

Motorized Travel Management Management Indicator Species Report

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Introduction

The purpose of this report is to evaluate and disclose the impacts of the Stanislaus National Forest (STF) Motorized Travel Management Project on the habitat of the twelve (12) Management Indicator Species (MIS) identified in the Forest (NF) Land and Resource Management Plan (LRMP) (USDA 1990) 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 project-level MIS. Detailed descriptions of the STF Motorized Travel Management Project alternatives are found in the Draft Environmental Impact Statement (DEIS) (USDA Forest Service 2008).

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). The current rule applicable to project decisions is the 2004 Interpretive Rule, which states “Projects implementing land management plans...must be developed considering the best available science in accordance with §219.36(a)...and must be consistent with the provisions of the governing plan.” (Appendix B to §219.35). Guidance regarding MIS set forth in the STF 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 STF LRMP as amended.

Direction Regarding the Analysis of Project-Level Effects on MIS Habitat

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

These project-level impacts to habitat are then related to broader scale (bioregional) population and/or habitat trends. The appropriate approach for relating project-level impacts to broader scale trends depends on the type of monitoring identified for MIS in the LRMP as amended by the SNF MIS Amendment ROD. Hence, where the STF LRMP as amended by the SNF MIS Amendment ROD identifies distribution population monitoring for an MIS, the project-level habitat effects analysis for that MIS is

informed by available distribution population monitoring data, which are gathered at the bioregional scale. The bioregional scale monitoring identified in the STF LRMP, as amended, for MIS analyzed for the STF Motorized Travel Management Project is summarized in Section 3 of this report.

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

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

These steps are described in detail in the Pacific Southwest Region’s draft document “MIS Analysis and Documentation in Project-Level NEPA, R5 Environmental Coordination” (May 25, 2006). This Management Indicator Species (MIS) Report documents application of the above steps to select project-level MIS and analyze project effects on MIS habitat for the STF Motorized Travel Management Project.

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

The bioregional scale monitoring strategy for the STF’s MIS is found in the Sierra Nevada Forests Management Indicator Species Amendment (SNF MIS Amendment) Record of Decision (ROD) of 2007. Bioregional scale habitat monitoring is identified for all twelve of the terrestrial MIS. In addition, bioregional scale population monitoring, in the form of distribution population monitoring, is identified for all of the terrestrial MIS. 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 Sierra Nevada Forests Bioregional Management Indicator Species (SNF Bioregional MIS) Report (USDA Forest Service 2008).

MIS Habitat Status and Trend

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

Habitats are the vegetation types (for example, early seral coniferous forest) or ecosystem components (for example, snags in green forest) required by an MIS for breeding, cover, and/or feeding. MIS for the Sierra Nevada National Forests represent 10 major habitats and 2 ecosystem components (USDA Forest Service 2007a), as listed in Table 1. These habitats are defined using the California Wildlife Habitat Relationship (CWHR) System (CDFG 2005). The CWHR System provides the most widely used habitat relationship models for California’s terrestrial vertebrate species (ibid). It is described in detail in the SNF Bioregional MIS Report (USDA Forest Service 2008).

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 SNF Bioregional MIS Report (USDA Forest Service 2008).

MIS Population Status and Trend

All population monitoring data are collected and/or compiled at the bioregional scale, consistent with the LRMP as amended by the 2007 SNF MIS Amendment ROD (USDA Forest Service 2007a). The information is presented in detail in the 2008 SNF Bioregional MIS Report (USDA Forest Service 2008).

Population monitoring strategies for MIS of the STF 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 SNF Bioregional MIS Report (USDA Forest Service 2008).

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.

Selection of Project level MIS _____

Management Indicator Species (MIS) for the STF are identified in the 2007 Sierra Nevada Forests Management Indicator Species (SNF MIS) Amendment (USDA Forest Service 2007a). The habitats and ecosystem components and associated MIS analyzed for the project were selected from this list of MIS, as indicated in Table 1. In addition to identifying the habitat or ecosystem components (1st column), the

CWHR type(s) defining each habitat/ecosystem component (2nd column), and the associated MIS (3rd column), Table 1 discloses whether or not the habitat of the MIS is potentially affected by the STF Motorized Travel Management Project (4th column).

Table 1. Selection of MIS for Project-Level Habitat Analysis for the STF Motorized Travel Management Project

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 Project Analysis ²
Riverine & Lacustrine	lacustrine (LAC) and riverine (RIV)	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 frog <i>Pseudacris regilla</i>	3
Early Seral Coniferous Forest	ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), eastside pine (EPN), tree sizes 1, 2, and 3, all canopy closures	Mountain quail <i>Oreortyx pictus</i>	3
Mid Seral Coniferous Forest	ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), eastside pine (EPN), tree size 4, all canopy closures	Mountain quail <i>Oreortyx pictus</i>	3
Late Seral Open Canopy Coniferous Forest	ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), eastside pine (EPN), tree size 5, canopy closures S and P	Sooty (blue) grouse <i>Dendragapus obscurus</i>	3
Late Seral Closed Canopy Coniferous Forest	ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), tree size 5 (canopy closures M and D), and tree size 6.	California spotted owl <i>Strix occidentalis occidentalis</i>	3
		American marten <i>Martes americana</i>	
		northern flying squirrel <i>Glaucomys sabrinus</i>	
Snags in Green Forest	Medium and large snags in green forest	hairy woodpecker <i>Picoides villosus</i>	2
Snags in Burned Forest	Medium and large snags in burned forest (stand-replacing fire)	black-backed woodpecker <i>Picoides arcticus</i>	2

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

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

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

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

The hairy woodpecker (Category 2) will not be discussed any further in this analysis. Although habitat for the hairy woodpecker occurs on the STF, the project alternatives would have net beneficial effects on its habitat. Available snags in green forest may be reduced when hazard trees are removed along maintained NFTS **roads**; thereby, potentially reducing hairy woodpecker MIS habitat. Although fallen logs may be removed, standing snags are not removed along NFTS **trails** within the STF. Therefore, the addition of trails to the NFTS would not result in a reduction of snags in green forest. Since the action alternatives would change the type of use on some routes, roads may be changed to trails, thereby, reducing the total amount of roads which hazard trees would be removed along within the project area. Alternatives 2 and 3 (no action alternatives) would not add any roads or trails to the NFTS nor would they change the type of use on any routes; therefore these alternatives would not result in reductions of snags in green forest. Alternatives 1, 4, and 5 would add 2.27, 2.27, and 0.72 miles, respectively, of road to the NFTS where hazard trees may be removed. Alternatives 1, 4, and 5 would change 65.6, 66.09, and 15.7 miles, respectively, of roads to trail within the NFTS. Therefore, Alternatives 1, 4, and 5 would have a net amount of reduced hazard tree removal along 63.33, 63.82, and 14.95 miles of road and would have net beneficial effects on the amount of snags in green forest within the STF.

The black-backed woodpecker (Category 2) will not be discussed further in this analysis. Although habitat for the black-backed woodpecker occurs on the STF, it is only affected by fire salvage and fire restoration projects.

The MIS whose habitat would be either directly or indirectly affected by the STF Motorized Travel Management Project, identified as Category 3 in Table 1, are carried forward in this analysis, which will evaluate the direct, indirect, and cumulative effects of the proposed action and alternatives on the habitat of these MIS. The MIS selected for project-level MIS analysis for the STF Motorized Travel Management are: aquatic macroinvertebrates, fox sparrow, mule deer, yellow warbler, Pacific tree frog, mountain quail, sooty grouse (sooty grouse), California spotted owl, American marten, northern flying squirrel, and hairy woodpecker.

