

**Management Indicator Species Report**

***Scottiago Forest Health and Fuels Reduction Project***

**Amador Ranger District**

**Eldorado National Forest**

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## *Project-Level MIS Report for the Scottiago FHFR Project*

### **1. Introduction**

The purpose of this report is to evaluate and disclose the impacts of the Scottiago Forest Health and Fuels Reduction Project (subsequently referred to in this document as the Scottiago FHFR) on the habitat of the thirteen (13) Management Indicator Species (MIS) identified in the Forest (NF) Land and Resource Management Plan (LRMP) (USDA 1989) as amended by the Sierra Nevada Forests Management Indicator Species Amendment (SNF MIS Amendment) Record of Decision (USDA Forest Service 2007a). This report documents the effects of the proposed action on the habitat of selected project-level MIS.

MIS are animal species identified in the SNF MIS Amendment Record of Decision (ROD) signed December 14, 2007, which was developed under the 1982 National Forest System Land and Resource Management Planning Rule (1982 Planning Rule) (36 CFR 219). Guidance regarding MIS set forth in the Eldorado National Forest (ENF) LRMP as amended by the 2007 SNF MIS Amendment ROD directs Forest Service resource managers to (1) at project scale, analyze the effects of proposed projects on the habitat of each MIS affected by such projects, and (2) at the bioregional scale, monitor populations and/or habitat trends of MIS, as identified in the ENF LRMP as amended.

#### **1.a. Direction Regarding the Analysis of Project-Level Effects on MIS Habitat**

Project-level effects on MIS habitat are analyzed and disclosed as part of environmental analysis under the National Environmental Policy Act of 1970 (NEPA). This involves examining the impacts of the proposed project on MIS habitat by discussing how direct, indirect, and cumulative effects will change the habitat in the analysis area.

These project-level impacts to habitat are then related to broader scale (bioregional) population and/or habitat trends. The appropriate approach for relating project-level impacts to broader scale trends depends on the type of monitoring identified for MIS in the LRMP as amended by the SNF MIS Amendment ROD. Hence, where the Eldorado NF LRMP as amended by the SNF MIS Amendment ROD identifies distribution population monitoring for an MIS, the project-level habitat effects analysis for that MIS is informed by available distribution population monitoring data, which are gathered at the bioregional scale. The bioregional scale monitoring identified in the Eldorado NF LRMP, as amended, for MIS analyzed for the Scottiago FHFR is summarized in Section 3 of this report.

Adequately analyzing project effects to MIS generally involves the following steps:

- Identifying which habitat and associated MIS would be either directly or indirectly affected by the project alternatives; these MIS are potentially affected by the project.
- Summarizing the bioregional-level monitoring identified in the LRMP, as amended, for this subset of MIS.
- Analyzing project-level effects on MIS habitat for this subset of MIS.
- Discussing bioregional scale habitat and/or population trends for this subset of MIS.

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- Relating project-level impacts on MIS habitat to habitat and/or population trends at the bioregional scale for this subset of MIS.

These steps are described in detail in the Pacific Southwest Region's draft document "MIS Analysis and Documentation in Project-Level NEPA, R5 Environmental Coordination" (May 25, 2006) (USDA Forest Service 2006a). This Management Indicator Species (MIS) Report documents application of the above steps to select project-level MIS and analyze project effects on MIS habitat for the Scottiagio FHFR.

### **1.b. Direction Regarding Monitoring of MIS Population and Habitat Trends at the Bioregional Scale.**

The bioregional scale monitoring strategy for the Eldorado NF's MIS is found in the Sierra Nevada Forests Management Indicator Species Amendment (SNF MIS Amendment) Record of Decision (ROD) of 2007 (USDA Forest Service 2007a). Bioregional scale habitat monitoring is identified for all twelve of the terrestrial MIS. In addition, bioregional scale population monitoring, in the form of distribution population monitoring, is identified for all of the terrestrial MIS except for the greater sage-grouse. For aquatic macroinvertebrates, the bioregional scale monitoring identified is Index of Biological Integrity and Habitat. The current bioregional status and trend of populations and/or habitat for each of the MIS is discussed in the 2010 Sierra Nevada Forests Bioregional Management Indicator Species (SNF Bioregional MIS) Report (USDA Forest Service 2010a).

#### **● MIS Habitat Status and Trend.**

All habitat monitoring data are collected and/or compiled at the bioregional scale, consistent with the LRMP as amended by the 2007 SNF MIS Amendment ROD (USDA Forest Service 2007a).

Habitats are the vegetation types (for example, early seral coniferous forest) or ecosystem components (for example, snags in green forest) required by an MIS for breeding, cover, and/or feeding. MIS for the Sierra Nevada National Forests represent 10 major habitats and 2 ecosystem components (USDA Forest Service 2007a), as listed in Table 1. These habitats are defined using the California Wildlife Habitat Relationship (CWHR) System (CDFG 2005). The CWHR System provides the most widely used habitat relationship models for California's terrestrial vertebrate species (ibid). It is described in detail in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a).

Habitat status is the current amount of habitat on the Sierra Nevada Forests. Habitat trend is the direction of change in the amount or quality of habitat over time. The methodology for assessing habitat status and trend is described in detail in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a).

#### **● MIS Population Status and Trend.**

All population monitoring data are collected and/or compiled at the bioregional scale, consistent with the LRMP as amended by the 2007 SNF MIS Amendment ROD (USDA Forest Service 2007a). The information is presented in detail in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a).

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Population monitoring strategies for MIS of the Eldorado NF are identified in the 2007 Sierra Nevada Forests Management Indicator Species (SNF MIS) Amendment ROD (USDA Forest Service 2007a). Population status is the current condition of the MIS related to the population monitoring data required in the 2007 SNF MIS Amendment ROD for that MIS. Population trend is the direction of change in that population measure over time.

There are a myriad of approaches for monitoring populations of MIS, from simply detecting presence to detailed tracking of population structure (USDA Forest Service 2001, Appendix E, page E-19). A distribution population monitoring approach is identified for all of the terrestrial MIS in the 2007 SNF MIS Amendment, except for the greater sage-grouse (USDA Forest Service 2007a). Distribution population monitoring consists of collecting presence data for the MIS across a number of sample locations over time. Presence data are collected using a number of direct and indirect methods, such as surveys (population surveys), bird point counts, tracking number of hunter kills, counts of species sign (such as deer pellets), and so forth. The specifics regarding how these presence data are assessed to track changes in distribution over time vary by species and the type of presence data collected, as described in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a).

- **Aquatic Macroinvertebrate Status and Trend.**

For aquatic macroinvertebrates, condition and trend is determined by analyzing macroinvertebrate data using the predictive, multivariate River Invertebrate Prediction And Classification System (RIVPACS) (Hawkins 2003) to determine whether the macroinvertebrate community has been impaired relative to reference condition within perennial water bodies. This monitoring consists of collecting aquatic macroinvertebrates and measuring stream habitat features according to the Stream Condition Inventory (SCI) manual (Frasier et al. 2005). Evaluation of the condition of the biological community is based upon the “observed to expected” (O/E) ratio, which is a reflection of the number of species observed at a site versus the number expected to occur there in the absence of impairment. Sites with a low O/E scores have lost many species predicted to occur there, which is an indication that the site has a lower than expected richness of sensitive species and is therefore impaired.

## ***2. Selection of Project level MIS***

Management Indicator Species (MIS) for the Eldorado NF are identified in the 2007 Sierra Nevada Forests Management Indicator Species (SNF MIS) Amendment (USDA Forest Service 2007a). The habitats and ecosystem components and associated MIS analyzed for the project were selected from this list of MIS, as indicated in Table 1. In addition to identifying the habitat or ecosystem components (1<sup>st</sup> column), the CWHR type(s) defining each habitat/ecosystem component (2<sup>nd</sup> column), and the associated MIS (3<sup>rd</sup> column), the Table discloses whether or not the habitat of the MIS is potentially affected by the Scottiagio FHFR (4<sup>th</sup> column).

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**Table 1. Selection of MIS for Project-Level Habitat Analysis for this Project.**

<b>Habitat or Ecosystem Component</b>	<b>CWHR Type(s) defining the habitat or ecosystem component<sup>1</sup></b>	<b>Sierra Nevada Forests Management Indicator Species <i>Scientific Name</i></b>	<b>Category for Project Analysis<sup>2</sup></b>
Riverine & Lacustrine	lacustrine (LAC) and riverine (RIV)	aquatic macroinvertebrates	2
Shrubland (west-slope chaparral types)	montane chaparral (MCP), mixed chaparral (MCH), chamise-redshank chaparral (CRC)	fox sparrow <i>Passerella iliaca</i>	3
Sagebrush	Sagebrush (SGB)	greater sage-grouse <i>Centrocercus urophasianus</i>	1
Oak-associated Hardwood & Hardwood/conifer	montane hardwood (MHW), montane hardwood-conifer (MHC)	mule deer <i>Odocoileus hemionus</i>	3
Riparian	montane riparian (MRI), valley foothill riparian (VRI)	yellow warbler <i>Dendroica petechia</i>	2
Wet Meadow	Wet meadow (WTM), freshwater emergent wetland (FEW)	Pacific tree (chorus) frog <i>Pseudacris regilla</i>	2
Early Seral Coniferous Forest	ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), eastside pine (EPN), tree sizes 1, 2, and 3, all canopy closures	Mountain quail <i>Oreortyx pictus</i>	3
Mid Seral Coniferous Forest	ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), eastside pine (EPN), tree size 4, all canopy closures	Mountain quail <i>Oreortyx pictus</i>	3
Late Seral Open Canopy Coniferous Forest	ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), eastside pine (EPN), tree size 5, canopy closures S and P	Sooty (blue) grouse <i>Dendragapus obscurus</i>	3
Late Seral Closed Canopy Coniferous Forest	ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), tree size 5	California spotted owl <i>Strix occidentalis occidentalis</i>	3
		American marten <i>Martes americana</i>	

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	(canopy closures M and D), and tree size 6.	northern flying squirrel <i>Glaucomys sabrinus</i>	
Snags in Green Forest	Medium and large snags in green forest	hairy woodpecker <i>Picoides villosus</i>	3
Snags in Burned Forest	Medium and large snags in burned forest (stand-replacing fire)	black-backed woodpecker <i>Picoides arcticus</i>	3

<sup>1</sup> All CWHR size classes and canopy closures are included unless otherwise specified; **dbh** = diameter at breast height; **Canopy Closure classifications:** S= Sparse Cover (10-24% canopy closure); P= Open cover (25-39% canopy closure); M= Moderate cover (40-59% canopy closure); D= Dense cover (60-100% canopy closure); **Tree size classes:** 1 (Seedling)(<1" dbh); 2 (Sapling)(1"-5.9" dbh); 3 (Pole)(6"-10.9" dbh); 4 (Small tree)(11"-23.9" dbh); 5 (Medium/Large tree)(≥24" dbh); 6 (Multi-layered Tree) [In PPN and SMC] (Mayer and Laudenslayer 1988).

<sup>2</sup> **Category 1:** MIS whose habitat is not in or adjacent to the project area and would not be affected by the project.

**Category 2:** MIS whose habitat is in or adjacent to project area, but would not be either directly or indirectly affected by the project.

**Category 3:** MIS whose habitat would be either directly or indirectly affected by the project.

Aquatic macroinvertebrates, yellow warbler, greater sage-grouse, sooty grouse, and Pacific tree frog habitats, as defined for this analysis, are not found within proposed treatment areas, or would be protected by design features, and therefore would not see direct, indirect, or cumulative effects from implementation of the Scottiago FHFR project. These species and their habitat will not be further analyzed in this document.

The MIS whose habitat would be either directly or indirectly affected by the Scottiago FHFR, identified as Category 3 in Table 1, are carried forward in this analysis, which will evaluate the direct, indirect, and cumulative effects of the proposed action on the habitat of these MIS. The MIS selected for project-level MIS analysis for the Scottiago FHFR are: fox sparrow, mule deer, mountain quail, sooty grouse, CA spotted owl, American marten, northern flying squirrel, and hairy woodpecker.

