



Summit Healthy Forest Project

United States
Department of
Agriculture

Biological Evaluation (Forest Service Sensitive Animals) Biological Assessment (Fish & Wildlife Service listed Animals)

Forest
Service

Kern River Ranger District, Sequoia National Forest, Kern County, California
Township 25 South, Range 32 East, Mount Diablo Base and Meridian (MDB&M)

July 2016



SUMMARY:

This report documents analysis of effects associated with thinning of green trees and removal of dead and dying trees that may contribute to further mortality associated with drought, insect activity, disease and potential wildfire effects that could adversely affect resilience and sustainability of forest stands on 1,100 acres, including salvage of dead, dying and diseased trees and removal of hazard trees on approximately 238 acres, near Alta Sierra, Kern County, California.

Based on timing, habitat disturbed and other factors, the project would have no effect on species listed for protection under the Endangered Species Act of 1973 (ESA) and would be not likely to result in trends that may lead to federal listing (for protection under the ESA) or loss of viability for Forest Service designated sensitive species (see summary table below for species addressed).

Table 1. Summary of Species at Risk Addressed in Document

Species Status* Scientific name	Determination
California condor ^{FE,CH} <i>Gymnogyps californianus</i>	No effect on species or critical habitat.
Mtn. yellow-legged frog ^{FT} (Northern DPS) <i>Rana muscosa</i>	No effect.
CA red-legged frog ^{FT} <i>Rana aurora draytonii</i>	No effect.
Delta smelt ^{FT} <i>Hypomesus transpacificus</i>	No effect.
Northern goshawk ^{FS} <i>Accipiter gentilis</i>	Not likely to result in a trend toward Federal listing or loss of species viability.
California spotted owl ^{FS} <i>Strix occidentalis occidentalis</i>	Not likely to result in a trend toward Federal listing or loss of species viability.
Pallid bat ^{FS,SC} <i>Antrozous pallidus</i>	Not likely to result in a trend toward Federal listing or loss of species viability.
Townsend's big-eared bat ^{FS, SC} <i>Corynorhinus townsendii</i>	Not likely to result in a trend toward Federal listing or loss of species viability.
Pacific Fisher ^{FS} <i>Pekania pennanti (Martes pennanti pacifica)</i>	Not likely to cause a trend toward Federal listing or loss of species viability.
Fringed myotis ^{FS, SC} <i>Myotis thysanodes</i>	Not likely to result in a trend toward Federal listing or loss of species viability.
Relictual (Greenhorn Mtn.) slender salamander ^L <i>Batrachoseps relictus (B. altasierrae)</i>	Not likely to result in a trend toward Federal listing or loss of species viability.

*Status: FS - FS Sensitive Species
FP - Federal Proposed

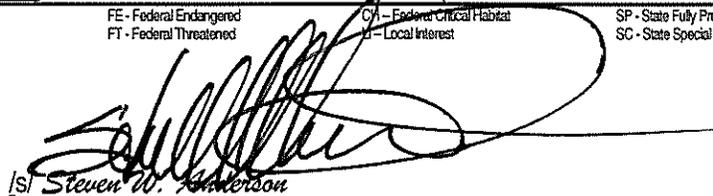
FE - Federal Endangered
FT - Federal Threatened

CH - Federal Critical Habitat
L - Local Interest

SP - State Fully Protected
SC - State Special Concern

ST - State Threatened
SE - State Endangered

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07/22/2016

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INTRODUCTION

This report meets the requirements of a biological assessment (BA) for species protected under the Endangered Species Act of 1973 (ESA) and a biological evaluation (BE) for species listed as sensitive by the Regional Forester, Pacific Southwest Region, Forest Service. Table 1 (cover page) summarizes species at risk listed for protection under the ESA (Threatened, Endangered and species proposed for listing (TEP)) and Forest Service sensitive species (S) that may be affected by the proposed action. A full list of identified species at risk (TEPS) that may be found within or indirectly affected by actions within the Sequoia National Forest is provided in Appendix A with the rationale for whether or not to include analysis for the species in this document.

This report is prepared in accordance with legal requirements set forth under Section 7 of the Endangered Species Act (19 U.S.C. 1536 c) and follows the standards established in Forest Service Manual direction (FSM 2672.42) (USDA-FS, 2011).

CONSULTATION TO DATE

An official species list of proposed, endangered, and threatened species (listed species) and designated critical habitats which may occur in or be affected by actions within the project area was requested through the USDI, Fish and Wildlife Service (USFWS), IPAC web site (<http://ecos.fws.gov/ipac/project/T72DW-WOGG5-EENE5-52KHJ-JKK3QQ/overview>) and updated on June 6, 2016. Four listed species were identified as potentially affected by this project and were included for effects analysis. The USFWS was contacted as part of scoping for the project and responded (reference: 08ESMF00-20160TA-0679). Conferencing for the fisher, as proposed for listing, was terminated when the USFWS determined that listing of the fisher was not warranted at this point in time (<https://www.gpo.gov/fdsys/pkg/FR-2016-04-18/pdf/2016-08288.pdf>). A determination of no effect was made for the California red-legged frog, mountain yellow-legged frog, delta smelt and California condor.

CURRENT MANAGEMENT DIRECTION

This project is consistent with the Sequoia National Forest (SQF) *Land and Resource Management Plan* (LRMP) (USDA-FS 1988) as amended by the *Sierra Nevada Forest Plan Amendment* (SNFPA) *Supplemental Environmental Impact Statement and Record of Decision* (USDA-FS 2004) and consistent with the action items identified in the *Mediated Settlement Agreement* (MSA) to the SQF LRMP (USDA-FS 1990).

DESCRIPTION OF THE PROPOSED PROJECT

Thinning would remove overstocked green trees up to 30 inches DBH, as well as salvage dead or dying trees, to achieve desired conditions as described in the FLRMP as amended within the units identified on the attached map. The proposed action would also remove trees of any size which are creating hazards to recreation residences, private homes, power lines, roads and other infrastructure, as defined by "*Hazard Tree Guidelines For Forest Service Facilities and Roads in the Pacific Southwest Region*" (USFS 2012).

Thinning would emphasize retention of large trees, while promoting stands that are resilient to insects and disease. Diseased or insect damaged "cull" trees may be sold as firewood. Mechanized equipment may be used on slopes less than 35 percent, including commercial timber harvest, to achieve desired conditions. A borax-based fungicide will be applied to cut trees to prevent the spread of annosus root disease.

The proposed action would also authorize fuels reduction in the project area including felling of small (<10 inches dbh, chipping, piling or prescribed burning to achieve desired conditions. Burning would occur during periods approved by the air pollution control district to maximize dispersion of smoke and minimize effects on local residents, especially when compared to wildfire effects. Re-planting of native tree species, including rust-resistant sugar pines, may occur in some areas following thinning and fuels reduction.

Table 2: Proposed Action

Treatment Type /Units	Unit Type				Grand Total
	Plantation	Roadside	Salvage Only	WUI Thin.	
Sapling to Small tree, Plantations: mechanical or hand thinning, Pile burn Units: 71, 72, 73	9				9
Primarily roadside: Hand Treatment Endline (steeper slopes) Units: 15, 62, 83, 84		122		75	197
WUI and Roadside: Mechanical or hand thinning, Ground based skidding Units: 14, 19, 21, 28, 30, 31, 33, 81, 82		61		138	199
Mechanical or hand thinning, Ground based skidding Units: 1, 5, 6, 8, 9, 12, 14,			88	432	520
Plantations: Mechanical or hand thinning, Ground based skidding Units: 50, 51, 74, 75, 76	16				16
Mechanical or Hand thinning, Ground based skidding Units: 13, 16, 26, 27, 29, 32			34	57	91
Grand Total	25	183	122	702	1,032

*Standard prescription all units: Cut, remove dead trees. Thin trees < 10" dbh to 20 SqFt BA/Ac. Pile and burn slash.

EXISTING ENVIRONMENT AND EFFECTS

GENERAL DISCUSSION

The project area is comprised of 1,100 acres of Sierran mixed-conifer forest with white fir, incense cedar, Jeffrey pine, ponderosa pine, and sugar pine, with some black oak, live oak and foothill pine. The current vegetation layer is based on 2002 aerial imagery. Drought, insect and disease based mortality during the extended and extreme drought conditions from 2010 to 2016 resulted in observed mortality of an average of 5-10 trees/acre each year, with a peak of 10-15 trees per acre in 2015. This likely reduced canopy cover or density by one class in the California Wildlife Habitats Relationship program classification indicated below. Stand exams were completed in late 2014 and early 2015 to reclassify the stands. Additional supplemental stand exams were completed in early 2016 to address the significant tree mortality that occurred after the initial stand exams were completed. The effects of drought and projected mortality are modeled through the Forest Vegetation Simulator (FVS) outputs.

SPECIES ACCOUNTS

Species accounts are summarized here with specific intent to focus on location or habitat preferences that may be affected by the proposed action. Greater detail is available on biology, range wide distribution and cumulative effects for these species in the Sierra Nevada Forest Plan Amendment (USDA-FS, 2001) (SNFPA) (the 2001 plan amendment is used in this context for reference rather than direction. Direction is provided by the Record of Decision for the 2004 SNFPA supplemental EIS) FEIS volume 3 and the associated supplemental EIS and specialists' reports. Information in this section uses the California Wildlife Habitat Relationships (CWHR) program (CDFW 2007) (online program accessed 6/3/2016), California Natural Diversity Database (CNDDDB) (RAREFIND) (CDFW 2014) (online program, accessed 6/3/2016), species accounts available from the USDI Fish and Wildlife Service (online accounts updated 6/3/2016), recent published literature and local survey or knowledge to provide a summary of species accounts.

FEDERALLY PROTECTED (LISTED) SPECIES

California condor (*Gymnogyps californianus*)

California condor are known to forage in the general vicinity of the southern San Joaquin Valley and occasionally roost in the Greenhorn Mountains north and west of the project or south in the Breckenridge Mountains. The proposed actions would not affect any known historic roosting or foraging areas. The project area is generally too dense and does not provide access to the thermal currents that are typical of roost areas, or the open grassland and woodland conditions of foraging habitat for this species. No designated critical habitat will be affected by the project.

Determination of effects: The proposed action will have **no effect** on California condors or their designated critical habitat.

Rationale for effects determination: Condors are actively monitored on a daily basis. Maps of Global Positioning System (GPS) points for condor roost and overflight locations are delivered to the District with a 24 hour time lag. Condors pass to the west of the project area on an infrequent basis with occasional roost several miles to the north west of the project or west of the Forest Boundary. The project area does not fit the conditions typically used for roost sites (open canopy (> 40% canopy cover) upper ridgelines with easy access adjacent to the valley floor). There are no historic condor roosts or foraging sites in or near the proposed project. The Basket Peak, historic roost sites are several miles to the west of the project and the historic roosts in Cedar and Alder Creeks are

several miles north. Designated critical habitat is over 10 miles north and west of the project on private property. Designated critical habitat on National Forest System (NFS) Lands is over 30 miles north and west of the proposed project.

Mountain yellow-legged frog (MYLF) (*Rana muscosa*)

The known and historic range of the northern distinct population segment (NDPS) of mountain yellow-legged frog (MYLF), as identified in the conservation assessment for the species, (Brown et al. 2014) is north of the Kern-Tulare County line with the exception of an isolated and extirpated population in the Breckenridge Mountains and populations south of Kern County.

Determination of effects: The proposed action will have **no effect** on MYLF or its designated critical habitat.

Rationale for effects determination: The best available information places the project area as outside the range of the species.

California red-legged frog (CRLF) (*Rana aurora draytonii*)

The known and historic range of the California red-legged frog (CRLF) is lower elevation, low gradient streams without the high flushing spring flows found in the steep mountain streams within the project area.

Determination of effects: The proposed action will have **no effect** on CRLF or its designated critical habitat.

Rationale for effects determination: The best available information places the project area as outside the range of the species.

Delta smelt (*Hypomesus transpacificus*)

The Delta smelt is small fish, endemic to the Sacramento-San Joaquin Delta in San Francisco Bay. Since the Kern River, historically, only connected to the San Joaquin River on an infrequent basis and no longer has even an infrequent connection, there is no possible effect of the project on the Delta smelt.

Determination of effects: The proposed action will have **no effect** on Delta smelt or its designated critical habitat.

Rationale for effects determination: The best available information places the project area as outside the range of the species.

FOREST SERVICE SENSITIVE SPECIES (INCLUDING FEDERAL CANDIDATES)

Mature, Dense-canopied Forest Group

The Pacific fisher, California spotted owl and northern goshawk occupy similar habitats and have similar responses to disturbance, these species and their habitats are grouped for purposes of consistency and reduction of repetitive analysis. There is a species account for each species but the effects sections for these species are combined into one analysis. Effects on fisher are addressed in summary in this document. Due to the potential sensitivity and complexity of analysis for fisher, a separate, more detailed document has been prepared to address analysis of impacts on fisher (Lang 2016) which is incorporated by reference in this document. Sierra marten, Sierra Nevada red fox, great gray owl and wolverine use similar habitats and would have similar effects. These species are not addressed in detail because systematic surveys in the area since 2002 and irregular surveys since 1991, have not detected the presence of these species in or near the project area. The area has some historic, anecdotal sighting records of marten and wolverine in the Greenhorn Range but there have been no sightings in the last 20 years in or adjacent to the project and no consistent or regular sightings that would indicate occupancy historically (except for marten found at higher elevation and 15 -20 miles further north). There are no historical sightings of red fox or great gray owl in the vicinity of the project area.

California spotted owl (CSO) (*Strix occidentalis occidentalis*)

Status and Distribution

The California spotted owl (CSO) occurs only in California on the western slope of the Sierra Nevada and very locally on the eastern slope. Its range extends 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. Isolated populations also occur in the Santa Cruz Mountains and Santa Lucia Mountains. The Sierra Nevada Forest Plan Amendment (SNFPA) (USDA Forest Service, 2001 and supplement 2004) described trends in habitat and population for the CSO. This information was updated and new information summarized in the 2006, 12 month finding on the CSO by the US Fish and Wildlife Service (USFWS) (USDI-FWS 2006) and in the 2010 Sierra Nevada forest Management Indicator Species Monitoring Report (USDA-Forest Service 2010).

The USFWS has conducted several status reviews of the CSO in response to listing petitions (published 12 month findings: (USDI-FWS 2003, USDI-FWS 2006). The latest finding dated May 15, 2006, incorporated the results from the most recent meta-analysis on population dynamics of the CSO (Franklin, Guttierrez, et al. 2003), the best-published and unpublished; scientific and commercial information; as well as information submitted to them during the public comment periods. Based on this review, the USFWS found that the listing of the California spotted owl was not warranted at that time.

The USFWS concluded that “impacts from fires, fuels treatments, timber harvest, and other activities are not at a scale, magnitude, or intensity that warrants listing, and that the overall magnitude of threats to the CSO do not rise to the level that requires the protections of the Act” (USDI-FWS 2006).

The most recent estimate of population size for CSO in the Sierra Nevada reported 1,865 owl sites, with 1399 sites on National Forest System (NFS) Lands, 129 owl sites on National Park System (NPS) lands, 314 sites on private lands, 14 sites on public lands managed by the Bureau of Land Management, eight on State of California lands, and one on Native American lands (U.S. Fish and Wildlife Service 2006).