Bioregional Monitoring Requirements for MIS Selected for Project-Level Analysis _____

MIS Monitoring Requirements

The Sierra Nevada Forests Management Indicator Species (SNF MIS) Amendment (USDA Forest Service 2007a) identifies bioregional scale habitat and/or population monitoring for the Management Indicator Species for ten National Forests, including the STF (USDA Forest Service 2007a). The habitat and/or population monitoring requirements for STF's MIS are described in the Sierra Nevada Forests Bioregional Management Indicator Species (SNF Bioregional MIS) Report (USDA Forest Service 2008) and are summarized below for the MIS being analyzed for the STF Motorized Travel Management Project. The applicable habitat and/or population monitoring results are described in the SNF Bioregional MIS Report (USDA Forest Service 2008) and are summarized in Section 5 below for the MIS being analyzed for the STF Motorized Travel Management Project.

Habitat monitoring at the bioregional scale is identified for all the habitats and ecosystem components, including the following analyzed for the STF Motorized Travel Management Project: shrubland; oak-associated hardwood & hardwood/conifer; riparian; wet meadow; early seral coniferous forest; mid seral coniferous forest; late seral open canopy coniferous forest; late seral closed canopy coniferous forest; snags in green forest.

Bioregional Monitoring for aquatic macroinvertebrates: 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 Stream Condition Inventory (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, and hairy woodpecker: 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 SNF Bioregional MIS Report (USDA Forest Service 2008) for details by habitat and MIS.

Description of Proposed Project

The STF Motorized Travel Management Project proposes to 1) prohibit motorized vehicle travel off of designated NFS roads, NFS trails and areas by the public, except as allowed by permit or other authorization (excluding snowmobile use); 2) add between 0 (Alt 3 - adds none) and 181.7s miles (Alt 4 – adds the most) of motorized routes to the current National Forest Transportation System (NFTS); seasonally restrict motorized use on native surface roads and trails; and change the class of vehicles.

Table 2. Summary of Alternatives for STF Motorized Travel Management Project

Alternatives	Number of Acres Cross Country Travel	Miles of Route Additions	Areas Added to OHV Use	Seasonal Restrictions
Alternative 1	All STF Lands	157.39	None	<ul style="list-style-type: none"> ▪ Wet Weather
Alternative 2	Prohibited 0 Designated Open: All STF Lands outside designated wilderness and roadless areas	0	None	<ul style="list-style-type: none"> ▪ Forest Plan ▪ Existing Forest Orders
Alternative 3	All STF Lands	0	None	<ul style="list-style-type: none"> ▪ Forest Plan ▪ Existing Forest Orders
Alternative 4	All STF Lands	181.72	None	<ul style="list-style-type: none"> ▪ Wet Weather

Alternatives	Number of Acres Cross Country Travel	Miles of Route Additions	Areas Added to OHV Use	Seasonal Restrictions
Alternative 5	All STF Lands	31.51	None	Wet Weather

Effects of Proposed Project on the Habitat for the Selected Project-Level 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, and hairy woodpecker. The analysis of the effects of the STF Motorized Travel Management Project on the MIS habitat for the selected project-level MIS is conducted at the **project** scale. The analysis used the following habitat data: STF GIS Veg_1995 updated in 2000. Detailed information on the MIS is documented in the SNF Bioregional MIS Report (USDA Forest Service 2008), which is hereby incorporated by reference.

Cumulative effects at the bioregional scale are tracked via the SNF MIS Bioregional monitoring, and detailed in the SNF Bioregional MIS Report (USDA Forest Service 2008).

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.

Project-level Effects Analysis – Lacustrine/Riverine Habitat

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

Flow. This habitat factor will be evaluated by assessing changes in the miles of perennial stream flow and intermittent stream flow, and changes in acres of lakes and ponds.

Sedimentation. This habitat factor will be evaluated by assessing miles of stream and acres of lake affected by sediment discharge as a result of native surfaced route crossings on streams and proximity of routes to streams, lakes and ponds. Sedimentation will be measured by route density within RCAs and Stream crossing density within RCAs.

Water surface shade. This habitat factor will be evaluated by assessing changes in water surface shade as a result of route locations that cross streams or are adjacent to streams, lakes and ponds. This change will serve to indicate changes in water surface shade to perennial and intermittent streams, and lakes and ponds.

Current Condition of the Habitat Factor(s) in the Project Area

Flow. There are currently approximately 2,307 miles of perennial stream, 2,533 miles of intermittent stream, and 18,323 acres of lakes, ponds, and reservoirs on the STF. These miles of perennial and

intermittent streams, and acres of lakes, ponds, and reservoirs comprise the habitat for aquatic macroinvertebrates across the Forest.

Sedimentation. Native surfaced, motorized stream crossings and motorized routes within close proximity to riverine and lacustrine habitats can be a considerable source of sediment delivery to aquatic habitats important to macroinvertebrates (See Chapter 3.02 Water Resources). There are not currently any water bodies on the STF that are listed as impaired for sediment on the EPA's 303(d) List.

Water surface shade. Water surface shade varies tremendously on the STF depending on the type and amount of vegetation, topographic features, floodplain type, etc. that the watercourse falls within.

Direct and Indirect Effects to Habitat

Wet Weather Seasonal Closures

Proposed wet weather seasonal restrictions on native surfaced roads and trails were analyzed for the project alternatives in terms of all aquatic species and their habitats. Motorized travel on native surfaced routes during the wet weather season has the potential to cause erosion and deliver sediment to aquatic species habitats.

Alternatives 1, 4, and 5 would impose wet weather seasonal restrictions on all native surfaced roads and motorized trails, where fish and other aquatic species would be benefited through the reduction of erosion and sedimentation that could occur from wet season wheeled motorized use on routes, especially motorized roads and trails that are within close proximity to or cross streams or other riparian aquatic habitats. Alternatives 2 and 3 only impose wet weather seasonal restrictions where current Forest Orders are in place. Since these closures are minimal, aquatic riparian dependent species would only slightly benefit from wet weather seasonal restrictions. Alternative 2 has the greatest number of motorized stream crossings and highest RCA route densities that could potentially deliver sediment to aquatic and riparian habitats from wheeled motorized use on native surfaced routes during the wet weather season.

Change in Class of Vehicle

The change in class of vehicle would not be expected to have any adverse impacts on riverine or lacustrine species. Alternatives 2 and 3 would not result in changes to vehicle class on any routes. Although there would be a significant amount of Maintenance Level 1 roads that would be converted to trails within the action alternatives (Alternative 1, 4, and 5), these changes would likely result in vegetation encroachment and narrowing of the exposed soil surface over the long-term. Vegetation encroachment and reductions in the exposed soil surface on routes near aquatic habitat would likely increase shade and decrease erosion and sedimentation; resulting in a beneficial impact to aquatic macroinvertebrates.

Prohibition of Cross Country Travel

Under Alternative 2, no action, motorized cross country travel would not be prohibited on approximately 262,482 acres within Riparian Conservation Areas (RCAs), where the potential for adversely affecting aquatic macroinvertebrate habitat factors by increasing sedimentation and altering water surface shade. Under the action alternatives, prohibitions on cross country travel on 262,482 acres within RCA's would

likely reduce the potential for sedimentation and alteration of water surface shade, and therefore benefit aquatic riverine and lacustrine habitat quality.

Proposed Route Additions to NFTS

Measures or indicators of changes in sedimentation and water surface shade are assessed by analyzing the number of stream crossings additions associated with motorized trail additions to the NFTS, and the miles motorized trail additions within Riparian Conservation Areas (RCAs) for perennial and intermittent streams, and lakes, ponds, and reservoirs.

