



Giant Sequoia National Monument

Management Indicator Species Report

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MANAGEMENT SPECIES INDICATOR REPORT

INTRODUCTION	2
CURRENT MANAGEMENT DIRECTION	2
AFFECTED ENVIRONMENT	4
ENVIRONMENTAL EFFECTS	4
LITERATURE CITED AND REFERENCES	44

Introduction

The purpose of this report is to evaluate and disclose the potential effects of the alternatives analyzed in the Giant Sequoia National Monument Plan FEIS (Monument Plan FEIS) on the habitat of the thirteen (13) Management Indicator Species (MIS) identified in the 1988 Sequoia National Forest Land and Resource Management Plan (Forest Plan) (USDA 1988) 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 and alternatives on the habitat of selected MIS. Detailed descriptions of the management alternatives are found in the Monument Plan Final Environmental Impact Statement (FEIS) (USDA Forest Service 2010c).

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 Sequoia NF 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 Sequoia NF LRMP as amended.

Relation to Diversity and Viability

The National Forest Management Act (NFMA) requires the Secretary of Agriculture to specify:

Guidelines for land management plans developed to achieve the goals of the [RPA] Program which provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives

(16 U.S.C. 1604(g)(3)(B)). The 1982 planning process utilized in this Monument Plan FEIS implements this provision of the NFMA by maintaining sufficient fish and wildlife habitat in the planning area to support viable populations of existing native and desired non-native vertebrate species. The Monument Plan FEIS incorporates applicable analysis and management direction from the Sequoia National Forest Plan and its FEIS, as amended by the 2001 Sierra Nevada Forest Plan Amendment (SNFPA) and its FEIS, including the viability analyses and conclusions contained therein. Moreover, the specific analyses provided in this MIS Report for the Monument Plan FEIS support these larger scale analyses regarding compliance with the NFMA and the relevant 1982 planning process.

Current Management Direction

Adequately analyzing effects to MIS generally involves the following steps:

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

Direction Regarding Monitoring of MIS Population and Habitat Trends at the Bioregional Scale

The bioregional scale monitoring strategy for the Sequoia NF's MIS is found in the SNF MIS Amendment Record of Decision (ROD) of 2007 (USDA Forest Service 2007a). Bioregional scale habitat monitoring is identified for all 12 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 Forest Plan 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 two 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 SNF Bioregional MIS Report (USDA Forest Service 2008a).

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 Forest Plan 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).

Population monitoring strategies for MIS of the Sequoia National Forest 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.

Affected Environment

MIS Habitat in the Giant Sequoia National Monument

Habitat	Acres
Riverine & Lacustrine (LAC, RIV)	335
Shrubland (MCP, MCH)	48,249
Oak-associated Hardwood & Hardwood Conifer (MHW, MHC)	88,861
Riparian (MRI, VRI)	242
Wet Meadow (WTM, FEW)	1,511
Early & Mid Seral Coniferous Forest (PPN, SMC, WFR, RFR, JPN; tree sizes 1, 2, 3, 4)	134,884
Late Seral Open Canopy Coniferous Forest (PPN, SMC, RFR, EPN, JPN; tree size 5, canopy closures S and P)	643
Late Seral Closed Canopy Coniferous Forest (PPN, SMC, WFR, RFR, JPN; tree size 5, canopy closures M and D)	50,848

Environmental Effects

Selection of MIS

MIS for the Sequoia NF are identified in the 2007 SNF MIS Amendment (USDA Forest Service 2007a). The habitats and ecosystem components and associated MIS analyzed for the Monument Plan FEIS were selected from this list of MIS, as indicated in Table 1. In addition to identifying the habitat or ecosystem components (1st column), the CWHR type(s) defining each habitat/ecosystem component (2nd column), and the associated MIS (3rd column), the Table discloses whether or not the habitat of the MIS is potentially affected by the alternatives of the Monument Plan FEIS (4th column).

Table 1. Selection of MIS for Plan-Level Habitat Analysis for the Monument Management Plan Final Environmental Impact Statement.

Habitat or ecosystem component	CWHR type(s) defining the habitat or ecosystem component ¹	Sierra Nevada Forests Management Indicator Species <i>Scientific Name</i>	Category for Analysis ²
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Management Indicator Species

Riverine & Lacustrine	riverine (RIV) and lacustrine (LAC)	aquatic macroinvertebrates	3
Shrubland (west-slope chaparral types)	montane chaparral (MCP), mixed chaparral (MCH), chamise-redshank chaparral (CRC)	fox sparrow <i>Passerella iliaca</i>	3
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>	3
Wet meadow	Wet meadow (WTM), freshwater emergent wetland (FEW)	Pacific tree (chorus) frog <i>Pseudacris regilla</i>	3

Table 1. Selection of MIS for Plan-Level Habitat Analysis for the Monument Management Plan Final Environmental Impact Statement (cont'd).

Habitat or ecosystem component	CWHR type(s) defining the habitat or ecosystem component ¹	Sierra Nevada Forests Management Indicator Species <i>Scientific Name</i>	Category for Analysis 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), Jeffery Pine (JPN), Sierran mixed conifer (SMC) white fir (WFR), red fir (RFR), tree size 5, (canopy closures M and D, and tree size 6	California spotted owl <i>Strix occidentalis occidentalis</i>	3
		American marten <i>Martes americana</i>	3
		northern flying squirrel <i>Glaucomys sabrinus</i>	3
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

¹All 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).

²Category 3: MIS whose habitat would be either directly or indirectly affected by the FEIS.

This is a programmatic level FEIS with no proposed ground disturbing activities and therefore, no direct effects. The MIS whose habitat would be indirectly affected by the alternatives of the Monument Plan FEIS, identified as Category 3 in Table 1, are carried forward in this analysis, which will evaluate the indirect and cumulative effects of the proposed action and alternatives on the habitat of these MIS. The MIS selected for analysis for the Giant Sequoia National Monument Management Plan Final Environmental Impact Statement are: aquatic macroinvertebrates, fox sparrow, mule deer, yellow warbler, pacific tree frog, mountain quail, sooty grouse, California spotted owl, American marten, northern flying squirrel, hairy woodpecker, and black-backed woodpecker.

Bioregional Monitoring Requirements for MIS

The SNF MIS Amendment (USDA Forest Service 2007a) identifies bioregional scale habitat and/or population monitoring for the MIS for 10 National Forests, including Sequoia NF. The habitat and/or population monitoring requirements for Sequoia NF's MIS are described in the 2010 Sierra Nevada Forests Bioregional MIS Report (USDA Forest Service 2010a) and are summarized below for the MIS being analyzed for the alternatives. 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. Habitat monitoring at the bioregional scale is identified for all the habitats and ecosystem components.

Bioregional Monitoring for aquatic macroinvertebrates is the Index of Biological Integrity (IBI) and habitat condition and trend are measured by collecting aquatic macroinvertebrates, and analyzing the resulting data using the 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. In addition, stream habitat features are measured according to the SCI manual (Frasier et al. 2005).

Population monitoring at the bioregional scale for fox sparrow, mule deer, yellow warbler, pacific tree frog, mountain quail, sooty grouse, California spotted owl, American marten, northern flying squirrel, hairy woodpecker, and black-backed woodpecker is 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).

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.

Description of Giant Sequoia National Monument Management Plan FEIS Alternatives

Below is a description of elements of the six alternatives in the Monument Plan FEIS considered important to wildlife and wildlife habitat. A complete description of the alternatives can be found in Chapter 2 of the Monument Plan FEIS.

Common to All Alternatives

Lands in the Monument continue to provide a diverse range of habitats that support viable populations of associated vertebrate species, with special emphasis on riparian areas, montane meadows, and late successional forest. Proper hydrologic and ecological functioning conditions in riparian areas and meadows are restored and maintained. Old forest habitat is in suitable quality, quantity, and distribution to support viable populations of late successional dependent species, including Pacific fishers, American martens, California spotted owls, northern goshawks, and great gray owls. The configuration of habitat in the Monument provides connectivity and heterogeneity. Ecological conditions in the Monument contribute to the recovery of federally threatened and endangered species such as the California condor and Springville clarkia, and help avoid federal listing of Forest Service sensitive species.

Alternative A- (No Action-Current Management)

Current management direction for the Monument comes from several sources:

- The 1988 Sequoia National Forest Land and Resource Management Plan (Forest Plan)
- The 1990 Sequoia National Forest Land Management Plan Mediated Settlement Agreement (MSA)

- The 1991 Kings River Wild and Scenic River and Special Management Area Implementation Plan (KRSMA)
- The 2000 Presidential Proclamation establishing the Monument (Proclamation)
- The 2001 Sierra Nevada Forest Plan Amendment (2001 SNFPA)

There are a number of standards and guidelines associated with the existing management goals and objectives and land allocations from the 1988 Forest Plan, the 1990 MSA, the Proclamation, and the 2001 SNFPA (See Appendix B).

The current management of the Monument includes a number of land allocations from the 2001 SNFPA for wildlife protection including: Southern Sierra Fisher Conservation Area (SSFCA), old forest emphasis areas, den site buffers for fisher and American marten, and protected activity centers (PACs) for California spotted owl, northern goshawks, great gray owls. It also requires habitat protection for meadows occupied by willow flycatchers. Riparian Conservation Areas (RCAs) and Critical Aquatic Refuges (CARs) guidelines follow the 2001 SNFPA and also provide protection for important wildlife habitat.

Alternative B

Alternative B includes the proposed action, and was developed to identify the changes to current management direction needed to comply with the Clinton Proclamation. Alternative B includes strategies that are responsive to the issues of recreation and public use, fuels management/community protection, and fires spreading to tribal lands. For Alternative B, a full range of recreation opportunities, including dispersed camping, developed camping, and the use of off-highway vehicles on designated roads would continue.

Protection of Objects of Interest

Alternative B would retain all of the land allocations and standards and guidelines from the 2001 SNFPA, except where noted as changed to better protect the objects of interest. For Alternative B, the Freeman Creek Grove would be designated as a botanical area, as prescribed by the 1990 MSA (MSA, p. 17). Alternative B includes multiple tools for decreasing fuel buildups and reducing the risk of uncharacteristically large-scale wildfire, which may threaten the objects of interest.

Promotion of Resiliency

Alternative B is expected to promote resilient vegetation communities through the use of prescribed fire, mechanical treatment, and managed wildfire (when available), in order of priority. Vegetation management projects for ecological restoration and maintenance would consider using prescribed fire first and be focused in the wildland urban intermix (WUI) defense and threat zones, with diameter limits throughout the Monument.

Alternative B allows tree cutting for fuels management and ecological restoration. No trees with a diameter greater than 20 inches may be cut, except for safety issues.

Promotion of Heterogeneity

Alternative B was designed to improve heterogeneity through the use of multiple tools for ecological restoration and maintenance. It would use these tools to reduce fuels, encourage natural regeneration, and increase the diversity in species composition and age.

Recreation Opportunities

Alternative B would continue to provide current recreation opportunities, with a focus on the development of new recreation facilities or opportunities as visitor use increases.

Vegetation, Including Giant Sequoia Groves

For Alternative B, ecological restoration of forested ecosystems would be accomplished by reducing fuels, improving stand resilience and health, promoting heterogeneity, and encouraging natural regeneration of giant sequoias and other species. In areas where natural regeneration is not likely, planting would occur. Resiliency would be improved by using prescribed fire, mechanical treatment, and managed wildfire (when available).

Fire and Fuels

Alternative B uses a WUI defense zone that extends approximately one-quarter mile from developed private land, and a WUI threat zone that extends another one and one-quarter mile from the defense zone. Designated WUI defense zones would cover 45,342 acres (13 percent) of the Monument and threat zones 145,522 acres (41 percent) of the Monument.

Alternative B includes the 56,591 acre Tribal Fuels Emphasis Treatment Area (TFETA). The TFETA was developed in response to discussions with the Tule River Indian Tribe and the concern over fires spreading to tribal lands. The Tribal Forest Protection Act of 2004 authorizes the Forest Service to enter into an agreement with Indian tribes meeting certain criteria to carry out projects to protect Indian forest land. This land allocation was designed along the boundary with the Tule River Indian Reservation to not only protect the reservation and its watersheds, but also the objects of interest and watersheds in the Monument, from fires spreading from one to the other.