### ***3. Bioregional Monitoring Requirements for MIS Selected for Project-Level Analysis***

#### **3.a. MIS Monitoring Requirements.**

The Sierra Nevada Forests Management Indicator Species (SNF MIS) Amendment (USDA Forest Service 2007a) identifies bioregional scale habitat and/or population monitoring for the Management Indicator Species for ten National Forests, including the Eldorado NF. The habitat and/or population monitoring requirements for the Eldorado NF’s MIS are described in the 2010 Sierra Nevada Forests Bioregional Management Indicator Species (SNF Bioregional MIS) Report (USDA Forest Service 2010a) and are summarized below for the MIS being analyzed for this Project. The applicable habitat and/or population monitoring results are also described in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a) and are summarized in Section 5 below for the MIS being analyzed for the Scottiago FHFR.

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Habitat monitoring at the bioregional scale is identified for all the habitats and ecosystem components, including the following analyzed for the Scottiagio FHFR: shrubland; sagebrush; oak-associated hardwood & hardwood/conifer; early seral coniferous forest; mid seral coniferous forest; late seral open canopy coniferous forest; late seral closed canopy coniferous forest; snags in green forest; snags in burned forest.

Population monitoring at the bioregional scale will be analyzed for fox sparrow, Pacific tree frog, mountain quail, blue grouse, California spotted owl, American marten, northern flying squirrel, and hairy woodpecker via distribution population monitoring. Distribution population monitoring consists of collecting presence data for the MIS across a number of sample locations over time (also see USDA Forest Service 2001, Appendix E).

### **3.b. How MIS Monitoring Requirements are Being Met.**

Habitat and/or distribution population monitoring for all MIS is conducted at the Sierra Nevada scale. Refer to the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a) for details by habitat and MIS.

## **4. Description of the Project.**

In order to improve stand resilience to insect and disease pressures and to reduce the risk of a catastrophic wildfire, the Scottiagio Project will reduce stand density, competing vegetation, and treat fuels on approximately 6,000 acres of National Forest System lands within the Sopiago Creek, Middle Fork Cosumnes River, and Scott Creek watersheds.

### *Commercial Harvest*

- Treat approximately (up to) 3,000 acres of natural stands and commercial sized plantations by cutting and removing trees between 10 inches and 30 inches diameter breast height (dbh) using ground-based commercial logging methods including whole tree yarding (2,950 acres) and skyline logging systems (38 acres). Where feasible, tree tops would be removed to landings as part of skyline logging. Recently killed trees (snags) within commercial harvest units would be cut and removed concurrently with logging operations without restriction on dbh. Feller bunchers or equivalent type of ground based equipment may be used for cutting and pre-bunching of logs that would be removed using a skyline logging system. Use of equipment in skyline units would generally be limited to 45% slope the exception of using a winch assist system. Winch assisted logging equipment would not be slope limited.
- Snags would be retained consistent with forest LRMP standards. The 4 largest snags will be retained per acre, averaged over the entire project area. Snags will not be evenly spaced across the landscape, but would vary by land allocation and landscape position, such as near roads, ridgetops and streams. Snag positions may be based on desired future conditions. Any snag posing a hazard to life, injury, or property may be removed.
- Remove small trees (4 inches to 10 inches dbh) to landings, or other designated disposal sites, on the mechanically thinned acres.
- Pile tree tops and small trees (biomass) at landings to be made available for either biomass power generation or public fire wood cutting. Material remaining at landings (if

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not removed by previous methods) would be burned.

- Conduct post-harvest treatments, including grapple or tractor piling of existing and activity fuels, followed by prescribed fire, including both broadcast burning and lighting of piles.

Silvicultural prescriptions will incorporate recommendations from PSW-GTR-220, and meet Forest Plan direction (LRMP 1988, SNFPA 2004). Prescriptions will be designed to meet the following goals:

- Improve forest resiliency by reducing stand densities by thinning. In general, lowest residual stand densities would occur on upper slopes, ridges and southern and western aspects. Targeted residual density would range from 100-140 square feet/acre basal area or approximately 25-30 feet tree spacing (50-70 trees per acre). Although canopy cover would average 50% over treatment units, lower canopy cover would exist in these less dense areas. On lower slopes and transitioning into Riparian Conservation Areas (RCA), as well as on north facing aspects, residual stand densities may be higher with a corresponding increase in canopy cover. Targeted residual density would range from 140-180 square feet/acre basal area or 20-25 feet tree spacing (70-110 trees per acre). Canopy cover in RCAs of perennial and intermittent streams would see the least overall reduction and would likely average closer to 60%.
- Reduce shading and competition around oaks to improve growing conditions.
- Increase the percentage of shade intolerant pine and hardwoods. Maintain a mix of species in pine dominated areas to reduce impacts from western bark beetle.
- Retain clumps of large trees. Clumps may vary in shape and size and range from a group of 4-5 trees up to an acre in size. In general, clumps would be located in the mid to lower slope positions. Preference will be given to clumps comprised of mixed species. Clumps would focus on trees exhibiting characteristics such as multi-top especially in firs and cedars, trees provide nesting structure, large snag inclusions, cavities, and other signs of use by wildlife.
- Within CSO Home Range Core Areas (HRCAs), and in areas identified as high quality habitat and having potential as future nesting sites for CSO, the management focus will be on retaining areas with highest density of tall trees and denser canopy cover. These areas generally will occur in forest patches >2 acres in size dominated by large trees (generally greater than 150 ft tall) and having >55% canopy cover. Within the project area these areas are generally located on north facing slopes and in riparian conservation areas. Commercial harvest in these areas will be limited to removing trees acting as ladder fuels. Retention areas will focus on clumps of large trees and key features used by CSO as stated in above bullet.
- Manage the intermediate size class (20 to 30 inch DBH), thinning this class primarily by species (shade tolerant) and growth form (those acting as ladder fuels).
- Increase stand variability. Target stand structure would consist of a mixture of clumps, gaps and a matrix of variably spaced trees. Small (.25 acre or less) gaps will be created or enlarged in low productivity sites and where natural openings in the canopy exist. These small gaps will not be evaluated for regeneration.

### *Fuel Reductions and Management Strategy*



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- Create and maintain a fuel treatment network to reduce extent and severity of wildfires based on the below listed locations:
  - Barney Ridge/Omo Ranch Road and Roads 8N61 and 8N62
  - Goldnote Ridge/ Roads 8N55 and 8N48
  - Big Mountain Ridge/ Road 8N49
  - North-South Road
- Using these locations, create evacuation routes for public egress and emergency responder safety by thinning trees less than 30" dbh within 35' of the centerline of roads. Trees would be selectively removed that are currently impeding the ability for safe access as well as fire suppression activities. (107 acres)
- Beyond the 35' and extending out to 200' from above listed strategic locations, trees up to 18" will be thinned and surface and ladder fuels will be removed. (749 acres) Post-treatment, these stands will retain their larger trees with minimal modification to overstory canopy. Plantations contained within and adjacent to the above-described fuel break would be treated as part of the fuel break design.
- Conduct additional treatments in 200' roadside areas, including grapple or tractor piling of existing and activity fuels, prescribed fire, including both broadcast burning and lighting of piles.
- On an additional approximately 2,132 acres, low intensity prescribed fire will be implemented at any time of year when conditions allow for consumption of surface fuels and low (<15% averaged across the unit; 5-10% averaged in PACs) overstory tree mortality. Reduction or rearrangement of fuel concentrations using hand cutting, piling, chipping and/or other mechanical treatment may also occur on these acres to supplement or complement prescribed burning.
- Install hand or dozer line to limit the extent of prescribed burns
- Use hand and aerial ignition techniques for pile and understory burning
- Reduce fuels and fire hazard 300 feet from key OHV staging areas (Barney, Five Corners, Goldnote, Goldnote East, 36 Tie). Trees up to 18" will be thinned and surface and ladder fuels will be removed to increase utility of these areas for fire suppression and staging of equipment.
- Reoccurring maintenance of treatments listed above using fire, hand or mechanical methods.
- Following harvest or fuel reduction activities, the desired surface fuel loading would be less than 20 tons per acre.
- Thinning of stands near Armstrong Hill lookout tower to enable detection and management of wild and prescribed fires in the Cosumnes and North Fork Mokelumne River watersheds. Thinning will be focused on providing a clear view and will include removal of tall trees. Some trees may exceed 30" dbh. Install a fire detection camera in

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the existing fire detection lookout tower. Reoccurring maintenance of trees and vegetation (promoting oaks for example) to allow continued effective fire detection.

### *Treatments for Protection of California Spotted Owl Habitat*

Fuels treatments listed in the “Fuels Reduction and Management Strategy” section (above) would occur in portions of spotted owl and goshawk PACs. These areas are designated Wildland Urban Intermix (WUI) Defense and Threat Zones. Treatments would be designed to facilitate prescribed burning, reduce stand mortality effects from both prescribed and wildland fire, and would be expected to improve efficiency of suppression of wildfires. Effective management of prescribed fire and wildfire may help reduce loss of or damage to key CSO and northern goshawk habitat. PACs were selected for treatment based on necessity to ensure the overall effectiveness of the landscape fire and fuel strategy. Design features to protect habitat and nesting status are listed below.

### *Transportation System*

Roads and trails within the project area will be managed consistent with the 2008 Eldorado National Forest Public Wheeled Motorized Travel Management Environmental Impact Statement (Travel Management EIS) and compliant with applicable standards. Roads not identified as open to public use may be blocked by gates, barricades, rocks, other barriers or by signage. In addition to the seasonal closure identified by the Travel Management EIS, roads identified as open for public use may be temporarily closed during inclement weather or during logging operations to protect reconstruction investments and for public safety.

There are approximately 12 miles of road maintenance, 60 miles of road reconstruction, and 1 mile of new temporary road construction within the project boundary area. Road maintenance will be performed according to Eldorado’s Standard Road Maintenance Specifications and applicable design criteria. Maximum clearing limit will be 200 feet from centerline of road in either direction. It is anticipated that some trees will fall an additional 150 feet beyond the designated clearing width. Ground disturbing project activities must stay within 350 feet from the centerline of road. Felled trees will be transported to nearby landings via skid trails. New skid trails may be created depending on the distance of felled trees to nearby landing. Ground disturbance will be minimized as much as possible. Existing landings and/or deck areas will be used to process the logs to prepare them for loading onto log trucks. New deck areas may be created if location of existing deck area and/or landing is impractical. Slash from hazard trees will be lopped and scattered, side casted, chipped or hand piled and burned.

Temporary roads will be obliterated upon project completion. Road maintenance and reconstruction will provide safe access for project activities as well as for fire suppression purposes. No changes to the Motor Vehicle Use Map are proposed and no permanent roads are proposed to be decommissioned.

General road maintenance activities may include:

- Removal of roadside vegetation,
- Repair of the road running surface and shoulder,
- Drainage structure maintenance,
- Removal of hazard trees,

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- Sign repair or replacement,
- Maintenance or replacement traffic gates and barriers, and
- Other similar activities.

General road reconstruction activities may include:

- Replacement of inadequate drainage crossings,
- Installation of water bars and dips on roads with inadequate runoff control,
- Out sloping the road where possible,
- Slope stabilization,
- Widening of traveled way,
- Gate installation to control seasonal use, and
- Other similar activities.

Drainage structures will be designed for 100-year storm events. Water will be used to abate dust during maintenance and reconstruction and from logging traffic with water selected from water drafting sites that have suitable stream flow and access. There are two water holes within the project area which will also be maintained as part of the project. In the event water holes are not suitable for drafting, magnesium chloride will be used for dust abatement.

### **Design Criteria**

#### **1. Terrestrial Wildlife**

##### *All Activities*

Standard LOPs would be adhered to, for all activities, for both the California spotted owl and northern goshawk, unless surveys conclusively ascertain that nesting/reproduction would not be affected in that particular breeding season by the treatments. The LOP periods are March 1 through August 15<sup>th</sup> for the California spotted owl, and February 15<sup>th</sup> through September 15<sup>th</sup> for the northern goshawk.