Number of Native Surfaced, Stream Crossings

The number of native surfaced, stream crossings is assessed for the alternatives, and provides a way to compare changes in sediment into riverine and lacustrine habitats for aquatic macroinvertebrates (Table 3). Alternative 2 poses the greatest risk of increased sedimentation where 173 stream crossings are affected by the continuance of cross country travel on motorized trails unauthorized to motorized public use. Of the action alternatives, Alternative 4 results in the greatest number of native surfaced, stream crossings (81 crossings) associated with proposed motorized trail additions to National Forest Transportation System (NFTS), followed by Alternatives 1, and 5, in descending order (Table 3). Alternative 3 does not add motorized trails to the NFTS, and therefore macroinvertebrate habitat factors of sedimentation or water surface shade would not be affected.

Table 3. Number of Native Surfaced, Stream Crossings Associated with Motorized Route Additions

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
Motorized Stream crossings associated with proposed motorized route additions (negative impact)	69	173	0	81	19

Miles of Proposed Route Additions within RCAs

The miles of proposed motorized trail additions to the National Forest Transportation System (NFTS) within RCAs were assessed for the alternatives, and provide additional information to assess the potential for off-site sediment delivery into riverine and lacustrine habitats for aquatic macroinvertebrates (Table 4). Alternative 2 poses the greatest risk to increased sedimentation potential from 40.92 miles of motorized trails un-authorized for motorized use within RCAs that would remain due to not prohibiting cross country travel. Similar to stream crossing numbers, Alternative 4 also results in the greatest number of motorized route trails within RCAs that would be added to the NFTS, followed by Alternatives 1, and 5, in descending order (Table 4). As stated above, Alternative 3 does not add motorized trails to the NFTS, and therefore changes to macroinvertebrate habitat factors of sedimentation or water surface shade would not occur.

Table 4. Miles of Proposed Route Additions within Riparian Conservation Areas (RCAs)

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5
Miles of proposed motorized trail additions within RCAs (negative impact)	16.50	40.92	0	19.30	3.0

Summary of Direct and Indirect Effects to Macroinvertebrate Habitat Factors

Table 5 summarizes the direct and indirect effects of macroinvertebrate habitat factors for the alternatives from proposed motorized trail additions to the National Forest Transportation System and cross country travel, including motorized trails un-authorized for motorized use. None of the action alternatives are expected to measurably change the amount of habitat within intermittent, perennial streams, lakes, ponds, and reservoirs. Flows within intermittent and perennial streams are expected to remain in existing conditions. Habitat quality will be affected from changes to sedimentation and to water surface shade. The following actions are assessed for their potential to affect sedimentation, and to a lesser degree to water surface shade. Native surface road and motorized trail crossings and within close proximity to watercourses have the potential to alter riparian habitat and therefore change the amount of water surface shade. These factors are measured by assessing the density of native surface road and motorized trails within the Riparian Conservation Areas (RCAs) and the density of stream crossings within RCAs. RCAs are defined as the area within 100 feet on each side of intermittent streams and 300 feet of perennial streams. Lakes, ponds, and reservoirs are considered perennial and have a 300 foot RCA. Water surface shade will be reduced by a very limited amount where shade has been removed by the proposed route crossings. Water surface shade alteration will depend upon the width of the crossing and the type of vegetation present at the crossing. Within some watercourses, water surface shade will either not be altered or only minimally reduced, such as, crossings within forested habitats. Crossings through riparian vegetation (herbaceous meadow plants and woody riparian shrubs) have resulted in a reduction of some water surface shade. The amount of water surface shade will depend on the width of the crossings and the number of crossings (crossing density).

Table 5. Summary of Effects of Motorized Route Additions to Aquatic Macroinvertebrate Habitat Factors for the Alternatives

Alternatives	Changes in habitat quality in miles of Stream and Acres of Lakes/ Ponds/Reservoirs	Changes in Sediment Levels	Changes in Water Surface Shade
Alternative 1	Low	Increases (16.5 RCA route miles, 69 crossings)	Decreases
Alternative 2	Low	Increases the most (40.92 RCA route miles, 173 crossings)	Decreases the most
Alternative 3	Low	No Change	No Change
Alternative 4	Low	Increases (19.3 RCA route miles, 81 crossings)	Decreases
Alternative 5	Low	Increase the least (3.0 RCA route miles, 19 crossings)	Decreases the least

Cumulative Effects to Habitat in the Analysis Area

The spatial boundary for analyzing cumulative effects to aquatic macroinvertebrates include all perennial, intermittent streams, lakes, ponds, and reservoirs located within the boundary of the STF.

Past and current cumulative effects to aquatic macroinvertebrate habitat that have affected the habitat factors of flow, sedimentation, and surface shade include current and historic grazing along watercourses; loss of habitat (shade) and increased sedimentation through catastrophic wildfires; timber and fuels

management where sedimentation has increased and cover has been reduced or removed; mining and dredging, urban development and expansion within a checkerboard land ownership pattern; and recreational activities including hunting, camping, and general recreation activities including all forms of motorized use including 4 wheeled drive vehicles, ATVs, and motorcycles.

The STF currently has 35 active livestock grazing allotments including both cattle and sheep. Stanislaus LRMP standards and guidelines, as amended by the Sierra Nevada Forest Plan Amendment (USFS 2004), for grazing are generally reducing the amount of grazing impacts on rangelands.

Appendix B (STF Travel Management DEIS) provides a list and description of past, present, and reasonably foreseeable projects on National Forest System and private lands within the STF boundary. Some, but not all, of these activities will contribute to impacts to the aquatic macroinvertebrates within the STF boundary. Between 2000 and 2008, vegetation/fuels thinning treatments were implemented on approximately 25,000 acres to reduce the potential for catastrophic wildfire. Many recent, current, and future vegetation and fuels reduction projects are designed to minimize affects to stream and riparian habitats by following “riparian conservation objectives” as prescribed in the Sierra Nevada Forest Plan Amendment. Between 2000 and 2008, approximately 37,000 acres burned on the STF, some of which may have resulted in changes in flow, increased sedimentation, and loss in surface cover.

Currently, there is a high demand for recreational use on the STF due to its close proximity to urban centers. The STF provides a wide variety of recreational experiences including developed and dispersed camping, hiking, fishing, hunting, wildlife viewing, winter sports activities (downhill skiing, cross country skiing, snowmobiling), summer OHV use, and a variety of other non-motorized use (equestrian use and mountain biking). Recreational use on the STF has significantly increased compared to the past 20 to 30 years. Because of the proximity to urban areas and population growth, increased recreational use on the STF is expected to continue to increase in the future including camping, hiking, fishing, wildlife viewing, hunting, and OHV use. Generally, the increase in recreational use on the STF has the potential to cause an increased impact to aquatic macroinvertebrate habitats because humans are attracted to streams, lakes, ponds, and reservoirs. Future increase in recreational use on the STF is expected, and therefore, increased impacts to aquatic macroinvertebrate habitat would be expected, particularly during the summer months.

Cumulative Effects Conclusion

For the action alternatives, generally, changes in flow and water surface shade will be too small to be measured. When considering all the cumulative effects of past, present, and reasonably foreseeable future impacts from grazing, vegetation/fuels projects, wildfires, mining, and recreation, Alternative 2 poses the greatest risk to the riverine and lacustrine habitats on the STF, where cross country travel will continue on 262,482 acres within Riparian Conservation Areas where the highest potential to reduce habitat quality by increasing sediment delivery and alter water surface shade to aquatic macroinvertebrate habitats.