Wildlife and Plant Habitat

Alternative B would replace the 2001 SNFPA standards and guidelines for great gray owl and willow flycatcher habitat with standards based on the 2004 SNFPA. The 2004 SNFPA includes management direction for these species that is adaptable to local site conditions, while carrying forward the protection measures set in place by the 2001 SNFPA.

Range

For Alternative B, standards and guidelines for livestock grazing from the 2004 SNFPA would replace the 2001 SNFPA direction. Some management direction from the 1988 Forest Plan and 1990 MSA would be used.

Hydrological Resources

Alternative B would replace the strategies, objectives, and standards and guidelines for the RCOs from the 2001 SNFPA with management direction based on the 2004 SNFPA. The 2004 SNFPA reduces redundancy and describes more consistent direction for hydrological resources, while maintaining the intent of the Aquatic Management Strategy.

Transportation

For Alternative B, the majority of the currently designated road and trail system would be available for use, retaining access similar to current levels for dispersed recreation, private ownerships, and management activities. There would be the potential for some reduction in high-clearance vehicle roads over time.

Off-highway vehicles (OHVs) would be allowed on designated roads. Over-snow vehicles (OSVs) would be allowed on designated roads when covered with snow, unless specifically prohibited. Non-motorized mechanized vehicles (mountain bikes) would be allowed on designated roads and trails unless specifically prohibited. Alternative B emphasizes opportunities for creating loop trails and roads, with the potential

for the construction of new roads for developed recreation facilities and loop driving opportunities. Decommissioned roads could be converted to trails.

Alternative C

Alternative C was developed to manage the Monument similar to the Sequoia and Kings Canyon National Parks (SEKI) in a manner that is consistent with Forest Service regulations and the direction of the Clinton Proclamation. Some management policies or direction from SEKI would not be applicable to the Monument because of differences in law, regulation, and policy for the two federal agencies. For Alternative C, restoration activities would focus on areas that have been affected by human use and occupation. Recreation opportunity management would be similar to SEKI management.

Protection of Objects of Interest

Alternative C would not use many of the land allocations associated with the 2001 SNFPA, nor the standards and guidelines associated with them, such as those for wildlife and plant habitat. New standards and guidelines would be used throughout the Monument, rather than in specific land allocations. No new special areas are proposed, because the entire Monument would be considered a special area. Alternative C would limit vegetation and fuels management to areas of human use and influence. To address fuels buildup, Alternative C relies primarily on prescribed fire and managed wildfire, and limits the use of mechanical treatments.

Promotion of Resiliency

Alternative C would allow natural processes to prevail, focusing on the resumption of natural processes in areas altered by human use. It is expected to promote resilient vegetation communities through the use of prescribed fire and managed wildfire (when available), and limited mechanical treatment, in order of priority. Alternative C would limit the tools used for ecological restoration and maintenance. It would focus necessary treatments in the WUI defense zones, with diameter limits for fuels reduction, fire protection, and giant sequoias throughout the Monument.

Promotion of Heterogeneity

Alternative C was designed to promote heterogeneity primarily through the use of prescribed burns and managed wildfire (when available). It would focus on the use of natural processes to reduce fuels, encourage natural regeneration, and increase the diversity in species composition and age, limiting treatments to areas of human use.

Recreation Opportunities

Alternative C would change the current recreation opportunities by focusing on developed recreation sites and concentrating new development in recreation opportunity areas.

Vegetation, Including Giant Sequoia Groves

For Alternative C, ecological restoration of forested ecosystems would be accomplished by reducing fuels, improving stand resilience and health, promoting heterogeneity, and encouraging natural regeneration of giant sequoias and other species. In areas where natural regeneration is not likely, planting would be used. Resiliency would be promoted by using prescribed fire and managed wildfire (when available) first, and mechanical treatment only as necessary.

Fire and Fuels

Alternative C uses a WUI defense zone that extends approximately 300 feet out from developed private land. No WUI threat zone is defined. Developed recreation sites and administrative sites would also have 300-foot buffers for fuels management. In Alternative C, WUI defense zones would only cover approximately 8,304 acres or two percent of the monument.

Generally, any mechanical treatments for fuels reduction would only be considered in visually-sensitive buffer zones (WUI defense) around areas of concentrated human use.

Wildlife and Plant Habitat

Alternative C would not use any of the land allocations or management areas specific to wildlife and plant habitat from the 2001 SNFPA or Forest Plan.

Alternative C would replace the 2001 SNFPA standards and guidelines for great gray owl and willow flycatcher habitat with standards based on the 2004 SNFPA. Some of the standards and guidelines for wildlife and plant habitat (such as those for limited operating periods) would be used throughout in the Monument, rather than being tied to a specific land allocation.

Range

For Alternative C, standards and guidelines for livestock grazing from the 2004 SNFPA would replace the 2001 SNFPA direction. Some management direction from the 1988 Forest Plan and 1990 MSA would be used.

Hydrological Resources

Alternative C would replace the strategies, objectives, and standards and guidelines for the RCOs from the 2001 SNFPA with management direction based on the 2004 SNFPA. Streamside management zones (SMZs) would be used to protect riparian areas, rather than the CARs, RCAs, and the associated RCOs.

Human Use

In Alternative C, dispersed camping would no longer be allowed at the end of roads or along roadsides. Dispersed camping would be allowed only by permit in the Wildlands niche setting, in inventoried roadless areas, and portions of the KRSMA. Target shooting would not be allowed. Other forms of dispersed recreation (e.g., hiking, birdwatching, fishing, picnicking) would be allowed.

Transportation

Under Alternative C, the majority of the currently designated roads maintained for passenger vehicle use would remain open to the public. Most of the roads for high-clearance vehicles would be closed over time due to a reduction in dispersed recreation, and would only be open for administrative use. Roads not needed for public access or management activities could be decommissioned, resulting in a substantial reduction in roads over time. Decommissioned roads could be converted to pedestrian trails. OHVs would not be allowed on roads, and OSVs would only be allowed on snow-covered roads to access private property, or for administrative and emergency use. Non-motorized mechanized vehicles (mountain bikes) would be allowed only on designated roads, not trails. Alternative C could include the construction of new roads for developed recreation facilities and loop driving opportunities.

Alternative D

Alternative D focuses on managing through natural processes with little to no human manipulation. It relies on naturally-occurring fire to reduce fuels, to protect the objects of interest, and to promote giant sequoia regeneration. Alternative D includes strategies that are responsive to the issues of tree removal, fuels management/community protection, and methods for sequoia regeneration. Dispersed and developed camping would still be available, although creation of new sites would be limited.

Protection of Objects of Interest

Alternative D focuses on allowing natural processes to restore and maintain ecosystems. To address fuels buildup, it would primarily use managed wildfire and prescribed fire, allowing mechanical treatment only under limited circumstances in the WUI defense zones.

Promotion of Resiliency

Alternative D would allow natural processes to prevail and focus on the resumption of natural processes in areas altered by human use. It is expected to promote resilient vegetation communities through the use of managed wildfire (when available), prescribed fire, and limited mechanical treatment, in order of priority. Alternative D would limit the tools used for ecological restoration and maintenance. It would focus necessary treatments in the WUI defense zones, with diameter limits for tree cutting.

Promotion of Heterogeneity

Alternative D was designed to promote heterogeneity primarily through the use of managed wildfire (when available) and prescribed burns. It would focus on the use of natural processes to reduce fuels, encourage natural regeneration, and increase the diversity in species composition and age, limiting treatments to areas of human use.

Recreation Opportunities

Alternative D would limit the development of new recreation sites to walk-in campgrounds and picnic areas near existing roads. Instead, developed recreation would be encouraged outside the Monument.

Vegetation, Including Giant Sequoia Groves

For Alternative D, ecological restoration of forested ecosystems would be accomplished by reducing fuels, improving stand resilience and health, promoting heterogeneity, and relying on natural regeneration of giant sequoias and other species. No planting or herbicides or pesticides would be used to promote regeneration. Resiliency would be promoted by using managed wildfire (when available), prescribed fire, and mechanical treatment only as necessary.

Fire and Fuels

Alternative D uses a WUI defense zone that extends approximately 200 feet out from developed private land. No WUI threat zone or TEFTA is included in Alternative D. WUI defense zones would only cover 4,603 acres or one percent of the Monument.

In Alternative D, mechanical treatments would be used to reduce fuels so that prescribed fire or managed wildfire could burn without harming the objects of interest. Any trees cut in the WUI defense zone would be kept on site. Tree cutting outside of the WUI defense zone would only be allowed to reduce risks to public and firefighter safety.

Wildlife and Plant Habitat

Alternative D includes most of the land allocations or management areas specific to wildlife and plant habitat from the 2001 SNFPA and Forest Plan, but not the old forest emphasis area and SSFCA allocations.

Alternative D would replace the 2001 SNFPA standards and guidelines for great gray owl and willow flycatcher habitat with standards based on the 2004 SNFPA.

Range

Under Alternative D, standards and guidelines for livestock grazing from the 2004 SNFPA would replace the 2001 SNFPA direction. Some management direction from the 1988 Forest Plan and 1990 MSA would be used.

Hydrological Resources

Alternative D would replace the strategies, objectives, and standards and guidelines for the RCOs from the 2001 SNFPA with management direction based on the 2004 SNFPA.

Human Use

In Alternative D, dispersed camping would be allowed, but new development would be limited to walk-in campgrounds and picnic areas. No new non-recreation special uses would be permitted, except for scientific research, administrative needs, or nondiscretionary uses.

Transportation

For Alternative D, the majority of the currently designated roads maintained for passenger vehicle use would remain open to the public. Many of the roads for high-clearance vehicles and closed roads would be decommissioned over time due to a reduced need for access. Decommissioned roads could be converted to pedestrian trails. Roads would continue to be managed for dispersed recreation access. No new roads would be constructed. OHVs would not be allowed on roads, and OSVs would only be allowed on paved roads. Not all roads and trails are expected to be designated for bicycles, including mountain bikes. Non-motorized mechanized vehicles (mountain bikes) would be allowed on designated roads and trails.

Alternative E

Alternative E was designed to manage the Monument as guided by the 1990 MSA. The 1990 MSA “remains in effect to the extent it has not been amended by other NEPA-compliant amendments” (*People of the State of California, ex rel. Lockyer v. United States Department of Agriculture, et al., No. C-05-00898 CRB*). Alternative E incorporates all appropriate 1990 MSA provisions. It includes current management direction from the 1988 Forest Plan and the 1990 MSA that was modified to comply with the Bush and Clinton Proclamations. Alternative E includes strategies that are responsive to the issue of the obligation to analyze the 1990 MSA under NEPA, and is designed to meet that obligation to consider and analyze the actions, standards, and guidelines contained in the 1990 MSA.

Protection of Objects of Interest

Alternative E would not use many of the land allocations from the 2001 SNFPA, but would use those 1988 Forest Plan management areas and associated management emphases, and their related standards and guidelines, that comply with the Clinton Proclamation. All provisions of the 1990 MSA that are appropriate for the Monument are incorporated. For Alternative E, the Freeman Creek Grove would be designated as a botanical area, as prescribed by the 1990 MSA (MSA, p. 17). In addition, a portion of the Moses Inventoried Roadless Area would be recommended to include in the Wilderness System (MSA 1990, p. 70). Alternative E includes multiple tools for decreasing fuel buildups and reducing the risk of uncharacteristically large-scale wildfire, which may threaten the objects of interest.

Promotion of Resiliency

Alternative E is expected to promote resilient vegetation communities through the use of mechanical treatment, prescribed fire, and managed wildfire (when available), in order of priority. Vegetation management for ecological restoration and maintenance would consider using mechanical treatment first, to prepare for the use of fire, and be focused first in the WUI defense and threat zones. Diameter limits are set in the WUI zones, in the Spotted Owl Habitat Areas (SOHAs), and for giant sequoias throughout the Monument.