More recent demographic monitoring from four study areas from 1990-2011 provides the sole source of empirical data on the status of and trends in California spotted owl populations in the Sierra Nevada. Three of the demographics studies are conducted on NFS Lands (Lassen (LAS), Eldorado (ELD) and Sierra (SIE) national forests), and the fourth study is located on NPS lands (Sequoia-Kings Canyon National Park (SKC)). Two meta-analysis workshops have been conducted to analyze CSO demographics and population trends across the four studies (Franklin et al. 2004, Blakesley et al. 2010). Blakesley et al. (2010) analyzed demographic data for the period 1990-2005 and estimated that the mean finite rate of population change (λ) for each study area was 0.973 for the LAS (95 percent CI = 0.946-1.001), 1.007 for the ELD (95 percent CI = 0.952-1.066), 0.992 for the SIE (95 percent CI = 0.966-1.018), and 1.006 for the SKC (95 percent CI = 0.946-1.001). Ongoing research of recent population trends indicates increasing evidence for population declines on the three studies on National Forest Service lands and a stable/increasing population on the NPS study area, and it is providing new approaches for evaluating spotted owl population trends and interpreting the probability of population declines (Conner et al., in review; Tempel and Gutiérrez, in review). The factors driving these population trends are not known (excerpted from Keane 2013 IN: Long et al. 2013). Similar information was provided in public comment.

From 1970-1991 the total CSO territories estimated for Sequoia National Forest based on the California Department of Fish and Game database was 127 (Verner et al. 1992). This number increased to 133 sites based on additional surveys as presented in SNFPA (USDA Forest Service, 2001). Currently, the Sequoia National Forest has 126 identified spotted owl territories. The differences between the 2001 reference and the current assessment are a result of several wildfires, most notably the McNally and Manter fires of 2002 and 2000 respectively, which appear to have eliminated several owl territories.

There are five spotted owl territories in the project analysis area with one spotted owl territory with confirmed young in 2016. The identified spotted owl territories in the project area are displayed on the map in appendix C.

Habitat Relationships

The California spotted owl selects habitat for nesting, roosting, or foraging that have structural components of old forests. Occupied stands tend to have a greater representation of large old trees (trees with cavities, broken tops, etc.); higher live tree basal area; a multi-layered condition; higher canopy cover; and an availability of large, live trees, snags and downed logs (CDFW 2008, Verner et al. 1992, USFWS 2006). The species appears to be intolerant of high temperatures (California Wildlife Habitat Relationships (CWHR) (CDFW, CWHR version 8.2 personal computer program, 2008), most roost locations occur in areas where dense multi-layered canopies exist. The selection of mature, multi-layered stands is also evident for breeding and nest selection (Ibid). Occupied spotted owl sites in California have occurred most frequently in mixed-conifer forests (80 percent). Limited occupancy however is also noted in red fir forests (10 percent), ponderosa pine/hardwood forests (7 percent), or other forest types such as east-side pine, and foothill riparian/hardwood (collectively 3 percent) (Verner et al. 1992, USFWS 2003).

Six major studies (Verner et al. 1992, chapter 5) described habitat relations of the owl in four general areas spanning the length of the Sierra Nevada. Radio-tracking studies of California spotted owls in the Lassen NF and Sierra NF have provided some insights into habitat selection in conifer forests. Through this analysis, stands with greater than 40 percent canopy cover were considered suitable, where stands with less than 39 percent canopy cover were not (Verner et al. 1992 p.10; USFWS 2006). Other studies suggested that spotted owls appear to preferentially select for forests with greater than 50 percent canopy cover, but use habitat with 40- 50 percent cover in proportion to availability (neither preferred nor avoided) (Hunsaker, Boroski and Steger 2002). Nest sites are generally in habitat with 70 percent or greater total canopy cover (defined as all canopy above 7 feet), although higher elevation nest sites in red fir types have been documented in stands with as little as 30-40 percent canopy cover (Verner et al. 1992, pg. 60).

Verner et al. (1992) found that owl foraging habitats include suitable nesting and roosting sites as well as more open stands, regularly down to 40-50 percent canopy cover, that are generally similar in structure and composition to nesting and roosting habitat. Typical conditions in occupied conifer forest include:

- A mixture of tree sizes, usually with some trees exceeding 24" DBH, resulting in tree canopies at a wide range of heights but not necessarily in distinct layers.
- Signs of decadence – snags, over mature trees, downed woody debris, large logs are especially characteristic.
- The presence of hardwoods probably tends to enhance foraging habitat in conifer forests.
- Ample open flying space within and beneath the canopy

Estimates of California spotted owl home range size are extremely variable. Available data indicate that home ranges are smallest in habitats at relatively low elevations that are dominated by hardwoods (800 acres), intermediate in size in conifer forests in the central Sierra Nevada (2,500 acres in the Sierra and Sequoia NFs, 4,000 acres in the Eldorado, Stanislaus, Plumas and Tahoe NFs), and largest in the true fir forests in the northern Sierra Nevada (9,000 acres in Lassen National Park) (Verner et al. 1992 In: USDA-FS 2001).

As part of the California spotted owl conservation strategy (USDA-FS 2001 and 2004) a Home Range Core Area (HRCA) with a minimum of 600 acres of suitable habitat where available is established for each California spotted owl territory. The HRCA includes a 300 acre Protected Activity Center (PAC). The HRCA is designed to include the best available spotted owl habitat encompassing the owl PAC where the most concentrated owl foraging activity is likely to occur. The HRCA is approximately 20 percent of the average breeding pair home range plus one standard error. Verner et al. (1992) found that 50 percent of foraging activity was within an average of 317 acres surrounding the nest site (comparable use was found within 788 acres surrounding the nest site or approximately 20 percent of the home range for owls in the northern Sierra). Bingham and Noon (1997) as cited in USDA-FS 2001 found the "overused" portion of an owl's breeding home range (core area) to be 20 to 21 percent of the owl's home range. Berigan et al. (2012) tested the efficacy of PAC designation as a management tool. Their findings indicated the average size of 95% owl core use areas (334.7 acres), as defined by locations of nests and roosts found over long periods of time, was similar to the average PAC size (287.5 acres) and the spatial overlap between owl core use areas and PACs was high. The average proportion of each core area that overlapped a PAC was 0.84, 0.70, and 0.61 for the 50, 90, and 95% usage distributions, respectively.

Studies suggest that spotted owl reproduction may be influenced by the percentage of closed-canopied stands that occur around the activity core. Lee and Irwin (2005) evaluated thresholds for risk assessment of short-term fuels reduction efforts versus long-term risk of loss of habitat to fire. Lee and Irwin (2005) found that spotted owl reproduction in the Southern Sierra was slightly increased when a greater percentage of the home range was occupied by stands with higher canopy closures. They used a 430 ha (1,062 acre) area immediately surrounding the territory center (approximately a .7 mile radius) and found a minimum threshold for reproductive owls was met when 44 percent (467 acres) or more of the area contained stands with greater than 40 percent canopy cover. However, once this minimum was met, the relative amount of forests with intermediate (40-70 percent) and dense (greater than 70 percent) canopy cover had little measurable effect on reproduction of spotted owls. This finding is consistent with the Bart (1995) conclusion that 30–50% of northern spotted owl territories should be in suitable owl habitat (greater than 40 percent canopy cover) to ensure replacement.

Blakesley (2003) found that 78% of the core area they studied (814 ha (2011 acres) based on northern California owls with larger home ranges) and 83% of the nest area (203 ha (approximately 500 acres) in reproductively successful spotted owl territories was composed of trees > 30 cm (24 inches DBH) with >40 percent canopy cover (Lassen study area in northeastern California). Blakesley (ibid) found that reproductive outputs were lower with increases in nest area dominated by small trees and un-forested area, although, the correlation was weak and no thresholds were identified. The composition of the nest area was a much better predictor of site occupancy than core area but relationships to apparent survival and reproductive output were similar for both spatial scales. The Lassen study area has some similarities to the project area but is considerably wetter with denser forests.

Although spotted owls appear to be associated with dense mature forest, there is evidence that diversity in home ranges, particularly interspersed open habitats with shrub components may support smaller territories and higher reproductive success. Verner et al. (1992) noted the smaller spotted owl territories in the more open southern Sierran Forests, and in particular the lower elevation riparian habitats, compared to the more dense northern forests. Franklin et al. (2000) (northwestern California) also described a complex interaction of habitat quality and distribution where higher reproductive success was noted in sites where owl habitat intermixed with non-habitat patches. These differences indicated smaller territory sizes and higher reproductive success associated with habitat diversity and appear to correlate with differences in prey availability.

Large diameter snags (greater than 15" DBH, and a minimum of 20' tall) (the average roost/nest tree is greater than 40 inches DBH) and woody debris appear to provide important habitat for nest and roost structures. These structures are also utilized by many prey species. Snag levels in nesting and roosting stands were found to range between 20 and 30 square feet basal area, and between 7-17 square feet basal area in foraging stands (Verner et al. 1992). Estimates of the mass of downed wood in owl nesting, roosting, and foraging sites ranged from 10.5 to 24.7 tons per acre, with a mean of 17.4 tons per acre. The snag and down woody debris levels reported for nesting and roosting areas represent specialized habitats within a small (.1 acre in some studies) area surrounding the nest or roost area and were substantially higher than the average for the landscapes surrounding the sites. These figures support the need to manage for a mosaic of diverse conditions that include areas with high snag and down woody debris levels, but do not appear to indicate need for uniform high densities of snags and down logs across the entire landscape. Based on the lack of fire over the last 80-90 years it is thought snag and down log values probably exceed what was present during the pre-European settlement period and are substantially higher than in similar unmanaged (no logging or fire suppression) forests of the Sierra San Pedro de Martir of northern Baja Mexico (Minnich et al., 2000, Stephens 2004) or from old growth study plots (average conditions in old growth that have not been logged, but generally have been excluded from fire (Potter et al. 1992)).

Some studies (Bond 2002, Bond 2009, Bond 2012) indicate that spotted owls may have short-term benefits from low intensity fire. Bond et al. 2002 found that short-term impacts (less than two years post fire) of wildfire on spotted owl survival, reproductive success, and mate/site fidelity were minimal in areas burned by low to moderate severity fires in northern California, Arizona and New Mexico. Following wildfire in the eastern Washington Cascades, spotted owls utilized areas of low intensity burns (Bevis et al. 1997). In addition, low intensity prescribed fire had little impact on the ability of Mexican spotted owls (*Strix occidentalis lucida*) to reproduce (Sheppard and Farnsworth 1995). Roberts et al. (2011) found that low and moderate intensity fire had no effect on spotted owl occupancy.

Protected Activity Center

One new spotted owl territory was established based on a new nest detection (map B at end of document).

Table 3: New CSO PAC Habitat

Analysis Area	CWHR Type (Density/Size)										
	D		Sub Total	% of area	M		Sub Total	% of area	Other	Grand Total	% of area
	4	5			4	5					
PAC	450	22	477	84%	19	0	19	3%	80	571	100%
.7 mile radius	593	283	876	89%	78	6	84	9%	25	985	100%
treated	129	26	155	16%	16	2	18	2%	7	179	18%
1.2 mile Radius	1892	575	2467	85%	164	8	172	6%	249	2895	100%
treated	385	64	449	16%	34	4	38	1%	47	534	17%

Application of the 29 May 2015 California Spotted Owl Interim Recommendations

The following is a set of non-binding, draft, interim recommendations for management of California spotted owl habitat in light of research that indicates populations may be declining. The recommendations are evaluated in this context as to whether they would meet the purpose and need for this project as an alternative to the proposed action.

1. General Plan (Interim Recommendation) Components:

- a. CSO direction changes from a strategy based on two zones (the Protected Activity Center and Home Range Core Area) to a strategy based on four zones: Protected Activity Center [300 acres], Territory [800 acres for So. Sierra], Home Range Area [1.5 mile radius circle for central CA, approximately 4,400 acres. So. Sierra, suggestion that it could be reduced to 3,000 acres], and landscape [6th order watershed, 10,000 to 30,000 acres], with all designated habitat areas only on NFS lands.
- b. A potential management approach would be added to evaluate California spotted owl habitat at the sub-watershed scale (10,000 to 30,000 acres). At this scale, designated spotted owl habitat is identified along with opportunities to improve the area towards desired conditions for the PAC, territory, and home range areas.
- c. Where mechanical treatment is warranted, a standard would require that silvicultural prescriptions would follow the concepts of GTR-220 and 237 and consistent with short-term habitat improvement objectives.

2. Plan Components (Interim Recommendation) within California spotted owl Protected Activity Center (PAC):

- a. The size of a PAC remains 300 acres and is designated using guidance in 2004 SNFPA
- b. A desired condition is added: canopy cover is ≥ 70% (increased from ≥ 60-70%).
- c. The guideline would require retention of all snags greater than or equal to 15 inches, unless they pose a safety hazard.
- d. A guideline is added that provides that unless they are needed to maintain or improve habitat suitability in the short term (1 to 5 years), mechanical treatments are not allowed. Key features of desired conditions (i.e., multi-layered structure, diversity of diameter classes, moderate to high tree canopy cover) are retained or enhanced as a result of forest management actions.
- e. A guideline providing for the use of other treatments such as hand thinning of small diameter woody material or prescribed burning is changed to allow and encourage these activities if they maintain or improve key features of desired conditions (i.e. multi-layered structure, diversity of diameter classes, moderate- to high-tree canopy cover) in the short-term.
- f. A standard is added to require that no overstory trees are removed.
- g. A guideline is added to require that except where they pose a public safety risk, all trees greater than or equal to 30 inches diameter at breast height are retained. The existing exemption allowing removal of trees greater than or equal to 30 inches in diameter for equipment operability is not carried forward.

3. Plan Components (Interim Recommendation) within California spotted owl Territory:

- a. The Territory is an 800 acre circular area [-.6 mile (1,000 meters) radius], surrounding the activity center that is assumed to be used exclusively and is not shared with adjacent owls.
- b. The size of the **designated habitat** within the Territory is 500 acres, including the applicable acres within the PAC. Territory designated habitat must not include the PAC or designated territory area of adjacent owls.
- c. A desired condition is added that of the 500 acres above, at least 400 acres within the entire Territory circle are high quality nesting or roosting habitat defined as having at least 70 percent canopy cover (in descending order of priority, CWHR classes 6, 5D, and 4D). This includes the applicable acres of the PAC and additional area with greater than 70 percent canopy cover outside of the PAC to meet the acreage target. Patch sizes within this designated habitat should be large enough to minimize edge effects (large enough to provide interior stand conditions, generally 1-2 tree heights from the edge). The 400 acres of high quality nesting or roosting habitat should ideally be in the vicinity of the activity center.
- d. A desired condition is added: territories include up to 300 acres in a fine-scale mosaic of low, moderate, and high canopy cover forest structure designed to achieve heterogeneous forest cover and stand density, defined as mosaics of habitats ranging from 0.03 to 2 acres in size that avoid uniform low tree density and bare understory conditions.
- e. A potential management approach is added to monitor owl occupancy pre- and post-treatment in treated territories.
- f. A guideline would be added that in the territory, except where it threatens public safety, all trees greater than or equal to 30 inches diameter at breast height are retained.
- g. A guideline would be added that in the acres of designated habitat that are within territory and outside of the PAC, except in rare cases (no examples of the 'rarely removed' situations given), all overstory trees are retained.
- h. A guideline is added that provides that unless they are needed to maintain or improve habitat suitability in the short term (1 to 5 years), mechanical treatments are not allowed within the designated habitat within the territory. Key features of desired conditions (i.e., multi-layered structure, diversity of diameter classes, moderate to high tree canopy cover) are retained or enhanced as a result of forest management actions. This is likely to limit treatments to the removal of small diameter woody material through hand thinning or prescribed fire. No previous exceptions/allowances are carried forward.
- i. A guideline providing for the use of other treatments such as hand thinning of small diameter woody material or prescribed burning is changed to allow and encourage these activities in the designated habitat within the territory and outside of the PAC if they maintain or improve key features of desired conditions (i.e. multi-layered structure, diversity of diameter classes, moderate- to high-tree canopy cover) in the short-term.