Changes in class of vehicles on native surfaced routes may potentially increase sedimentation to Wet weather seasonal restrictions under Alternatives 1, 4, and 5 on all native surfaced roads and trails would benefit macroinvertebrate habitat through the reduction of erosion and sedimentation that could result

from wet season wheeled motorized use on routes, especially wheeled motorized routes that are within close proximity to macroinvertebrate habitats.

Sedimentation of macroinvertebrate habitats would be the greatest under Alternative 2, where 173 stream crossings and 40.92 RCA miles of motorized trails would continue to have un-authorized motorized use since cross country is not prohibited. For the action alternatives, Alternative 4 results in the greatest number of native surfaced, stream crossings, followed by Alternatives 1, and 5, in descending order from the addition of motorized trails to the National Forest Transportation System (NFTS). Alternative 3 does not add any stream crossings because no route additions are proposed to the NFTS.

Summary of Aquatic Macroinvertebrate Status and Trend at the Bioregional Scale

The STF 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 STF Motorized Travel Management Project 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 2008), which is hereby incorporated by reference.

Habitat and Index of Biological Integrity Status and Trend. Aquatic habitat has been assessed using Stream Condition Inventory (SCI) data collected since 1994 (Frasier et al. 2005) and habitat status information from the Sierra Nevada Ecosystem Project (SNEP) (Moyle and Randall 1996). Index of Biological Integrity is assessed using the River Invertebrate Prediction and Classification System (RIVPACS) and macroinvertebrate data collected since 2000 (see USDA Forest Service 2008, Table BMI-1). These data indicate that the status and trend in the RIVPACS scores is stable.

Relationship of Project-Level Habitat Impacts to Bioregional-Scale Aquatic Macroinvertebrates Habitat Trend

The STF Motorized Travel Management Project will affect the greatest amount of macroinvertebrate habitat under Alternative 2, through increased sedimentation and decreased surface shade, where 40.92 miles of motorized trails unauthorized to motorized public use would continue to occur under the continuance of cross country travel within RCAs. These motorized trails would effectively result in 173 native surfaced, stream crossings that could adversely affect the quality of macroinvertebrate habitats through increased sediment delivery and decreased surface water shade.

The analysis of the addition of motorized trails to the National Forest Transportation System (NFTS) for the action alternatives indicates Alternative 4 results in the greatest amount impact to macroinvertebrate habitat, though the potential increase in sedimentation and decrease in surface water shade from motorized stream crossings and RCA route miles (19.3 RCA miles, 81 crossings), followed by Alternatives 1 and 5, in descending order (Tables 3, 4, 5). Alternative 3 does not add any stream crossings or motorized trails within RCAs because no motorized trail additions to the NFTS are proposed under this alternative.

The action alternatives will not alter the existing trend in macroinvertebrate habitat, nor will it lead to a change in the distribution of macroinvertebrates across the Sierra Nevada bioregion. This is based on

the relatively low amount of lacustrine and riverine habitat affected and the prohibition of cross country travel within 262,482 RCA acres.

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

Habitat/Species Relationship

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

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

Habitat Factor(s) for the Analysis: For the proposed alternatives, the habitat factor used in this analysis was the amount of shrubland habitat (west-slope chaparral) that fell within a 200 meter zone of influence of proposed routes to be added to the National Forest Transportation System (NFTS). The no action alternative (Alternative 2) was analyzed by determining the amount of shrubland habitat that fell within a 200 meter zone of influence of existing routes unauthorized to motorized public use.

Current Condition of the Habitat Factor(s) in the Project Area

The project area, comprised of the STF boundary, currently has 193,939 acres of shrubland habitat. Shrubland habitat is comprised of various age classes that range from young shrubs, intermediate age classes, and mature to decadent shrub classes.

Direct and Indirect Effects to Habitat

Change in Class of Vehicles

Although responses to motorized vehicle use varies by species and depends upon the type of vehicle, in addition to the intensity, timing, speeds, and amount motorized vehicle use, the specific species responses are not well understood. For this analysis, it is assumed that all vehicle types result in the same disturbance to fox sparrow. Therefore, changes in the class of vehicles would not vary in their effects to fox sparrow for all of the proposed alternatives.

Seasonal Restrictions

Alternatives 1, 4, and 5 would impose wet weather seasonal restrictions on all native surfaced roads and motorized trails, where fox sparrow habitat effectiveness would be benefited through the reduced disturbance and avoidance when motorized use on native surfaced roads and motorized trails that are seasonally restricted during the wet weather season. Alternatives 2 and 3 only impose wet seasonal weather restrictions where current Forest Orders are in place, therefore the fox sparrow habitat effectiveness would be minimally enhanced due to wet weather seasonal restrictions.

Prohibition of Cross Country Travel

Under Alternative 2, cross country travel would not be prohibited, potentially affecting 193,939 acres of shrubland (west slope chaparral) habitat, potentially causing reduced habitat effectiveness through disturbance, avoidance, and abandonment for the fox sparrow. For the action alternatives, cross country travel would be prohibited on 193,939 acres, where disturbance, avoidance, abandonment would be reduced or eliminated. Existing LRMP motorized prohibitions would remain in effect.

Proposed Route Additions to the NFTS

The direct and indirect effects to fox sparrow shrubland habitat from motorized trail additions to the National Forest Transportation System (NFTS) results in a decrease in habitat quality from disturbance, displacement and/or avoidance of habitat as a result of activities associated with motorized vehicle use. Based on the analysis conducted for fox sparrow shrubland habitat, Alternative 2 would affect the greatest amount of habitat within a 200-meter zone of influence (Table 6). Approximately 9,232 acres or approximately 1% of Sierra Nevada-wide habitat would be affected by continued cross country travel on motorized trails un-authorized for motorized use. Alternative 4, 1, and 5 have the next highest direct and indirect effects to fox sparrow habitat, where a nominal percentage of Sierra Nevada-wide habitat would be affected by proposed motorized trail additions to the NFTS.

Table 6. Acres Cross Country Travel Prohibitions and Proportion of Fox Sparrow MIS habitat within a 200-meter “Zone of Influence” of Proposed Routes

Fox Sparrow MIS Habitat		Alt 1	Alt 2 ¹	Alt 3	Alt 4	Alt 5
Acres Cross Country Travel within Shrubland habitat						
Acres shrubland habitat where cross country travel would be prohibited		0	193,939	193,939	193,939	193,939
Proportion of Fox Sparrow MIS habitat within a 200-meter “Zone of Influence” of Proposed Route Additions						
Acres shrubland (west-slope chaparral types)	Habitat Acres	2,941	9,232	0	3,336	678
Proportion of Habitat in Sierra Nevada	922,000	0.3%	1%	0%	0.4%	0.1%
Proportion of Habitat in Stanislaus NF boundary ²	192,939	1.5%	4.8%	0%	1.7%	0.4%

¹Alternative 2 includes existing routes unauthorized to motorized public use that would continue with continued cross country travel.

²The Zone of Influence within 200 meters of motorized routes includes both NFS and non-NFS lands within the boundary of the Stanislaus NF due to the complex checkerboard pattern. The proportion of habitat affected likely over-represents the actual amount of habitat affected on NFS lands.

Cumulative Effects to Habitat in the Analysis Area

The spatial boundary for analyzing cumulative effects to fox sparrow includes all suitable fox sparrow shrubland on the STF. Past and current cumulative effects to fox sparrow include current and historic grazing of fox sparrow habitat; loss of habitat through catastrophic wildfires; timber and fuels management where cover and forage has been reduced or removed; urban development and expansion within a checkerboard land ownership pattern; and recreational activities including hunting, camping, and

general recreation activities including all forms of motorized use including 4 wheeled drive vehicles, ATVs, and motorcycles.