Promotion of Heterogeneity

Alternative E was designed to improve heterogeneity through the use of multiple tools for ecological restoration and maintenance. It would use these tools to reduce fuels, encourage natural regeneration, and increase the diversity in species composition and age.

Recreation Opportunities

Alternative E would continue to provide current recreation opportunities, with a focus on the development of new recreation facilities or opportunities. Alternative E includes vegetation management for old growth values in SOHAs, riparian zones, wilderness, giant sequoia groves, and other areas for wildlife and visual values (MSA, p. 51).

Vegetation, Including Giant Sequoia Groves

The 1988 Forest Plan was designed to manage the majority of the forest for timber production (no longer applicable per the Clinton Proclamation and 2001 SNFPA) and recreation use. The 1988 Forest Plan and subsequent 1990 MSA contained no diameter limits for tree cutting or removal, except for giant sequoias. For Alternative E, vegetation management direction would be shifted for Management Area “Conifer Forest (CF)” and the associated Management Emphasis “7 (emphasize production of sawtimber volume in conifer)” that covers much of the Monument. Prescription CF7 from the 1988 Forest Plan focuses on commercial forestry based on allowable sale quantity. Since the Clinton Proclamation prohibits this type of commercial forestry in the Monument, this timber portion of Prescription CF7 is no longer applicable.

For Alternative E, ecological restoration of forested ecosystems would be accomplished by reducing fuels, improving stand resilience and health, promoting heterogeneity, and encouraging natural regeneration of giant sequoias and other species. In areas where natural regeneration is not likely, planting would occur. Resiliency would be promoted by using mechanical treatment, prescribed fire, and managed wildfire (when available).

Fire and Fuels

For Alternative E, the WUI defense and threat zones are the only land allocations included from the 2001 SNFPA. The 1990 MSA did not address the need to protect the objects of interest and the urban interface from wildfire. Alternative E uses a WUI defense zone that extends approximately one-quarter mile out from developed private land, and a WUI threat zone that extends another one and one-quarter mile out from the defense zone. Designated WUI defense zones would cover 45,342 acres (13 percent of the Monument) and threat zones 145,522 acres (41 percent of the Monument).

Wildlife and Plant Habitat

Alternative E does not use the land allocations or associated standard and guidelines from the 2001 SNFPA for the SSFCA; RCAs; CARs; PACs for California spotted owls, northern goshawks, and great gray owls; or den site buffers for American marten and fisher. Alternative E would use the direction from the 1990 MSA to protect wildlife and plant habitat, including SOHAs.

Range

For Alternative E, grazing management would be directed by the 1988 Forest Plan and the 1990 MSA. Standards and guidelines from these documents do not contain specific guidelines for grazing within occupied willow flycatcher or great gray owl habitat. Current range management practices would continue, including the Aquatic Management Strategy from the 2001 SNFPA. The allowable use factors from the 2001 SNFPA would not be used. They would be determined at the local level as described in the Forest Service Range Analysis Handbook.

Hydrological Resources

Alternative E includes the riparian and wetland standards and guidelines from the 1988 Forest Plan and the 1990 MSA. Standards and guidelines from the 2001 and 2004 SNFPAs, such as those for the Aquatic Management Strategy, RCAs, CARs, and RCOs, are not included.

Transportation

Under Alternative E, the majority of the currently designated road and trail system would be available for use, retaining access similar to current levels for dispersed recreation, private ownerships, and management activities. There would be the potential for some reduction in high-clearance vehicle roads over time.

OHVs would be allowed on designated roads. OSVs would be allowed on designated roads when covered with snow, unless specifically prohibited. Non-motorized mechanized vehicles (mountain bikes) would be allowed on designated roads and trails unless specifically prohibited. Alternative E emphasizes opportunities for creating loop trails and roads, and could include the construction of new roads for developed recreation facilities and loop driving opportunities. Decommissioned roads could be converted to trails.

Alternative F

Alternative F is designed to allow more flexibility in treatment methods to promote ecological restoration and maintenance, and forest health, and achieve the desired conditions in less time. Alternative F includes strategies that are responsive to the issues of recreation and public use, tree removal, fuels management/community protection, fires spreading to tribal lands, and methods for giant sequoia regeneration. It is similar to Alternative B, but proposes upper diameter limits for only giant sequoias.

Protection of Objects of Interest

Alternative F would retain the land allocations and standards and guidelines from the 2001 SNFPA, except where noted. Diameter limits in California spotted owl and northern goshawk PACs would be removed. For Alternative F, the Freeman Creek Grove would be designated as a botanical area, as prescribed by the 1990 MSA (MSA, p. 17). Alternative F includes multiple tools for decreasing fuel buildups and reducing the risk of uncharacteristically large-scale wildfire, which may threaten the objects of interest.

Promotion of Resiliency

Alternative F is expected to promote resilient vegetation communities through the use of prescribed fire, mechanical treatment, and managed wildfire (when available), with priorities and combinations determined by site-specific project analysis. It would allow flexibility in treatments where clearly needed for ecological restoration and maintenance or public safety, focusing first on the WUI defense and threat zones. It includes diameter limits only for giant sequoias.

Promotion of Heterogeneity

Alternative F was designed to improve heterogeneity through the use of multiple tools for ecological restoration and maintenance. It would use these tools to reduce fuels, encourage natural regeneration, and increase the diversity in species composition and age.

Recreation Opportunities

Alternative F would continue to provide current recreation opportunities, with a focus on the development of new recreation facilities or opportunities as visitor use increases.

Vegetation, Including Giant Sequoia Groves

For Alternative F, ecological restoration of forested ecosystems would be accomplished by reducing fuels, improving stand resilience and health, promoting heterogeneity, and encouraging natural

regeneration of giant sequoias and other species. In areas where natural regeneration is not likely, planting would be used. Resiliency would be improved by using a combination of fire and mechanical treatments determined by site-specific analysis.

Alternative F would eliminate the standard and guideline from the 2001 SNFPA requiring retention of all conifer trees with a dbh of 30 inches or greater and hardwoods with a dbh of 12 inches or larger when implementing vegetation and fuels treatments.

Fire and Fuels

Alternative F uses a WUI defense zone that extends approximately one-quarter mile from developed private land and a WUI threat zone that extends another one and one-quarter mile from the defense zone. The actual boundaries of the WUI are determined locally, based on the distribution of structures and communities adjacent to or intermixed with National Forest lands. Strategic landscape features such as roads, changes in fuel types, and topography are used in delineating the physical boundary of the WUI. In Alternative F, WUI defense zones would cover 45,342 acres (13 percent of the Monument) and threat zones 145,522 acres (41 percent of the Monument).

Alternative F includes the 56,591 acre TFETA. This land allocation was designed along the boundary with the Tule River Indian Reservation to not only protect the reservation and its watersheds, but also the objects of interest and watersheds in the Monument, from fires spreading from one to the other.

Wildlife and Plant Habitat

Alternative F would replace the 2001 SNFPA standards and guidelines for great gray owl and willow flycatcher habitat with standards based on the 2004 SNFPA. The 2004 SNFPA includes management direction for these species that is adaptable to local site conditions, while carrying forward the protection measures set in place by the 2001 SNFPA. Diameter limits in California spotted owl and northern goshawk PACs would be removed.

Range

For Alternative F, standards and guidelines for livestock grazing from the 2004 SNFPA would replace the 2001 SNFPA direction. Some management direction from the 1988 Forest Plan and 1990 MSA would be used.

Hydrological Resources

Alternative F would replace the strategies, objectives, and standards and guidelines for the RCOs from the 2001 SNFPA with management direction based on the 2004 SNFPA. The 2004 SNFPA reduces redundancy and describes more consistent direction for hydrological resources, while maintaining the intent of the Aquatic Management Strategy.

Transportation

For Alternative F, the majority of the currently designated road and trail system would be available for use, retaining access similar to current levels for dispersed recreation, private ownerships, and management activities. There would be the potential for some reduction in high-clearance vehicle roads over time.

OHVs would be allowed on designated roads. OSVs would be allowed on designated roads when covered with snow, unless specifically prohibited. Non-motorized mechanized vehicles (mountain bikes) would be allowed on designated roads and trails unless specifically prohibited. Alternative F emphasizes opportunities for creating loop trails and roads, with the potential for the construction of new roads for

developed recreation facilities and loop driving opportunities. Decommissioned roads could be converted to trails.

The priority for vegetation management in all of the alternatives would be WUI defense zones. There are differences in the size and location of defense zones in Alternatives C and D from the other alternatives (Table 2). In this analysis of effects to MIS it is assumed that WUI defense zones have the greatest risk of habitat altering vegetation management activities.

Table 2. Acres of Habitat within WUI Defense Zones by Alternative

Habitat	Alts. A, B, E, and F	Alt. C	Alt. D
Riverine & Lacustrine	44	44	7
Shrubland	4,894	844	505
Oak-associated hardwood & hardwood conifer	13,965	2,292	1,404
Riparian	54	15	8
Wet meadow	173	77	26
Early & mid seral coniferous forest	15,381	2,911	1,472
Late seral open canopy coniferous forest	149	13	8
Late seral closed canopy coniferous forest	5,139	941	510

Effects of the Alternatives in Giant Sequoia National Monument Management Plan Environmental Impact Statement on the Habitat of MIS

The following section documents the analysis for the following ‘Category 3’ species: aquatic macroinvertebrates, fox sparrow, mule deer, yellow warbler, pacific tree frog, mountain quail, sooty grouse, California spotted owl, American marten, northern flying squirrel, hairy woodpecker, and black-backed woodpecker. The analysis of the effects of the alternatives on the MIS habitat for the selected MIS is conducted at the programmatic scale. The analysis used the following habitat data: Forest GIS layers based on 2002 aerial photo interpretation, updated in 2003 for major fires; Forest Inventory Analysis (FIA) plots completed in 2005; and stream survey (SCI plots and general survey) from 2004 and 2005. The number of acres reported in this document was based on totals inside the Monument boundary. There was no distinction made between public, private or state owned land within the Monument. 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 bioregional monitoring, and detailed in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a).

Lacustrine/Riverine Habitat (Aquatic Macroinvertebrates)

Habitat/Species Relationship: Aquatic or Benthic Macroinvertebrates (BMI) were selected as the MIS for riverine and lacustrine habitat in the Sierra Nevada. They have been demonstrated to be very useful as indicators of water quality and aquatic habitat condition (Resh and Price 1984, Karr et al. 1986, Hughes and Larsen 1987, Resh and Rosenberg 1989). They are sensitive to changes in water chemistry, temperature, and physical habitat; aquatic factors of particular importance are: flow, sedimentation, and water surface shade.

Effects Analysis – Lacustrine/Riverine Habitat

Habitat Factor(s) for the Analysis: Flow; Sedimentation; and Water surface shade.

Current Condition of the Habitat Factor(s) in the Monument: There are 335 acres of lacustrine/riverine habitat in the Monument. There are approximately 575 miles of perennial streams in the Monument. Detailed information can be found in the hydrology section of the Monument Plan FEIS.

Flow: Current flow levels within streams in the analysis area are primarily driven by snow melt with the greatest flows in spring, and occasionally during winter rain on snow events. The lowest flows occur in late summer as conditions continually dry up over the course of the summer.

Sedimentation: The streams within the Monument have the channel types normally associated with steep mountain streams, and most of the surveyed stream areas were dominated by bedrock, boulder, or cobble substrates. These channel types tend to be inherently stable because they are confined within narrow floodplains, have channel substrates that are large and difficult to move, and because they have a limited capacity to store sediment. There were some surveyed stream areas that had gravel, sand, or silt substrates; these stream areas are naturally unstable because the smaller material is easily moved by high water flows.

Water surface shade: Water surface shading along streams within the analysis area currently consists primarily of conifers, with some areas of willows and other riparian vegetation.