4. Plan Components (Interim Recommendation) within the California spotted owl Home Range Area:

- a. The Home Range Area is 4400 acres (or potentially 3000 acres in the So. Sierra (approximately 1.2 mile radius)) within a 1.5 mile [radius] circle surrounding the activity center.
- b. The size of the **designated habitat** within the Home Range Area is 600-900 acres, including the applicable acres within the PAC and the designated acres within the Territory.
- c. Home range area for one owl may overlap with other home range areas of adjacent owls when there is significant overlap but must not include the PAC or territory designated area of any adjacent owls.
- d. A desired condition is added for a minimum of 600 acres and expected value of greater than 900 acres within the entire Home Range Area circle have at least 50 percent canopy cover. Patch sizes within this designated habitat should be large enough to minimize edge effects (large enough to provide interior stand conditions, generally 1-2 tree heights from the edge). This includes applicable acres in the PAC and designated Territory Habitat, and an additional 100-400 acres of designated habitat having greater than 50 percent canopy.
- e. A desired condition is added that the remaining area of the Home Range, outside of the Territory circle and outside the PAC or territory designated habitat of adjacent owls, contain an average of 40 percent canopy cover, and fine scale heterogeneity.
- f. A desired condition is added to provide an approximate range of desired canopy covers in the Home Range outside the territory circle that reflects historical forest conditions. Percentages assume no overlap with adjacent owl PACs or territory designated areas:
 - i. 25 percent or less with less than 25 percent canopy cover; (1,100 acres of 4,400 acres)
 - ii. 10 percent or more with more than 70 percent canopy cover; (440 acres of 4,400 acres)
 - iii. 15 percent or more with canopy from 40 to 70 percent canopy cover; (660 acres of 4,400 acres)
 - iv. 50 percent is flexible in canopy cover with fine-scale mosaic. (2,200 acres of 4,400 acres)
- g. A guideline would require within the home range area, retention of all overstory trees and all trees greater than or equal to 30 inches diameter at breast height except where they pose a public safety risk.
- h. A guideline is added that provides that unless they are needed to maintain or improve habitat suitability in the short term (1 to 5 years) mechanical treatments are not allowed within the designated habitat within the home range. Key features

of desired conditions (i.e., multi-layered structure, diversity of diameter classes, moderate to high tree canopy cover) are retained or enhanced as a result of forest management actions. This is likely to limit treatments to the removal of small diameter woody material through hand thinning or prescribed fire. No previous exceptions/allowances are carried forward.

- i. A guideline providing for the use of other treatments such as hand thinning of small diameter woody material or prescribed burning is changed to allow and encourage these activities in the designated habitat within the home range and outside of the Territory if they maintain or improve key features of desired conditions (i.e. multi-layered structure, diversity of diameter classes, moderate- to high-tree canopy cover) in the short-term.

Application of CSO Interim recommendations with regard to the Summit Project:

Since the 2016 California spotted owl interim recommendations (CSO-IR) are in draft form and with still substantial question regarding application to the smaller home ranges of the Southern Sierra, standard analysis areas which roughly correspond to the areas described above were used rather than adding a completely new, but roughly parallel analysis. The analysis areas and how they correspond to SNFPA guidelines, 2016 CSO Interim Recommendations and findings in scientific literature are found in the following table. The following describes how the existing analysis corresponds to the CSO-IR and fits with current science as applied to the demographics of the southern Sierran California spotted owl population within the Summit Project analysis area. I apologize in advance for the confusing nomenclature that uses inconsistent terminology between the published literature, the SNFPA direction and the 2016 CSO interim recommendations which is extremely confusing. Hopefully the table will help.

The protected activity center for each territory is the same under existing direction and the CSO IR at 300 acres. The PAC roughly corresponds to the portion of a spotted owl territory that comprises 50 percent of the foraging area used by a spotted owl pair during the reproductive period (breeding through fledging) (Verner et al. 1992). The Home Range Core Area (HRCA) under existing guidelines is 600 acres and includes the 300 acre PAC. Under the CSO-IR, the 500 acres of designated territory habitat in the interim guidelines is in addition to the PAC is used as a proxy for that designated habitat. The CSO-IR recommendation is that 500 acres of suitable habitat (including the PAC) within the "territory" be retained in 70 percent or better canopy cover and be non-overlapping with designated habitat from adjacent territories. At least two of the existing SNFPA "territories" have centers that are too close to avoid overlapping habitat except the designated PACs. The 2002 remote sensing habitat designations are CWHR type D (indicating >70% canopy cover) however, stand exams and tree mortality overflights indicate current canopy cover of most stands within the CSO-IR "territories" is M (> 40 %< 70%). Otherwise the 500 acres of higher density habitat will remain untreated within a .7 mile radius of the owl activity center.

The PACs were delineated to avoid overlap with treatment areas, but treatment does occur in the adjacent "territory" as defined in the CSO_IR. Failure to treat areas within the designated habitat of the CSO-CSO_IR "territory" would maintain conditions of higher density trees and tree composition that would perpetuate higher vulnerability to large-scale, high severity fire effects and drought related tree mortality. Tree species currently and into the foreseeable future would remain dominated by shade tolerant, drought and fire intolerant species and conditions would not be favorable to promote establishment and survival of shade intolerant, fire and drought tolerant pine and oak.

For the purposes of analysis of spotted owl habitat effects on reproductive productivity, I used a .7 mile radius circle, comprising approximately 1,000 acres of habitat around the territory center, to simulate the core area discussed above analyzed by Lee and Irwin (2005) in the Southern Sierra. A similar analysis area was addressed by Blakesley (2003) for larger central California owl territories and Bart 1995) for the northern spotted owl. All three researchers found that spotted owl reproduction and territorial fidelity was diminished if less than 44 to 50 percent of the spotted owl territory was in habitat with less than 40% canopy cover. The SNFPA HRCA (600 acres) and CSO-IR "designated habitat" within the "territory" (500 acres), roughly correspond to the 45-50 percent of the core area of a spotted owl territory that should maintain a minimum of 40 percent canopy cover to support full reproductive potential. The modeling by Lee and Irwin (2005) did not appear to support that higher canopy cover or greater area of high canopy cover significantly increased reproductive potential. All of the spotted owl territories in or adjacent to the Summit project analysis area retain a 600 acre Home Range Core with minimal treatment activity and retention of a minimum of 600 acres of habitat with greater than 40 percent canopy cover, The PACs are untreated and retain all existing canopy cover.

The CSO-IR designation of a 1.5 mile radius Home Range Area (HRA) roughly corresponds to the 4,400 acre spotted owl territory for the central Sierra identified by Verner et al. (1992). The corresponding spotted owl territory for the southern Sierras is 2,200 acres or slightly smaller than 3,000 acres suggested as a possible analysis area for the southern Sierra in the CSO-IR or the 1.2 mile radius circle (2,895 acres) identified in the 1992 spotted owl protocols (still most current direction) and used for the purposes of the analysis for this project. For this project, the project area will meet or exceed the CSO-IR guidelines with the exception of the 50% of the area in fine scale mosaic. It is likely that current mortality will meet or approach this guideline.

Table 4. SNFPA and CSO-IR spotted owl habitat definitions

SNFPA Designated Area	CSO IR designated area	Verner	Lee and Irwin	Blakesley	Bart
Protected Activity Center (300 acres) No mechanical treatments unless in WUI	Protected Activity Center (300 acres) No mechanical treatments	20% of territory with 50% of foraging during breeding period (317 acres in S. Sierra, 778 acres in N. Sierra)	N/A	83 percent of nest area (500 acres in N CA. corresponds to Verner's 317 acres for S. Sierra)	N/A
Home Range Core Area (600 acres) 300 acre PAC, 300 acres retain 50% canopy cover unless treatment necessary for	Territory 500 acres designated within a .6 mile radius circle	N/A	45% of a 1,063 acre circle (478 acres) with at least 40% canopy cover necessary to support reproductive owls. No	78% of a core area (2,011 acres out of a 8,800 acre territory for Northern California) with greater than 40% canopy cover	30-50 percent of a territory with > 40% canopy cover.

fuels reduction or forest health			increase in breeding productivity for higher density or more area in moderate to high density mature forest		Bingham and Noon (1997) found "overused" portion of N. spotted owl territory to be ~20% of territory
Territory: 2,500 acres in S. Sierra, 4,700 acres in C. Sierra and 9,000 acres in N Sierra. General rule of retention of all trees > 30" dbh and retention of 40% canopy cover applies to all suitable owl habitat outside of WUI	Home Range Core 1.5 mile radius circle, Approximately 4,400 acres Retain all trees >30"dbh, no exceptions, retain 40% canopy cover where it currently exists.	Home Range ~4,200 acres across Sierras N, C, and S. 800 acres in low elevation riparian forest of So. Sierra			

Application of CSO Interim recommendations to the Summit Project:

The purpose and need for the Summit Project is the treatment of excessive fuels, salvage of dead trees, specifically for removal of hazard trees and treatment to reduce further drought and insect related tree mortality, all within the defense zone of wildland urban interface. The PACs for spotted owls have been adjusted to allow buffers for treatment of hazard trees and areas within the WUI defense zone where forest health and hazard reduction is important adjacent to private lands and structures within the National Forest. There is no difference in treatment of PACs under current proposed action and the CSO IR. The CSO IR include 500 acres of habitat with greater than 70 percent canopy cover be designated for retention. The project appears to meet the interim recommendations with the exception of overlapping designated habitat within the CSO-IR "territory" where the owl activity centers are too close to avoid overlap.

Northern Goshawk (*Accipiter gentilis*)

Status and Distribution

The northern goshawk is holarctic in distribution. In North America it occurs primarily in boreal forests, but it also occurs far to the south in montane forests of the western United States and Mexico. The goshawk is partly migratory in the northern portion of its range, where in winters of food shortage it migrates southward. In high elevations and montane areas, some goshawks descend into lower elevations with woodlands, riparian areas, and scrublands during the winter.

The status of northern goshawk populations in the western United States is poorly understood. Data are difficult to interpret due to inherent biases in methodologies and irruptive migrations. Although northern goshawks remain widely distributed throughout their historic range, current sampling techniques are inadequate to determine population status or trends of this species. One index of trend is the Christmas bird counts adjusted for observer days. This index indicates a slight positive trend for goshawks.

Currently, there are 20 protected activity centers established for northern goshawk pairs documented on Sequoia National Forest. Several more sites are under investigation to locate nests within areas with active goshawk use. It anticipated further survey will lead to the establishment of four or more additional PACs in the near future and 10 or more over several years across the Forest. Monitoring of existing Goshawk PACs on the Forest suggests stability in their occupancy. Surveys and incidental observation confirm that the species is well distributed across the Forest. Increases in the number of documented occupied territories are a result of continued effort to find nest sites within areas of historical observation.

There are three recorded goshawk territories within the Greenhorn Mountains. Two goshawk territories are in close proximity to the project. One new goshawk PAC was established based on an observed nest in 2016. Based on nest site location, the majority of habitat use for the new PAC is likely on private lands, but the full 200 acre territory PAC was established on NFS lands. A portion of this PAC overlaps unit 26 where there are hazard trees near recreational residences. Unit 26 will be hazard tree removal only.

Habitat Relationships

Northern goshawks occur in a variety of coniferous forest communities in the western United States, primarily in ponderosa pine (*Pinus ponderosa*), Jeffrey pine (*P. jeffreyi*), mixed-conifer, white fir (*Abies concolor*), and lodgepole pine (*P. contorta*). Large snags and downed logs are believed to be important components of northern goshawk foraging habitat because such features increase the abundance of major prey species. When foraging, northern goshawks utilize a wider range of forest types and conditions, but most populations still exhibit a preference for high canopy closure and a high density of larger trees. In Nevada, however, northern goshawks forage in open sagebrush habitats or perch in aspen stands to hunt ground squirrels in adjacent sagebrush.

Nest stands are typically composed of large trees that have high canopy closure, are near the bottom of moderate hill slopes, and have a sparse understory. Studies of nesting habitat show that goshawks nest in older-aged forests with variable tree species). Coniferous trees used for nesting in the western portion of northern goshawk's range include ponderosa pine, Douglas-fir (*Pseudotsuga menziesii*), white fir, and lodgepole pine. Nests are typically constructed in the largest tree in the stand. Goshawks typically nest in stands with canopy cover between 60 percent and 80 percent. Studies of habitat characteristics at goshawk nest sites have reported average canopy closure measurements from 75 percent in northern California to 88 percent in northwestern California. Stand structure ranges from dense multi-layered stands in Oregon to open park-like understories in Colorado and California. Average

nest tree size is variable, with mean tree diameters ranging from 8-20 inches in Colorado, 20 inches in Oregon, and 36 inches in northwestern California.

Goshawks appear to prefer north to east aspects for nest sites, as tree stands within these aspects are typically denser and more suitable. Slope also appears important, nests are usually placed on flat to moderately slope (1-40 percent grade) where trees are larger and grow at a higher density. A tendency for goshawks to build nests near or on trails, edges, dirt roads, or other clearings such that clear flight lanes were provided to and from the nest has been observed.

Northern goshawks prey on a variety of animals, including but not limited to tree squirrels, hares, grouse, corvids, woodpeckers, and large passerines. Goshawks are short-duration sit-and-wait predators and a height zone generalist, taking prey from the ground-shrub and shrub-canopy layers. Meadows, streams, and aspen stands, which may be important for prey species on which the goshawk feeds are important. However, goshawks forage in a variety of habitats, probably along edge as well as in deep forests. The presence of prey plucking sites within the nesting territory is also a habitat characteristic related to foraging. Prey plucking sites usually consist of stumps, fallen logs, snags, or arched trees.

Protected Activity Center

One new goshawk territory was established based on a new nest detection (map C at end of document).

Table 5: Goshawk Suitable habitat in PAC

Analysis area	Suitable CWHR habitat						Grand Total
	4		4 Total	5		5 Total	
	D	M		D	M		
PAC	707	26	733	83	2	86	819
.7 mile Radius	123	26	149	49	4	52	202
1.2 mile radius	653	114	767	128	4	132	899
Grand Total	1484	167	1650	260	10	270	1920

Pacific fisher (*Pekania (Martes) pennanti*)

Status and Distribution

A more detailed report on fisher was prepared by Emilie Lang, Forest Wildlife Biologist, to address specific issues with fisher. That report is summarized here and incorporated by reference.