The STF currently has 35 active livestock grazing allotments, including both cattle and sheep. STF LRMP standards and guidelines, as amended by the Sierra Nevada Forest Plan Amendment (USFS 2004), for grazing are generally reducing the amount of grazing impacts on rangelands.

Appendix B (STF Travel Management DEIS) provides a list and description of past, present, and reasonably foreseeable projects on National Forest System and private lands within the STF boundary. Some, but not all, of these activities will contribute to impacts to the fox sparrow within the STF boundary. Between 2000 and 2008, vegetation/fuels thinning treatments were implemented on approximately 25,000 acres to reduce the potential for catastrophic wildfire. These treatments may result in some removal of shrubland habitat in the short-term, but may increase fox sparrow shrubland habitat in the long-term. Many recent, current, and future vegetation and fuels reduction projects are designed to minimize effects to stream and riparian habitats by following “riparian conservation objectives” as prescribed in the Sierra Nevada Forest Plan Amendment. Between 2000 and 2008, approximately 37,000 acres burned on the STF, some of which have removed fox sparrow habitat, but over time, a large percentage of the burned areas quickly become revegetated by shrubland habitats, especially on highly productive sites.

Cumulative Effects Conclusion

Alternative 2 poses the greatest cumulative effects to fox sparrow MIS shrubland habitat on the STF, where 9,232 acres out of 193,939 acres of fox sparrow habitat would be affected within a 200-meter zone of influence of existing motorized trails un-authorized for motorized use. This will add to existing cumulative effects by approximately 4.8%. Although this alternative impacts the greatest amount of habitat within the project area, it would not be significant enough to result in a downward trend in fox sparrow habitat effectiveness. The remaining alternatives (Alternatives 1, 4, and 5) impact less than 2% of habitat and would not alter fox sparrow habitat within the project area. Alternatives 3 would not directly or indirectly affect fox sparrow habitat, therefore, no cumulative effects will occur from implementation this alternative.

Alternatives 1, 4, and 5 would impose wet weather seasonal restrictions on all native surfaced roads and motorized trails, where fox sparrow habitat effectiveness would be benefited through the reduced disturbance and avoidance when motorized use on native surfaced roads and motorized trails that are seasonally restricted during the wet weather season. The change in the class of vehicles would not affect fox sparrow habitat for all of the proposed alternatives. Finally, all the action alternatives would prohibit motorized cross country travel on 193,939 acres of fox sparrow habitat, where habitat effectiveness would be enhanced through reduced disturbance and avoidance.

Summary of Fox Sparrow Status and Trend at the Bioregional Scale

The STF 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 STF Motorized Travel Management Project must be informed by both habitat and distribution population

monitoring data. The sections below summarize the habitat and distribution population status and trend data for the fox sparrow. This information is drawn from the detailed information on habitat and population trends in the Sierra Nevada Forests Bioregional MIS Report (USDA Forest Service 2008), which is hereby incorporated by reference.

Habitat Status and Trend. There are currently 922,000 acres of west-slope chaparral shrubland habitat on National Forest System lands in the Sierra Nevada. Within the last decade, the trend is stable.

Population Status and Trend. The fox sparrow has been monitored in the Sierra Nevada at various sample locations by avian point counts and breeding bird survey protocols, including: 1997 to present – Lassen National Forest (Burnett and Humple 2003, Burnett et al. 2005); 2002 to present - Plumas and Lassen National Forests (Sierra Nevada Research Center 2007); on-going monitoring through California Partners in Flight Monitoring Sites (CPIF 2002); 1992 to 2005 – Sierra Nevada Monitoring Avian Productivity and Survivorship (MAPS) stations (Siegel and Kaschube 2007); and 1968 to present – BBS routes throughout the Sierra Nevada (Sauer et al. 2007). These data indicate that fox sparrows continue to be present at these sample sites, and current data at the rangewide, California, and Sierra Nevada scales indicate that, although there may be localized declines in the population trend, the distribution of fox sparrow populations in the Sierra Nevada is stable.

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

The STF Travel Management Project will directly, indirectly, and cumulatively affect between 9,232 acres (highest) of fox sparrow shrubland habitat under Alternative 1 and 0 acres (lowest) under Alternatives 3. Based on the acres affected, which range from 0% to 1% of the total Sierra Nevada-wide, the STF Motorized Travel Management Project will not change the existing trend in the habitat, nor will it lead to a change in the distribution 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).

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

Habitat Factor(s) for the Analysis: For the proposed alternatives, the habitat factor used in this analysis was the amount of oak-associated hardwood and hardwood/conifer habitat that fell within a 200 meter zone of influence of proposed routes to be added to the National Forest Transportation System (NFTS).

The no action alternative (Alternative 2) was analyzed by determining the amount of oak-associated hardwood and hardwood/conifer habitat that fell within a 200-meter zone of influence of existing motorized trails un-authorized for motorized use.

Current Condition of the Habitat Factor(s) in the Project Area

The STF currently has 250,054 acres of oak-associated hardwood and hardwood/conifer habitat. Habitat is comprised of various age classes that range from sapling size with sparse canopy cover (CWHR size class 2S) to multi-layered stands with dense canopy cover (CWHR size class 6D).

Direct and Indirect Effects to Habitat

Change in Class of Vehicles

The change in the class of vehicles will have no effect to mule deer habitat, since the change in class of vehicles on existing motorized routes will generally not affect mule deer habitat condition. In general, some smoothed surfaced roads may become rough (native) surfaced roads through reduced road maintenance. In addition, some existing motorized National Forest Transportation System (NFTS) roads may receive lower maintenance resulting in higher vegetation density at the road margins which would provide additional cover and/or foraging habitat. The resulting roadway condition would depend upon the amount and type of vegetation present and the amount of maintenance any given road receives.

Wet Weather Seasonal Restrictions

Alternatives 1, 4, and 5 would impose wet weather seasonal restrictions on all native surfaced roads and motorized trails, where mule deer habitat effectiveness would be benefited through the reduced disturbance and avoidance when motorized use on native surfaced roads and motorized trails that are seasonally restricted during the wet weather season. Alternatives 2 and 3 only impose wet seasonal weather restrictions where current Forest Orders are in place, therefore the mule deer habitat effectiveness would be minimally enhanced due to wet weather seasonal restrictions.

Prohibition of Cross Country Travel

Under Alternative 2, cross country travel would not be prohibited, potentially affecting 250,054 acres of oak-associated hardwood and hardwood/conifer habitat, resulting in reduced habitat effectiveness through disturbance, avoidance, and abandonment for the mule deer. For the action alternatives, cross country travel would be prohibited on 250,054 acres, where disturbance, avoidance, and abandonment by mule deer would be reduced or eliminated.

Proposed Route Additions to the NFTS

Mule deer were found to respond to disturbance associated with secondary motorized roads and trails within a 200 meter distance. Although, because deer may respond differently, depending on the type of route and the type of surrounding vegetation, analyzing for these variables can be complex. The amount of disturbance to deer depends upon the type of route, the intensity of use, and the degree to which motorized activities overlap with deer use. The project alternatives only consider the addition of motorized trails to the National Forest Travel System (NFTS) that are native surfaced, which have less

volume of traffic and receive lower rates of speed. Therefore, a Zone of Influence within 200 meters of motorized routes was used by to compare differences in the direct and indirect impacts between alternatives for oak associated hardwood and hardwood/conifer habitat used by deer as represented by CWHR types MHW and MHC. Oak associated hardwood and hardwood/conifer affected within a 200-meter zone of influence was then compared to the amount of oak associated hardwood and hardwood/conifer habitat available Sierra Nevada-wide.