Alternatives A, B, C, E, and F

Indirect Effects to Habitat: Fuels reduction treatments have the potential to affect water quality. In Alternatives A, B, C, E, and F, 44 acres of lacustrine/riverine habitat would be within WUI defense zones. In order to limit potential adverse effects water quality, a suite of Best Management Practice (BMPs) will be followed (see the Hydrology Section of the Monument Plan FEIS for a detailed description of BMPs). Implementation of these BMPs on fuel reduction treatments is expected to maintain the current levels of flow, sedimentation, and water surface shade in the analysis area. Therefore, there would be no change in the three habitat factors for aquatic macroinvertebrates.

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting lacustrine/riverine habitat are described in Chapter 4 of the Monument Plan FEIS.

Cumulative Effects Conclusion: The direct, indirect, and cumulative effects of Alternatives A, B, C, E, and F will result in changes in flow, sedimentation and water surface shade that will be too small to be measured.

Alternative D

Indirect Effects to Habitat: Fuels reduction treatments have the potential to affect water quality. In Alternative D, seven acres of lacustrine/riverine habitat would be within WUI defense zones. In order to limit potential adverse effects water quality, a suite of BMPs will be followed (see the Hydrology Section of the Monument Plan FEIS for a detailed description of BMPs). Implementation of these BMPs in fuels reduction treatments is expected to maintain the current levels of flow, sedimentation, and water surface shade in the analysis area. Therefore, there would be no change in the three habitat factors for aquatic macroinvertebrates.

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting lacustrine/riverine habitat are described in Chapter 4 of the Giant Sequoia National Monument Management Plan Final Environmental Impact Statement.

Cumulative Effects Conclusion: The direct, indirect, and cumulative effects of Alternative D will result in changes in flow, sedimentation and water surface shade that will be too small to be measured.

Summary of Aquatic Macroinvertebrate Status and Trend at the Bioregional Scale: The Sequoia NF LRMP (as amended by the SNF MIS Amendment) requires bioregional-scale Index of Biological Integrity and Habitat monitoring for aquatic macroinvertebrates; hence, the lacustrine and riverine effects analysis for the Monument Plan FEIS must be informed by these monitoring data. The sections below summarize the Biological Integrity and Habitat status and trend data for aquatic macroinvertebrates. This information is drawn from the detailed information on habitat and population trends in the Sierra Nevada Forests Bioregional MIS Report (USDA Forest Service 2008a), which is hereby incorporated by reference.

Habitat and Index of Biological Integrity Status and Trend: Aquatic habitat has been assessed using SCI data collected since 1994 (Frazier et al. 2005) and habitat status information from the Sierra Nevada Ecosystem Project (SNEP) (Moyle and Randall 1996). Moyle and Randall (1996) developed a watershed index of biotic integrity (IBI) based on distributions and abundance of native fish and amphibian species, as well as extent of roads and water diversions. According to this analysis, seven percent of the watersheds were in excellent condition, 36 percent were in good condition, 47 percent were in fair condition and nine percent were in poor condition.

Sierra Nevada MIS monitoring for aquatic (benthic) macroinvertebrates (BMI) was conducted in 2009 and 2010 (Furnish 2010). Benthic macroinvertebrates were collected from stream sites during both the 2009 and 2010 field seasons according to the Reachwide Benthos (Multihabitat) Procedure (Ode 2007). The initial BMI data from 2009 and 2010 found 46 percent (six of 13) of the surveyed streams indicate an impaired condition and 54 percent (seven of 13) indicate a non-impaired condition (see USDA Forest Service 2010a, Table BMI-1). This is similar to the IBI conditions estimated by Moyle and Randall (1996). Therefore, current data from the Sierra Nevada indicate that status and trend in the RIVPACS scores appears to be stable.

Relationship of Habitat Effects to Bioregional-Scale Aquatic Macroinvertebrates Habitat Trend: Any changes in flow, sedimentation, and shade from direct, indirect, and cumulative effects of the alternatives in the Monument Plan FEIS are too small to be measured. Therefore, none of the alternatives will alter the existing trend in the River Invertebrate Predication and Classification System (RIVPACS) scores across the Sierra Nevada bioregion.

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).

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 percent; Open=25-39 percent; Moderate=40-59 percent; Dense=60-100 percent). (3) Acres with changes in CWHR shrub size class (Seedling shrub (seedlings or sprouts less than 3 years); Young shrub (no crown decadence); Mature Shrub (crown decadence 1-25 percent); Decadent shrub (greater than 25 percent)).

Current Condition of the Habitat Factor(s) in the Analysis Area: Within the Monument there are approximately 48,249 acres of shrubland habitat. About 18,072 of the acres are montane chaparral, 23,802 of the acres are mixed chaparral and 6,375 acres are chamise chaparral.

Alternatives A, B, E, and F

Indirect Effects to Habitat: Fuels reduction treatments have the potential to affect shrubland habitat by reducing shrub ground cover and shrub size class. In Alternatives A, B, E, and F, 4,894 acres of shrubland habitat would be within WUI defense zones.

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting shrubland habitat are described in Chapter 4 of the Monument Plan FEIS.

A total of 4,894 acres of shrubland habitat could be affected by fuels reduction treatments in Alternatives A, B, E, and F. This represents approximately 10 percent of the shrubland in the Monument.

Cumulative Effects Conclusion: The indirect and cumulative effects of Alternatives A, B, E, and F will result in: (1) no change in acres of shrubland habitat, (2) a reduction in shrub ground cover classes on a maximum of 4,894 acres treated for fuels reduction, and (3) a reduction in CWHR size classes of shrubs on a maximum of 4,894 acres.

Alternative C

Indirect Effects to Habitat: Fuels reduction treatments have the potential to affect shrubland habitat by reducing shrub ground cover and shrub size class. In Alternative C, 844 acres of shrubland habitat would be within WUI defense zones.

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting shrubland habitat are described in Chapter 4 of the Monument Plan FEIS.

A total of 844 acres of shrubland habitat could be affected by fuels reduction treatments in Alternative C. This represents approximately two percent of the shrubland in the Monument.

Cumulative Effects Conclusion: The indirect and cumulative effects of Alternative C will result in: (1) no change in acres of shrubland habitat, (2) a reduction in shrub ground cover classes on a maximum of 844 acres treated for fuels reduction, and (3) a reduction in CWHR size classes of shrubs on a maximum of 844 acres.

Alternative D

Indirect Effects to Habitat: In Alternative D, 505 acres of shrubland habitat would be within WUI defense zones.

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting shrubland habitat are described in Chapter 4 of the Monument Plan FEIS.

A total of 505 acres of shrubland habitat could be affected by fuels reduction treatments in Alternative D. This represents approximately one percent of the shrubland in the Monument.

Cumulative Effects Conclusion: The indirect and cumulative effects of Alternative C will result in: (1) no change in acres of shrubland habitat, (2) a reduction in shrub ground cover classes on a maximum of 505 acres treated for fuels reduction, and (3) a reduction in CWHR size classes of shrubs on a maximum of 505 acres.

Summary of Fox Sparrow Status and Trend at the Bioregional Scale: The Sequoia 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 Monument Plan FEIS 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 eight to nine percent of the acres on National Forest System lands).

Population Status and Trend: Monitoring of fox sparrows across the 10 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 percent of 1659 point counts in 2009 and 44.3 percent 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 Habitat Effects to Bioregional-Scale Fox Sparrow Trend: Since the alternatives in the Monument Plan FEIS will indirectly result in a reduction of shrub ground cover and shrub size class on less than one percent of existing shrubland habitat, this FEIS is not expected to alter the existing trend in the habitat, or 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, 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).

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 percent; Open=25-39 percent; Moderate=40-59 percent; Dense=60-100 percent). (3) Acres with changes in CWHR size class of hardwoods [1/2 (Seedling/Sapling) (less than 6 inches dbh); 3 (Pole) (6 inches-10.9 inches dbh); 4 (Small tree) (11 inches-23.9 inches dbh); 5 (Medium/Large tree) (greater than or equal to 24 inches dbh)]

Current Condition of the Habitat Factor(s) in the Analysis Area: Within the Monument there are approximately 88,861 acres of oak-associated hardwood and hardwood/conifer habitat. Approximately 20,889 of the acres are montane hardwood-conifer with 1,995 acres in medium/large trees; 12,663 acres have dense canopy cover and 7,446 acres have moderate canopy cover. Approximately 67,972 of the acres are montane hardwood, with 2,605 acres in medium/large trees; 40,269 acres have dense canopy cover and 22,349 acres have moderate canopy cover.

Alternatives A, B, E, and F

Indirect Effects to Habitat: Fuels reduction treatments have the potential to affect oak-associated hardwood and hardwood/conifer habitat by reducing canopy cover. In Alternatives A, B, E, and F, 13,965 acres of oak-associated hardwood and hardwood/conifer habitat would be within WUI defense zones.

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting oak-associated hardwood and hardwood/conifer habitat are described in Chapter 4 of the Monument Plan FEIS.

A total of 13,965 acres of oak-associated hardwood and hardwood/conifer habitat could be affected by fuels reduction treatments in Alternatives A, B, E, and F. This represents approximately 16 percent of the oak-associated hardwood and hardwood/conifer in the Monument.

Cumulative Effects Conclusion: The indirect and cumulative effects of Alternatives A, B, E, and F will result in: (1) no change in acres of oak-associated hardwood and hardwood/conifer habitat, (2) a possible reduction in hardwood canopy cover classes on a maximum of 13,965 acres treated for fuels reduction, and (3) no change in CWHR size classes of hardwoods.

Alternative C

Indirect Effects to Habitat: In Alternative C, 2,292 acres of oak-associated hardwood and hardwood/conifer habitat would be within WUI defense zones.

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting oak-associated hardwood and hardwood/conifer habitat are described in Chapter 4 of the Monument Plan FEIS.

A total of 2,292 acres of oak-associated hardwood and hardwood/conifer habitat could be affected by fuels reduction treatments in Alternative C. This represents approximately three percent of the oak-associated hardwood and hardwood/conifer in the Monument.

Cumulative Effects Conclusion: The indirect and cumulative effects of Alternative C will result in: (1) no change in acres of oak-associated hardwood and hardwood/conifer habitat, (2) a possible reduction in hardwood canopy cover classes on a maximum of 2,292 acres treated for fuels reduction, and (3) no change in CWHR size classes of hardwoods.

Alternative D

Indirect Effects to Habitat: In Alternative D, 1,404 acres of oak-associated hardwood and hardwood/conifer habitat would be within WUI defense zones.

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting oak-associated hardwood and hardwood/conifer habitat are described in Chapter 4 of the Monument Plan FEIS.

A total of 1,404 acres of oak-associated hardwood and hardwood/conifer habitat could be affected by fuels reduction treatments in Alternative D. This represents approximately two percent of the oak-associated hardwood and hardwood/conifer in the Monument.

Cumulative Effects Conclusion: The indirect and cumulative effects of Alternative D will result in: (1) no change in acres of oak-associated hardwood and hardwood/conifer habitat, (2) a possible reduction in hardwood canopy cover classes on a maximum of 1,404 acres treated for fuels reduction, and (3) no change in CWHR size classes of hardwoods.

Summary of Mule Deer Status and Trend at the Bioregional Scale: The Sequoia 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 the Monument Plan FEIS 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 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 five to seven percent of the acres on National Forest System lands).

Population Status and Trend: Mule deer have been monitored in the Sierra Nevada at various sample locations by herd monitoring (spring and fall) and hunter survey and associated modeling (CDFG 2007). 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, 2010). 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 Habitat Effects to Bioregional-Scale Mule Deer Trend: Since the alternatives in the Monument Plan FEIS will result in a possible reduction in hardwood canopy cover classes on less than two percent of existing oak-associated hardwood and hardwood/conifer habitat, this FEIS is not expected to alter the existing trend in the habitat, or lead to a change in the distribution of mule deer across the Sierra Nevada bioregion.

Riparian Habitat (Yellow Warbler)

Habitat/Species Relationship: The yellow warbler was selected as the MIS for riparian habitat in the Sierra Nevada. This species is usually found in riparian deciduous habitats in summer (cottonwoods, willows, alders, and other small trees and shrubs typical of low, open-canopy riparian woodland) (CDFG 2005). The yellow warbler is dependent on both meadow and non-meadow riparian habitat in the Sierra Nevada (Siegel and DeSante 1999).