In April 2016, the USFWS determined the West Coast Distinct Population Segment (DPS) of fisher did not require the protection of the Endangered Species Act (ESA) (Federal Register Vol. 81, No. 74). USFWS based their decision on best available science showing current threats are not causing significant declines to the West Coast populations of fisher and further states "there has been a substantial increase in support and interest by federal, state, tribal, and private stakeholders in implementing voluntary and proactive fisher conservation measures, it is clearly resulting in a much improved long term conservation outlook for fisher."

Fisher populations are presently at low numbers or absent throughout most of their historic range in Montana, Idaho, Washington, Oregon, and California (Heinemeyer and Jones 1994). In recent decades, a scarcity of sightings in Washington, Oregon, and the northern Sierra Nevada may indicate fisher extirpation from much of this area (Aubry and Raley 1999), (Carroll, Zielinski and Noss 1999), (Zielinski, Kucera and Barrett 1995). The Sierra Nevada and northwestern California/Southwest Oregon populations appear to be the only naturally-occurring, known breeding populations of fishers in the Pacific region from southern British Columbia to California (Zielinski, Truex and Organ, et al. 1997).

Status and trend monitoring for fisher and marten was initiated in 2002; the monitoring objective is to be able to detect a 20 percent decline in population abundance and habitat (USDA-FS 2006a). This monitoring includes intensive sampling to detect population trends on the Sierra and Sequoia National Forests, where the fisher currently occurs. Monitoring is supplemented by less intensive sampling in suitable habitat in the central and northern Sierra Nevada specifically designed to detect population expansion. From 2002-2008, 439 sites were surveyed throughout the Sierra Nevada on 1,286 sampling occasions, with the bulk of the sampling effort occurring within the Southern Sierra fisher population monitoring study area (USDA-FS 2009). There have been numerous detections and anecdotal reports of fisher use in the general project vicinity, including consistent use of treated units of the adjacent Ice project. It is assumed that fishers are likely present and use the area for foraging.

Habitat Relationships

Fishers use large areas of primarily coniferous forests with fairly dense canopies and large trees, snags, and down logs. A vegetated understory and large woody debris appear important for their prey species. It is assumed that fishers will use patches of quality habitat that are interconnected by other forest types, whereas they will not likely use patches of habitat that are separated by large open areas lacking canopy cover (Buskirk and Powell 1994). Buck et al. (Buck, Mullis, et al. 1994) described 1970s research in managed Douglas-fir and white fir forests in northwestern California. They detected a selection pattern favoring residual stands of mature forest in areas heavily harvested for timber.

CBI (Spencer, et al., 2008) modeled habitat suitability at elevations between 3,500 to 8,000 feet based on current and historic occupancy records at the fisher home range and micro-site scales. This should be considered the core of fisher range, despite occasional detections above or below these elevations. Outputs reflected habitat suitability based on the probability of occurrence. The CBI predicted probability of occupancy map (Spencer, et al., 2008) serves as a "best available science" refinement of the crude elevation-based Southern Sierra Fisher Conservation Area (SSFCA) designated in the 2001 and 2004 Sierra Nevada Framework analyses and decisions (USDA-FS, 2004a). Data utilized in this suitability analysis were restricted to locations where fishers were detected in more than one year to provide a more accurate estimate of occupancy, and avoid overemphasis on what might be transient individuals.

The CBI Phase II report: Baseline Evaluation of Fisher Habitat, Fires and Vegetation Dynamics in the Southern Sierra Nevada (Spencer, et al., 2008) linked and fine-tuned the Phase I habitat and population models with a vegetation dynamics model, LANDIS-II, simulating predicted changes in forest vegetation in response to wildfires, management actions, climate change, and ecological succession. Results of this modeling exercise are discussed in the Supplemental BE for Fisher (Lang 2016). They generally concluded that the threat of uncharacteristically severe wildfire outweighs the threat of short term declines in habitat suitability, with specific caveats disclosed in the report.

Riparian corridors (Heinemeyer and Jones 1994) and forested saddles between major drainages (Buck 1983) may provide important dispersal habitat or landscape linkages for the species. Riparian areas are important to fishers because they provide concentrations of large rest site elements, such as broken top trees, snags, and coarse woody debris (Seglund 1995), perhaps because they persisted in the mesic riparian microtopography through historic fires.

Habitat suitable for resting and denning sites is thought to be most limiting to the population; therefore, these habitats are given more weight than foraging habitats when planning or assessing habitat management (Powell and Zielinski, 1994), (Zielinski, Truex, et al., 2004a). However, resting and denning habitat appears to be measured at small scales, as small as .1 acre. Radio collared fisher studied in the Tule River Canyon were found to use rest sites within plantations and brush fields where previous timber harvest had been designed to leave wildlife islands and legacy structures such as large oaks, clumps of large trees, down logs and other suitable rest and den structures with adequate adjacent cover. As such, modeling and tracking rest and den structures on such a small scale is difficult. Fishers generally use at least one rest site per day, and rarely reuse rest site structures (Kilpatrick and Rego 1994) (Seglund 1995) (Zielinski, Truex, et al. 2004a). Zielinski et al. (2004a) indicate that retaining and recruiting trees, snags and logs of at least 39 in. DBH, encouraging dense canopies and structural diversity, and retaining and recruiting large hardwoods are important for producing high quality fisher habitat and resting/denning sites.

Fisher home range sizes in the Tule River Canyon, Sequoia National Forest averaged 1,304 acres for females and 7,409 acres for males using the 100% minimum convex polygon method (Zielinski et al. (2004c). Zielinski et al. (2004b) speculated that the relatively small home range sizes of fisher in the southern Sierra Study Site located on Sequoia National Forest reflect higher habitat quality due to greater abundance of black oak that provides cavities and prey food resources. Diet of fisher in the southern Sierra also tends to reflect the high diversity of available habitats, including prey from early seral habitats (Zielinski and Duncan 2004). Male home ranges generally overlap several female home ranges. Sierra Nevada Adaptive Management Project (SNAMP) data collected (online: <http://snamp.cnr.berkeley.edu/documents/Fisher/> accessed December 1, 2009) from the northern Sierra National Forest have found that the core use area of denning female fishers ranges from about 600 to 800 acres. However, home ranges in this study were significantly larger than the observations in the Tule River Canyon which is in closer proximity and closer to similar habitats in the Summit project.

The following California Wildlife Habitat Relationships (CWHR) types are thought to be important to fishers: generally structure classes 4M, 4D, 5M, 5D and 6 (stands with trees 11" diameter at breast height or greater and greater than 40% cover) in ponderosa pine, montane hardwood-conifer, Klamath mixed-conifer, Douglas-fir, mixed-conifer, montane riparian, aspen, redwood, red fir, Jeffrey pine, lodgepole pine, subalpine conifer, and eastside pine (Timossi 1990). However, rest and den sites have ranged from areas with very little trees cover (single tree with high manzanita surrounding the den site), plantations with small trees and legacy structures to high density forest within the Tule River Canyon study site (personal observations of rest and den sites identified in the Tule River Study).

Using data available at the time, Zielinski et al. (2004b) examined the vegetation composition of fisher home ranges in the southern Sierra Nevada as described in the following paragraph. These figures are descriptions of information regarding home range

composition selected relative to what is available. Fishers may occupy areas that differ somewhat from values presented here. The GIS data used in Zielinski et al. (2004b) lacked the spatial resolution to map small inclusions of shrub habitat within the greater mixed-conifer matrix. R. Truex (pers. comm.) believes that this fine grain heterogeneity is important from the perspective of prey diversity.

CWHR size class 4 stands (11-24" DBH), dense canopy closure (greater than 60%), and Sierran Mixed-conifer forest types constituted the greatest proportion of home ranges studies by Zielinski et al. (2004b). Home ranges rarely had less than 15% Sierran Mixed-conifer, less than 5% area in CWHR size class 5 (greater than 24" DBH), or less than 53% dense canopy closure stands (dense stands included all size classes and vegetation types including live oak, plantation, and shrub layers). The montane hardwood-conifer type averaged 12% of home range areas. CWHR size class 2 (1-6" DBH) stands comprised generally less than 3% of home ranges, and less than 10% of home ranges were in open canopies (25 to 39%).

Truex and Zielinski (2013) investigated modeled or predicted changes in fisher habitat after fuels reduction projects. The fuels reduction projects occurred in an area with no fisher presence, so actual response of fisher was not monitored. The fuels reduction projects on research lands where fuels reduction was maximized. The projects did not incorporate project design criteria that are common on Forest Service projects within occupied fisher habitat. It was noted that mechanical harvest had the potential to be more selective in retaining habitat elements for fisher compared to fire alone, but as noted, such design criteria were not incorporated. This study was specifically intended to reduce fuels in a green forest and is not particularly applicable to salvage logging, areas where project design criteria are implemented for fisher conservation or where actual fisher response can be monitored.

Garner (2013), in an unpublished master's thesis, indicated that fisher appeared to avoid areas treated by thinning and fuels reduction for rest and den sites. Garner's study also found that fisher home ranges were smaller in areas where treatments had occurred (smaller home ranges are an indication of higher suitability) and that fisher preferentially selected home ranges where thinning and fuels reduction had occurred. A possible interpretation of the Garner study is that the habitat diversity in thinned/treated areas provides a better prey base for foraging as long as there are well-distributed, undisturbed microsites for resting and denning. Studies on the Tule River Site indicated a high preference for high density forest at the rest, den and territory scales, but food and prey base was highly diverse and including a significant proportion of foods from open or early seral stage sources.

Monitoring of fisher in the Southern Sierra since 2002, as well as camera stations set up to detect fisher presence specifically within treated units of the Ice Project (adjacent to this project), have shown consistent and repeated use of treated areas by fisher. The west-slope, southern Sequoia (former Hot Springs Ranger District) has the highest naive detection rate for fisher. The west-slope southern Sequoia area also has the highest rate of historic timber management across the Sequoia National Forest. The Tule River Fisher Study also found rest sites and a den site in or adjacent to former treatment areas. Rest and den sites included plantations where specific efforts were made to retain legacy structures for wildlife habitat (unpublished rest and den site locations from a radio-telemetered fisher and marten study, Sequoia National Forest). This information was not designed to test fisher reaction to treatments, but it is clear that fisher will use treated areas for at least foraging and the diversity of habitats appears to support fisher in smaller home ranges when present. The relationship between fisher and treated areas may depend on treatment type, size, age or intensity.

It has been argued that large-scale, high severity fire effects may be beneficial and have less impact on fisher than thinning to reduce the potential for such effects. Hanson (2013) found that fishers selected Sierran mixed-conifer forests in both post-fire and unburned areas, and selected closed-canopied, mature/old forest in unburned forests, as well as burned forests that had this structure in the pre-fire condition. When fishers were near burned/unburned edges, they selected the within-fire side. Fishers used dense, mature/old forest that experienced moderate to high-severity fire at the same level as unburned dense, mature/old forest, and both males and females were found deep inside large fires—several km from the fire perimeter. These results indicate that fishers may benefit from the structural complexity of such post-fire habitat for foraging. The study interpreted and sampled relatively low to moderate intensity, managed wildfires that resulted in a fine-grained mosaic of mixed lethal conditions as if in the same category of large-scale, high intensity fire effects that were actively suppressed due to prevent or minimize further resource damage. The Hanson study appears to survey primarily in areas of mixed lethal results, particularly along stream courses within the fire where fire effects may be moderated and shrub cover more likely to recover quickly. The survey routes appeared to avoid uplands where high intensity patches were larger and more uniform in loss of cover. Where survey lines crossed upland areas with little or no cover that had been previously forested, few or no detections of fisher scat were indicated. Hanson interpreted high and moderate intensity fire effects in a way that included low to moderate fire intensity effects as defined and used by the Forest Service. As such, the study has very little or no application to large-scale, high intensity fire effects as defined by the Forest Service and limited interpretation regarding areas of moderate severity fire effects. Although fire severity is interpreted differently in the above study compared to Forest Service analysis, there are similarities in observed results.

Informal Forest Service monitoring of the periphery of the McNally Fire also indicates continued fisher use of the edges of this large fire where patch size is small and fire effects are mixed. Formal long-term monitoring plots in areas of past large fires indicate few or no detections or inconsistent detections in areas with large patches of high severity fire effects such as portions of the Red Mountain, McNally, Stormy and Manter Fires (USDA Forest Service 2014). The large complex of fires north of Yosemite with a large component

of stand-replacing fire effects in 1987 are also cited as a likely barrier to northward migration of fisher and is an area that does not appear to support fisher (Zielinski and Barrett 1995).

Effects- Mature Forest Sensitive Species

California spotted owl, Pacific fisher and Northern goshawk

Criteria for Effects Analysis

1. protection of nesting/denning habitat in the immediate vicinity of nest/den sites or territorial centers;
2. proportion of the known territories in moderate to dense forest conditions (measured by canopy cover);
3. availability of large trees (> 40" DBH);
4. large (> 20" diameter at small end) down woody debris within nesting areas;
5. Multiple-layered canopies including hardwoods.
6. number and size of large snags (> 15" DBH)

No Action

Direct and Indirect Effects

Protection of existing reproductive centers

No action would maintain landscape conditions that are highly vulnerable to continued drought and insect related mortality at accelerated rates and to large-scale, high severity fire effects. Vulnerability of the area to large-scale, high severity fire effects is evident through the observations of local fire history. Completion of Ice and other forest health and fuels reduction projects have helped relieve some stress and reduced fuels, but communities as well as habitat for fisher, spotted owl and goshawk remain vulnerable. No action will increase the probability of severe wildfire effects over time and may contribute to the trend toward deforestation in the Pacific Southwest Region of the Forest Service (http://www.fs.usda.gov/detail/full/r5/landmanagement/resourcemanagement/?cid=fsbdev3_047145&width=full)

Proportion of known territories in moderate to dense forest conditions (measured by canopy cover).

No immediate effect. Indirect effect of limiting fuels treatment and forest health thinning is accumulation of fuel and higher density related tree mortality. This will in turn increase the potential for larger and more severe fires that would have a greater effect on canopy cover at the landscape scale.

Multiple-layered canopies including hardwoods

There would be no immediate change. The risk of large-scale, high-severity fire effects would remain higher and risk would incrementally increase over time in the absence of low intensity fire or other treatments. Most oaks within the project area are being outcompeted by conifers and the large oak component of the forest is declining. Recent drought related mortality may reverse this trend since the oaks are more drought tolerant than fir or cedar. Untreated accumulations of large woody debris may exceed 100 tons/acre which would eliminate most options for future managed fire, and severely affect the ability to contain future large wildfires. This may in turn affect availability of multiple layered canopies in and adjacent to the project area in the long-term.

Availability of large trees (> 40" DBH)

Very few large trees over 30 inches DBH exist in the project area or adjacent to the project area. Drought related stress and effects of insects and disease appear to be disproportionately removing larger trees. This trend would continue based on current and predicted effects of drought and insect related tree mortality and climate change.

Large down woody debris (> 20" diameter at small end)

No action would maximize availability of down logs with the potential effect of limiting future forest development or contributing to conditions where fire suppression or control is not feasible. Drought related mortality effects in the early to mid-1990s resulted in patches that exceeded 100 tons/acre and high numbers of large down trees per acre. Current conditions have higher number of standing dead and down dead trees than the 1990s. The high rates of mortality and loss of larger trees will contribute to high volumes of down dead woody material, but may limit future recruitment of larger woody debris and increases the risk of total loss of down woody material under wildfire conditions.