Areas that are less influenced by motorized roads and trails are considered “security habitat,” whereas, areas influenced by routes are considered “zones of influence” where deer are less secure. For Alternative comparison purposes, a simple ranking system, such as the one developed by Gaines et al. (2003), is used. For this purpose, less than 25 percent of key habitat affected was ranked as a low level of road or trail influence, 25 to 50 percent of key habitat affected was ranked as a moderate level of influence, and greater than 50 percent of key habitat affected was ranked as a high level of influence. Using this ranking system, all the alternatives result in a low “security” risk to mule deer habitat. The habitat effectiveness of oak-associated hardwood and hardwood/conifer habitat would be minimally affected by the influence of motorized routes.

Alternative 2 poses the greatest risk to oak-associated hardwood and hardwood/conifer habitats by affecting 14,138 acres or 1.7% of Sierra Nevada-wide habitat (Table 7). These acres would result in reduced habitat effectiveness from potential disturbance or avoidance behavior as a result of factors associated with motorized roads and trails. Alternative 4, 1, and 5 have the next highest direct and indirect effects to mule deer habitat, where a nominal percentage of Sierra Nevada-wide habitat would be affected by proposed motorized trail additions to the NFTS.

Table 7. Acres of Cross Country Travel Prohibitions and Proportion of Mule Deer MIS habitat within a 200-meter “Zone of Influence” of Proposed Routes

		Alt 1	Alt 2 ¹	Alt 3	Alt 4	Alt 5
Acres of Cross Country Travel Prohibitions Within Oak-Associated Hardwood and Hardwood/Conifer Habitats						
Acres oak-associated and hardwood conifer habitat where cross country travel would be prohibited	250,054 habitat acres	0	250,054	250,054	250,054	250,054
Acres oak-associated and hardwood conifer habitat where cross country travel would not be prohibited		250,054	0	0	0	0
Proportion of Mule Deer MIS habitat within a 200-meter “Zone of Influence” of Proposed Routes						
Acres Oak-associated hardwood and hardwood/conifer habitats		3,596	14,138	0	3,954	927
Proportion of Sierra Nevada Habitat	809,000	0.4%	1.7%	0%	0.5%	0.1%
Proportion of Stanislaus NF Habitat ²	250,054	1.4%	5.7%	0%	1.6%	0.4%

¹Alternative 2 includes existing routes unauthorized to motorized public use that would continue with the continuance of cross country travel.

²The Zone of Influence within 200 meters of motorized routes includes both NFS and non-NFS lands within the boundary of the Stanislaus NF due to the complex checkerboard pattern. The proportion of habitat affected likely over-represents the actual amount of habitat affected on NFS lands

Cumulative Effects to Habitat in the Analysis Area

The spatial boundary for analyzing cumulative effects to mule deer includes all suitable mule deer habitats within the boundary of the STF. Past and current cumulative effects to mule deer include current and historic grazing of mule deer habitat; loss of habitat through catastrophic wildfires; timber and fuels management where cover and forage has been reduced or removed; urban development and expansion within a checkerboard land ownership pattern; and recreational activities including hunting, camping, and general recreation activities including all forms of motorized use including 4 wheeled drive vehicles, ATVs, and motorcycles.

The STF currently has 35 active livestock grazing allotments including both cattle and sheep. Stanislaus LRMP standards and guidelines, as amended by the Sierra Nevada Forest Plan Amendment (USFS 2004), for grazing are generally reducing the amount of grazing impacts on rangelands.

Appendix B (STF Travel Management DEIS) provides a list and description of past, present, and reasonably foreseeable projects on National Forest System and private lands within the STF boundary. Some, but not all, of these activities will contribute to impacts to mule deer within the STF boundary. Between 2000 and 2008, vegetation/fuels thinning treatments were implemented on approximately 25,000 acres to reduce the potential for catastrophic wildfire. These treatments may result in short-term reduction of cover, though it is expected that greater amounts of habitat would be protected over the long-term from catastrophic wildfire. Furthermore, thinning treatments increases early successional species that provide forage for mule deer. Many recent, current, and future vegetation and fuels reduction projects are emphasizing habitat improvement for deer by removing competing conifers within oak habitats and aspen habitats which are designed to enhance mule deer foraging condition. Between 2000 and 2008, approximately 37,000 acres burned on the STF, some of which have removed mule deer habitat, but over time, a large percentage of the burned areas quickly become revegetated by early successional species, providing increased forage opportunities.

Currently, there is a high demand for recreational use on the STF due to its close proximity to urban centers. The STF provides a wide variety of recreational experiences including developed and dispersed camping, hiking, fishing, hunting, wildlife viewing, winter sports activities (downhill skiing, cross country skiing, snowmobiling), summer OHV use, and a variety of other non-motorized use (equestrian use and mountain biking). Recreational use on the STF has significantly increased compared to the past 20 to 30 years. Because of the proximity to urban areas and population growth, increased recreational use on the STF is expected to continue to increase in the future including camping, hiking, fishing, wildlife viewing, hunting, and OHV use. Generally, the increase in recreational use on the STF has the potential to cause an increase in negative interactions between humans and mule deer. Future increase in recreational use on the STF is expected, and therefore, increased disturbance to mule deer would be expected, particularly during the summer months.

When considering all the cumulative effects of past, present, and reasonably foreseeable future impacts from grazing, vegetation/fuels projects, wildfires, and recreation, Alternative 2 poses the greatest risk to mule deer on the STF, where approximately 5.7% of their habitat would be affected. Alternatives 1 and 4 slightly increase the amount of cumulative effects on deer habitat, where site specific localized effects may occur. Alternative 5 would only slightly increase overall cumulative impacts and would have

a nominal impact mule deer habitat within the STF. Alternative 3 does not add any motorized trails un-authorized for motorized use to the National Forest Transportation System (NFTS), so does not add to existing cumulative impacts. All the action alternatives will result in a beneficial impact to all deer ranges across the STF from the prohibition of cross-country travel. It is expected that non-motorized use may occur on these motorized trails un-authorized for motorized use which would likely result in less disturbance to mule deer. However, some studies indicate that certain non-motorized activities (hiking, mountain bicycling, equestrian, etc.) could actually result in greater disturbance to mule deer. Regardless, the amount of disturbance caused by non-motorized use will depend on the type, intensity and duration of the use. The prohibition of cross country travel, including motorized trails un-authorized for motorized use, become revegetated and recover over time, either through active or passive restoration efforts, overall mule deer disturbance from human activity is expected to diminish in the future. In addition, Alternatives 1, 4, and 5 would benefit deer on winter ranges through the implementation of wet weather closures on native surfaced roads and motorized trails.

Cumulative Effects Conclusion

Alternative 2 poses the greatest cumulative effects to mule deer MIS oak-associated hardwood and hardwood/conifer habitat on the STF where 14,138 acres out of 250,054 acres of mule deer habitat would be affected within a 200-meter zone of influence of existing motorized trails un-authorized for motorized use. This will add to existing cumulative effects by approximately 7.5%. Increasing direct and indirect effects on 7.5% of mule deer habitat within the project area could contribute to a downward trend in mule deer habitat effectiveness within oak-associated and hardwood/conifer habitats on the STF. All action alternatives (Alternatives 1, 4, and 5) would impact a small percentage of mule deer habitat that would not likely alter the existing trend in mule deer habitat. Alternative 3 would not directly or indirectly affect oak-associated hardwood and hardwood/conifer habitat, therefore, no cumulative effects would occur from implementation of this alternative.