Where surveys and biological assessment determine that impacts would not affect reproduction for these species, the LOP may be lifted, or the area affected by the LOP reduced. Based on nesting status, additional mitigation measures, such as (but not limited to): exclusion of portions of the proposed treatment areas until after the breeding season, additional fire lines, and different treatment techniques (lighting techniques, postponing slash work), may be implemented to reduce potential effects to nesting spotted owls and goshawks.

Snags ( $\geq 15$ " dbh) would be retained, except where they pose a threat to human health and safety, or perimeter control risk for containment of the fire, and will not be actively lit during burning operations.

##### *Fuel Reduction Treatments*

Where possible, mechanical treatments (including commercial and non-commercial as described in the "Fuels Reduction and Management Strategy" section, above) would occur in lower quality habitat inclusions in the PAC (ridge tops, lava caps, small diameter dominated treed stands, plantations).

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The district wildlife biologist would be involved in the burn planning, and notified prior to implementation of the prescribed burning and fuel reduction treatments in PACs. When possible, the biologist and/or staff would be onsite to take part in, and/or monitor burning and associated effects.

Prescribed burning would be undertaken in relatively small proportion of the PACs within the project area. No more than two PACs within the Scottiago project area would be burned in a 12 month period. Burning would avoid direct impacts to known nest stands by either not burning through them, or clearing material from around known nest and roost trees and other trees/snags > 30" dbh in the nest stands.

Fuel reduction treatments would be designed to ensure retention of highly suitable habitat (less than 5-10% change in canopy closure within treated area inclusive of all treatments) by reducing ladder fuels 12" dbh and smaller.

Mechanical rearranging of existing fuels in the PACs (mastication, chipping, piling) would only occur within relatively short distances from roads and property lines (200 feet or less).

Additional hand treatments, including handline construction, tree pruning, and cutting of small trees (less than 6 inches dbh), may be conducted within a 1 to 2 acre area surrounding known nest trees, to the extent necessary, to protect nest trees and trees in their immediate vicinity.

*In Summary, CSO and northern goshawk PAC Treatments would:*

- Maintain canopy closure at or above 90% of starting canopy closure (pre-treatment of any kind),
- Outside of 35' treatment on roads listed above in the "Fuel Reductions and Management Strategy", retain large trees ( $\geq 24$ " dbh) near current levels (less than 5% reduction numerically across treatment area),
- Retain snags ( $\geq 15$ " dbh) during burn preparation, except where they pose a threat to human health and safety, or perimeter control risk for containment of the fire, and will not be actively lit during burning operations,
- Retain downed logs greater than 30" diameter (large end) by not be actively lighting during implementation of the burn, and
- Result in small openings (generally  $\leq 1/4$ - $1/2$  acre in size), with the total area of openings created less than 5% of treated area. There may be instances where larger openings are created, but these should be limited in both number and size (openings over and acre in size are not desirable in PACs).

*Where these design criteria standards cannot be met, no prescribed burning would occur within these PACs, or these portions of PACs.*

## **2. Aquatic Wildlife**

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**Table 1.** Operating requirements for sky-logging and mechanical equipment in Riparian Conservation Areas (RCAs) for the Scottiago Forest Health and Fuels Reduction Project.

<b>Habitat Type<sup>1</sup></b>	<b>RCA Zone</b>	<b>Width (feet)</b>	<b>Equipment Requirements</b>	<b>Operating Requirements</b>
<sup>1</sup> Perennial/ Intermittent Streams and Special Aquatic Features (SAFs)	Exclusion Zone	0 to 100 feet from stream or SAF edge; or 0 to 25 feet beyond riparian vegetation, whichever is greater	Prohibited:  Sky-logging Mechanical Harvesting/ Shredding <sup>2</sup> and Skidding <sup>3</sup>	Equipment reach in may be allowed upon consultation with RCA team <sup>4</sup> .  Sky-logging is allowed within 50 feet from perennial/ intermittent streams or SAF edge if full suspension is utilized.
Perennial Streams and SAFS	Partial Treatment	100 to 300 feet from stream edge; or 25 feet beyond riparian vegetation to 300 feet	Allowed:  Sky-logging Mechanical Harvesting/ Shredding <sup>2</sup> and Skidding <sup>3</sup>	Ground based equipment operations prohibited on slopes greater than 25%. Use existing skid trails except where unacceptable impact would result. Do not construct new primary skid trails or landings within RCA zones without consultation of RCA team <sup>4</sup> .
Intermittent Streams	No Restrictions	100 to 150 feet from stream edge; or 25 feet beyond riparian vegetation to 150 feet	Allowed:  Sky-logging Mechanical Harvesting/ Shredding <sup>2</sup> and Skidding <sup>3</sup>	
Ephemeral Streams	Exclusion Zone	0 – 25 feet	Prohibited:  Sky-logging Mechanical Harvesting/ Shredding <sup>2</sup> and Skidding <sup>3</sup>	Equipment reach in may be allowed upon consultation with RCA team <sup>4</sup> .
	Partial	25 – 150	Allowed:	Ground based equipment

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	Treatment	feet	Sky-logging Mechanical Harvesting/ Shredding <sup>2</sup> and Skidding <sup>3</sup>	operations prohibited on slopes greater than 25%. Use existing skid trails except where unacceptable impact would result. Do not construct new primary skid trails or landings within RCA zones without consultation with the RCA Team <sup>4</sup> .
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<sup>1</sup> Perennial streams flow year long. Intermittent streams flow during the wet season but dry by summer or fall. Ephemeral streams flow only during or shortly after rainfall or snowmelt. Special aquatic features (SAFs) include lakes, ponds, meadows, bogs, fens, wetlands, vernal pools and springs

<sup>2</sup> Low ground pressure track-laying machines such as feller bunchers and masticators

<sup>3</sup> Rubber-tired skidders and track-laying tractors

<sup>4</sup> RCA team is one or more of the following: Forest Service hydrologist, botanist, or aquatic biologist

*Design Criteria Specific to Aquatic Resources*

Design Criteria are measures taken as part of the Proposed Action to ensure meeting purpose and need while minimizing the potential for adverse effects. This document lists the Design Criteria which support the effects analysis for aquatic species and their habitat.

For the applicable Design Criteria discussed below:

Potential breeding habitat for the California red-legged frog (CARLF) occurs below 4,000 feet in elevation, and in ponds and lakes, or perennial and intermittent stream reaches with less than 2% gradient. Potential non-breeding habitat for CARLF includes all land and water within 1-mile of potential breeding habitat. Overland migration occurs during the wet season (defined as starting with the first frontal rain system that deposits a minimum of 0.25 inches of rain after October 15 and ending April 15), which creates a Limited Operating Period (LOP) for certain activities.

*General Measures*

Protection measures may be altered on the ground for a specific site based on recommendations by relevant specialists (soil scientist, aquatic biologist, botanist, or hydrologist).

- If a sensitive or listed amphibian or turtle is sighted within the Action Area, cease operations in the sighting area, and inform a Forest Service aquatic biologist of the sighting immediately. Before commencing activities, consultation may need to be re-initiated with USFWS for listed species.
- Protect any seeps, springs, bogs and wet areas not located on map found in the field during treatment, with same criteria for Special Aquatic Features (SAFs).
- Do not use tightly woven fiber or monofilament netting (or similar materials) for erosion control or other purposes when netting is left exposed.
- An emergency response plan shall be created and implemented to prevent the

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contamination of waters from accidental spills of hazardous materials (per BMP 7.4).

### *Specific Measures*

#### Commercial Harvest Operations

- Off-road mechanical equipment and sky-logging equipment operations would not occur within 1-mile of areas identified as suitable CARLF breeding habitat during the wet season (defined as starting with the first frontal rain event that deposits a minimum of 0.25 inches of rain after October 15 and ending April 15).; however, sky-logging and mechanical equipment operations is allowed within 1-mile of CRLF suitable habitat (review Table 1 for exclusion zones) after a 72-hour dry period.
- Mechanical operations off existing roads within RCA zones, as defined by Table 1, would utilize low ground pressure equipment per S&G 113 (SNFPA 2004).
- If sale administrator identifies situation where it appears that a log or portion of tree should be removed from the RCA exclusion zones (0-100 ft. from perennial/ intermittent streams and SAF), no activity would commence without approval of the RCA team.
- Use existing skid trails and landings to the extent use would avoid impact from new trails and landings. Do not construct new primary skid trails or landings within 100 to 300 feet of perennial streams or SAFs, within 100 to 150 feet of intermittent streams, or within 25 to 150 feet of ephemeral streams unless approved by a hydrologist or aquatic biologist. When expanding or constructing landings or skid trails in the RCA outside these zones utilize guidelines outlining special situations that require consultation with RCA team.
- Minimize construction of skid trails or temporary roads for access into RCAs for fuel treatments, harvest, or hazard tree removal per S&G 113 (SNFPA 2004).
  - Where practical, cover primary skid trails within an RCA zone with slash or wood chips as trails are developed, thereby crushing slash, protecting soil mantle and reducing fuel piles to be burned.
  - Rehabilitate skids trails within an RCA zone using de-compaction, back-blading berms, building water bars, and covering with any displaced or available slash.
- Locate new log landings or reuse old landing in such a way as to avoid watershed impacts and associated water-quality degradation (BMP 1.12; USFS 2011). Log landings, new or reused, would be situated outside of RCA zones to the maximum extent possible. If new log landings are needed within RCAs a site-specific review by RCA team would occur prior to construction.
  - Reuse of existing landings within an RCA may occur where creation of a new landing is likely to result in more resource damage than use of the landing within the RCA.
  - Re-used landings within the RCA would be rehabilitated using a combination of de-compaction and slash coverage.
  - Consult with RCA team if new landing construction is needed within 300 feet of perennial streams and SAFS, or within 150 feet of intermittent streams, or 25 feet of ephemeral streams

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- Where reach-in is used within an RCA zone, grooves and bare soil created would be mitigated with hand-built water bars and/or slash placement.

### Burning

- Slash and cull logs accumulated on landings would be piled and/or decked.
- Ignition of fire would not occur within 50 feet of the edge of the channel of perennial streams and special aquatic features or 50 feet from the edge of riparian vegetation, whichever is greater. Ignition would be limited to non-riparian vegetation. Fire creep will be allowed all the way to edge of streams.
- Ignition of fire would not occur within 25 feet of the edge of the channel of intermittent streams and ephemeral streams or within 25 feet of riparian vegetation, whichever is greater. Fire creep will be allowed to the edge of stream channels. Existing down logs which lie in or across all stream channel types would not be intentionally ignited.

### CARLF Specific Criteria

- Piles that lie within the RCA (outside of the CARLF buffer) can be burned, but would, to the extent practicable, be ignited in a manner that allows any organisms to flee from the pile (for example, light on the leeward side so that fire moves as a front through the pile).
- No piling/burning would occur within meadows, fens or springs.
- No fuel storage would take place within any of the RCA zones. Refueling would take place in RCAs only where there is no other alternative.
- Piles would not be located within 300 feet of potential CARLF breeding habitat, and 100 feet of all other aquatic habitat.
- Burning may take place year-round to reduce fuels. However, between October 15 and April 15, a Limited Operating Period shall be applied for the California red-legged frog (CARLF) so that, starting with the first frontal system that deposits a minimum of 0.25 inches of rain, prescribed fire activities may only resume after a 72-hour drying period.
- Magnesium chloride will not be used within 100-ft of all stream crossings.

### Water Drafting

- The development of water drafting sources shall follow all applicable guidelines under BMP 2.5 (USFS 2012). Locate water drafting sites to avoid adverse effects to in-stream flows and depletion of pool habitat.
- Water drafting sites would be assessed or surveyed for TES species prior to use and periodically during use depending on operation duration and seasonality. If sensitive, threatened, or endangered species are identified at a potential water drafting site, that site would not be used for water drafting.
- In perennial and intermittent streams, pump intake screens shall have openings not exceeding 3/32-inch (0.09375 inch) and be sized according to the pump intake capacity. Place hose intake into bucket in the deepest part of the pool. Use a low-velocity water pump and do not pump natural ponds to low levels beyond which they cannot recover quickly (approximately one hour).
- For water drafting on fish-bearing streams: do not exceed 350 gallons per minute for stream flow greater than or equal to 4.0 cubic feet per second (cfs); do not exceed 20% of surface flows below 4.0 cfs; and, cease drafting when bypass surface flow drops below



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1.5 cfs.