Retention of snags, number and size of large snags (> 15" DBH)

No action would maximize snag numbers over the next 10-20 years. There are areas with few green trees for future replacement snags within portions of the treatment units, so snag retention would be short-term in these areas.

Cumulative effects

The cumulative effects discussion is bounded by the affected watersheds (7th order HUC) for the discussion of this project. The Supplemental Biological Evaluation for Fisher (Lang 2016) addresses mature forest habitat, specifically for fisher, but applicable to all mature forest species, at multiple scales including the Southern Sierra Fisher Area (known southern Sierra population range). This analysis is summarized here and incorporated by reference.

No action would have no immediate effect on mature forest habitat dependent wildlife, but would perpetuate the conditions that have contributed to large-scale, high severity fire effects and density driven drought and insect related tree mortality. Wildfire has been the greatest agent of change both in extent and intensity of conversion of high density forest to low density or deforested conditions within the elevation range considered most important to these species (4,000-8,000 feet) at multiple scales. Although, spotted owls and fisher continue to occupy areas in and adjacent to several of the large, high severity fires, habitat previously considered suitable has been rendered unsuitable for long-term occupancy and reproduction of spotted owls, fisher and goshawks. These large fires have resulted in fragmentation and clearly definable gaps in connectivity for mature forest dependent species.

Proposed action

Direct and Indirect Effects

Protection of existing reproductive centers

There are five spotted owl territories, one goshawk territory and no known fisher den sites within the project analysis area. As discussed above, the protected activity centers for spotted owl and goshawk have been delineated and are adjacent to, but do not overlap the proposed mechanical treatment areas with the exception of removal of hazard trees within unit 26 which overlaps a portion of the goshawk PAC. Underburning and/or thinning of small trees, if funded, may increase protection and reduce risk of stand-replacing effects in the protected activity centers. However, the PACs will remain at higher risk of stand-replacing effects of wildfire and drought related tree mortality than fully treated areas. PACs will be buffered by and be better protected by the treated area of reduced fuels surrounding them. The treated area should respond with increased growth which will result in larger trees and multiple -layered stands that are more likely to survive existing drought conditions and predicted climate change effects than no action. The mosaic of habitat conditions will provide future replacement habitat and greater habitat diversity over the long-term.

Proportion of known territories in moderate to high density (> 40 percent cover), medium to large trees

Habitat, in and around the PACs, remains in proportion to conditions that were found to support reproductive spotted owls by Lee and Irwin (2005) and Bart (1997) Treated areas will retain suitable habitat features, legacy elements and habitat conditions that have been shown to be used on a consistent basis by fisher after treatment in the adjacent Ice Project for at least foraging (resting and denning functions are not detected by photo point or track plate monitoring, although resting and denning use in the nearby area is implied by consistent and frequent detection in treated units). Spotted owls and goshawks have also been observed in the adjacent thinned Ice Units and have maintained consistent presence in the area. Habitat attributes consistent with use of the project area by mature forest related species are displayed in the following table.

Untreated areas would remain vulnerable to continued drought and insect related tree mortality, but treated areas dispersed across the landscape reduce vulnerability to large-scale effects at the landscape level.

Table 6: live tree >24" dbh basal area, canopy cover and snags before and after treatment

CWHR Type ¹	Acres	Existing Condition 2016				No Action 2051				Proposed Action 2017				Proposed Action 2051			
		Live Trees >24" dbh /Acre	Canopy Cover 6+	Snags >15"/Acre	Coarse Woody Debris	Live Trees >24" dbh /Acre	Canopy Cover 6+	Snags >15"/Acre	Coarse Woody Debris	Live Trees >24" dbh /Acre	Canopy Cover 6+	Snags >15"/Acre	Coarse Woody Debris	Live Trees >24" dbh /Acre	Canopy Cover 6+	Snags >15"/Acre	Coarse Woody Debris
High to moderate CWHR suitability habitat attributes for mature forest species within project Units																	
5D	23	20.3	62	20.0	na	60	5.1		19.0	57	1.0		na	60	5.0		
4M	313	17.9	42	17.4	na	38	13.0		17.4	43	1.0		na	43	6.5		
4D	526	14.8	62	18.2	na	58	18.2		12.8	52	1.0		na	52	6.5		
Weighted Ave.	862	16.1	56	18.0		52	15.0		13.8	48	1.0			48	6.4		
High to moderate CWHR suitability habitat attributes for mature forest species at 6 th order watershed scale adjusted for cumulative effects of previous and planned projects																	
5D	2037	20.3	62	20	na	60	5.1		20.2	60	19.8		na	60	5.0		
5M	401	17.9	42	17.4	na	38	13.0		17.9	42	15.6		na	43	12.0		
4D	11,996	14.8	62	18.2	na	58	18.2		14.4	62	16.4		na	62	17.9		
4M	4,574	17.9	42	17.4	na	38	13.0		17.4	42	15.6		na	43	12.0		
Weighted Ave.**	19,628	16.1	56	18.0		52	15.0		16.0	56	16.2			50	14.5		

¹ CA Wildlife Habitat Relationships Size/density class
 Size Class Crown size Density Canopy Closure
 5=Med/large >24' D=Dense 60-100%
 4=Small tree 12-24' M=Medium 40-59%
 3=Pole tree <12' P=Poor 25-39%

This table is a representation of the weighted average stand conditions adjusted to 2016 within the treatment units and 6th order watersheds by California Wildlife Habitat Relationships size and density classes. Some plantations have reached size and density 4D, but generally lack the complexity for denning/nesting habitat. They may provide resting/foraging habitat depending on legacy elements, however suitability for resting/roosting/foraging habitat will not be affected by the proposed action.

*Reflects high observed and expected mortality

**adjusted for projects completed within 10 years, approved and reasonably foreseeable, including Summit, Tobias and Rancheria (total moderate and highly suitable fisher habitat remains the same, no habitat was rendered unsuitable except by the Shirley fires (2013, 2014) since 2002 within the watersheds addressed for cumulative effects. See appendix X for a list of projects affecting moderate to highly suitable fisher, spotted owl and goshawk habitat within the analyzed watersheds since 2002 (last update of forest vegetation GIS layers). At the scale or effects extrapolated to the 4 affected watersheds, there is no significant cumulative effect.

Availability of large trees (> 40" DBH)

The project area is second growth forest with few trees greater than 30 inches DBH. The proposed action would not affect availability of live trees over 30 inches dbh. The largest trees available would be retained. Thinning would increase growth of the remaining trees and reduce stress or competition based mortality of large trees resulting in stands dominated by larger trees over time. Current drought related mortality appears to be affecting larger trees at a greater rate than expected. Thinning is expected to reduce the loss of larger trees but is difficult to model in the no action alternative. The effect of thinning to reduce mortality of larger trees appears to be evident in the thinned stands on adjacent county lands, where overall mortality and mortality of larger trees appears to be less evident than adjacent unthinned stands. Live trees greater than 24 inches dbh within treatment units and within the sixth order hydrologic units (HUC watersheds) are displayed in table 4 above for action and no action adjusted for cumulative effects of other projects projected out to 2051.

Retention of snags, number of large snags (> 15" DBH)

The past 4 years of severe drought resulted in stands that have high densities of standing dead trees with an average for some stands of 16 snags/acre over 15 inches dbh and pockets of much higher mortality. Even with a return to rainfall closer to average conditions, tree mortality is expected to continue at accelerated rates for several years even in the treated areas. As such removal, of hazard trees and the majority of dead trees on approximately 10 percent of the analysis area would not reduce the level of snags below the 4 snags/acre level recommended for Sierra Nevada mixed conifer forest. Snags should not be limiting on a landscape basis and are expected to continue to increase over the near future. Snag levels will decline into the future as existing snags decay and fall. Recruitment of new snags can be cyclic and dependent on future climate effects.

Large down woody debris (> 20" diameter at small end)

The high rates of tree mortality are expected to continue and the majority of the project area will not be treated to remove standing or down dead trees due to steep slopes and conditions where treatment is not economically feasible with existing resources. Within the WUI defense zone, down logs will be minimized to reduce fuels and increase the ability to safely construct and hold fire suppression lines. However, on a landscape basis, down logs will exceed the 10-15 tons/acre recommended in the 2001 Sierra Nevada Forest Plan Amendment (current direction allows down woody material levels to be set based on local conditions and makes no recommendation for down logs within WUI defense). Due to the high rate of tree mortality, it is expected that there will be high to extremely high accumulations of large down wood, in some areas, exceeding 100 tons/acre. On average, the project area can be expected to significantly exceed the recommended 10-15 tons/acre of large down woody material.

Cumulative effects

The original Ice Fuels Reduction and Timber Sale project environmental analysis (USDA-FS 1994) anticipated the effects of high density forest and fuels accumulation that contribute to the existing condition in 2016. Delays in implementation of the Ice Project have resulted in increased activity in the area over a relatively short period of time as the Forest Service tries to implement the old decisions and keep on track to achieve levels of treatment that have been shown to be effective at changing wildfire effects that reduce the risk of stand replacing effects of wildfire and drought. The fisher analysis for Summit (Lang 2016) analyzed cumulative effects of all past, present and reasonably foreseeable projects and found that effects on fisher fall within the recommendations within the Southern Sierra fisher conservation strategy.

- Design treatments to keep affected management grid cells in suitable fisher habitat condition *and* limit disturbance from mechanical treatments to <13% of the affected cells over a five- year period (Zielinski et al. 2013b) or <25% over a 10-year period, unless treatments will not fragment fisher core or linkage areas and will better meet fisher conservation objectives. In areas at highest risk of severe fire in critical locations, up to 30% of the area may be treated over a five-year period or up to 50% in a 10-year period, so long as the retention guidelines are adhered to and fisher core or linkage areas are not fragmented.

For spotted owls and goshawk, the requirements for protection of PACs was met and adequate adjacent untreated habitat support habitat that exceeds the analysis by Lee and Irwin(2005) for supporting reproductively successful spotted owls in the southern Sierra. Since habitat remains within reasonable tolerance of established thresholds, no adverse cumulative effects are expected for mature, closed canopy, forest habitat dependent species.

Determination

No Action

The direct, indirect and cumulative impacts of no action may contribute to the accelerating trend toward deforestation and leading toward federal listing (protection under the Endangered Species Act) or loss of species viability for the California spotted owl, northern goshawk and the west coast distinct population segment (DPS) of fisher

Rationale

The 2006 USFWS finding on a petition to list the California spotted owl determined that the effects of wildfire had not reached the point of magnitude that would warrant listing of this species for federal protection. Wildfire effects were a contributing factor in the determination by the USFWS that listing of the west coast DPS of fisher was warranted. No action may contribute to increased risk of another large-scale, stand replacing fire. However, the effects of future wildfire are speculative, not "reasonably foreseeable" and may range from beneficial to stand-replacing loss depending on timing and climatic conditions. There is an increasing risk of stand-replacing fire as fuels accumulate with continued fire exclusion. No action will result in an extreme accumulation of fuel and is likely to compromise future options for controlling severe wildfire effects, however the effects would occur over a limited geographic area at the periphery of the occupied range for fisher and the California spotted owl such that loss of habitat would not be likely to cause a trend leading to a large gap in occupied habitat for these species. Northern goshawks appear to be less impacted by stand replacing fire effects than the other species, but may be similarly affected by future fires.

Proposed Action

The direct, indirect and cumulative impacts of the proposed action would not cause or significantly contribute to a trend leading to protection under the Endangered Species Act or loss of viability for the California spotted owl, or northern goshawk. The proposed action would not be likely to cause or contribute to a trend jeopardizing the West Coast distinct population segment of fisher.

Rationale

The scale of affected foraging habitat would be small relative to the available habitat; the intensity of change would be moderate considering size of units, project design features that include retention of green trees and down logs. There are potential benefits to short and long-term productivity by accelerating cover from down logs and slash for soil retention and wildlife cover. There are additional long-term benefits that may accrue from strategically placed areas of reduced fuels where fire can be managed both for suppression and resource benefit in the future.

Salamanders

Greenhorn Mountains slender salamander (*Batrachoseps altasierrae*)

Status and Distribution (from Californiaherps.com (Nafis 2013))

Endemic to California, *B. altasierrae* is the common high elevation *Batrachoseps* species found on the western slopes of the southern Sierra Nevada. This species occurs in the Greenhorn Mountains north to the Tule River and Kern River highland drainages. It is also known from one area on the western edge of the Kern Plateau east of the Kern River.

B. altasierrae was described in February 2012 by Jockusch et al. (Jockusch et al. 2012), *B. relictus* found north of the Kern River were renamed *B. altasierrae*. Salamanders south of the Kern River on Breckenridge Mountain are given the name *B. relictus*. *B. altasierrae* is not officially listed as Forest Service sensitive, but it is a species of local concern and is addressed as if Forest Service sensitive for the purpose of this analysis.

Habitat Relationships and Biology

This species occurs from 3,900 - 8,200 ft. (1200 - 2500 m) in heavily forested areas of mixed-conifers and deciduous oaks. The species is a member of family Plethodontidae, lungless salamanders. Lungless salamanders breathe through their skin which requires them to live in damp environments on land and to move about on the ground only during times of high humidity. In California, they do not inhabit streams or bodies of water, but they are capable of surviving for some time if they fall into water and appear to be closely associated with water. All California Lungless Salamanders lay eggs in moist places on land. The young hatch from the egg directly into a tiny terrestrial salamander with the same body form as an adult. Most slender salamander species are active on rainy or wet nights when temperatures are moderate, fall through spring, retreating underground when the soil dries or when air temperature drops to near freezing. At higher elevations, activity may be restricted to spring and early summer and early fall.

Risk Factors and Management Concerns for Greenhorn Mtn. Slender Salamander

There is no specific management direction for salamanders. Riparian Conservation Area buffers of 300 feet on either side of perennial streams, meadows, seeps, and springs and 150 feet on either side of intermittent streams provide protection to habitat by limiting effects from management projects. Although the salamanders are not dependent on surface water they are moisture dependent. As such, mesic sites, east and north slopes or riparian areas are the most likely habitat where they may be found. Land-use activities that affect substrate, ground cover including down wood, compact soil, forest condition, or microhabitat and microclimate regimes may

impact individuals or populations at occupied sites (Olson et al 2002). In particular, where there is limited large down wood volume and limited down wood recruitment, negative consequences for this terrestrial salamander are likely. Evaluation criteria are:

1. Road construction and maintenance especially in or near temporary draws areas of springs, seeps or other moist areas;
2. the integrity of substrates (avoid soil compaction) for subsurface refugia),
3. Sustainable riparian habitat;
4. Availability of decayed logs in the 50 to 75 cm (20 to 30 in) diameter class, and snags;
5. Jack pot burning in moist riparian areas, Aspen Groves, meadows, and temporary draws
6. Effects of controlled fire in upland wooded areas

Effects

No Action

Direct and Indirect Effects

Roads construction and maintenance especially in or near temporary draws areas of springs, seeps or other moist areas

No action would not alter current conditions for this species.

Maintain the integrity of substrates (avoid soil compaction) for subsurface refugia

These salamanders live underground during the colder and hotter parts of the year. No action should have no direct effects on ground disturbance. However indirect effects include the increased potential for severe wildfire effects.