The change in the class of vehicles will have no effect to mule deer habitat, since the change in class of vehicles on existing National Forest Transportation System (NFTS) roads will generally not affect mule deer habitat condition. Wet weather seasonal restrictions under Alternatives 1, 4, and 5 on all native surfaced roads and trails would benefit mule deer habitat effectiveness through the reduced disturbance and avoidance when motorized use on native surfaced routes that are seasonally restricted. Finally cross country travel would be prohibited on 250,054 acres with the implementation of the action alternatives where disturbance, avoidance, and abandonment by mule deer would be reduced or eliminated.

Summary of Mule Deer Status and Trend at the Bioregional Scale

The STF 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 STF Motorized Travel Management Project must be informed by both habitat and distribution population monitoring data. The sections below summarize the habitat and distribution population status and trend data for the mule deer. This information is drawn from the detailed information on habitat and population trends in the Sierra Nevada Forests Bioregional MIS Report (USDA Forest Service 2008), which is hereby incorporated by reference.

Habitat Status and Trend. There are currently 809,000 acres of oak-associated hardwood and hardwood/mixed conifer habitat on National Forest System lands in the Sierra Nevada. The trend is slightly increasing (within the last decade, changing from 5% to 7% of the acres on National Forest System lands).

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

Relationship of Project-Level Habitat Impacts to Bioregional-Scale Mule Deer Trend

Alternative 2 results the greatest amount of oak-associated hardwood and hardwood/conifer habitat 14,138 acres (1.7% of Sierra Nevada-wide habitat) affected by cross country travel, including use on existing motorized trails un-authorized for motorized use. The remaining alternatives would result in zero or nominal increases in acres of Sierra Nevada-wide habitat affected. Based on the small percentage of habitat affected, the STF Motorized Travel Management Project will not alter the existing habitat trend, nor will it 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). Yellow warbler is dependent on both meadow and non-meadow riparian habitat in the Sierra Nevada (Siegel and DeSante 1999). On the STF, CWHR montane riparian habitat (MRI) provides suitable habitat for the yellow warbler.

Project-level Effects Analysis – Montane Riparian Habitat

Habitat Factor(s) for the Analysis: Two habitat factors were used to assess the effects of the proposed motorized trail additions to the National Forest Transportation System (NFTS) for the alternatives on yellow warbler habitat. For Alternative 2, the habitat factors were used to assess the effects on existing motorized trails un-authorized for motorized use. The habitat factors used to assess direct and indirect effects of motorized routes for the yellow warbler were riparian habitat acres affected and the proportion of montane riparian habitat within a 200-meter “zone of influence” of motorized routes.

Habitat Acres: Acres of montane riparian habitat provides a measure of the direct effect to montane riparian habitat from proposed route additions. Habitat acres were determined by the length of the road/trail multiplied by the width of the Road/trail. Road/trail width is assumed to be a maximum of 8 feet. In some cases, route width may be less; therefore, impacts may be somewhat over-emphasized.

Zone of Influence within 200 meters: For the action alternatives, the habitat factor used to assess the effects of yellow warbler habitat effectiveness consisted of determining the amount of montane riparian habitat that fell within a 200-meter zone of influence of proposed motorized trail additions.

Current Condition of the Habitat Factor(s) in the Project Area

The STF has approximately 3,166 acres CWHR montane riparian habitat (MRI).

Direct and Indirect Effects to Habitat

Change in Class of Vehicles

The change in class of vehicle would not be expected to have any adverse impacts on montane riparian habitat. Alternatives 2 and 3 would not result in changes to vehicle class on any routes. Although there would be a significant amount of Maintenance Level 1 roads that would be converted to trails within the action alternatives (Alternative 1, 4, and 5), these changes would likely result in vegetation encroachment and narrowing of the exposed soil surface over the long-term. Vegetation encroachment and reductions in the exposed soil surface on routes in montane riparian habitat would likely improve habitat conditions for the yellow warbler.

Wet Weather Seasonal Restrictions

Alternatives 1, 4, and 5 would impose wet weather seasonal restrictions on all native surfaced roads and motorized trails, where montane riparian habitats for the yellow warbler would be benefited through the reduction of erosion and sedimentation that could occur from wet season wheeled motorized use on routes, especially motorized roads and trails that are within close proximity to yellow warbler habitat. Alternatives 2 and 3 only impose wet seasonal weather restrictions where current Forest Orders are in place, therefore the yellow warbler habitat effectiveness would be minimally enhanced due to wet weather seasonal restrictions.

Prohibition of Cross Country Travel

Under Alternative 2, cross country travel would not be prohibited, affecting 3,166 acres of montane riparian habitat, potentially causing reduced habitat effectiveness through disturbance, avoidance, and abandonment for the yellow warbler. For the action alternatives, cross country travel would be prohibited on 3,166 acres, where disturbance, avoidance, abandonment would be reduced or eliminated.

Proposed Route Additions to the NFTS

Table 9 displays the acres of montane riparian habitat directly and indirectly affected by the alternatives. Alternative 2 affects the greatest amount of montane riparian habitat, suitable for yellow warbler, where continued use of motorized trails un-authorized for motorized use results in a loss or reduction in montane riparian habitat within 0.12 out of 3,166 acres of STF montane riparian habitat. All of the project

alternatives would result in nominal direct effects to montane riparian habitat that and would not measurably affect yellow warblers.

Table 9. Proportion of Yellow Warbler MIS habitat affected by of Proposed Route Additions

Yellow Warbler MIS Habitat	Yellow Warbler Habitat Acres	Alt1	Alt2*	Alt 3	Alt 4	Alt 5
Acres Montane Riparian Habitat		0.12	0.16	0	0.12	0.12
Proportion of Sierra Nevada Habitat	29,000	0%	0%	0%	0%	0%
Proportion of Stanislaus NF Habitat	3,166	0%	0%	0%	0%	0.01%

*Alternative 2 includes existing routes un-authorized to motorized public use that would continue with the continuance of cross country travel.

Table 10 displays the acres of montane riparian habitat that would be indirectly affected within a 200 meter zone of influence. All of the project alternatives would result in nominal indirect effects to montane riparian habitat and would not measurably affect yellow warblers.

Table 10. Proportion of Yellow Warbler MIS habitat within a 200-meter “Zone of Influence” of Proposed Routes

		Alt 1	Alt 2 ¹	Alt 3	Alt 4	Alt 5
Proportion of Yellow Warbler MIS habitat within a 200-meter “Zone of Influence” of Proposed Routes						
Acres Montane Riparian Habitat		21	25	0	23	18
Proportion of Sierra Nevada Habitat	29,000	0%	0%	0%	0%	0%
Proportion of Stanislaus NF Habitat ²	3,166	0.07%	0.08%	0%	0.08%	0.06%

¹Alternative 2 includes existing routes unauthorized to motorized public use that would continue with the continuance of cross country travel.

²The Zone of Influence within 200 meters of motorized routes includes both NFS and non-NFS lands within the boundary of the Stanislaus NF due to the complex checkerboard pattern. The proportion of habitat affected likely over-represents the actual amount of habitat affected on NFS lands

Cumulative Effects to Habitat in the Analysis Area

A lack of direct or indirect effects from all project alternatives precludes them having any cumulative effects to the yellow warbler.

Cumulative Effects Conclusion

A lack of direct or indirect effects from all project alternatives precludes them having any cumulative effects to the yellow warbler.

Summary of Yellow Warbler Status and Trend at the Bioregional Scale

The STF 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 STF Motorized Travel Management Project must be informed by both habitat and distribution

population monitoring data. The sections below summarize the habitat and distribution population status and trend data for the yellow warbler. This information is drawn from the detailed information on habitat and population trends in the SNF Bioregional MIS Report (USDA Forest Service 2008), which is hereby incorporated by reference.