Effects Analysis – Riparian Habitat

Habitat Factor(s) for the Analysis: (1) Acres of riparian habitat (CWHR montane riparian (MRI) and valley foothill riparian (VRI)). (2) Acres with changes in deciduous canopy cover (Sparse=10-24 percent; Open=25-39 percent; Moderate=40-59 percent; Dense=60-100 percent). (3) Acres with changes in total canopy cover (Sparse=10-24 percent; Open=25-39 percent; Moderate=40-59 percent; Dense=60-100 percent). (4) Acres with changes in CWHR size class [1/2 (Seedling/Sapling) (less than 6 inches dbh); 3 (Pole) (6 inches-10.9 inches dbh); 4 (Small tree) (11 inches-23.9 inches dbh); 5 (Medium/Large tree) (greater than or equal to 24 inches dbh)].

Current Condition of the Habitat Factor(s) in the Analysis Area: Within the Monument there are approximately 242 acres of riparian habitat. This includes 118 acres of montane riparian and 124 acres are valley foothill riparian.

Alternatives A, B, E, and F

Indirect Effects to Habitat: Fuels reduction treatments have the potential to affect riparian habitat by reducing canopy cover. In Alternatives A, B, E, and F, 54 acres of riparian habitat would be within WUI defense zones.

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting riparian habitat are described in Chapter 4 of the Monument Plan FEIS.

A total of 54 acres of riparian habitat could be affected by fuels reduction treatments in Alternatives A, B, E, and F. This represents approximately 22 percent of the riparian habitat in the Monument.

Cumulative Effects Conclusion: The indirect and cumulative effects of Alternatives A, B, E, and F will result in: (1) no change in acres of riparian habitat, (2) a possible reduction in deciduous canopy cover on a maximum of 54 acres treated for fuels reduction, (3) a possible reduction in total canopy cover on a maximum of 54 acres, and (4) no change in CWHR size classes.

Alternative C

Indirect Effects to Habitat: In Alternative C, 15 acres of riparian habitat would be within WUI defense zones.

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting riparian habitat are described in Chapter 4 of the Monument Plan FEIS.

A total of 15 acres of riparian habitat could be affected by fuels reduction treatments in Alternative C. This represents approximately six percent of the riparian habitat in the Monument.

Cumulative Effects Conclusion: The indirect and cumulative effects of Alternative C will result in: (1) no change in acres of riparian habitat, (2) a possible reduction in deciduous canopy cover on a maximum of 15 acres treated for fuels reduction, (3) a possible reduction in total canopy cover on a maximum of 15 acres, and (4) no change in CWHR size classes.

Alternative D

Indirect Effects to Habitat: In Alternative D, eight acres of riparian habitat would be within WUI defense zones.

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting riparian habitat are described in Chapter 4 of the Monument Plan FEIS.

A total of eight acres of riparian habitat could be affected by fuels reduction treatments in Alternative D. This represents approximately three percent of the riparian habitat in the Monument.

Cumulative Effects Conclusion: The indirect and cumulative effects of Alternative D will result in: (1) no change in acres of riparian habitat, (2) a possible reduction in deciduous canopy cover on a maximum of 8 acres treated for fuels reduction, (3) a possible reduction in total canopy cover on a maximum of eight acres, and (4) no change in CWHR size classes.

Summary of Yellow Warbler Status and Trend at the Bioregional Scale: The Sequoia NF LRMP (as amended by the SNF MIS Amendment) requires bioregional-scale habitat and distribution population monitoring for the yellow warbler; hence, the riparian habitat effects analysis for the Monument Plan FEIS 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 yellow warbler. 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 38,140 acres of riparian habitat on National Forest System lands in the Sierra Nevada. Over the last two decades, the trend is stable.

Population Status and Trend: Monitoring of yellow warblers across the 10 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 woodpeckers, and fox sparrows (USDA Forest Service 2010a, <http://data.prbo.org/partners/usfs/snmis/>). Yellow warblers were detected on 13.7 percent of 160 riparian point counts in 2009 and 19.4 percent of 397 riparian point counts in 2010; additional detections were documented on upland point counts. The average abundance (number of individuals recorded on riparian passive point count surveys) was 0.166 in 2009 and 0.309 in 2010. In addition, the yellow warblers 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 the distribution of yellow warbler populations in the Sierra Nevada is stable.

Relationship of Habitat Effects to Bioregional-Scale Yellow Warbler Trend: Since the alternatives of the Monument Plan FEIS will, at most, result in a reduction in canopy cover on less than one percent of existing riparian habitat, this FEIS is not expected to alter the existing trend in the habitat, or lead to a change in the distribution of yellow warblers across the Sierra Nevada bioregion.

Wet Meadow Habitat (Pacific tree (chorus) frog)

Habitat/Species Relationship: The Pacific tree frog (now known as the Pacific chorus frog) was selected as an MIS for wet meadow habitat in the Sierra Nevada. This broadly distributed species requires standing water for breeding; tadpoles require standing water for periods long enough to complete aquatic development, which can be as long as three or more months at high elevations in the Sierra Nevada (CDFG 2005). During the day during the breeding season, adults take cover under clumps of vegetation and surface objects near water; during the remainder of the year, they leave their breeding sites and seek cover in moist niches in buildings, wells, rotting logs or burrows (ibid).

Project-level Effects Analysis – Wet Meadow Habitat

Habitat Factor(s) for the Analysis: (1) Acres of wet meadow habitat [CWHR wet meadow (WTM) and freshwater emergent wetland (FEW)]. (2) Acres with changes in CWHR herbaceous height classes [short herb (less than 12 inches), tall herb (greater than 12 inches)]. (3) Acres with changes in CWHR herbaceous ground cover classes (Sparse=2-9 percent; Open=10-39 percent; Moderate=40-59 percent; Dense=60-100 percent). (4) Changes in meadow hydrology.

Current Condition of the Habitat Factor(s) in the Project Area: Within the Monument there are approximately 1,511 acres of wet meadow habitat and no acres classed as freshwater emergent wetland.

All Alternatives

Indirect Effects to Habitat: Fuels reduction treatments are not expected to occur within meadows, regardless of whether they are in or out of WUI defense zones. All alternatives identify the strategy to "Restore ecological processes of ... Meadows... wherever possible." Indian Basin Meadow, Long Meadow and Last Chance Meadow are identified as priorities for restoration in the next five years. Restoration projects could result in changes from short herb to tall herb size classes and increasing ground cover when hydrologic function is improved.

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting wet meadow habitat are described in Chapter 4 of the Monument Plan FEIS. Grazing will continue under the current standards for all action alternatives.

Cumulative Effects Conclusion: The indirect and cumulative effects of all the alternatives will result in: (1) no change in acres of wet meadow habitat. (2) A potential change in CWHR herbaceous height classes from short herb to tall herb on some acres following restoration projects. (3) A potential change in CWHR herbaceous ground cover classes toward dense on some acres following restoration projects. (4) An improvement in meadow hydrology at any restored meadows.

Summary of Pacific Tree (Chorus) Frog Status and Trend at the Bioregional Scale: The Sequoia NF LRMP (as amended by the SNF MIS Amendment) requires bioregional-scale habitat and distribution population monitoring for the Pacific tree (chorus) frog; hence, the wet meadow effects analysis for the Monument Plan FEIS 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 Pacific (chorus) tree frog. 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 61,247 acres of wet meadow habitat on National Forest System lands in the Sierra Nevada. Over the last decades, the trend is stable.

Population Status and Trend: Since 2002, Pacific tree (chorus) frogs have been monitored on the Sierra Nevada forests as part of the Sierra Nevada Forest Plan Amendment (SNFPA) monitoring plan (USDA Forest Service 2006b, 2007b, 2009, 2010b; Brown 2008). These data indicate that Pacific tree (chorus) frogs continues to be present at these sample sites, and current data at the range-wide, California, and Sierra Nevada scales indicate that the distribution of Pacific tree (chorus) frog populations in the Sierra Nevada is stable.

Relationship of Habitat Effects to Bioregional-Scale Pacific Tree (Chorus) Frog Trend: Since the alternatives of the Monument Plan FEIS will, at most, result in changes to the herbaceous height class, herbaceous ground cover class, and meadow hydrology on less than one percent of the existing wet meadow habitat, this FEIS is not expected to alter the existing trend in the habitat, or lead to a change in the distribution of Pacific tree (chorus) frogs 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, Jeffrey pine and eastside pine) habitat in the Sierra Nevada. Early seral coniferous forest habitat is comprised primarily of seedlings (less than 1 inch dbh), saplings (1 inch-5.9 inches dbh), and pole-sized trees (6 inches-10.9 inches dbh). Mid seral coniferous forest habitat is comprised primarily of small-sized trees (11 inches-23.9 inches 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 kilometers (0.5 miles) from water (CDFG 2005).

Effects Analysis – Early and Mid Seral Coniferous Forest Habitat

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, Jeffrey pine and eastside pine) habitat [CWHR ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), Jeffrey pine (JPN), 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 Analysis Area: There are 18,636 acres of early and 116,248 acres of mid seral coniferous forest in the Monument.

Alternatives A, B, E, and F

Indirect Effects to Habitat. Fuels reduction treatments have the potential to affect early and mid seral coniferous forest habitat by reducing tree canopy closure and understory shrub canopy closure. In Alternatives A, B, E, and F, 15,381 acres of early and mid seral coniferous forest habitat would be within WUI defense zones.

Cumulative Effects to Habitat in the Analysis Area. Cumulative effects, including reasonably foreseeable future actions affecting early and mid seral coniferous forest habitat are described in Chapter 4 of the Monument Plan FEIS.

A total of 15,381 acres of early and mid seral coniferous forest habitat could be affected by fuels reduction treatments in Alternatives A, B, E, and F. This represents approximately 11 percent of the early and mid seral coniferous forest habitat in the Monument.

Cumulative Effects Conclusion: The indirect and cumulative effects of Alternatives A, B, E, and F will result in: (1) no change in acres of early and mid seral coniferous forest habitat, (2) no change in CWHR tree size class on any acres, (3) a possible reduction in tree canopy closure on a maximum of 15,381 acres treated for fuels reduction, and (4) a possible reduction in understory shrub canopy cover on a maximum of 15,381 acres.

Alternative C

Indirect Effects to Habitat: In Alternative C, 2,911 acres of early and mid seral coniferous forest habitat would be within WUI defense zones.

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting early and mid seral coniferous forest habitat are described in Chapter 4 of the Monument Plan FEIS.

A total of 2,911 acres of early and mid seral coniferous forest habitat could be affected by fuels reduction treatments in Alternative C. This represents approximately two percent of the early and mid seral coniferous forest habitat in the Monument.

Cumulative Effects Conclusion: The indirect and cumulative effects of Alternative C will result in: (1) no change in acres of early and mid seral coniferous forest habitat, (2) no change in CWHR tree size class on any acres, (3) a possible reduction in tree canopy closure on a maximum of 2,911 acres treated for fuels reduction, and (4) a possible reduction in understory shrub canopy cover on a maximum of 2,911 acres.

Alternative D

Indirect Effects to Habitat: In Alternative D, 1,472 acres of early and mid seral coniferous forest habitat would be within WUI defense zones.

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting early and mid seral coniferous forest habitat are described in Chapter 4 of the Monument Plan FEIS.

A total of 1,472 acres of early and mid seral coniferous forest habitat could be affected by fuels reduction treatments in Alternative D. This represents approximately one percent of the early and mid seral coniferous forest habitat in the Monument.

Cumulative Effects Conclusion: The indirect and cumulative effects of Alternative D will result in: (1) no change in acres of early and mid seral coniferous forest habitat, (2) no change in CWHR tree size class on any acres, (3) a possible reduction in tree canopy closure on a maximum of 1,472 acres treated for fuels reduction, and (4) a possible reduction in understory shrub canopy cover on a maximum of 1,472 acres.