Sustainable riparian habitat

The species has a small range within the Greenhorn Mountains. As the risk of widespread unmanageable fire increases with predicted climate change, seeps, riparian conservation areas and streamside management zones may burn eliminating the potential beneficial effects of this habitat for this species in xeric areas.

Availability of decayed logs in the 50 to 75 cm (20 to 30 in) diameter class, and snags;

Existing high levels of down woody material and standing snags is beneficial for wildlife, but increases the risk of stand-replacing fire effects which could remove all habitat for this species.

Jack pot burning in moist riparian areas, meadows, and temporary draws

None.

Effects of controlled fire in upland wooded areas

None.

Cumulative Effects

The cumulative effects of no action may contribute to an increasing trend toward deforestation as a result of wildfire. This trend is expected to increase as a result of projected trends in climate change and fuel accumulation in the absence of natural fire. No action fails to increase the resistance of forested stands to the effects of stand-replacing effects and their resilience or ability to recover important stand characteristics after disturbance. As such no action will contribute to the existing trend toward loss of mature forest habitat. With no action to reduce fuels, fuels build up and no barriers to stop unmanageable wildfire, the no action alternative could have indirect effects which could result in long-term loss of habitat of burning a substantial portion of the range of this range restricted species. Due to the slow spread of these salamanders from one location to another they would be severely reduced in distribution for a long period of time.

Proposed Action

Direct and Indirect

Roads construction and maintenance especially in or near temporary draws areas of springs, seeps or other moist areas

There are no new roads planned for this action.

Maintain the integrity of substrates (avoid soil compaction) for subsurface refugia

These salamanders live underground during the colder and hotter parts of the year. Tree-felling and ground based logging systems mechanically disturb the substrate and ground cover which can result in both substrate compaction and loss of the integrity of existing down wood. These actions can result in loss of interstices used by salamanders as refuges and for their movements, and a drying out of the ground surface if cover is lost. However indirect effects of wildfire under no action may be greater than the upland use of mechanized equipment. **Timing of mechanized equipment use should coincide with the hottest part of the summer when soils are dry and salamanders are not on the surface.** Reduce, where possible, the area traversed by large machinery or over which logs are dragged. As long as mechanized machinery does not enter moist habitats and methods to minimize ground disturbance are employed in upland sites; this resource issue should have no significant direct impacts on the species or the population in the area. No skidding or mechanical disturbance is planned within the riparian zones where this species would be expected.

Sustainable riparian habitat

The protection of seeps, riparian conservation areas, meadows, and streamside management zones and limited time for management activities will provide the best protection for this species. As the risk of large-scale, stand-replacing fire effects increases with predicted climate change; seeps, riparian conservation areas and streamside management zones may burn, eliminating the beneficial effects of this habitat. Management directives for fuels reductions in riparian areas have not yet been developed. However the risk of unmanageable wildfire will be reduced by creation of WUI areas, reduction of fuels and under burning associated with the proposed action. Hand thinning activities should not disturb this species as long as it is done either in the hottest time of year or when temperatures begin to drop towards night time freezing. With restriction on timing of activities, this resource issue is unlikely to significantly affect this species.

Availability of decayed logs in the 50 to 75 cm (20 to 30 in) diameter class, and snags;

There is a trade-off between the desire to reduce fuels and the need to retain surface litter, large down woody debris and other features that provide cover and retain moisture. These features provide microsites and dispersal habitat for salamanders. This species is unlikely to be travelling in upland areas in the hottest time of the year (July and August). The proposed action is focused on areas adjacent to private land and housing tracts on low to moderate slopes. Significant stands with little or no treatment will remain. High densities of snags and down logs in the untreated areas will remain available for salamander habitat. Treated areas will retain a minimum of 50% ground cover within the unit and 3-5 down logs averaged across the landscape.

Jack pot burning

No direct burning is planned within riparian areas. Most activity will be pile burning outside riparian areas, however, some creeping or backing fire may be allowed where there is incomplete combustion of duff and riparian vegetation is not adversely affected. Low intensity fires that retain decayed logs (don't jackpot burn decayed and rotting logs) and occur during the seasons when salamanders are not surface active are not likely to have adverse effects.

Effects of controlled fire in upland wooded areas

It is anticipated that all burning will be pile burning, but effects of broad cast burning is address also as a contingency. Prescribed fire for fuels reduction treatments may have different effects than natural fire that can differ significantly in intensity. Low intensity fires that retain large down wood and occur during the seasons when these salamanders are not surface active may not have adverse effects. One recent study surveyed for this species following a midsummer fire (Clark, 2003), and numerous detections were reported (Olson et al. 2002). With retention of 10-15 tons/acre of large woody debris, including and specifically targeting retention of large rotting logs (> 20inches DBH small end) where available, the project should optimize upland habitat for salamanders while meeting fuels requirements and reducing overall potential for less desirable large-scale, stand replacing fire effects.

Cumulative effects

Most of the past prescribed burning has been light underburning in the project area. The burning has caused torching of groups of trees and resulted in increased snag numbers, but the effects have been small in scale. The historical fire regime in the area was likely one of high frequency and low intensity fire, which consisted of very frequent underburning of the forest in the summer and fall and few stand replacement events. The effects of a more intense level of fire disturbance due to fire suppression and fuel loading is of concern in that stand replacement fire represents a more catastrophic disturbance to flora and fauna. In particular, relative to salamander habitat, it removes overstory canopy that serves to moderate surface microclimates from extremes (e.g., high temperatures and low moisture) and can reduce decayed down wood (Olson et al. 2002). The cumulative effects of the project as described for the proposed action would reduce the risk of widespread unmanaged fire when compared to no action.

Determination

No Action

The direct, indirect or cumulative impacts of no action are **unlikely to contribute to a trend leading to protection under the Endangered Species Act or loss of viability** for the Greenhorn Mountains slender salamander.

Rationale

No action foregoes opportunities for reduction of stand-replacing fire risk, improvement of tree growth and restoration of conditions closer to the natural range of variability. The trend toward deforestation as a result of large-scale, stand-replacing fire effects is of concern but in this area it is mitigated by high suppression costs invested to protect the community of Alta Sierra. However, it is not inevitable that the area will burn at stand-replacing intensity and slender salamanders appear to have survived some areas of severe fire effects within the McNally fire. Therefore, although there is greater risk to the species under no action, a wild fire under average conditions could affect a large portion of the habitat for this species but would be unlikely to cause loss of viability.

Proposed Action

The direct, indirect or cumulative impacts of the proposed action should not cause or contribute to the need for protection under the Endangered Species Act or loss of viability for the Greenhorn Mountains slender salamander.

Rationale

There would be some temporary disturbance and effects on suitable habitat for Greenhorn Mountain slender salamander, but the effects would be small in scale, would not result in elimination of habitat currently suitable for these species and would reduce potential risk of adverse effects of large-scale, stand-replacing effects of wildfire or insect and drought related mortality

Bat Group

The Townsends' big-eared bat, pallid bat and fringed myotis are addressed as a group since habitat and effects are similar.

Townsend's big-eared bat**(*Corynorhinus townsendii*)****Status and Distribution**

Townsend's big-eared bat is found throughout California, but the details of its distribution are not well known. This species is found in all but subalpine and alpine habitats, and may be found at any season throughout its range. Once considered common, Townsend's big-eared bat now is considered uncommon in California. It is most abundant in mesic habitats. This species has been found in abandoned mines and using portions of the McNally Fire but not specifically within the project area.

Habitat Relationships

This species roosts in caves, mines, tunnels, buildings, or other human-made structures. It may use separate sites for night, day, hibernation, or maternity roosts. Hibernation sites are cold, but not below freezing. Maternity roosts are warm. Roosting sites are the most important limiting resource. This species prefers mesic habitats. Gleans from brush or trees or feeds along habitat edges. Peak activity is late in the evening preceded by flights close to the roost. This relatively sedentary species makes short movements to hibernation sites. Males are solitary in spring and summer. Females form maternity colonies. This bat is relatively specialized on moths and is a slow, maneuverable flier. It gleans, and captures prey in the air by echolocation. Roosting sites may be shared with other species. This species is extremely sensitive to disturbance of roosting sites. A single visit may result in abandonment of the roost. All known nursery colonies in limestone caves in California apparently have been abandoned. Numbers reportedly have declined steeply in California.

Pallid bat**(*Antrozous pallidus*)****Status and Distribution**

The pallid bat is a locally common species of low elevations in California. It occurs throughout California except for the high Sierra Nevada from Shasta to Kern counties and the northwestern corner of the state from Del Norte and western Siskiyou cos. to northern Mendocino Co. A wide variety of habitats is occupied, including grasslands, shrublands, woodlands, and forests from sea level up through mixed-conifer forests. The species is most common in open, dry habitats with rocky areas for roosting. It is a yearlong resident in most of the range. This species is known from Sequoia National Forest and is presumed present.

Habitat Relationships

Pallid bats forage over open ground, usually 0.5-2.5 m (1.6-8 ft.) above ground level. Foraging flight is slow and maneuverable with frequent dips, swoops, and short glides. Day roosts are in caves, crevices, mines, and occasionally in hollow trees and buildings. Roost must protect bats from high temperatures. Bats move deeper into cover if temperatures rise. Night roosts may be in more open sites, such as porches and open buildings. Few hibernation sites are known, but this species probably uses rock crevices. This species prefers rocky outcrops, cliffs, and crevices with access to open habitats for foraging. Briefer foraging periods occur in autumn, and activity is infrequent below 2°C (35°F). It undergoes shallow torpor daily and hibernates in winter near the summer day roost. Most pallid bats (95%) roost in groups of 20, or more, ranging to 162. Group size is important for metabolic economy and growth of young. This slow-flying, maneuverable species is adapted to feed on large, hard-shelled prey on the ground or in foliage. It is known to roost with a number of other bats, principally *Myotis* spp. and *Tadarida brasiliensis*.

Fringed myotis**(*Myotis thysanodes*)****Status and Distribution**

The fringed myotis is widespread in California, occurring in all but the Central Valley and Colorado and Mojave deserts. Its abundance appears to be irregular; it may be common locally. It occurs in a wide variety of habitats; records range in elevation from sea level to 2850 m (9350 ft) in New Mexico. Optimal habitats are pinyon-juniper, valley foothill hardwood and hardwood-conifer, generally at 1300-2200 m (4000-7000 ft).

Habitat Relationships and Biology

Fringed myotis roost in caves, mine tunnels, rock crevices, and old buildings in colonies that may number several hundred. This is a highly migratory bat that arrives by May, at which time it forms nursery colonies. These colonies begin to disperse in October, and the winter locales and habits of this bat remain a mystery.

This species appears late in the evening to forage. They fly slowly and are highly maneuverable, allowing the bats to forage close to the vegetative canopy or about the face of small cliffs. No data are available on their specific food habits, but specimens from New Mexico contained mostly small beetles.

The single young is born in late June or early July after a gestation period of 50-60 days. Gravid females captured on June 28 each contained a single fetus nearly ready for birth. Immature individuals have been found in July and August in colonies of adult females. The young are able to fly at 16-17 days of age. As with other species of Myotis, adult males and females do not associate with each other in summer.

Risk Factors and Management Concerns for bat species

There is no specific management direction for these species.

1. Numbers of large snags. The bats may use snags or large trees with loose bark at varying levels for roost sites. Red bats tend to use primarily oaks, while pallid and Townsends' bats tend to use caves, crevices and abandoned mines.
2. Open flight paths and foraging areas.

Effects

No Action

Direct and Indirect

There would be no direct or indirect effects as a result of no action.

Cumulative

The cumulative effect of continued fire suppression and no action may contribute to severe and widespread effects of wildfire. Combined with climate change and trends toward increasing deforestation due to fire, no action would likely contribute to the existing trend toward loss of forested habitat, but may benefit bats by creating more open habitats and short-term snags for roost sites.

Proposed Action

Direct and Indirect

The primary effect of the proposed action would be loss of potential roost sites as a result of removal of dead trees. High snag levels would remain across the landscape in untreated areas of the analysis area. Considering the number and distribution of snags, it is unlikely that snags for roosting would become a limiting factor. Thinning and removal of dead trees would open better flight paths.

Cumulative

A small proportion of available habitats would be affected and would not be likely to affect bats foraging in the area. At a landscape scale the number of snags and potential roost trees would remain at high to extremely high level

Determination

No Action

The direct, indirect and cumulative impacts of no action **would not cause or contribute to a trend leading to protection under the Endangered Species Act or loss of viability** for Townsends' big-eared bat, pallid bat or fringed myotis.

Rationale

No Action would have no effect on bat species using the fire area.

Proposed Action

The direct, indirect and cumulative impacts of the proposed action **would not cause or contribute to a trend leading to protection under the Endangered Species Act or loss of viability** for Townsends' big-eared bat, pallid bat or fringed myotis.

Rationale

These species primarily use caves and other structures for roost sites. The fire killed trees are unlikely to have developed loose bark that would support bat roosts at this point. Open flight paths that attract bats to fires for foraging would remain open.

SPECIES OF LOCAL INTEREST

The following species were identified through public comment as species of local concern or interest.