- For water drafting on non-fish-bearing streams: do not exceed 350 gallons per minute for stream flow greater than or equal to 2.0 cfs; do not exceed 50% of surface flow; and, cease drafting when bypass surface flow drops below 10 gallons per minute.
- In-channel water drafting locations would include rocking of approaches and barriers of rock or sloping of drafting pads away from water source to prevent spillage at vehicle from returning to the watercourse.

### **3. Soil and Water Quality**

- Single track and skid trails that are at risk of altering and concentrating flow after implementation would be back-bladed or smoothed to obliterate potential hillslope channels and downslope berms.
- Where feasible and within fuel criteria, leave uncut downed wood adjacent to roads and trails, to discourage unauthorized OHV travel.
- Where feasible, place enough excess biomass at the outlet of waterdips and waterbars to dissipate runoff energy and trap sediment.
- Once skid trails are decommissioned, construct earth berms and/or place logs and/or rocks to discourage unauthorized motor vehicle use.
- Use a very high erosion hazard rating when considering application of erosion control on skid trails unless subsoil if feasible.
- Place slash or biomass material on skid trails between landings at a distance of 100 feet from landings. A 25-foot-wide slash mat would also be placed on the downslope portion of landings. All slash mats would be crushed either by equipment treads or equipment heads. Slash mats should be placed far enough away from the pile to allow for dozer lines around piles.
- Although 100% soil cover is considered ideal for soil stabilization, the following minimum values should be retained to the extent practical and allowable by fuel loading limits: 50% on slopes less than 25%; and 70% on slopes greater than 25%.
- Existing skid trails would be used, if appropriate, to limit the extent of new areas of compacted ground within the Action Area.

### **4. Riparian Conservation Areas**

- Hazard trees within the mechanical exclusion zone (Table above) may be hand felled away from stream channels and SAFs. If logs can't be removed with reach in, they would be left in place. Any portion of a felled tree outside of the RCA exclusion zones may be bucked and removed. Coordination would occur with the RCA Team for specific site exceptions.
- Within the RCAs, 70% post-implementation soil cover would be maintained when possible and dominated by material less than 3 inch in diameter. Application methods could include cutting and lopping, or mastication of pre-commercial material, cutting and scattering of activity material, non-whole tree harvesting methods, or mulch applications. Utilize on site biomass to generate mulch materials wherever possible.
- Trees that are within the RCA zones and felled into the road prism would be removed as necessary to allow safe vehicle use and permit proper maintenance of the road.
- Skidding and loading equipment would remain outside of RCA exclusion zones, except in those instances where the safe falling of hazard trees requires the control that lining by

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equipment may provide. In the rare instances where equipment would need to enter the RCA exclusion zones, a member of the RCA team, would review the circumstances and work with the sale administrator.

The removal of dead and unstable live trees (hazard trees) of all sizes would occur along timber haul roads and landings to provide for safety of woods worker and public throughout project implementation, except where restrictions for removal apply.

### **5. Botany**

User created routes off of Omo Ranch Road and 8N62 will be blocked using rock, bollards, or other native material barriers. These routes are not on the MVUM and currently impact lava cap plant communities and FS Sensitive plants.

Sensitive and watchlist plant populations within the project area would be flagged for avoidance. All ground disturbing activities, landing, skid trails, burn piles, hazard tree removal, brushing, and mechanical equipment, would be excluded from sensitive plant protection areas. Where it is necessary to remove trees or conduct roadside brushing from within site boundaries, the project botanist would be consulted to mitigate impacts. All thinning of trees adjacent to site boundaries would be directionally felled away from the site. If new sensitive plant occurrences are discovered during project implementation the project botanist would be notified to develop necessary protection measures.

Burning operations within Sensitive and watchlist plant populations would be designed to produce a low intensity fire. No ignition within occupied habitat would occur unless required to moderate fire intensity.

All potential habitat for Sensitive Plants would be surveyed prior to project implementation. Any unsurveyed potential habitat would be flagged for avoidance.

Prior to new fire line construction and mechanical thinning of non-commercial burn units, fireline and thinning locations would be evaluated by the FS botanist and surveyed as needed. Sensitive and Watchlist plant occurrences in burn units would be re-flagged for avoidance during fireline construction, thinning, and ignition.

Lava caps, which support unique plant communities in the project area, would be protected from motorized equipment and vehicles. Skid trail and Line construction through lava cap communities would be avoided when feasible.

Application of Magnesium Chloride for dust abatement will not occur within 100 feet of roadside occurrences of Sensitive or Watchlist plants.

Eldorado National Forest Priority 1 and 2 invasive plant infestations within the project area would be flagged for avoidance and treated using integrated pest management techniques as a part of the project for up to 5 years after implementation. Treatments under the project will tier to the Forest invasive plant treatment EA and may include a combination of techniques including tarping, manual removal, string trimming, and targeted herbicide application. If new infestations

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develop as a result of project activities (i.e. within landings, areas of road reconstruction, within harvest units) treatment strategies would be developed under the Eldorado National Forest Invasive plant EA and would be implemented as part of the project.

Invasive plant surveys would occur within fuel break for five years following project implementation. If found, newly detected invasive plant species would be treated using methods covered by the Eldorado NF Forest-wide invasive plant management EA.

All equipment and vehicles (Forest Service) used for project implementation must be free of invasive plant material before moving into the project area. Equipment will be considered clean when visual inspection does not reveal soil, seeds, plant material or other such debris. Cleaning shall occur at a vehicle washing station or cleaning facility before the equipment and vehicles enter the project area.

Known invasive plant sites along roads in the project area will be flagged prior to implementation and will be avoided as much as possible. If infestation cannot be avoided contact a Forest Service Botanist.

To the extent possible, work would be completed in infested areas last. Otherwise, equipment would be cleaned prior to moving from a weed- infested unit to a weed-free unit.

Where proposed work occurs in known invasive plant infestations equipment would be cleaned prior to leaving infested areas.

All gravel, fill or other materials would to be weed free. On-site sand, gravel, rock, or organic matter from uninfested areas would be used where possible.

Any straw or mulch used for erosion control would be certified weed-free. A certificate from the county of origin stating the material was inspected is required.

Any seed used for erosion control or restoration would be from a locally collected source (ENF Seed, Mulch and Fertilizer Prescription, March 21, 2000). Plant taxa proposed for re-vegetation would be approved by the project botanist.

### **6. Archeology/Heritage**

The Scottiango project will comply with Section 106 of the National Historic Preservation Act of 1966, as amended in accordance with provisions of the “Programmatic Agreement among the U.S.D.A. Forest Service, Pacific Southwest Region (Region 5), the California State Historic Preservation Officer, the Nevada State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding Processes for Compliance with Section 106 of the National Historic Preservation Act for Management of Historic Properties by the National Forest of the Pacific Southwest Region” (Regional PA 2013).

Fuel reduction using hand tools and other activities may be permitted within the boundaries of known Historic Properties, if approved by the District Archaeologist. Sites that are at risk from fire will be flagged and avoided during prescribed understory burning. Sites that are not considered at risk or have previously burned at moderate or high intensity may be included in the

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prescribed burn at the discretion of the District Archeologist. Construction of fire lines will occur outside of the cultural resource site boundaries unless directed by the District Archeologist. All machine and hand piles will be placed away from site boundaries at a distance such that site features will not be affected by flames and heat. Hazard tree removal on or in the vicinity of cultural resource sites will be coordinated with the District Archeologist. Sites within harvest units or near road maintenance/reconstruction projects will be identified with flagging and avoided during ground disturbing project activities. All thinning of trees adjacent to site boundaries will be directionally felled away from the site. Non-merchantable trees and brush may be removed by hand, within site boundaries, at the direction of the District Archeologist. Road reconstruction may require the use of Standard Protection Measures or mitigation as per the *Regional PA 2013*.

Should any previously unrecorded cultural resources be encountered during implementation of this project, all work should immediately cease in that area and the District Archeologist be notified immediately. Work may resume after approval by the District Archeologist; provided any recommended Standard Protection Measures are implemented. Should any cultural resources become damaged in unanticipated ways by activities proposed in this project; the steps described in the *Regional PA 2013* for inadvertent effects will be followed.

The District Archeologist will be kept informed of the status of various stages of the project, so that subsequent field work can proceed in a timely fashion. Monitoring of the area may occur after the project has been completed. This work will be documented in amendments to the Archaeology Specialist Report, as appropriate.

### ***5. Effects of Proposed Project on the Habitat for the Selected Project-Level MIS.***

The following section documents the analysis for the following ‘Category 3’: fox sparrow, mule deer, mountain quail, CA spotted owl, American marten, northern flying squirrel, sooty grouse, and hairy woodpecker. The analysis of the effects of the Scottiagio FHFR Project on the MIS habitat for the selected project-level MIS is conducted at the project scale. The analysis used the following habitat data: Existing Vegetation, Eldorado National Forest. 2005. McClellan, CA: USDA-Forest Service, Region 5 Remote Sensing Lab, 2008. Detailed information on the MIS is documented in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a), which is hereby incorporated by reference.

Cumulative effects at the bioregional scale are tracked via the SNF MIS Bioregional monitoring, and detailed in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a). In general the proposed activities eliminate or change habitat types from one category to another very little. Most of the changes in habitat move in one direction or another, such as speeding the development from open canopy stands to closed canopy stand, or early seral stand to later seral stands.

The table below summarizes past, present and foreseeable future projects in the vicinity of the proposed activities, and will be referred to for project level cumulative effects for analysis of all species.

#### **Table 5. Pertinent Past, Present and Reasonably Foreseeable Actions within the Scottiagio FHFR Project Area.**

<b>Past Actions</b>
<p><b>- Forest Service: Timber harvest/Stewardship Projects, and prescribed burning:</b></p> <ul style="list-style-type: none"> <li>• Lower Middle Fork Timber Sale, Tie Die Timber Sale, Sopiago Timber Sale, Simpson Timber Sale, Scott Creek Fuels Reduction Project, and Gold Fingers Timber Sale</li> <li>• Fuels burning and prescribed burning associated with the previously listed projects</li> <li>• Omo Ranch Fuel Break periodic burning and maintenance</li> <li>• Salvage logging late 1980's early 1990's</li> <li>• Regeneration Harvest, including group select/clearcuts and seed tree/shelterwood harvests (1970s)</li> <li>• Road hazard tree removal (past, ongoing and planned including the Scottiago Hazard Tree Abatement decision, and Forest Wide Road Hazard Tree decision).</li> <li>• Various Reforestation Treatments (pre-commercial thinning etc...)</li> </ul> <p><b>Private Lands</b></p> <ul style="list-style-type: none"> <li>• Commercial Timber Harvest</li> <li>• Thinning</li> <li>• Reforestation Treatments</li> </ul> <p><b>Other Activities:</b></p> <ul style="list-style-type: none"> <li>• Road construction/maintenance</li> <li>• Recreation (dispersed recreation, camping, OHV use, firewood removal, etc.)</li> <li>• Grazing</li> </ul>
<b>Present Actions:</b>
<ul style="list-style-type: none"> <li>• Road construction/maintenance</li> <li>• Recreation (dispersed recreation, camping, OHV use, firewood removal, etc.)</li> <li>• Grazing</li> </ul>
<b>Foreseeable Future Actions:</b>
<ul style="list-style-type: none"> <li>• Commercial, and Non-Commercial hazard tree and fuels treatments (associated with the recent tree mortality event, Scottiago Hazard Abatement decision)</li> </ul>

## **Shrubland (West-Slope Chaparral) Habitat (Fox Sparrow)**

### **Habitat/Species Relationship.**

The fox sparrow was selected as the MIS for shrubland (chaparral) habitat on the west-slope of the Sierra Nevada, comprised of montane chaparral (MCP), mixed chaparral (MCH), and chamise-redshank chaparral (CRC) as defined by the California Wildlife Habitat Relationships System (CWHR) (CDFG 2005). Recent empirical data from the Sierra Nevada indicate that, in the Sierra Nevada, the fox sparrow is dependent on open shrub-dominated habitats for breeding (Burnett and Humple 2003, Burnett et al. 2005, Sierra Nevada Research Center 2007).