Summary of Mountain Quail Status and Trend at the Bioregional Scale: The Sequoia 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 seral coniferous forest effects analysis for the Monument Plan FEIS 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 nine to five percent of the acres on National Forest System lands) and the trend for mid seral is increasing (changing from 21 to 25 percent of the acres on National Forest System lands).

Population Status and Trend: Monitoring of mountain quail across the 10 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 sparrows, hairy woodpeckers, and yellow warblers (USDA Forest Service 2010a, <http://data.prbo.org/partners/usfs/snmis/>). Mountain quail were detected on 40.3 percent of 1659 point counts (and 48.6 percent of 424 playback points) in 2009 and 47.4 percent of 2266 point counts (and 55.3 percent 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 Habitat Effects to Bioregional-Scale Mountain Quail Trend: Since the alternatives in the Monument Plan FEIS will result in a reduction in tree canopy closure and understory shrub canopy closure on less than one percent of existing early and mid seral coniferous forest habitat in the Sierra Nevada, this FEIS is not expected to alter the existing trend in the habitat or 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 percent. 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).

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 Analysis Area: In the Monument there are approximately 643 acres of late seral open canopy coniferous forest habitat. This includes PPN (12 acres), SMC (476 acres) and RFR (155 acres).

Alternatives A, B, E, and F

Indirect Effects to Habitat: Fuels reduction treatments have the potential to affect late seral open canopy coniferous forest habitat by reducing tree canopy closure and understory shrub canopy closure. In Alternatives A, B, E, and F, 149 acres of late seral open canopy coniferous forest habitat would be within WUI defense zones.

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting late seral open canopy coniferous forest habitat are described in Chapter 4 of the Monument Plan FEIS.

A total of 149 acres of late seral open canopy coniferous forest habitat could be affected by fuels reduction treatments in Alternatives A, B, E, and F. This represents approximately 23 percent of the late seral open canopy coniferous forest habitat in the Monument.

Cumulative Effects Conclusion: The indirect and cumulative effects of Alternatives A, B, E, and F will result in: (1) no change in acres of late seral open canopy coniferous forest habitat, (2) a possible reduction in tree canopy closure class on a maximum of 149 acres if treated for fuels reduction, (3) a possible reduction in shrub canopy closure class on a maximum of 149 acres.

Alternative C

Indirect Effects to Habitat: In Alternative C, only 13 acres of late seral open canopy coniferous forest habitat would be within WUI defense zones.

Cumulative Effects to Habitat in the Analysis Area. Cumulative effects, including reasonably foreseeable future actions affecting late seral open canopy coniferous forest habitat are described in Chapter 4 of the Monument Plan FEIS.

A total of 13 acres of late seral open canopy coniferous forest habitat could be affected by fuels reduction treatments in Alternative C. This represents approximately two percent of the late seral open canopy coniferous forest habitat in the Monument.

Cumulative Effects Conclusion: The indirect and cumulative effects of Alternative C will result in: (1) no change in acres of late seral open canopy coniferous forest habitat, (2) a possible reduction in tree canopy closure class on a maximum of 13 acres if treated for fuels reduction, (3) a possible reduction in shrub canopy closure class on a maximum of 13 acres.

Alternative D

Indirect Effects to Habitat: In Alternative D, only eight acres of late seral open canopy coniferous forest habitat would be within WUI defense zones.

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting late seral open canopy coniferous forest habitat are described in Chapter 4 of the Monument Plan FEIS.

A total of eight acres of late seral open canopy coniferous forest habitat could be affected by fuels reduction treatments in Alternative D. This represents approximately one percent of the late seral open canopy coniferous forest habitat in the Monument.

Cumulative Effects Conclusion: The indirect and cumulative effects of Alternative D will result in: (1) no change in acres of late seral open canopy coniferous forest habitat, (2) a possible reduction in tree canopy closure class on a maximum of eight acres if treated for fuels reduction, (3) a possible reduction in shrub canopy closure class on a maximum of eight acres.

Summary of Sooty Grouse Status and Trend at the Bioregional Scale: The Sequoia NF LRMP (as amended by the SNF MIS Amendment) requires bioregional-scale habitat and distribution population monitoring for sooty grouse; hence, the late seral open canopy coniferous forest effects analysis for the Monument Plan FEIS 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 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 in National Forest System lands in the Sierra Nevada. Over the last two decades the trend is decreasing (changing from three to one percent of the acres on National Forest System lands).

Population Status and Trend: Sooty grouse have 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 Habitat Effects to Bioregional-Scale Sooty Grouse Trend: Since the alternatives in the Monument Plan FEIS will result in a reduction in tree canopy closure and understory shrub canopy closure on less than one percent of existing late seral open canopy coniferous forest habitat in the Sierra Nevada, this FEIS is not expected to alter the existing trend in the habitat or lead to a change in the distribution of sooty grouse across the Sierra Nevada bioregion.

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, Jeffrey 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 percent 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 California 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 percent 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. American 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 marten habitat can be found in the SNFPA 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 percent 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).

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 snags (greater than 15 inches dbh) per acre.

Current Condition of the Habitat Factor(s) in the Analysis Area: In the Monument there are approximately 50,848 acres of late seral closed canopy coniferous forest habitat. This includes PPN (4,727 acres), SMC (38,440 acres), WFR (10 acres) and RFR (7,670 acres).

Alternatives A, B, E, and F

Indirect Effects to Habitat: Fuels reduction treatments have the potential to affect late seral closed canopy coniferous forest habitat by reducing tree canopy closure and removing large snags. In Alternatives A, B, E, and F, 5,139 acres of late seral closed canopy coniferous forest habitat would be within WUI defense zones.

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting late seral closed canopy coniferous forest habitat are described in Chapter 4 of the Monument Plan FEIS.

A total of 5,139 acres of late seral closed canopy coniferous forest habitat could be affected by fuels reduction treatments in Alternatives A, B, E, and F. This represents approximately 10 percent of the late seral closed canopy coniferous forest habitat in the Monument.

Cumulative Effects Conclusion: The indirect and cumulative effects of Alternatives A, B, E, and F will result in: (1) no change in acres of late seral closed canopy coniferous forest habitat, (2) a possible reduction in tree canopy closure class on a maximum of 5,139 acres if treated for fuels reduction, (3) a possible reduction in large snags, if removed for safety reasons, on a maximum of 5,139 acres.

Alternative C

Indirect Effects to Habitat: In Alternative C, 941 acres of late seral closed canopy coniferous forest habitat would be within WUI defense zones.

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting late seral closed canopy coniferous forest habitat are described in Chapter 4 of the Monument Plan FEIS.

A total of 941 acres of late seral closed canopy coniferous forest habitat could be affected by fuels reduction treatments in Alternative C. This represents approximately two percent of the late seral closed canopy coniferous forest habitat in the Monument.

Cumulative Effects Conclusion: The indirect and cumulative effects of Alternative D will result in: (1) no change in acres of late seral closed canopy coniferous forest habitat, (2) a possible reduction in tree canopy closure class on a maximum of 941 acres if treated for fuels reduction, (3) a possible reduction in large snags, if removed for safety reasons, on a maximum of 941 acres.

Alternative D

Indirect Effects to Habitat: In Alternative D, 510 acres of late seral closed canopy coniferous forest habitat would be within WUI defense zones.

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting late seral closed canopy coniferous forest habitat are described in Chapter 4 of the Monument Plan FEIS.

A total of 510 acres of late seral closed canopy coniferous forest habitat could be affected by fuels reduction treatments in Alternative D. This represents approximately one percent of the late seral closed canopy coniferous forest habitat in the Monument.

Cumulative Effects Conclusion: The indirect and cumulative effects of Alternative D will result in: (1) no change in acres of late seral closed canopy coniferous forest habitat, (2) a possible reduction in tree canopy closure class on a maximum of 510 acres if treated for fuels reduction, (3) a possible reduction in large snags, if removed for safety reasons, on a maximum of 510 acres.

Summary of Status and Trend at the Bioregional Scale

California spotted owl, American marten, and northern flying squirrel: The Sequoia NF LRMP (as amended by the SNF MIS Amendment) requires bioregional-scale habitat and distribution population monitoring for the California spotted owl, American marten, and northern flying squirrel; hence, the late seral closed canopy coniferous forest (ponderosa pine, Jeffrey pine, Sierran mixed conifer, white fir, and red fir) habitat effects analysis for the Monument Plan FEIS 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) habitats in National Forest System lands in the Sierra Nevada. Over the last two decades, the trend is slightly increasing (changing from seven to nine percent of the acres on National Forest System lands); since the early 2000s, the trend has been stable at nine percent.

Population Status and Trend

California spotted owl: California spotted owls have 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.

American marten: American marten have 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, American marten have been monitored on the Sierra Nevada forests as part of the SNFPA monitoring plan (USDA Forest Service 2005, 2006b, 2007b, 2009, 2010b). Current data at the rangewide, California, and Sierra Nevada scales indicate that, although American 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).

Northern flying squirrel: Northern flying squirrels have 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 2008a, Table NOFLS-IV-1). These data indicate that northern flying squirrels continue to be present at these sample sites, and current data at the rangewide, California, and Sierra Nevada scales indicate that the distribution of northern flying squirrel populations in the Sierra Nevada is stable.

Relationship of Habitat Effects to Bioregional-Scale Trends: Since the alternatives in the Monument Plan FEIS will result in, at most, a reduction in tree canopy closure and reduction in large snags on less than one percent of existing late seral closed canopy coniferous forest habitat in the Sierra Nevada, this FEIS is not expected to alter the existing trend in the habitat or lead to a change in the distribution of California spotted owls, American martens or northern flying squirrels across the Sierra Nevada bioregion.

Snags in Green Forest Ecosystem Component (Hairy woodpecker)

Habitat/Species Relationship: Hairy woodpeckers were 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. Hairy woodpeckers use 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).

Effects Analysis – Snags in Green Forest Ecosystem Component

Habitat Factor(s) for the Analysis: (1) Medium and Large (greater than 15 inches dbh) snags per acre.

(2) Large

(greater than 30 inches dbh) snags per acre.

Current Condition of the Habitat Factor(s) in the Analysis Area: The number of snags per acre in the monument is quite variable depending on vegetation type. In mixed conifer, the number of snags greater than 15 inches ranges from 0 to 10 per acre (Based on 2004 vegetation inventory data). The number of snags larger than 30 inches dbh in mixed conifer ranged from 0 to 2.5 per acre.

Alternative A

Indirect Effects to Habitat: Vegetation treatments have the potential to reduce the number of medium and large snags. Snags of any size may be removed from treatment areas if they pose a safety hazard. In Alternative A, 38,518 acres of forest habitat would be within WUI defense zones. Snag retention standards and guidelines from the 2001 SNFPA would apply:

- *Retain the following numbers of large snags after fuels treatments except where: (1) snag removal is needed to address imminent safety hazards and (2) snag levels are reduced as a result of incidental loss to prescribed fire. In Westside mixed conifer and ponderosa pine forest types, retain four of the largest snags per acre. In the red fir forest type, retain six of the largest snags per acre. In Westside hardwood ecosystems, retain four of the largest snags (hardwood or conifer) per acre. Where standing live hardwood trees lack dead branches, retain six of the largest snags per acre, where they exist, to supplement wildlife needs for dead material. Use snags larger than 15 inches dbh to meet this standard. Evaluate snag density on a 10-acre basis. The defense zone of the urban wildland intermix zone and developed recreation sites are exempt from this standard and guidelines.*
- *In old forest emphasis area (46 percent of the Monument)-Retain all snags 15 inches or greater following stand-replacing events except to address imminent hazards to human safety.*

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting snags in green forest habitat are described in Chapter 4 of the Monument Plan FEIS.

A total of 38,518 acres of forest habitat containing green snags could be affected by fuels reduction treatments in Alternative A. This represents approximately 13 percent of the forest habitat in the Monument.