Table 7: Species of local concern

Species	Distribution	Status/Threats	Determination
ring-tailed cat <i>Bassariscus astutus</i>	Widely distributed, common to uncommon permanent resident. Occurs in various riparian habitats, and in brush stands of most forest and shrub habitats, at low to middle elevations. Little information available on distribution and relative abundance among habitats (Grinnell et al. 1937, Schempf and White 1977). Known from the project general area.	Natureserve=secure, Not considered a species at risk or with special status. No specific threats identified. May use snags and forested habitats, but habitat does not appear to be limiting	No further analysis or special mitigation provisions warranted
Mt. Pinos sooty grouse <i>Dendragapus fuliginosus howardi</i>	Sooty grouse known from the general project area, but not proposed treatment units. Favors open forest along ridgelines and near meadows. Could be favored by thinning on ridgelines. As long as low cover is retained near food sources.	Subspecies in project vicinity uncertain if Mt. Pinos or likely the more common sierra subsp pending genetic confirmation. Natureserve ranking of T2 indicates concern for subspecies, but there is no official designation, still considered a game species. Some forms of timber harvest can be a threat, but no specific threat from proposed action indicated & public comment did not indicate any new or unforeseen information that would change this information.	No further analysis or special mitigation provisions warranted
golden eagle <i>Aquila chrysaetos</i>	Golden eagles generally inhabit open and semi-open country such as prairies, sagebrush, arctic and alpine tundra, savannah or sparse woodland, and barren areas, especially in hilly or mountainous regions, in areas with sufficient mammalian prey base and near suitable nesting sites. In Nevada, the only habitats routinely avoided by golden eagles are forests, large agricultural areas, and urban areas. Found in more open habitats in the surrounding area. No known use of the project area	Protected by federal law. No project specific threats identified. No presence or suitable habitat identified in project area.	No further analysis or special mitigation provisions warranted
sharp-shinned hawk <i>Accipiter striatus</i>	Sharp-shinned Hawks are birds of the forest and forest edge, and are not found where trees are scarce or scattered, except on migration. They require dense forest, ideally with a closed canopy, for breeding. While favoring forests that contain conifers, they also nest in stands of aspen in Colorado, oak-hickory forest in Missouri, and the hardwood forests of the East. They occupy a wide range of elevations, from sea level to near tree line. In the winter season, look for Sharp-shinned Hawks at forest edges, in somewhat more open habitats than the dense forests. Observations in project area in habitat similar to and protected for spotted owl and goshawk.	Habitats, analysis and protections are similar to spotted owl, fisher and goshawk. No project specific new information regarding threats or presence was provided in public comment	No further analysis or special mitigation provisions warranted
pileated woodpecker <i>Dryocopus pileatus</i>	Pileated Woodpeckers live in mature deciduous or mixed deciduous-coniferous woodlands of nearly every type, from tall western hemlock stands of the Northwest to beech and maple forests in New England and cypress swamps of the Southeast. They can also be found in younger forests that have scattered, large, dead trees or a ready supply of decaying, downed wood. Throughout their range, Pileated Woodpeckers can also be found in suburban areas with large trees and patches of woodland. This species has been observed in the general project area.	No federal or state status. IUCN identified as species of least concern. Pileated Woodpeckers are fairly common and numerous. Their populations steadily increased from 1966 to 2014, according to the North American Breeding Bird Survey. No project specific new information or threats were identified in public comment. They primarily use large dead trees, specifically fir. With the current rates of drought and insect related tree mortality, habitat is not in short supply and the proposed project will not significantly affect habitat at the landscape scale.	No further analysis or special mitigation provisions warranted
gregarious slender salamander <i>Batrachoseps gregarius</i>	Endemic to California. Occurs along the west slope of the central and southern Sierra Nevada Mountains from the southern boundary of Yosemite National Park almost to the Kern River. Occurs from around 1000 ft. to 5,900 ft. (300 - 1800 m.) Mostly found in oak woodlands in the foothills, but they are also found in high-elevation coniferous forests, and grasslands on the floor of the Central Valley, including very hot and dry habitats at the southern end of its range. Not specifically within project but may overlap range.	Listed as imperiled by one organization, though there are no apparent issues with this salamander other than some possible loss of habitat at the eastern edge of the Central Valley to development and agriculture. No protected status. No project specific information provided regarding threats.	No further analysis or special mitigation provisions warranted. Similar habitats and analysis as Greenhorn Slender Salamander
Blainville's horned lizard <i>Phrynosoma blainvillii</i>	Historically found in California along the Pacific coast south into Baja California, west of the deserts and the Sierra Nevada, north to the Bay Area, and inland as far north as Shasta Reservoir. Ranges up onto the Kern Plateau east of the crest of the Sierra Nevada. The range has now been severely fragmented due to land alteration. Found at elevations from sea level to 8,000 ft. No specific records of	Natureserve= species vulnerable, but not specifically at risk. Species has no official conservation status and has not been identified as of conservation concern by state of federal agencies. Threatened and eliminated from many areas due to habitat destruction from human	No further analysis or special mitigation provisions warranted

Species	Distribution	Status/Threats	Determination
	species in project area, but assumed that it may be present in open areas.	development and agriculture, and the spread of nonnative ants, such as Argentine Ants (<i>Iridomyrmex humilis</i>) which displace the native ant food source. Before commercial collecting was banned in 1981, this lizard was extensively exploited by the pet trade. No threats specific to this project identified	
Sierra night lizard <i>Xantusia sierrae</i>	Found only in the southwestern foothills of the Sierra Nevada Mountains along the western edge of the Greenhorn mountains around Granite Station, in Kern Co.	Due to its small range, the Sierra Night Lizard is very susceptible to any habitat alteration. This lizard needs exfoliated and fissured granite outcrops to survive. Project is outside of the known range and habitats for this species. No new information regarding presence or potential threats specific to this project identified	No further analysis or special mitigation provisions warranted
southern rubber boa <i>Charina umbratica</i>	<p>The range of this species is unclear, controversial and still under investigation. It is definitely found in a few disjunct areas in montane southern California in the San Bernardino and San Jacinto Mountains, but boas occurring in the southern Sierra Nevada, the Tehachapi Mountains, and on Mt. Pinos, Mt. Abel, Mt. Alamo, and Frazier Mountain appear to be protected as <i>C. umbratica</i> by the California Department of Fish and Wildlife. Nevertheless, their species status is still unclear. Pending more DNA studies, these could turn out to be <i>C. umbratica</i> or <i>C. bottae</i> or hybrids. Since the species of <i>Charina</i> occurring in the southern Sierra Nevada, the Tehachapi Mountains, Mt. Pinos, and in San Luis Obispo County has not been determined, and because <i>C. umbratica</i> is a species protected by the state CalHerps maps show a separate area for range maps of <i>Charina</i>, unknown species, and another for <i>Charina</i> that appear to be classified as <i>C. umbratica</i> by the CDFW, until new scientific studies change this. MitDNA work has shown that most (but not all) <i>Charina</i> in the southern Sierra Nevada and the Tehachapis are more closely related to <i>Charina bottae</i> than to <i>Charina umbratica</i>.</p> <p>"Morphologically, the Kern Plateau, Breckenridge Mountain, Piute Mountains, Scodie Mountains, and Tehachapi Mts populations all are comprised of "dwarf-morph" snakes [similar to <i>C. umbratica</i>] but that trait does not track with the mtDNA." (R.Hansen Pers. Comm. 4/13) Because the morphology does not correspond to the mtDNA findings, there is not enough evidence to support an argument that these populations belong to either species.</p>	The project area in northern Kern county appears to fall under the range Map for <i>C. bottae</i> , but is unclear at the scale presented. This species may use snags and down wood but evolved with frequent fire and retreats to areas with greater moisture during the time period when full consumption of down logs would be likely. Moisture in down logs would likely protect the species during late fall burning. High volumes of snags and down logs will remain well distributed across the landscape and will retain adequate habitat for this species. No project specific threats were identified in public comments.	No further analysis or special mitigation provisions warranted
western bumble bee	<i>Bombus occidentalis</i> was widespread and common throughout the western United States and western Canada before 1998 (Xerces Society 2009). The former range of U.S. states included: northern California, Oregon, Washington, Alaska, Idaho, Montana, western Nebraska, western North Dakota, western South Dakota, Wyoming, Utah, Colorado, northern Arizona, and New Mexico (Fig. 4). Unfortunately, since 1998 populations of this bumblebee have declined drastically throughout parts of its former range. In Alaska and east of the Cascades in the Canadian and U.S. Rocky Mountains, viable populations still exist. Populations of the western bumblebee in central California, Oregon, Washington and southern British Columbia have mostly disappeared.	Species is found north of Fresno County in central California outside the range of this project. No new information was provided regarding presence in the project area or specific threats of this project to the species.	No further analysis or special mitigation provisions warranted
lodgepole chipmunk	Open mixed-conifer forests and forests mixed with chaparral; forests of lodgepole pine, Jeffrey pine, and red fir; lodgepole pine/chinquapin/shrub associations in southern California; meadows in some areas. Primarily terrestrial but frequently climbs trees. Nests for sleeping and rearing young are in burrows, stumps, logs, tree cavities (e.g., woodpecker holes), or among rocks. central Sierra Nevada in California, into Nevada in the vicinity of Lake Tahoe, south to the San Bernardino and San Gabriel mountains and Mount Pinos. Not specifically identified in project area, but within range.	Natureserve ranking= apparently secure. Species is widespread and not at risk. It has no federal or state status. No threats or habitats at risk for this species were identified in public comment.	No further analysis or special mitigation provisions warranted

SUMMARY OF DETERMINATIONS: BIOLOGICAL EVALUATION

It is my determination that the proposed action is not likely to lead to a trend toward federal listing under the Endangered Species Act for: Northern goshawk, California spotted owl, fisher, Greenhorn Mtns., slender salamander, Townsend's big-eared bat, pallid bat, fringed myotis. A no effect determination is made for the federally protected species: California condor. Mountain yellow-legged frog and California red-legged frog..

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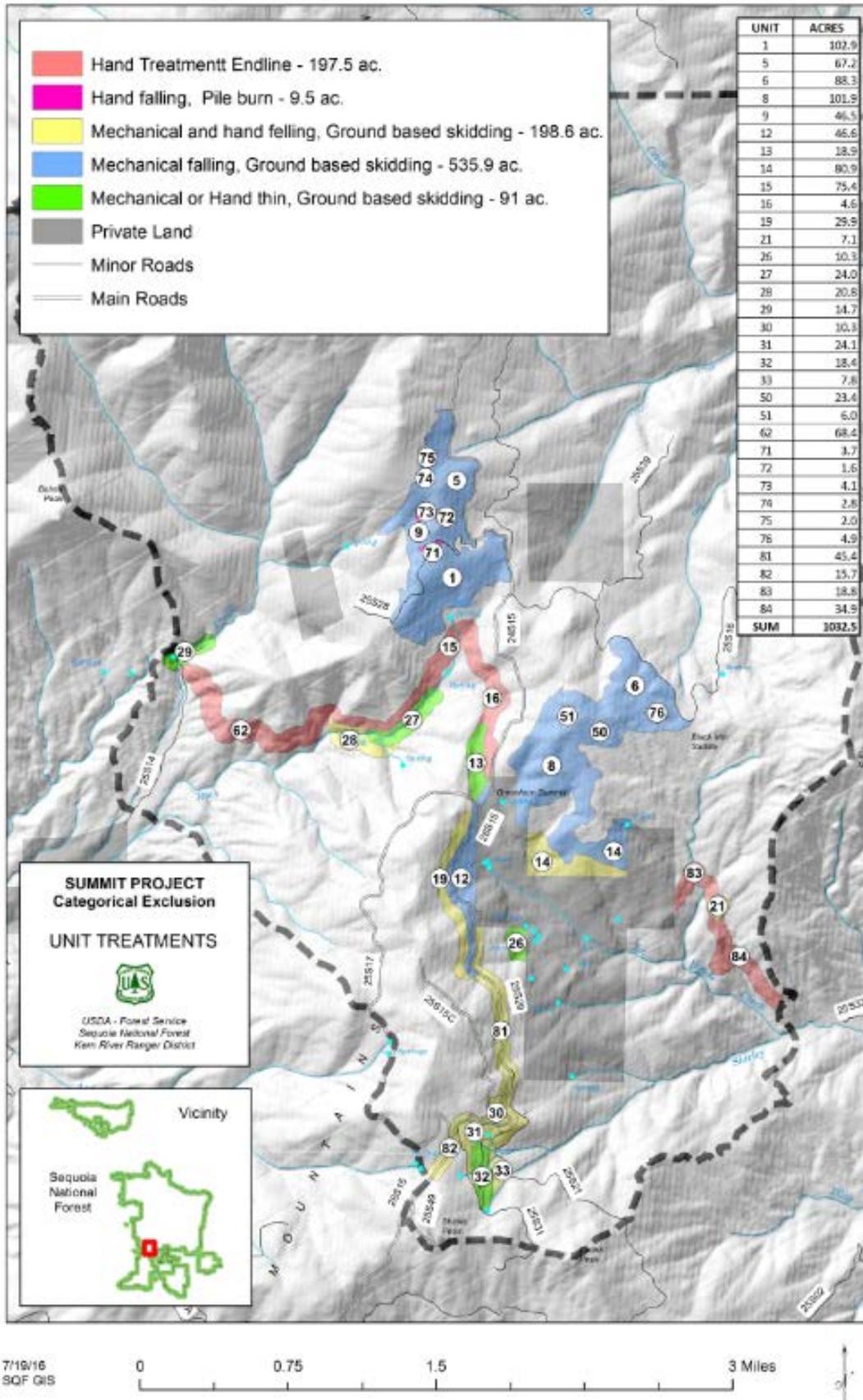
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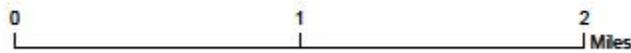
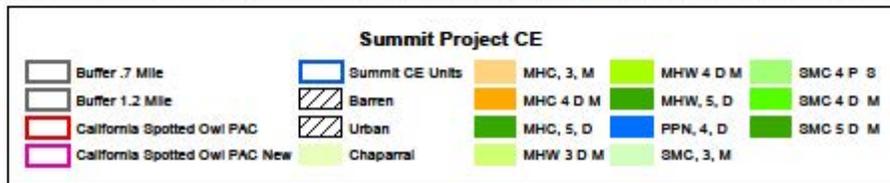
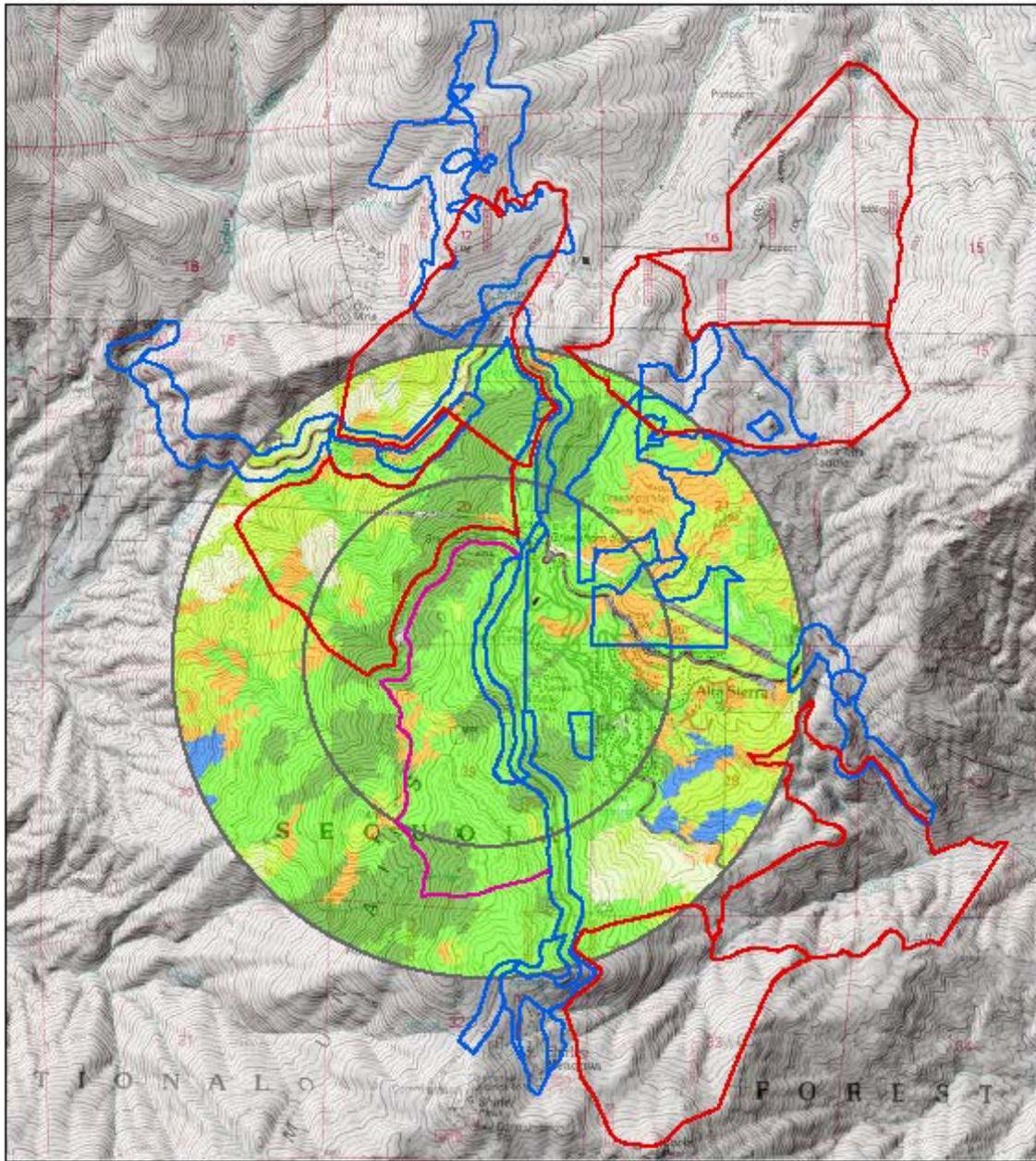
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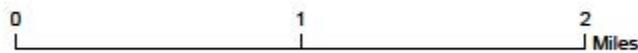
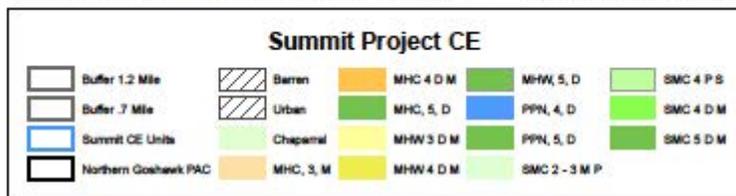
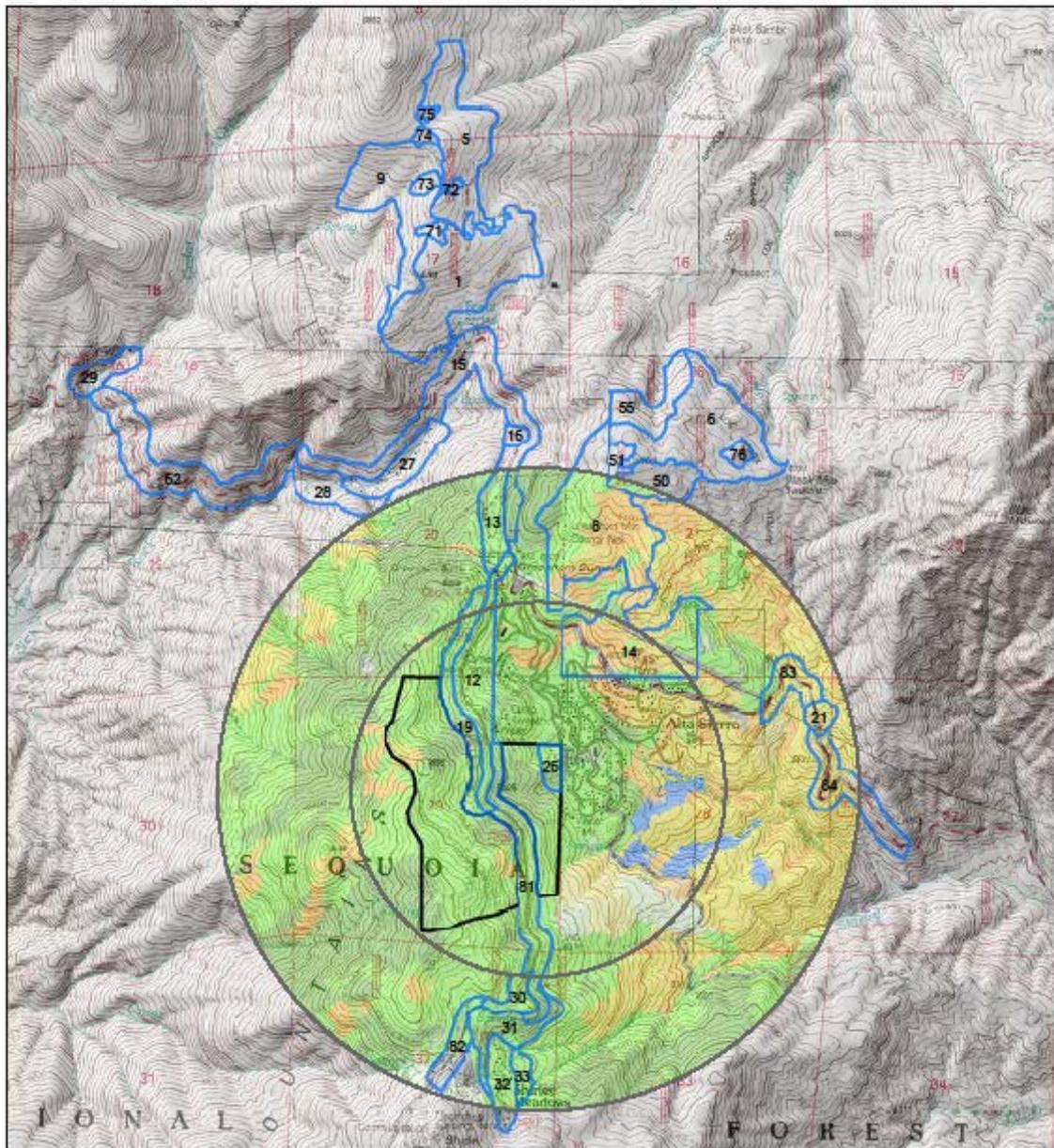
MAP A: SUMMIT HEALTHY FOREST RESTORATION PROJECT