### **Project-level Effects Analysis - Shrubland (West-Slope Chaparral) Habitat**

**Habitat Factor(s) for the Analysis:** (1) Acres of shrubland (chaparral) habitat [CWHR montane chaparral (MCP), mixed chaparral (MCH), and chamise-redshank chaparral (CRC)]. (2) Acres with changes in shrub ground cover class (Sparse=10-24%; Open=25-39%; Moderate=40-59%; Dense=60-100%). (3) Acres with changes in CWHR shrub size class (Seedling shrub (seedlings or sprouts <3years); Young shrub (no crown decadence); Mature Shrub (crown decadence 1-25%); Decadent shrub (>25%).

**Current Condition of the Habitat Factor(s) in the Project Area:** There are approximately 280 acres of montane chaparral, mixed chaparral habitat found within the project area, and a total of 160 acres of this habitat are within proposed treatment units. Most of project area where this habitat occurs is associated with ridgetops and south facing slopes.

### **Proposed Action**

**Direct and Indirect Effects to Habitat.** A maximum of 160 acres of existing habitat would be treated by one or multiple treatments proposed under this project. Approximately 65 acres is contained within commercial treatment units, and another 95 acres within the proposed fuels treatments.

***Mechanical Thinning/Commercial Harvest-*** The proposed action treatments in these areas are unlikely to adversely impact this habitat type due to the small amount of overlap with the habitat, 65 acres, and the lack of treatment needed in these areas to thin conifers. In many cases these areas are inclusions within units that would not receive treatment due to the low conifer stocking within them at the present time. Post-harvest burning may result in more open shrub habitat, but would not be expected to convert this habitat to another habitat type.

As part of the mechanical thinning, the project may create small openings (.25 acres or less), and/or expand the size of existing openings, or recent drought related mortality occurs in clumps occur in the proposed units. These areas would likely provide some habitat in the short to mid-term as the conifers forest develops over time, with sporadic reductions in habitat quality as management of these stands are thinned/burned to control shrubs and tree densities.

***Fuels, Prescribed Burning and Fuel Break Treatments-*** These treatments would potentially have the most impact on habitat for this species, In total, 95 acres of the existing habitat falls in

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these treatment units. Most of these acres would see a long term reduction in the amount of mature chaparral habitat, as well as reduced shrub content, shrub canopy height, and shrub canopy closure, especially immediately following initial and follow up treatments, these are the core areas of the fuelbreak which would be most heavily managed. With prescribed fire, and mechanical treatments being the maintenance treatments for these areas, shrub habitat would change over time, with lowest quality habitat occurring immediately following the treatments, and improving in between the maintenance treatments. These impacts would be short term, and are unlikely to occur over the entire project area at one time since treatments will occur over several years. Where small openings 1/4 -1/2 acre and smaller openings result from burning, these areas may increase the amount of fox sparrow shrub habitat, but to a very limited degree.

The reductions in canopy closure within the more intensive roadside treatments (within 35' centerline of the main roads, up to 30" dbh) may open canopy and improve habitat quality in these areas between maintenance treatments, and may increase to a very small degree the amount of this habitat available within the intensively treated roadside corridors. The ladder fuel treatments in the remainder of these 200' treatment areas, would not be expected to change either quality or quantity of this type of habitat.

Fuels treatments on the whole would maintain the existing amount of this habitat and would be expected to generate less than 5% of this habitat across the treated area.

***Road Maintenance and Reconstruction***-The road maintenance and reconstruction treatments proposed for the project would have a negligible impact on this habitat, and result in no measurable change to habitat quantity or quality.

### *Summary Impacts*

The net effect of the proposed action would be some level of habitat impacts to 160 acres of habitat, 95 acres of which would experience a short term reduction in, or loss of habitat suitability as these areas would be see immediate reductions in shrub heights and density post treatment, but would be expected to recover between maintenance treatments. As these treatments would be unlikely to occur simultaneously, there would be some level of this habitat available across the project in any given period of time. There could be short to medium term increases in habitat from the creation of small openings in the conifer canopy, and generally maintaining much of this habitat across time in varying states of habitat capability, mostly dependent on the timing of maintenance treatments.

**Cumulative Effects to Habitat in the Analysis Area.** The project area, which includes all proposed treatments and areas that will not be treated adjacent to these units, is used for the cumulative effects area. Ongoing and foreseeable future activities are summarized in Table 5. As a general rule, these past and present activities have had, and will have short term effects on these habitat types, usually resulting in short term increases in younger age classes, but with little change in the total acreage in these habitat types.

**Cumulative Effects Conclusion:** Based on the fact that none of the existing habitat within the Scottiagio FHFR area would be converted to other habitat types by the

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treatments, and that where impacts occur to habitat, the changes would be relatively short term, 1-5 years, (these mature shrub habitat types returning fairly quickly after treatment). The project may generate habitat in the short- and medium term, where small openings are either created or enlarged. The treatment of all the existing habitat is unlikely to occur in a single year, and as a result, some portion of shrubland habitat would persist in within the project area for the next 5-10 years (during treatments). Approximately 60% or less of the existing habitat within the cumulative effects area would be treated by this project. The proposed action would not be expected to result in a change in species trend, and would result in a negligible addition to adverse cumulative effects for this habitat type/species.

### **Summary of Fox Sparrow Status and Trend at the Bioregional Scale**

The Eldorado NF LRMP (as amended by the SNF MIS Amendment) requires bioregional-scale habitat and distribution population monitoring for the fox sparrow; hence, the shrubland effects analysis for the Scottiagio FHFR must be informed by both habitat and distribution population monitoring data. The sections below summarize the habitat and distribution population status and trend data for the fox sparrow. This information is drawn from the detailed information on habitat and population trends in the 2010 Sierra Nevada Forests Bioregional MIS Report (USDA Forest Service 2010a), which is hereby incorporated by reference.

**Habitat Status and Trend.** There are currently 1,009,681 acres of west-slope chaparral shrubland habitat on National Forest System lands in the Sierra Nevada. Over the last two decades, the trend is slightly increasing (changing from 8% to 9% of the acres on National Forest System lands).

**Population Status and Trend.** Monitoring of the fox sparrow across the ten National Forests in the Sierra Nevada has been conducted since 2009 in partnership with PRBO Conservation Science, as part of a monitoring effort that also includes mountain quail, hairy woodpecker, and yellow warbler (USDA Forest Service 2010a, <http://data.prbo.org/partners/usfs/snmis/>). Fox sparrows were detected on 36.9% of 1659 point counts in 2009 and 44.3% of 2266 point counts in 2010, with detections on all 10 national forests in both years. The average abundance (number of individuals recorded on passive point count surveys) was 0.563 in 2009 and 0.701 in 2010. These data indicate that fox sparrows continue to be distributed across the 10 Sierra Nevada National Forests. In addition, the fox sparrows continue to be monitored and surveyed in the Sierra Nevada at various sample locations by avian point count, spot mapping, mist-net, and breeding bird survey protocols. These are summarized in the 2008 Bioregional Monitoring Report (USDA Forest Service 2008). Current data at the rangewide, California, and Sierra Nevada scales indicate that, although there may be localized declines in the population trend, the distribution of fox sparrow populations in the Sierra Nevada is stable.

### **Relationship of Project-Level Habitat Impacts to Bioregional-Scale Fox Sparrow Trend.**

The small area of habitat that would be affected by the project, 160 acres, would not alter the existing trend in the habitat, nor would it lead to a change in the distribution of fox sparrows across the Sierra Nevada bioregion.



## **Oak-Associated Hardwoods and Hardwood/Conifer Habitat (Mule deer)**

### **Habitat/Species Relationship.**

The mule deer was selected as the MIS for oak-associated hardwood and hardwood/conifer in the Sierra Nevada, which is comprised of montane hardwood (MHW) and montane hardwood-conifer (MHC) as defined by the California Wildlife Habitat Relationships System (CWHR) (CDFG 2005). Mule deer range and habitat includes coniferous forest, foothill woodland, shrubland, grassland, agricultural fields, and suburban environments (CDFG 2005). Many mule deer migrate seasonally between higher elevation summer range and low elevation winter range (Ibid). On the west slope of the Sierra Nevada, oak-associated hardwood and hardwood/conifer areas are an important winter habitat (CDFG 1998).

### **Project-level Effects Analysis - Oak-Associated Hardwoods and Hardwood/Conifer Habitat**

**Habitat Factor(s) for the Analysis:** (1) Acres of oak-associated hardwood and hardwood/conifer habitat [CWHR montane hardwood (MHW), montane hardwood-conifer (MHC)]. (2) Acres with changes in hardwood canopy cover (Sparse=10-24%; Open=25-39%; Moderate=40-59%; Dense=60-100%) (3) Acres with changes in CWHR size class of hardwoods [1/2 (Seedling/Sapling)( $<6''$  dbh); 3 (Pole)( $6''$ - $10.9''$  dbh); 4 (Small tree)( $11''$ - $23.9''$  dbh); 5 (Medium/Large tree)( $\geq 24''$  dbh)]

**Current Condition of the Habitat Factor(s) in the Project Area:** There are approximately 700 acres of mule deer habitat (as defined above) within the project area, of which approximately 200 acres are within the proposed treatment units. These areas have had no recent wildland fire activity, some of the area has had prescribed fire, following the previous thinning projects listed in the cumulative effect table 5, almost all of the commercial harvest treatment units proposed, have been thinned, and resulting less conifer shading resulting from the fire suppression than untreated areas of the forest. The existing oaks are in competition with the conifers for light and water, and the thinning treatments have reduced this competition where the previous thinning has taken place. For the most part, the oaks appear to be of a mature age class, with little recruitment on a younger age class within the project area.

### **Proposed Action**

**Direct and Indirect Effects to Habitat.** Approximately 200 acres of habitat would be treated by one or multiple treatments proposed under this project. Approximately 100 acres are within the proposed commercial thinning units, and 100 acres are within the fuels, fuel break, prescribed burning fuels treatment units.

**Mechanical Thinning/Commercial Harvest-** Within the 100 acres of this habitat that would be commercially thinned, oaks would be retained, and where possible thinning around these oaks should improve mature oak tree vigor, and may promote stump sprouting of existing trees, and opportunities for oak seedlings to sprout where canopy closure is reduced surround these oaks. The total acres of this oak habitat, is not expected to changes as the project would not be converting conifer dominated stands to oak dominated stands but would be managed to produce more pine dominated stands.

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***Fuels, Prescribed Burning and Fuel Break Treatments-*** Approximately 100 acres would be treated under the fuel reduction treatments, which include mechanical thinning of ladder fuels, roadside tree removal, and prescribed burning. These treatments would favor the existing oak component by reducing competition for water and sunlight with the smaller conifers and shrub species, which may translate into longer oak tree retention, and possibly increased mast for browse. These beneficial effects may vary depending on which follow up treatment tools are used (burning, manual treatments and/or mechanical treatments), but these differences and subsequent effects to the deer habitat would be subtle and difficult to separate.

The immediate impact of these treatments would affect browse species in this habitat, and would likely reduce available browse immediately following treatment, but invigorate and potentially increase browse quality if not quantity in the periods between follow up treatments. In general, habitat quantity is not expected to be reduced under this project, and quality of habitat may increase for mule deer due to oak release.

Short term reductions in browse availability immediately following treatments would, including direct competition with cattle grazing where it occurs, would only be expected to affect a portion of the available habitat, and browse quality would return to similar or higher quality the following year. Where openings from the prescribed burning occur, oak seedling sprouting, and stump sprouting would be expected to increase, where mature oaks presently occur.