Cumulative Effects Conclusion: The indirect and cumulative effects of Alternative A will result in: (1) a possible reduction in medium and large (greater than 15 inches dbh) snags per acre on a maximum of 38,518 acres. (2) a possible reduction in large (greater than 30 inches dbh) snags per acre on a maximum of 38,518 acres. Retention guidelines from the 2001 SNFPA would be followed.

Alternatives B and F

Indirect Effects to Habitat: Fuels reduction treatments have the potential to reduce the number of medium and large snags. In Alternatives B and F 38,518 acres of forest habitat would be within WUI defense zones.

In Alternatives B and F, snags would only be removed for safety reasons or ecological restoration. Snags near roads, campgrounds, and administrative facilities would more likely be removed. More snags would be expected across the landscape than in Alternative A.

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting snags in green forest habitat are described in Chapter 4 of the Monument Plan FEIS.

A total of 38,518 acres of forest habitat containing green snags could be affected by fuels reduction treatments in Alternatives B and F. This represents approximately 13 percent of the forest habitat in the Monument.

Cumulative Effects Conclusion: The indirect and cumulative effects of Alternatives B and F will result in: (1) a possible reduction in medium and large (greater than 15 inches dbh) snags per acre on a maximum of 38,518 acres, if snags are removed for safety reasons or ecological restoration (2) a possible reduction in large (greater than 30 inches dbh) snags per acre on a maximum of 38,518 acres if snags are removed for safety reasons or ecological restoration.

Alternative C

Indirect Effects to Habitat: Fuels reduction treatments have the potential to reduce the number of medium and large snags. In Alternative C, 6,961 acres of forest habitat would be within WUI defense zones.

In Alternative C, snags would only be removed for safety reasons or ecological restoration. Snags near roads, campgrounds, and administrative facilities would more likely be removed. More snags would be expected across the landscape than in Alternative A.

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting snags in green forest habitat are described in Chapter 4 of the Monument Plan FEIS.

A total of 6,961 acres of forest habitat containing green snags could be affected by fuels reduction treatments in Alternative C. This represents approximately two percent of the forest habitat in the Monument.

Cumulative Effects Conclusion: The indirect and cumulative effects of Alternative C will result in: (1) a possible reduction in medium and large (greater than 15 inches dbh) snags per acre on a maximum of 6,961 acres, if snags are removed for safety reasons or ecological restoration (2) a possible reduction in large (greater than 30 inches dbh) snags per acre on a maximum of 6,961 acres if snags are removed for safety reasons or ecological restoration.

Alternative D

Indirect Effects to Habitat: Fuels reduction treatments have the potential to reduce the number of medium and large snags. Snags of any size may be removed from treatment areas if they pose a safety hazard. In Alternative D, 3,839 acres of forest habitat would be within WUI defense zones.

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting snags in green forest habitat are described in Chapter 4 of the Monument Plan FEIS.

A total of 3,839 acres of forest habitat containing green snags could be affected by fuels reduction treatments in Alternative D. This represents approximately one percent of the forest habitat in the Monument.

Cumulative Effects Conclusion: The indirect and cumulative effects of Alternative D will result in: (1) a possible reduction in medium and large (greater than 15 inches dbh) snags per acre on a maximum of 3,839 acres, if snags are removed for safety reasons (2) a possible reduction in large (greater than 30 inches dbh) snags per acre on a maximum of 3,839 acres if snags are removed for safety reasons.

Alternative E

Indirect Effects to Habitat: Fuels reduction treatments have the potential to reduce the number of medium and large snags. Snags of any size may be removed from treatment areas. In Alternative E 38,518 acres of forest habitat would be within WUI defense zones.

In Alternative E, guidance from the 1990 MSA is to: “maintain a minimum average of 1.5 snags per acre in each compartment (MSA p.89).”

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting snags in green forest habitat are described in Chapter 4 of the Monument Plan FEIS.

A total of 38,518 acres of forest habitat containing green snags could be affected by fuels reduction treatments in Alternative E. This represents approximately 13 percent of the forest habitat in the Monument.

Cumulative Effects Conclusion: The indirect and cumulative effects of Alternative E will result in: (1) a possible reduction in medium and large (greater than 15 inches dbh) snags per acre on a maximum of 38,518 acres, with a minimum of 1.5 snags per acre retained (2) a possible reduction in large (greater than 30 inches dbh) snags per acre on a maximum of 38,518 acres, with a minimum of 1.5 snags per acre retained.

Summary of Hairy Woodpecker Status and Trend at the Bioregional Scale: The Sequoia NF LRMP (as amended by the SNF MIS Amendment) requires bioregional-scale habitat and distribution population monitoring for hairy woodpeckers; hence, the snag effects analysis for the Monument Plan FEIS 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 hairy woodpeckers. 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 (greater than 15 inches 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).

Population Status and Trend: Monitoring of hairy woodpeckers across the 10 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 sparrows, and yellow warblers (USDA Forest Service 2010a, <http://data.prbo.org/partners/usfs/snmis/>). Hairy woodpeckers were detected on 15.1 percent of 1659 point counts (and 25.2 percent of 424 playback points) in 2009 and 16.7 percent of 2266 point counts (and 25.6 percent 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, 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 range wide, California, and Sierra Nevada scales indicate that the distribution of hairy woodpecker populations in the Sierra Nevada is stable.

Relationship of Habitat Effects to Bioregional-Scale Hairy Woodpecker Trend: The indirect and cumulative effects of the alternatives in the Monument Plan FEIS will result in a possible reduction in medium and large (greater than 15 inches dbh) snags per acre and large (greater than 30 inches dbh) snags per acre on a maximum of 38,518 acres. Since this is less than one percent of the forested area in the region, this FEIS will not alter the existing trend in snags, nor will it lead to a change in the distribution of hairy woodpeckers across the Sierra Nevada bioregion.

Snags in Burned Forest Ecosystem Component (Black-backed woodpecker)

Habitat/Species Relationship: Black-backed woodpeckers were selected as the MIS for the ecosystem component of snags in burned forests. Recent data indicate that black-backed woodpeckers are dependent on snags created by stand-replacement fires (Hutto 1995, Kotliar et al. 2002, Smucker et al. 2005). The abundant snags associated with severely burned forests provide both prey (by providing food for the specialized beetle larvae that serve as prey) and nesting sites (Hutto and Gallo 2006).

Effects Analysis – Snags in Burned Forest Ecosystem Component

Habitat Factor(s) for the Analysis: (1) Medium (15-30 inches dbh) snags per acre within burned forest created by stand-replacing fire. (2) Large (greater than 30 inches dbh) snags per acre within burned forest created by stand-replacing fire.

Current Condition of the Habitat Factor(s) in the Monument: There are no areas greater than 100 acres in the Monument that have had stand-replacing fires within the past five years.

Alternative A

In Alternative A the 2001 SNFPA standards and guidelines would be followed. This prohibits salvage of snags on at least 10 percent of an area following a stand-replacing event. This restriction does not apply to WUI defense zones. In old forest emphasis areas (46 percent of the Monument) all snags 15 inches dbh or greater would be retained following stand-replacing events except to address imminent hazards to human safety.

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting snags in burned forest habitat are described in Chapter 4 of the Monument Plan FEIS.

Cumulative Effects Conclusion: The indirect and cumulative effects of Alternative A will result in: (1) a possible reduction in medium (15 to 30 inches dbh) snags per acre within burned forest created by stand-replacing fire, if snags are removed (2) a possible reduction in large (greater than 30 inches dbh) snags per acre within burned forest created by stand-replacing fire if snags are removed.

Alternatives B, C, and F

In Alternatives B, C, and F, snags would only be removed from burned forests for safety reasons or ecological restoration. This could potentially reduce the number of medium and large snags per acre in the affected area. The change in number of available snags would depend on the size and specific location of the burned area. Snags near roads, campgrounds, and administrative facilities would more likely be removed.

The SPECTRUM model estimated that management following Alternative C would likely result in more acres of stand-replacing fire than all the alternatives, except D.

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting snags in burned forest habitat are described in Chapter 4 of the Monument Plan FEIS.

Cumulative Effects Conclusion: The indirect and cumulative effects of all the alternatives will result in: (1) a possible reduction in medium (15-30 inches dbh) snags per acre within burned forest created by stand-replacing fire, if snags are removed for safety reasons or for ecological restoration (2) a possible reduction in large (greater than 30 inches dbh) snags per acre within burned forest created by stand-replacing fire if snags are removed for safety reasons or ecological restoration.

Alternative D

In Alternative D, snags would only be removed from burned forests for safety reasons. This could potentially reduce the number of medium and large snags per acre in the affected area. The change in number of available snags would depend on the size and specific location of the burned area. The number of new snags created is likely to be higher than the other alternatives because fuels would be reduced on fewer acres, and natural processes, including stand-replacing fires would be the primary vegetation management strategy in Alternative D. The SPECTRUM model estimated that management following Alternative D would result in approximately twice as many acres of stand-replacing fire as Alternatives A, B, E and F.

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting snags in burned forest habitat are described in Chapter 4 of the Monument Plan FEIS.

Cumulative Effects Conclusion: The indirect and cumulative effects of all the alternatives will result in: (1) a possible reduction in medium (15-30 inches dbh) snags per acre within burned forest created by stand-replacing fire, if snags are removed for safety reasons. However, there is also the potential for an increase in new snags if stand-replacing wildfires occur. (2) a possible reduction in large (greater than 30 inches dbh) snags per acre within burned forest created by stand-replacing fire if snags are removed for safety reasons. However, there is also the potential for an increase in new snags if stand-replacing wildfires occur.

Alternative E

Alternative E would follow snag retention guidelines in the 1988 Forest Plan and 1990 MSA to retain a minimum average of 1.5 snags per acre in each compartment. This could potentially reduce the number of medium and large snags per acre in the affected area.

Cumulative Effects to Habitat in the Analysis Area: Cumulative effects, including reasonably foreseeable future actions affecting snags in burned forest habitat are described in Chapter 4 of the Monument Plan FEIS.

Cumulative Effects Conclusion: The indirect and cumulative effects of all the alternatives will result in: (1) a possible reduction in medium (15-30 inches dbh) snags per acre within burned forest created by stand-replacing fire (2) a possible reduction in large (greater than 30 inches dbh) snags per acre within burned forest created by stand-replacing fire.

Summary of Black-backed Woodpecker Status and Trend at the Bioregional Scale The Sequoia NF LRMP (as amended by the SNF MIS Amendment) requires bioregional-scale habitat and distribution population monitoring for black-backed woodpeckers; hence, the snags effects analysis for the Monument Plan FEIS 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 black-backed woodpeckers. 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 (greater than 15 inches 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 forest 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).

These data include snags in both green forest and burned forest. Between 2000 and 2007, 211,000 acres underwent severe burn and 176,000 acres underwent moderate burn in the Sierra Nevada.

Population Status and Trend: Monitoring of black-backed woodpeckers across the 10 National Forests in the Sierra Nevada has been conducted since 2008 in partnership with the Institute for Bird Populations (IBP) (USDA Forest Service 2010a, <http://www.birdpop.org/Sierra/bbw.o.htm>). In 2008, black-backed woodpeckers were detected at 68 survey stations distributed across 10 of the 19 fire areas surveyed. In 2009, black-backed woodpeckers were detected at 169 survey station distributed across 28 of the 51 fire

areas surveyed. In both years, occupied sites were well distributed across the Sierra Nevada National Forests, included burned areas of a variety of sizes, and included areas one to 10 years post-fire. These data indicate that black-backed woodpeckers continue to be distributed across the 10 Sierra Nevada National Forests. Additionally, mean occupancy probability for stations surveyed during 2009 was 0.253 (95percent credible interval: 0.222 – 0.289); applying this probability across the 10 National Forests yields an estimate that approximately 81,814 ha (25.3 percent) (range of 71,921 – 93,610 ha) the 323,358 ha of burned forest (burned between 1999 and 2008) on the 10 National Forest units within monitoring area was occupied by black-backed woodpeckers in 2009. In addition, black-backed woodpeckers continue to be 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 the distribution of black-backed woodpecker populations in the Sierra Nevada is stable.