MAP B: NEW SPOTTED OWL PROTECTED ACTIVITY CENTER (PAC)



MAP C: NEW GOSHAWK PROTECTED ACTIVITY CENTER (PAC)



APPENDIX A: LIST OF PROJECTS CONSIDERED IN CUMULATIVE EFFECTS

The following Pacific Southwest Region, USDA Forest Service, sensitive species and federally listed threatened, endangered and proposed species were reviewed for potential impacts. Species not addressed in detail are identified with a brief rationale for that determination.

TABLE A-1: THREATENED, ENDANGERED AND PROPOSED ANIMALS

Sequoia National Forest (USFWS List, 02/2015)

Common Name <i>Scientific Name</i>	Habitat Requirements	Risk/Rationale
California Tiger Salamander <i>Ambystoma californiense</i>	Valley floor, annual grassland, vernal pools generally below 2,000'	None, outside known range
Vernal pool fairy shrimp <i>Branhinecta lynchi</i>	Valley floor, annual grassland, vernal pools generally below 4,000'	None, outside known range.
W yellow billed cuckoo <i>Coccyzus americanus occidentalis</i>	Dense riparian forest. Only known from SFWA at Lake Isabella.	None, outside known range.
Valley Elderberry L-H Beetle <i>Desmocerus californicus dimorphus</i>	Fresno County north, specific to elderberry with 1" stems below 2,900'	None, outside known range.
Tipton kangaroo rat <i>Dipodomys nitratoides</i>	Alkali sinks and valley floor habitat	None, outside known range.
SW Willow flycatcher <i>Empidonax traillii extimus</i>	Riparian forest and meadow with dense willow habitat and standing water.	None, outside known range
Kern primrose sphinx moth <i>Euprosperinus euterpe</i>	Valley foothill, oak woodland and chaparral associated with evening primrose. Range limited to Walker Basin area	None, outside known range.
Blunt-nosed leopard lizard <i>Gambelia silius</i>	Open grassland, valley floor below 1,000'.	None, outside known range.
California condor <i>Gymnogyps californianus</i>	Mountain and foothill rangeland and forest habitats; nests on cliffs and in large trees.	Low, within range, habitat not affected.
Delta smelt <i>Hypomesus transpacificus</i>	Limited connection to San Joaquin/Sacramento delta	None, outside known range.
Little Kern golden trout <i>Oncorhynchus mykiss whitei</i>	Native to cold water streams in Little Kern Drainage	None, outside known range.
Sierra Nevada bighorn sheep <i>Ovis canadensis californiana</i>	Rugged mountain areas, mostly eastern Sierra with small historic range on western edge of Kern Drainage	None, outside known range.
California red-legged frog <i>Rana draytonii</i>	Low gradient streams and ponds with emergent vegetation below 4,500'. No historical presence in Kern River Valley	None, outside known range
Mountain yellow-legged frog <i>Rana muscosa</i>	4,500-12,000' aquatic habitats, Breckenridge, Kern Plateau and north of Sunday Peak.	None, outside known range.
SN yellow-legged frog <i>Rana sierrae</i>	4,500-12,000' aquatic habitats. North of Kings River	None, outside known range
San Joaquin kit fox <i>Vulpes macrotis mutica</i>	Valley floor annual grassland, alkali washes generally below 1,000'	None, outside known range
Least Bell's vireo <i>Vireo bellii pusillus</i>	Riparian forest. Only known from South Fork Wildlife Area.	None, outside known range

Status Key: E: Endangered

T: Threatened

P: Proposed

X: Critical Habitat

PX: Proposed Critical Habitat

TABLE A-2: FOREST SERVICE SENSITIVE ANIMALS

Sequoia National Forest (Regional Forester's List 06/30/2013)

Common Name <i>Scientific Name</i>	Habitat Requirements	Risk/Rationale
Birds		
Northern goshawk <i>Accipiter gentiles</i>	Dense mixed-conifer forest to open eastside pine	low, No. suitable nesting habitat
Willow flycatcher <i>Empidonax traillii</i>	Large meadow ≥15acre complexes with dense willow and standing water, up to 8,000'	None, no suitable habitat
Bald eagle <i>Haliaeetus leucocephalus</i>	Lakes and open water; nests on large trees.	None, outside known range.
Great gray owl <i>Strix nebulosa</i>	Large meadows & openings 2,500 – 9,000'. Dense forest and large snags for nest area	None, outside known range.
California spotted owl <i>Strix occidentalis occidentalis</i>	Dense forest >40% canopy closure, but open enough to allow for observation and flying space to attack prey. Substantial amounts of dead woody debris are desirable.	Moderate
Mammals		
Pallid bat <i>Antrozous pallidus</i>	Open habitats, rocky crevices, tree cavities, mines, caves, or buildings for maternity roosts. Deep crevices are important for day roosts	Moderate
Townsend's. big eared bat <i>Corynorhinus townsendii townsendii</i>	Nocturnal, roosts in caves, uses wide variety of habitats although usually mesic areas for foraging	Low, no mesic habitats.
California wolverine <i>Gulo luscus</i>	Remote habitats, sensitive to human presence. 4000' to 13,000' mixed habitats	None, outside known range.
Sierra marten <i>Martes caurina</i>	Dense forest >30% canopy cover, high number of large snags and down logs, dense riparian corridors, and small <1 acre openings with ground cover. Elevation 4,000-13,000 ft.	Low, outside known range.
Pacific fisher <i>Pekania pennanti</i>	Dense forest >40% canopy cover. High number of large snags and down logs, dense riparian corridors, and small <1 acre openings with ground cover. Elevation 3,500-8,500 ft.	Moderate, no suitable denning habitat
Fringed. Myotis <i>Myotis thysanodes</i>	Widespread in California, except Central Valley and deserts. Roost in caves, mine tunnels, rock crevices, and old buildings. sea level to 9350 ft.	Moderate, suitable habitat affected
Amphibians		
Fairview slender salamander <i>Batrachoceps bramei</i>	Down logs and moist areas, below 3,500' Limited to area around Fairview and Road's End	None, outside known range.
Breckenridge sl. salamander <i>Batrachoceps relictus</i>	Down logs and moist areas in the Breckenridge and lower Kern Canyon area. South of Kern R.	None, outside known range.
Kern Cyn. slender salamander <i>Batrachoceps simatus</i>	Down logs and moist areas, below 3,500' Limited to Kern Canyon	None, outside known range.
Yellow blotched salamander <i>Ensatina escholtzii croceator</i>	Valley foothill/hardwood habitats and conifer in the Breckenridge mtns. Moist habitats and down logs	None, outside known range.
Foothill yellow-legged frog <i>Rana boylei</i>	Low gradient streams and ponds below 6,000'	None, outside known range.
Reptiles		
California legless lizard <i>Anniella pulchra</i>	Loose, moist soil in chaparral and valley foothill woodland below 3,500'.	None, outside known range.
Southwestern pond turtle <i>Actinemys marmorata</i>	Low gradient ponds and streams with basking sites. Can be found up to 1 mile from perennial water	None, outside known range..
Invertebrates		
Tehachapi fritillary butterfly <i>Speyeria egleis tehachapina</i>	Endemic to Kern County, California: the Tehachapi Mountains and nearby Piute Mountains at about 7000-8400 feet.	None, outside known range.
Fishes		
Kern brook lamprey <i>Lampetra hubbsi</i>	Habitat includes silty backwaters of large rivers in the foothills region. Kings River north	None, outside known range.
Hardhead minnow <i>Mylopharodon conocephalus</i>	Warm water rivers at mid-elevation	None, no perennial streams affected
California golden trout <i>Oncorhynchus mykiss aguabonita</i>	cold water streams in SF Kern drainage	None, outside known range.
Kern River rainbow trout <i>Oncorhynchus mykiss aguabonita</i>	cold water streams in NF Kern drainage	None, outside known range.

APPENDIX B: LIST OF PROJECTS CONSIDERED IN CUMULATIVE EFFECTS

A much larger area was considered in the supplemental biological evaluation for fisher (Lang 2016). The habitat and cumulative effects for all the mature forest species are similar and the fisher cumulative effects analysis is incorporated by reference. The Fisher analysis found that the cumulative effects of the completed and proposed projects fell within the range of activities analyzed by Spencer et al (2008) and within the guidelines for the fisher conservation strategy at approximately 13 percent habitat disturbance within a five year period within any 2,471 acre hexagon of suitable fisher habitat (mature, closed canopy forest). This would be within the range of tolerance for spotted owl and goshawk as well.

Project Activity	Project Name	Year	Estimated Acres of high density habitat treated or proposed for treatment	Impacts to near ground cover (shrubs, small trees and down woody debris)	Impact to Den and Rest structures	Impacts from Disturbance
thinning (removal of trees >12" dbh but ≤30" dbh), and fuels treatment (pre-commercial thin and Rx burn)	Ice Fuels Reduction-Tractor Units	2010	704	Woody debris retentions standards incorporated in project design.	Proposal would not remove trees over 30" dbh. Some reductions 12 - 29" dbh size class. Legacy structures identified and protected	Limited operating period included to reduce disturbance influences to fisher during reproductive period.
Portion in analysis watersheds	Rancheria Forest Restoration	2013	669 total project	Woody debris retention standards from SNFPA will be incorporated into project design.	Proposal would not remove trees over 30" dbh. Some reductions expected in 12-29" dbh size class. Legacy structures identified and protected	Limited operating period included to reduce disturbance influences to fisher during reproductive period.
Portion in analysis watersheds	Tobias Ecosystem Restoration	2017	1,567. Approximately 200 acres of plantations overlap with Summit project analysis area. No expected effect on highly suitable habitat	Woody debris retentions standards incorporated in project design.	Proposal would not remove trees over 30" dbh. Some reductions expected in 12-29" dbh size class.	Limited operating period included to reduce disturbance influences to fisher during reproductive period.
	Summit CE	2017	948	Some loss in woody debris and near ground cover. Woody debris retention standards incorporated from SNFPA.	Proposal would not remove trees over 30" dbh. Some reductions expected in <29" dbh size classes.	Limited operating period included to reduce disturbance influences to fisher during reproductive period.
In analysis watersheds	Shirley Fire Salvage and Forest Restoration	Implemented.	142 burned forest	Some loss in woody debris and near ground cover. Woody debris retention standards incorporated from SNFPA.	Removed dead trees from fire killed area	Area had no live green canopy