***Road Maintenance and Reconstruction-*** The road maintenance and reconstruction treatments proposed for the project would have no impact on this habitat, and result in no measurable change to habitat quantity or quality.

### **Cumulative Effects to Habitat in the Analysis Area.**

The project area, which includes all proposed treatments and areas that will not be treated adjacent to these units, is used for the cumulative effects area. Ongoing and foreseeable future activities are summarized in Table 5. Generally, these past and present activities have had, and will have short term effects on these habitat types, usually resulting in short term reductions in competition with conifers, and canopy closures, but with little change in the total acreage in these habitat types.

**Cumulative Effects Conclusion:** The proposed action would treat less than 30% of the existing 700 acres of habitat within the cumulative effects area. As the project will neither create nor remove any of the habitat type, would reduce competition, and may generally increase the quality of the habitat for mule deer, the project would result in no adverse cumulative effect to this habitat type and species.

### **Summary of Mule Deer Status and Trend at the Bioregional Scale**

The Eldorado NF LRMP (as amended by the SNF MIS Amendment) requires bioregional-scale habitat and distribution population monitoring for the mule deer; hence, the oak-associated hardwood and hardwood/conifer effects analysis for this project must be informed by both

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habitat and distribution population monitoring data. The sections below summarize the habitat and distribution population status and trend data for the mule deer. This information is drawn from the detailed information on habitat and population trends in the 2010 Sierra Nevada Forests Bioregional MIS Report (USDA Forest Service 2010a), which is hereby incorporated by reference.

**Habitat Status and Trend.** There are currently 808,006 acres of oak-associated hardwood and hardwood/mixed conifer habitat on National Forest System lands in the Sierra Nevada. Over the last two decades, the trend is slightly increasing (changing from 5% to 7% of the acres on National Forest System lands).

**Population Status and Trend.** The mule deer has been monitored in the Sierra Nevada at various sample locations by herd monitoring (spring and fall) and hunter survey and associated modeling (CDFG 2007, 2010). California Department of Fish and Game (CDFG) conducts surveys of deer herds in early spring to determine the proportion of fawns that have survived the winter, and conducts fall counts to determine herd composition (CDFG 2007). This information, along with prior year harvest information, is used to estimate overall herd size, sex and age ratios, three-year average populations, and the predicted number of bucks available to hunt (CDFG 2007, 2010). These data indicate that mule deer continue to be present across the Sierra Nevada, and current data at the rangewide, California, and Sierra Nevada scales indicate that, although there may be localized declines in some herds or Deer Assessment Units, the distribution of mule deer populations in the Sierra Nevada is stable.

**Relationship of Project-Level Habitat Impacts to Bioregional-Scale Mule Deer Trend.** The small area affected, 200 acres, which would be improved for mule deer habitat under this project, would not alter the existing trend in the habitat, nor will it lead to a change in the distribution of mule deer across the Sierra Nevada bioregion.

### **Early and Mid-Seral Coniferous Forest Habitat (Mountain quail)**

#### **Habitat/Species Relationship.**

The mountain quail was selected as the MIS for early and mid-seral coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, red fir, and eastside pine) habitat in the Sierra Nevada. Early seral coniferous forest habitat is comprised primarily of seedlings (<1" dbh), saplings (1"-5.9" dbh), and pole-sized trees (6"-10.9" dbh). Mid seral coniferous forest habitat is comprised primarily of small-sized trees (11"-23.9" dbh). The mountain quail is found particularly on steep slopes, in open, brushy stands of conifer and deciduous forest and woodland, and chaparral; it may gather at water sources in the summer, and broods are seldom found more than 0.8 km (0.5 mi) from water (CDFG 2005).

#### **Project-level Effects Analysis – Early and Mid-Seral Coniferous Forest Habitat**

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**Habitat Factor(s) for the Analysis:** (1) Acres of early (CWHR tree sizes 1, 2, and 3) and mid seral (CWHR tree size 4) coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, red fir, and eastside pine) habitat [CWHR ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), eastside pine (EPN), tree sizes 1, 2, 3, and 4, all canopy closures). (2) Acres with changes in CWHR tree size class. (3) Acres with changes in tree canopy closure. (4) Acres with changes in understory shrub canopy closure.

**Current Condition of the Habitat Factor(s) in the Project Area:** There presently are approximately 1,180 acres of early seral (size class 1-3) coniferous habitat, and approximately 6,640 acres of mid seral (size class 4) coniferous habitat within the project area. Much of the early seral habitat is associated with the overlap of the project area with the Power Fire Area and ridge tops.

### **Proposed Action**

**Direct and Indirect Effects to Habitat.** Approximately 770 acres of early seral quail habitat, and 3,600 acres mid-seral quail habitat would be affected by one or multiple treatments proposed under this project. The various treatments would have similar impacts on this habitat type, with varying degrees of intensity based on the methods/tools used, and frequency of maintenance treatments.

**Mechanical Thinning/Commercial Harvest-** There are 440 acres (early seral) and 2,150 acres (mid seral) of quail habitat in proposed commercial harvest treatment units. Commercial harvest is unlikely to affect existing habitat since early seral habitat would undergo little to no treatment (little or no commercial timber on these lands), and only minimal harvest would be conducted in the mid-seral habitat due to the low density of conifers in these areas.

There is likely to be an increase in habitat quantity where the small openings are created in areas of recent drought related mortality occurs in clumps which could increase habitat. These increases would be small scale (.25 acres or less in size) and scattered in nature. These openings would provide early to mid-seral habitat for quail for an estimated 5-15 years, possibly longer, depending how quickly desired conditions of pine dominated forest stands develop in these areas. In summary, the project would be expected to maintain existing habitat, and may generate small scattered pockets of new habitat.

**Fuels, Prescribed Burning and Fuel Break Treatments-** There are 330 acres (early seral) and 1,455 acres (mid seral) of quail habitat in proposed fuels reduction, roadside, fuel break, and prescribed burning units.

The proposed action would result in short term declines in habitat capability immediately post treatment, but would maintain this habitat on the landscape over time, and in some areas may slow or arrest the development of later seral, dense forested habitats. There may be some differences in these effects, depending on what maintenance treatment tools are used (burning or manual/mechanical treatments), but these differences would be site specific, subtle, and difficult to separate.

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The proposed action would affect nesting substrates and foraging vegetation utilized by the species in this habitat, and would likely reduce available forage immediately following treatment. The project would reduce or remove nesting and cover structure as more mature shrubs are reduced in number and height. The impacts would be short term, 1-2 growing seasons, and follow immediately upon the treatment. The project would be expected to move some mid seral habitat into an earlier seral state, and may improve foraging quality within a 1-2 growing seasons. As with previous discussions, the entirety of the available habitat is not expected to be treated at one time, so there would be varying degrees of habitat quality available to quail and other species at any given time.

Where prescribed burning and fuels treatments create small openings (¼-1/2 acre in size), a limited amount of habitat may be created for this species in the form of early seral habitat. These pockets of new habitat would be relatively small in number and scattered across the treatment areas.

In general, habitat quantity is not expected to be reduced under the proposed action, the amount of habitat would remain on the landscape longer than the taking no action, and there would be a shift toward the early seral habitat and away from the mid-seral habitat for quail, and an addition some small pockets of habitat might be created by these activities.

***Road Maintenance and Reconstruction-*** The road maintenance and reconstruction treatments proposed for the project would have no impact on this habitat, and result in no measurable change to habitat quantity or quality.

**Cumulative Effects to Habitat in the Analysis Area.** The project area is used for the cumulative affects area. Ongoing and foreseeable future activities are summarized in Table 5. Generally, these past and present activities have had, and will have short term effects on these habitat types, usually resulting in short term reductions in competition with conifers, and canopy closures, but with little change in the total acreage in these habitat types.

**Cumulative Effects Conclusion:** The proposed action would retain early and mid-seral habitat where they presently exist. There may be some short term reductions in foraging and nesting habitat quality, but in the longer term these treatments would contribute to beneficial cumulative effects by increasing the amount of habitat, in the small and scattered created openings, and retain habitat longer on the landscape through the management of the fuel breaks.

The proposed action would treat approximately 55-65% of the existing habitat in the project area, and not all of the area at any one time. For these reasons, any immediate affects from the project would not be expected to limit the availability of these habitat types for quail and other species using this habitat. Any effects would also be offset by future wildfire in the Sierra Nevada, which generates early and mid-seral habitats.

### **Summary of Mountain Quail Status and Trend at the Bioregional Scale**

The Eldorado NF LRMP (as amended by the SNF MIS Amendment) requires bioregional-scale habitat and distribution population monitoring for the mountain quail; hence, the early and mid-

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seral coniferous forest effects analysis for the Scottiagio FHFR must be informed by both habitat and distribution population monitoring data. The sections below summarize the habitat and distribution population status and trend data for the mountain quail. This information is drawn from the detailed information on habitat and population trends in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a), which is hereby incorporated by reference.

**Habitat Status and Trend.** There are currently 530,851 acres of early seral and 2,776,022 acres of mid seral coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, and red fir) habitat on National Forest System lands in the Sierra Nevada. Over the last two decades, the trend for early seral is decreasing (changing from 9% to 5% of the acres on National Forest System lands) and the trend for mid-seral is increasing (changing from 21% to 25% of the acres on National Forest System lands).

**Population Status and Trend.** Monitoring of the mountain quail across the ten National Forests in the Sierra Nevada has been conducted since 2009 in partnership with PRBO Conservation Science, as part of a monitoring effort that also includes fox sparrow, hairy woodpecker, and yellow warbler (USDA Forest Service 2010a, <http://data.prbo.org/partners/usfs/snemis/>). Mountain quail were detected on 40.3 percent of 1659 point counts (and 48.6% of 424 playback points) in 2009 and 47.4% of 2266 point counts (and 55.3% of 492 playback points) in 2010, with detections on all 10 national forests in both years. The average abundance (number of individuals recorded on passive point count surveys) was 0.103 in 2009 and 0.081 in 2010. These data indicate that mountain quail continue to be distributed across the 10 Sierra Nevada National Forests. In addition, mountain quail continue to be monitored and surveyed in the Sierra Nevada at various sample locations by hunter survey, modeling, and breeding bird survey protocols. These are summarized in the 2008 Bioregional Monitoring Report (USDA Forest Service 2008). Current data at the rangewide, California, and Sierra Nevada scales indicate that the distribution of mountain quail populations in the Sierra Nevada is stable.

### **Relationship of Project-Level Habitat Impacts to Bioregional-Scale Mountain Quail Trend.**

The project would retain existing early and mid-seral habitat longer than expected in the taking no action. The habitat would primarily be maintained in the fuel breaks, although there would be some shift from mid-seral toward early seral habitat immediately after treatment, and there would be shifts in understory shrub species mix. There is potential to generate this type of habitat, in small openings, scattered through the treatment areas.

Short term impacts to foraging and nesting availability would likely occur, but would not reduce habitat sufficiently to render them unsuitable. The proposed would not greatly alter the existing trend in the habitat as the scale of impact is relatively small,  $\leq 4,400$  acres ( $\leq 65\%$  of habitat in project area), when compared to the existing habitat elsewhere in the Sierra Nevada,  $>3,000,000$  acres, nor would they lead to a change in the distribution of mountain quail across the Sierra Nevada bioregion.

### **Late Seral Open Canopy Coniferous Forest Habitat [Sooty (blue) grouse]**

### **Habitat/Species Relationship.**

The sooty grouse was selected as the MIS for late seral open canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, red fir, and eastside pine) habitat in the Sierra Nevada. This habitat is comprised primarily of medium/large trees (equal to or greater than 24 inches dbh) with canopy closures less than 40%. Sooty grouse occurs in open, medium to mature-aged stands of fir, Douglas-fir, and other conifer habitats, interspersed with medium to large openings, and available water, and occupies a mixture of mature habitat types, shrubs, forbs, grasses, and conifer stands (CDFG 2005). Empirical data from the Sierra Nevada indicate that Sooty Grouse hooting sites are located in open, mature, fir-dominated forest, where particularly large trees are present (Bland 2006).

