guidelines (S&Gs) for the management of Wildlife Habitats in the 2012 Monument Plan are found on pages 90 to 93 of the Monument Plan:

- When activities are planned within or adjacent to a protected activity center (PAC) and the location of the nest site or activity center is uncertain, conduct surveys to establish or confirm the location of the nest or activity center. (p. 90, S&G #16).
- Maintain a limited operating period (LOP), prohibiting activities within approximately ¼ mile of the nest site during the breeding season (March 1 through August 15) unless surveys confirm that California spotted owls are not nesting (p. 90, S&G #18). The LOP may be waived, where necessary, to allow for early season prescribed burning in up to 5 percent of the California spotted owl PACs on a national forest per year (p. 90, S&G #20)
- Maintain a LOP, prohibiting activities within approximately ¼ mile of the nest site during the breeding season (February 15 through September 15) unless surveys confirm that northern goshawks are not nesting. (p. 92, S&G #35). The LOP may be waived, where necessary, to allow for early season prescribed burning in up to 5 percent of the northern goshawk PACs on a national forest per year (p. 92, S&G #37)
- Apply a LOP, prohibiting vegetation management activities and road construction within ¼ mile of active great gray owl nest stands during the nesting period (typically March 1 to August 15). (p. 92, S&G #42).
- Prior to vegetation treatments, identify important wildlife structures, such as large diameter snags and coarse woody material within the treatment unit. For prescribed fire treatments, use firing patterns, fire lines around snags and large logs, and other techniques to minimize effects on snags and large logs. Evaluate the effectiveness of these mitigation measures after treatment. (p. 93, S&G #48).
- Protect fisher den site buffers from disturbance with a LOP from March 1 through June 30 for all new Proposed Actions as long as habitat remains suitable or until another regionally approved management strategy is implemented. (p. 93, S&G #50).

Southern Sierra Nevada Fisher Conservation Strategy (Spencer et al. 2016) - The Project site is also located within the Southern Sierra Fisher Conservation Area (SSFCA) which has specific guidelines for managing projects in fisher habitats. The Southern Sierra Nevada Fisher Conservation Strategy recommends the following LOPs in fisher habitat (Table 7, p.60):

- Maintain a LOP of March 1 to May 1 restricting prescribed fire (unless carefully designed to minimize potential harm to fishers, including smoke accumulation in denning habitat)
- Maintain a LOP of March 15 to May 1 for burning large slash or woody debris piles (>0.1 acre), piles adjacent to possible den structures, or in situations where simultaneous lighting would create intense smoke; also for hand thinning within natural stands with California Wildlife Habitat Relationships diameter class 12 in or greater.