Relationship of Habitat Effects to Bioregional-Scale Black-Backed Woodpecker Trend: The indirect and cumulative effects of the alternatives in the Monument Plan FEIS will result in a possible reduction in medium (15-30 inches dbh) snags and large (greater than 30 inches dbh) snags per acre within burned forest created by stand-replacing fire. Alternative E may result in the fewest snags in burned forest across the Monument because the guidelines in Alternative E only require a minimum retention of 1.5 snags per acre. Alternative A may result in the second fewest snags in burned forest across the Monument (through use of the 2001 SNFPA guidelines). Alternative D, which would have a greater likelihood of stand-replacing fires and would remove the fewest snags, would lead to the greatest number of snags in burned forest across the Monument. Since these alternatives are likely to affect only a small percentage of the burned area in the region, this FEIS will not alter the existing trend in snags, nor will it lead to a change in the distribution of black-backed woodpeckers across the Sierra Nevada bioregion.

SUMMARY OF EFFECTS TO MIS

The analysis of the potential effects to habitat for the MIS species documented in the preceding section indicates that the alternatives have the potential to affect a minor percentage of habitat within the Giant Sequoia National Monument, and therefore, an even smaller percentage in the Sequoia National Forest.

Specifically, the effects of the alternatives on the habitat for MIS within the Monument are summarized below.

Lacustrine/Riverine (aquatic macroinvertebrates):

All alternatives: no change in the three habitat factors for aquatic macroinvertebrates;

Shrubland (west-slope Chaparral) Habitat (fox sparrow):

Alternatives A, B, E, F: (a) no change in acres, (b) reduction in shrub ground cover on a maximum of 4,894 acres of the 48,249 acres within the Monument (10%); (c) reduction in CWHR size classes of shrubs on a maximum of 4,894 acres of the 48,249 acres within the Monument (10%) if treated for fuels reduction;

Alternative C: (a) no change in acres, (b) reduction in shrub ground cover on a maximum of 844 acres of the 48,249 acres within the Monument (1.7%) if treated for fuels reduction; (c) reduction in CWHR size classes of shrubs on a maximum of 844 acres of the 48,249 acres within the Monument (1.7%);

Alternative D: (a) no change in acres, (b) reduction in shrub ground cover on a maximum of 505 acres of the 48,249 acres within the Monument (1%) if treated for fuels reduction; (c) reduction in CWHR size classes of shrubs on a maximum of 505 acres of the 48,249 acres within the Monument (1%);

Oak-Associated Hardwoods and Hardwood/Conifer Habitat (mule deer):

Alternatives A, B, E, F: (a) no change in acres of oak-associated hardwood and hardwood/conifer habitat, (b) a possible reduction in hardwood canopy cover classes on a maximum of 13,965 acres of the 88,861 acres within the Monument (15.7%) if treated for fuels reduction; (c) no change in CWHR size classes of hardwoods.

Alternative C: (a) no change in acres of oak-associated hardwood and hardwood/conifer habitat, (b) a possible reduction in hardwood canopy cover classes on a maximum of 2,292 acres of the 88,861 acres within the Monument (2.6%) if treated for fuels reduction; (c) no change in CWHR size classes of hardwoods.

Alternative D: (a) no change in acres of oak-associated hardwood and hardwood/conifer habitat, (b) a possible reduction in hardwood canopy cover classes on a maximum of 1,404 acres of the 88,861 acres within the Monument (1.6%) if treated for fuels reduction; (c) no change in CWHR size classes of hardwoods.

Riparian Habitat (yellow warbler):

Alternatives A, B, E, F: (a) no change in acres of riparian habitat, (b) a possible reduction in deciduous canopy cover on a maximum of 54 acres of the 242 acres within the Monument (22%) if treated for fuels reduction; (c) a possible reduction in total canopy cover on a maximum of 54 acres of the 242 acres within the Monument (22%) (4) no change in CWHR size classes.

Alternative C: (a) no change in acres of riparian habitat, (b) a possible reduction in deciduous canopy cover on a maximum of 15 acres of the 242 acres within the Monument (6%) if treated for fuels reduction; (c) a possible reduction in total canopy cover on a maximum of 15 acres of the 242 acres within the Monument (6%) (4) no change in CWHR size classes.

Alternative D: (a) no change in acres of riparian habitat, (b) a possible reduction in deciduous canopy cover on a maximum of 8 acres of the 242 acres within the Monument (3%) if treated for fuels reduction; (c) a possible reduction in total canopy cover on a maximum of 8 acres of the 242 acres within the Monument (3%) (4) no change in CWHR size classes.

Wet Meadow Habitat (Pacific tree (chorus) frog):

All Alternatives: (a) no change in acres of wet meadow habitat, (b) a potential change in CWHR herbaceous height classes from short herb to tall herb on some acres following restoration projects; (c) a potential change in CWHR herbaceous ground cover classes toward dense on some acres following restoration projects; (4) an improvement in meadow hydrology at any restored meadows.

Early and Mid Seral Coniferous Forest Habitat (mountain quail):

Alternatives A, B, E, F: (a) no change in acres of early and mid seral coniferous forest habitat, (b) no change in CWHR tree size classes on any acres; (c) a possible reduction in tree canopy closure on a maximum of 15,381 acres of the 134,884 acres within the Monument (11%) if treated for fuels reduction; (d) a possible reduction understory shrub canopy cover on a maximum of 15,381 acres of the 134,884 acres within the Monument (11%).

Alternative C: (a) no change in acres of early and mid seral coniferous forest habitat, (b) no change in CWHR tree size classes on any acres; (c) a possible reduction in tree canopy closure on a maximum of 2,911 acres of the 134,884 acres within the Monument (2%) if

treated for fuels reduction; (d) a possible reduction understory shrub canopy cover on a maximum of 2,911 acres of the 134,884 acres within the Monument (2%).

Alternative D: (a) no change in acres of early and mid seral coniferous forest habitat, (b) no change in CWHR tree size classes on any acres; (c) a possible reduction in tree canopy closure on a maximum of 1,472 acres of the 134,884 acres within the Monument (1%) if treated for fuels reduction; (d) a possible reduction understory shrub canopy cover on a maximum of 15,381 acres of the 1,472 acres within the Monument (1%).

Late Seral Open Canopy Coniferous Forest Habitat (sooty (blue) grouse):

Alternatives A, B, E, F: (a) no change in acres of late seral open canopy coniferous forest habitat, (b) no change in CWHR tree size classes on any acres; (c) a possible reduction in tree canopy closure class on a maximum of 149 acres of the 643 acres within the Monument (23%) if treated for fuels reduction; (d) a possible reduction understory shrub canopy cover on a maximum of 149 acres of the 643 acres within the Monument (23%).

Alternative C: (a) no change in acres of late seral open canopy coniferous forest habitat, (b) no change in CWHR tree size classes on any acres; (c) a possible reduction in tree canopy closure class on a maximum of 13 acres of the 643 acres within the Monument (2%) if treated for fuels reduction; (d) a possible reduction understory shrub canopy cover on a maximum of 13 acres of the 643 acres within the Monument (2%).

Alternative D: (a) no change in acres of late seral open canopy coniferous forest habitat, (b) no change in CWHR tree size classes on any acres; (c) a possible reduction in tree canopy closure class on a maximum of 8 acres of the 643 acres within the Monument (1%) if treated for fuels reduction; (d) a possible reduction understory shrub canopy cover on a maximum of 8 acres of the 643 acres within the Monument (1%).

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

Alternatives A, B, E, F: (a) no change in acres of late seral closed canopy coniferous forest habitat, (b) a possible reduction in tree canopy closure class on a maximum of 5,139 acres of the 50,848 acres within the Monument (10%) if treated for fuels reduction; (d) a possible reduction in large snags, if removed for safety reasons, on a maximum of 5,139 acres of the 50,848 acres within the Monument (10%).

Alternative C: (a) no change in acres of late seral closed canopy coniferous forest habitat, (b) a possible reduction in tree canopy closure class on a maximum of 941 acres of the 50,848 acres within the Monument (1.9%) if treated for fuels reduction; (d) a possible reduction in large snags, if removed for safety reasons, on a maximum of 941 acres of the 50,848 acres within the Monument (1.9%).

Alternative D: (a) no change in acres of late seral closed canopy coniferous forest habitat, (b) a possible reduction in tree canopy closure class on a maximum of 510 acres of the 50,848 acres within the Monument (1%) if treated for fuels reduction; (d) a possible reduction in large snags, if removed for safety reasons, on a maximum of 510 acres of the 50,848 acres within the Monument (1%).

Snags in Green Forest Ecosystem Component (hairy woodpecker):

Alternative A: (a) a possible reduction in medium and large snags per acre on a maximum of 38,518 acres (13% of the forest habitat in the Monument) if treated for fuels reduction; (b) a possible reduction in large snags per acre on a maximum of 38,518 acres (13% of the forest habitat in the Monument) if treated for fuels reduction. Retention guidelines from the 2001 SNFPA would be followed.

Alternatives B and F: (a) a possible reduction in medium and large snags per acre on a maximum of 38,518 acres (13% of the forest habitat in the Monument) if snags are removed for safety reasons or ecological restoration; (b) a possible reduction in large snags per acre on a maximum of 38,518 acres (13% of the forest habitat in the Monument) if snags are removed for safety reasons or ecological restoration.

Alternative C: (a) a possible reduction in medium and large snags per acre on a maximum of 6,961 acres (2% of the forest habitat in the Monument) if snags are removed for safety reasons or ecological restoration; (b) a possible reduction in large snags per acre on a maximum of 6,961 acres (2% of the forest habitat in the Monument) if snags are removed for safety reasons or ecological restoration.

Alternative D: (a) a possible reduction in medium and large snags per acre on a maximum of 3,839 acres (1% of the forest habitat in the Monument) if snags are removed for safety reasons; (b) a possible reduction in large snags per acre on a maximum of 3,839 acres (1% of the forest habitat in the Monument) if snags are removed for safety reasons.

Alternative E: (a) a possible reduction in medium and large snags per acre on a maximum of 38,518 acres (13% of the forest habitat in the Monument) with a minimum of 1.5 snags per acre retained; (b) a possible reduction in large snags per acre on a maximum of 38,518 acres (13% of the forest habitat in the Monument)) with a minimum of 1.5 snags per acre retained.

Snags in Burned Forest Ecosystem Component (black-backed woodpecker):

Alternative A: (a) a possible reduction in medium and large snags per acre within burned forest created by stand-replacing fire, if snags are removed; (b) a possible reduction in large snags per acre within burned forest created by stand-replacing fire, if snags are removed.

Alternatives B, C, and F: (a) a possible reduction in medium snags per acre within burned forest created by stand-replacing fire, if snags are removed for safety reasons or ecological restoration; (b) a possible reduction in large snags per acre within burned forest created by stand-replacing fire, if snags are removed for safety reasons or ecological restoration.

Alternative D: (a) a possible reduction in medium snags per acre within burned forest created by stand-replacing fire, if snags are removed for safety reasons; (b) a possible reduction in large snags per acre within burned forest created by stand-replacing fire, if snags are removed for safety reasons.

Alternative E: (a) a possible reduction in medium snags per acre within burned forest created by stand-replacing fire; (b) a possible reduction in large snags per acre within burned forest created by stand-replacing fire.

This analysis indicates that, within the project area of the Monument, there is no loss of habitat, some short-term decrease in quality of habitat associated with fuels reduction, safety, and/or ecological restoration on a small percentage of the habitat within the Monument, and an increase in quality of meadow habitat related to restoration. Moreover, the planning process for the Monument partially relied on assessments completed pursuant to the 2001 SNFPA that made risk projections regarding the ecological conditions that are necessary to maintain viable populations of vertebrate species well distributed throughout their range under full implementation of the SNFPA. The findings contained in the 2001 FEIS and associated viability assessments, in combination with the specific analysis and conclusions in this MIS Report, support the conclusion that the management proposed under all

alternatives in the Giant Sequoia National Monument FEIS will not contribute to a loss of viability of MIS populations at the Sequoia National Forest level.

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