### **Project-level Effects Analysis - Late Seral Open Canopy Coniferous Forest Habitat**

**Habitat Factor(s) for the Analysis:** (1) Acres of late seral open canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, red fir, and eastside pine) habitat [CWHR ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), eastside pine (EPN), tree size 5, canopy closures S and P]. (2) Acres with changes in tree canopy closure class. (3) Acres with changes in understory shrub canopy closure class.

**Current Condition of the Habitat Factor(s) in the Project Area:** There is a limited amount of this habitat, approximately 25 acres of late seral open canopied habitat within the project area. These areas have seen salvage logging, thinning and other management in the past.

### **Proposed Action**

**Direct and Indirect Effects to Habitat.** Where habitat presently exists, it would be expected to remain post implementation of the proposed action. None of the mechanical harvest units appear to contain this habitat, and therefore this treatment would not affect existing habitat, and as canopy closure would be retain at or above 50% within these treatment areas, habitat would not be expanded by this treatment. For these reasons, commercial treatment units will not be further discussed for this species/habitat type.

Within proposed fuels treatment areas there are approximately 8 acres of this type of habitat, about half of the existing habitat in the project area. The proposed fuel reductions, and burning would be expected to have no negative impacts to the habitat, and should maintain the habitat longer on the landscape. There is some potential for generation of small amounts of this habitat by the project, but the amount of habitat and size of these areas is likely to be very small and scattered.

**Cumulative Effects to Habitat in the Analysis Area.** The project area is used as the cumulative effects area. A summary of pertinent past, present, and future projects are summarized in Table 5, previous section of this document. As a general rule, these past and present activities have had, and will have short term effects on these habitat types, usually resulting in short term increases in younger age classes, but with little change in the total acreage in these habitat types.

**Cumulative Effects Conclusion:** As the proposed action would only potentially affect 8 acres of this habitat type, have no adverse impacts on habitat quality or quantity, and retain this habitat, the project would not contribute to adverse cumulative effects.

### **Summary of Sooty Grouse Status and Trend at the Bioregional Scale**

The Eldorado NF LRMP (as amended by the SNF MIS Amendment) requires bioregional-scale habitat and distribution population monitoring for the sooty grouse; hence, the late seral open canopy coniferous forest effects analysis for the Power Fire Fuels Maintenance Study Project must be informed by both habitat and distribution population monitoring data. The sections below summarize the habitat and distribution population status and trend data for the sooty grouse. This information is drawn from the detailed information on habitat and population trends in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a), which is hereby incorporated by reference.

**Habitat Status and Trend.** There are currently 63,795 acres of late seral open canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, red fir, and eastside pine) habitat on National Forest System lands in the Sierra Nevada. Over the last two decades, the trend is decreasing (changing from 3% to 1% of the acres on National Forest System lands).

**Population Status and Trend.** The sooty grouse has been monitored in the Sierra Nevada at various sample locations by hunter survey, modeling, point counts, and breeding bird survey protocols, including California Department of Fish and Game Blue (Sooty) Grouse Surveys (Bland 1993, 1997, 2002, 2006); California Department of Fish and Game hunter survey, modeling, and hunting regulations assessment (CDFG 2004a, CDFG 2004b); Multi-species inventory and monitoring on the Lake Tahoe Basin Management Unit (LTBMU 2007); and 1968 to present – BBS routes throughout the Sierra Nevada (Sauer et al. 2007). These data indicate that sooty grouse continue to be present across the Sierra Nevada, except in the area south of the Kern Gap, and current data at the rangewide, California, and Sierra Nevada scales indicate that the distribution of sooty grouse populations in the Sierra Nevada north of the Kern Gap is stable.

### **Relationship of Project-Level Habitat Impacts to Bioregional-Scale Sooty Grouse Trend.**

Due to the small amount of affected habitat (8 acres), the beneficial impacts of the treatment, and the retention of the total 25 acres of habitat in the project area, would have no adverse effect, and little to no effect on habitat trend or distribution of this species.

### **Late Seral Closed Canopy Coniferous Forest Habitat (California spotted owl, American marten, and northern flying squirrel)**

#### **Habitat/Species Relationship.**

**California spotted owl.** The California spotted owl was selected as an MIS for late seral closed canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, and red fir) habitat in



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the Sierra Nevada. This habitat is comprised primarily of medium/large trees (equal to or greater than 24 inches dbh) with canopy closures above 40% within ponderosa pine, Sierran mixed conifer, white fir, and red fir coniferous forests, and multi-layered trees within ponderosa pine and Sierran mixed conifer forests. The California spotted owl is strongly associated with forests that have a complex multi-layered structure, large-diameter trees, and high canopy closure (CDFG 2005, USFWS 2006). It uses dense, multi-layered canopy cover for roost seclusion; roost selection appears to be related closely to thermoregulatory needs, and the species appears to be intolerant of high temperatures (CDFG 2005). Mature, multi-layered forest stands are required for breeding (Ibid). The mixed-conifer forest type is the predominant type used by spotted owls in the Sierra Nevada: about 80 percent of known sites are found in mixed-conifer forest, with 10 percent in red fir forest (USDA Forest Service 2001).

**American Marten.** The American marten was selected as an MIS for late seral closed canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, and red fir) habitat in the Sierra Nevada. This habitat is comprised primarily of medium/large trees (equal to or greater than 24 inches dbh) with canopy closures above 40% within ponderosa pine, Sierran mixed conifer, white fir, and red fir coniferous forests, and multi-layered trees within ponderosa pine and Sierran mixed conifer forests. Martens prefer coniferous forest habitat with large diameter trees and snags, large down logs, moderate-to-high canopy closure, and an interspersed of riparian areas and meadows. Important habitat attributes are: vegetative diversity, with predominately mature forest; snags; dispersal cover; and large woody debris (Allen 1982). Key components for westside and eastside marten habitat can be found in the Sierra Nevada Forest Plan Amendment FEIS (USDA Forest Service 2001), Volume 3, Chapter 3, part 4.4, pages 20-21.

**Northern flying squirrel.** The northern flying squirrel was selected as an MIS for late seral closed canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, and red fir) habitat in the Sierra Nevada. This habitat is comprised primarily of medium/large trees (equal to or greater than 24 inches dbh) with canopy closures above 40% within ponderosa pine, Sierran mixed conifer, white fir, and red fir coniferous forests, and multi-layered trees within ponderosa pine and Sierran mixed conifer forests. The northern flying squirrel occurs primarily in mature, dense conifer habitats intermixed with various riparian habitats, using cavities in mature trees, snags, or logs for cover (CDFG 2005).

### **Project-level Effects Analysis – Late Seral Closed Canopy Coniferous Forest Habitat.**

**Habitat Factor(s) for the Analysis:** (1) Acres of late seral closed canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, and red fir) habitat [CWHR ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), tree size 5 (canopy closures M and D), and tree size 6]. (2) Acres with changes in canopy closure (D to M). (3) Acres with changes in large down logs per acre or large snags per acre.

**Current Condition of the Habitat Factor(s) in the Project Area:** There are approximately 2,660 acres of late seral closed canopied habitat within the project area.

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Much of this area has seen some level of timber harvest in the past, including salvage harvest, and mechanical thinning treatments (within the last 20 years), and continue to see fire suppression. These areas have retained the large/tall tree component and moderate canopy closure (50-65%). There are numerous spotted owl and goshawk Protected Activity Centers (PACs) (16 PACs, 5 goshawk and 11 spotted owl) within the project area which have seen little to no harvest or treatment outside of the immediate roadside hazard tree and road maintenance treatments, resulting in high canopy closures, and extensive ladder fuels. In some areas drought, insects and disease, age, and other factors have resulted in patches of tree mortality affecting both pine and fir species, and higher fuel loadings.

### **Proposed Action**

**Direct and Indirect Effects to Habitat.** Approximately 1,135 acres of late seral moderate to highly closed canopy habitat (WHR size class 5, and 40-100% cc) would be treated under the proposed action by one or multiple methods.

***Mechanical Thinning/Commercial Harvest-*** Approximately 180 acres of habitat is within the proposed mechanical thinning/commercial harvest treatment units. The units proposed for treatment were previously treated under various thinning treatments (within the last 20 years), and are starting, generally, with moderate levels of canopy closure 50-65%, with some small inclusions of more dense canopied habitat. A 10-15% reduction in canopy closure, on average would occur, with retention of some of the best future nesting habitat, denser canopied large treed (tall tree) areas (as described in the design criteria for the project). These proposed treatments would reduce canopy closure where it currently is moderate, greater than 50% to no less than 50% canopy closure post treatment. The larger diameter trees, 30" dbh and greater, would be retained during these treatments, as the majority of the thinning would take place in the intermediate trees and codominant trees.

Snags would be retained consistent with forest LRMP standards, and will not be targeted for removal outside of hazard trees, and pockets of recent mortality.

Small openings (.25 acres or less) may occur as previously described, scattered through the treatment units. As these openings are small, and scattered, and In these openings the habitat are part of the larger habitat blocks, openings may provide improved prey availability, and would not be expect to greatly affect habitat suitability for these species in the project areas.

Down logs would be reduced to some extent where the proposed post-harvest piling and burning occurs, but would be retained to meet forest standards. The proposed removal of recently killed trees would reduce down log recruitment for a period of time in the areas where it takes place. These impacts to the down log component would not be expected to change habitat suitability long term, and the impacts would be apparent over the short term (1-5 years).

In summary, approximately 180 acres of late seral closed canopied habitat is found in the project area. Due to project design including requirements that canopy be retained at or above 50%

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canopy closure, that down log and snag forest standards be met post implementation, that openings created would be small and scattered, and have little effect to habitat suitability, beyond potentially positive increases in prey numbers and availability.

***Fuels, Prescribed Burning and Fuel Break Treatments-*** Approximately 1135 acres of habitat is within fuel break treatment units. The fuel reduction, fuel break treatments would have little impact on canopy closure (5-15% averaged over treatment units for all treatments) and may increase the average tree size over time by reducing competition through the removal of shrub species and small diameter trees. Down logs would be reduced by the use of mechanized equipment and prescribed fire in follow up treatments.

Snags would not be targeted for removal, outside of roadsides, fuel breaks, and fire lines. Existing snags would be reduced, or completely removed in the core of the fuel breaks, and on the larger ridgetop fuel breaks some snags would be retained where they do not pose a direct threat to road use or fire fighter safety. Snags will not be evenly spaced across the landscape, but would vary by land allocation, such as fuel break or PAC, and landscape position, such as near roads, ridgetops and streams. Snag positions may be based on desired future conditions. Any snag posing a hazard to life, injury, or property may be removed.

Due to the fact that the fuel treatments are designed around the ridge tops and main roads, these areas tend to have lower numbers of snags to start with, and post project would have less than presently exist. The reductions in snags in the fuel treatment areas will reduce habitat quality in these areas, but across the project area, habitat quality is expected to remain suitable for these species where it presently exists.

**Cumulative Effects to Habitat in the Analysis Area.** The project area is used for the cumulative affects area. Ongoing and foreseeable future activities are summarized in Table 5. Generally, these past and present activities have had, and have short term effects on these habitat types, usually resulting in short term reductions in competition with conifers, and canopy closures, but with little change in the total acreage in these habitat types. As much of the project area has seen thinning treatments in the last 10-15 years, canopy closure in the treated areas is lower than within the PACs and untreated areas, however the large trees were retained in these treatments.

**Cumulative Effects Conclusion:** The proposed action would impact between 607 and 1,135 acres of habitat by reducing canopy closure, some reduction in both snag and down logs, and creating small openings. Both the commercial harvest treatments and fuels reduction/burning activities would retain 50% canopy closure or better, where it currently exists, in the and most of the large trees 30”dbh and greater. These actions would not alter the existing trend in habitat for this habitat type, or associated species.

### **Summary of Status and Trend at the Bioregional Scale**

**California spotted owl, American marten, and Northern flying squirrel.** The Eldorado NF LRMP (as amended by the SNF MIS Amendment) requires that the bioregional-scale habitat and

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distribution population monitoring for the California spotted owl, American marten, and northern flying squirrel; hence, the late seral closed canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, and red fir) habitat effects analysis for the Scottiagio FHFR must be informed by both habitat and distribution population monitoring data. The sections below summarize the habitat and distribution population status and trend data. This information is drawn from the detailed information on habitat and population trends in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a), which is hereby incorporated by reference.

**Habitat Status and Trend.** There are currently 1,006,923 acres of late seral closed canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, and red fir) habitat on National Forest System lands in the Sierra Nevada. Over the last two decades, the trend is slightly increasing (changing from 7% to 9% of the acres on National Forest System lands); since the early 2000s, the trend has been stable at 9%.

**Population Status and Trend - California spotted owl.** California spotted owl has been monitored in California and throughout the Sierra Nevada through general surveys, monitoring of nests and territorial birds, and demography studies (Verner et al. 1992; Gutierrez et al. 2008, 2009, 2010; USDA Forest Service 2001, 2004, 2006b; USFWS 2006; Sierra Nevada Research Center 2007, 2008, 2009, 2010). Current data at the rangewide, California, and Sierra Nevada scales indicate that, although there may be localized declines in population trend [e.g., localized decreases in “lambda” (estimated annual rate of population change)], the distribution of California spotted owl populations in the Sierra Nevada is stable.

**Population Status and Trend – American marten.** American marten has been monitored throughout the Sierra Nevada as part of general surveys and studies since 1996 (e.g., Zielinski et al. 2005, Moriarty 2009). Since 2002, the American marten has been monitored on the Sierra Nevada forests as part of the Sierra Nevada Forest Plan Amendment (SNFPA) monitoring plan (USDA Forest Service 2005, 2006b, 2007b, 2009, 2010b). Current data at the rangewide, California, and Sierra Nevada scales indicate that, although marten appear to be distributed throughout their historic range, their distribution has become fragmented in the southern Cascades and northern Sierra Nevada, particularly in Plumas County. The distribution appears to be continuous across high-elevation forests from Placer County south through the southern end of the Sierra Nevada, although detection rates have decreased in at least some localized areas (e.g., Sagehen Basin area of Nevada County).

**Population Status and Trend – northern flying squirrel.** The northern flying squirrel has been monitored in the Sierra Nevada at various sample locations by live-trapping, ear-tagging, camera surveys, snap-trapping, and radiotelemetry: 2002-present on the Plumas and Lassen National Forests (Sierra Nevada Research Center 2007, 2008, 2009, 2010), and 1958-2004 throughout the Sierra Nevada in various monitoring efforts and studies (see USDA Forest Service 2008, Table NOFLS-IV-1). These data indicate that northern flying squirrels continue to be present at these sample sites, and current data at

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the rangewide, California, and Sierra Nevada scales indicate that the distribution of northern flying squirrel populations in the Sierra Nevada is stable.

### **Relationship of Project-Level Habitat Impacts to Bioregional-Scale Trends.**

**California spotted owl, American marten, and Northern flying squirrel:** This project would impact approximately 50% of the existing habitat within the project area. The proposed action would retain the existing habitat for these species on the treatment acres, albeit with some reduction in canopy closure (10-15% or less) and impacts to snag/log locations and quantity and/or size, the actions would not alter the existing trend in habitat, nor would they lead to a change in distribution of these species across the Sierra Nevada bioregion.

### **Snags in Green Forest Ecosystem Component (Hairy woodpecker)**

#### **Habitat/Species Relationship.**

The hairy woodpecker was selected as the MIS for the ecosystem component of snags in green forests. Medium (diameter breast height between 15 to 30 inches) and large (diameter breast height greater than 30 inches) snags are most important. The hairy woodpecker uses stands of large, mature trees and snags of sparse to intermediate density; cover is also provided by tree cavities (CDFG 2005). Mature timber and dead snags or trees of moderate to large size are apparently more important than tree species (Siegel and DeSante 1999).

#### **Project-level Effects Analysis – Snags in Green Forest Ecosystem Component**

**Habitat Factor(s) for the Analysis:** (1) Medium (15-30 inches dbh) snags per acre. (2) large (greater than 30 inches dbh) snags per acre.

**Current Condition of the Habitat Factor(s) in the Project Area:** The project area, and surrounding area has recently experienced a drought and insect related tree mortality event, which is resulting in increased numbers of individual trees, and clumps of trees dying. There are approximately 9,680 acres of green forest which contain, in varying quantities, 15 inch dbh and greater snags. Snags within immediate 150-200 feet of the existing road ways have a shorter lifetime, in general, as they are often removed as hazards to the public, resulting in lower densities than would be found outside of the road corridors. The existing snag locations, densities of snags, and how many acres have snags of this size class have not been quantified, but with the recent mortality event, snag numbers are believed to be high and increasing within the project area.

#### **Proposed Action**

**Direct and Indirect Effects to Habitat.** This project would treat approximately 4,850 acres of snag habitat. The recently killed trees would not be removed to a large extent outside of the major road corridors, where they would be reduced or removed to a large extent as either hazard trees, or as part of the strategic fuel reduction activities (road/ridge fuel breaks, prescribed burning, thinning on key corridors).

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The project would retain snags on the landscape, at or above the forest plan standards, however, there will be reductions on an acre to acre basis across the units. The standard of retaining the 4 largest snags per acre would be met across the entire project area, including areas outside of the proposed treatment units.

***Mechanical Thinning/Commercial Harvest-*** Approximately 2,380 acres of habitat would be treated using mechanical/commercial thinning under the proposed action. These mechanical/commercial treatments would have little direct impact on snag distributions in green forest since the larger diameter trees would be retained during these treatments, the majority of the thinning would take place in the intermediate and codominant sized trees, and not targeting snags for removal, outside of those that pose a hazard to operations or roads. The mechanical harvest units would remove some recently dead trees/snags where they pose a hazard to logging operations, and use of the roads to access the project area. These hazard tree/snag removal would primarily take place within 200 feet of roads and landings. Interior areas of the units would generally retain snags.

In summary, approximately 2,380 acres of habitat presently is found in the proposed mechanical harvest units would maintain snags, where they are not a hazard to operation and road use, generally habitat would be retained with some reduction in quality primarily along the road corridors. Given that the proposed treatments are designed to prevent habitat loss due to insect and disease, this project would be likely retain habitat longer than without treatment, but may slow the recruitment of snags over time. Snags would be retained consistent with, or in excess of forest LRMP standard. Generally the 4 largest snags will be retained per acre, averaged over the treatment unit area.

***Fuels, Prescribed Burning and Fuel Break Treatments-*** Approximately 2,470 acres of habitat would be treated in fuel break/fuel reduction activities units with implementation of the proposed action. The fuel break/road corridor treatments would have the greatest reduction in the number and size of snags remaining on the landscape, especially along the roads and ridges. Areas closest to the ridges and roads would undergo nearly complete removal of existing snags. Retention of snags within the fuel breaks would be greater in areas of the fuel break further from the roads, where the snags do not directly pose a threat to road use, fire suppression, and fire fighter safety.

As described for the commercial mechanical treatment units, removal of snags would be greatest in proximity to the roads (100-200'). Prescribed burning would remove some snags, however, snags would not be targeted for lighting, and burning would be expected to generate some new snags. Past experience with these treatments show a reduction in snag size (diameter) as older large snags often are susceptible to burning, and snags created tend to be of smaller diameters, as the burning is designed to kill very few large trees. Snags would be retained consistent with, or in excess of forest LRMP standard. Generally the 4 largest snags will be retained per acre, averaged over the treatment unit area.

Due to the fact that the fuel breaks/road corridor treatments are designed along the ridge tops and main roads, these areas tend to have lower numbers of snags due to ongoing hazard tree removal, yet following implementation of any of the project, these areas would have fewer snags than

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presently exist. Due to the location of the fuel break treatments, and as snags will be retained elsewhere in the project area, the removal of snags in the fuel break treatment areas would reduce habitat quality to some extent in these areas, but across the project area habitat quality would remain suitable for this species.

**Cumulative Effects to Habitat in the Analysis Area.** The project area is used for the cumulative effects area. Ongoing and foreseeable future activities are summarized in Table 5. Generally, these past and present activities have had, and will have short term effects on these habitat types, usually resulting in short term reductions in snag numbers, and average diameter of remaining snags in some cases. These actions have resulted in little change in the total acreage in these habitat types.

**Cumulative Effects Conclusion:** The project would decrease habitat capability through a reduction in snags within fuel breaks and within the proposed mechanical thinning units where hazard trees are removed, in both cases the road corridors would see the greatest impacts to snag habitat. The majority of the habitat would remain suitable, however, there will be areas that no longer retain enough snags for habitat to remain suitable in the near future, mainly along road corridors. Due to the scope of the impacts, and relatively large amount of habitat available, the project would not alter existing trend in habitat for this habitat type, or associated species.

### **Summary of Hairy Woodpecker Status and Trend at the Bioregional Scale**

The Eldorado NF LRMP (as amended by the SNF MIS Amendment) requires bioregional-scale habitat and distribution population monitoring for the hairy woodpecker; hence, the snag effects analysis for the Scottiago FHFR Project must be informed by both habitat and distribution population monitoring data. The sections below summarize the habitat and distribution population status and trend data for the hairy woodpecker. This information is drawn from the detailed information on habitat and distribution population trends in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a), which is hereby incorporated by reference.

**Ecosystem Component Status and Trend.** The current average number of medium-sized and large-sized snags ( $\geq 15$ " dbh, all decay classes) per acre across major coniferous and hardwood forest types (westside mixed conifer, ponderosa pine, white fir, productive hardwoods, red fir, eastside pine) in the Sierra Nevada ranges from 1.5 per acre in eastside pine to 9.1 per acre in white fir. In 2008, snags in these types ranged from 1.4 per acre in eastside pine to 8.3 per acre in white fir (USDA Forest Service 2008).

Data from the early-to-mid 2000s were compared with the current data to calculate the trend in total snags per acre by Regional forest type for the 10 Sierra Nevada National Forests and indicate that, during this period, snags per acre increased within westside mixed conifer (+0.76), white fir (+2.66), productive hardwoods (+0.35), and red fir (+1.25) and decreased within ponderosa pine (-0.16) and eastside pine (-0.14). Detailed information by forest type, snag size, and snag decay class can be found in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a).

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**Population Status and Trend.** Monitoring of the hairy woodpecker across the ten National Forests in the Sierra Nevada has been conducted since 2009 in partnership with PRBO Conservation Science, as part of a monitoring effort that also includes mountain quail, fox sparrow, and yellow warbler (USDA Forest Service 2010a, <http://data.prbo.org/partners/usfs/snmis/>). Hairy woodpeckers were detected on 15.1% of 1659 point counts (and 25.2% of 424 playback points) in 2009 and 16.7% of 2266 point counts (and 25.6% of 492 playback points) in 2010, with detections on all 10 national forests in both years. The average abundance (number of individuals recorded on passive point count surveys) was 0.116 in 2009 and 0.107 in 2010. These data indicate that hairy woodpeckers continue to be distributed across the 10 Sierra Nevada National Forests. In addition, the hairy woodpeckers continue to be monitored and surveyed in the Sierra Nevada at various sample locations by avian point count and breeding bird survey protocols. These are summarized in the 2008 Bioregional Monitoring Report (USDA Forest Service 2008). Current data at the rangewide, California, and Sierra Nevada scales indicate that the distribution of hairy woodpecker populations in the Sierra Nevada is stable.

**Relationship of Project-Level Habitat Impacts to Bioregional-Scale Hairy Woodpecker Trend.** As the project would treat approximately 50% of the existing habitat in the project area, snags would be retained consistent with, or in excess of forest LRMP standard. The reduction of snags proposed in this project would not be sufficient in scope to alter the existing trend in the snag ecosystem component, nor would it lead to a change in the distribution of hairy woodpecker across the Sierra Nevada bioregion.



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