Habitat Status and Trend. There are currently 29,000 acres of riparian habitat on National Forest System lands in the Sierra Nevada. Within the last decade, the trend is stable.

Population Status and Trend. The yellow warbler has been monitored in the Sierra Nevada at various sample locations by avian point counts and breeding bird survey protocols, including Lassen NF (Burnett and Humple 2003, Burnett et al. 2005) and Inyo NF (Heath and Ballard 2003) point counts; ongoing California Partners in Flight monitoring and studies (CPIF 2004); 1992 to 2005 – Sierra Nevada Monitoring Avian Productivity and Survivorship (MAPS) stations (Siegel and Kaschube 2007); and 1968 to present – BBS routes throughout the Sierra Nevada (Sauer et al. 2007). These data indicate that yellow warblers continue to be present at these sample sites, and 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 Project-level Habitat Impacts to Bioregional-Scale Yellow Warbler Trend

The project alternatives would have nominal impacts to montane riparian habitat and would not have any measurable direct or indirect effects to the yellow warbler. Based on the small percentage of habitat affected, the STF Motorized Travel Management Project will not alter the existing habitat trend, nor will it lead to a change in the distribution of yellow warbler across the Sierra Nevada bioregion.

Wet Meadow Habitat (Pacific tree frog)

Habitat/Species Relationship

The Pacific tree 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 3 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: For this analysis the acres of wet meadow (WTM) habitat altered by the proposed alternatives is assessed. The amount of wet meadow altered or removed is calculated by determining the length of proposed routes that intersect wet meadows and multiplying by 8 feet (assumption: width of roads/trails equals 8 feet), and then converting to acres. Herbaceous cover, herbaceous plant height and meadow hydrology have the potential to be indirectly affected by motorized roads and trails. In general, degradation in meadow hydrologic condition caused by motorized roads and trails can lead to reduced herbaceous cover and height, as well as changes in meadow plant species composition.

Current Condition of the Habitat Factor(s) in the Project Area

The STF currently has 19,165 acres of wet meadow habitat. Wet meadow habitat condition varies across the Forest from early, mid to late seral ecological status condition. In general, wet meadows on the STF predominately fall in the mid ecological status category. Wet meadow herbaceous ground cover ranges from sparse to dense depending upon the ecological status and management activities. Herbaceous height classes range from short to tall (<12” to >12”), with the majority averaging over 12” in height. Hydrological condition of wet meadows generally correlates with meadow ecological status.

Direct and Indirect Effects to Habitat

Change in Class of Vehicles

The change in class of vehicle would not be expected to have any adverse impacts on wet meadow habitat. Alternatives 2 and 3 would not result in changes to vehicle class on any routes. Although there would be a significant amount of Maintenance Level 1 roads that would be converted to trails within the action alternatives (Alternative 1, 4, and 5), these changes would likely result in vegetation encroachment and narrowing of the exposed soil surface over the long-term. Vegetation encroachment and reductions in the exposed soil surface on routes within wet meadows would likely improve habitat conditions for the Pacific tree frog.

Wet Weather Seasonal Restrictions

Alternatives 1, 4, and 5 would impose wet weather seasonal restrictions on all native surfaced roads and motorized trails, where wet meadow habitat for the Pacific tree frog would be benefited through the reduction of erosion and sedimentation that could occur from wet season wheeled motorized use on routes, especially National Forest Transportation System roads and motorized trails that are within close proximity to wet meadow habitats. Alternatives 2 and 3 only impose wet seasonal weather restrictions where current Forest Orders are in place, therefore the Pacific tree frog habitat effectiveness would be minimally enhanced due to wet weather seasonal restrictions.

Prohibition of Cross Country Travel

Under Alternative 2, cross country travel would not be prohibited, affecting 19,165 acres of wet meadow habitat, potentially causing reduced habitat effectiveness through disturbance, avoidance, and abandonment for the Pacific tree frog. For the action alternatives, cross country travel would be prohibited on 19,165 wet meadow acres, where disturbance, avoidance, and abandonment to the Pacific tree frog would be reduced or eliminated.

Proposed Route Additions to NFTS

Table 11 displays the acres of wet meadow habitat directly and indirectly affected by the alternatives. Alternative 2 affects the greatest amount of montane riparian habitat, suitable for the Pacific tree frog, where continued use of motorized trails un-authorized for motorized use results in a loss or reduction in montane riparian habitat within 1.27 out of 19,165 acres of STF wet meadow habitat. All of the project

alternatives would result in nominal direct and indirect effects to wet meadow habitat that and would not measurably affect Pacific tree frogs.

Table 11. Proportion of Pacific Tree Frog MIS Wet Meadow habitat affected by of Proposed Motorized Trail Additions to the National Forest Transportation System

Pacific tree frog MIS Habitat	Wet Meadow Habitat Acres	Alt1	Alt 2 ¹	Alt 3	Alt 4	Alt 5
Acres Wet Meadow Habitat ²		0.52	1.27	0	0.8	0.01
Proportion of Sierra Nevada Habitat	66,000	0%	0%	0%	0%	0%
Proportion of Stanislaus NF Habitat	19,165	0%	0%	0%	0%	0%

¹Alternative 2 includes existing routes unauthorized to motorized public use under the continuance of cross country travel.

² The acres of wet meadow habitat affected by proposed route additions is calculated by multiplying the length of the route by the width of the route, and then converting to acres. The route width is assumed to be 8 feet. In some cases, route width will be less, and therefore, acres affected will be overestimated.

Cumulative Effects to Habitat in the Analysis Area

The lack of direct and indirect effects from the project alternatives precludes them from having any cumulative effects to the Pacific tree frog.

Cumulative Effects Conclusion

The lack of direct and indirect effects from the project alternatives precludes them from having any cumulative effects to the Pacific tree frog.

Summary of Pacific Tree Frog Status and Trend at the Bioregional Scale

The STF LRMP (as amended by the SNF MIS Amendment) requires bioregional-scale habitat and distribution population monitoring for the Pacific tree frog; hence, the wet meadow effects analysis for the STF Motorized Travel Management Project must be informed by both habitat and distribution population monitoring data. The sections below summarize the habitat and distribution population status and trend data for the Pacific tree frog. This information is drawn from the detailed information on habitat and population trends in the SNF Bioregional MIS Report (USDA Forest Service 2008), which is hereby incorporated by reference.

Habitat Status and Trend. There are currently 66,000 acres of wet meadow habitat on National Forest System lands in the Sierra Nevada. Within the last decade, the trend is stable.

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

Relationship of Project-Level Habitat Impacts to Bioregional-Scale Pacific Tree Frog Trend

The action alternatives would have nominal impacts to wet meadow habitat and would not have any measurable direct or indirect effects to the Pacific tree frog. Based on the small percentage of habitat affected, the STF Motorized Travel Management Project will not alter the existing habitat trend, nor will it lead to a change in the distribution of Pacific tree frog across the Sierra Nevada bioregion.

Early and Mid Seral Coniferous Forest Habitat (Mountain quail)

Habitat/Species Relationship

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

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

Habitat Factor(s) for the Analysis: The habitat factor used in this analysis for the action alternatives was the amount of early and mid seral coniferous forest habitat that fell within the 200-meter zone of influence of proposed motorized trail additions to the National Forest Transportation System (NFTS). For Alternative 2, no action, the amount of early and mid seral coniferous forest habitat that fell within the 200-meter zone of influence of existing motorized trails un-authorized for motorized use was determined. Each alternative was compared to determine the proportion of habitat directly and indirectly affected in relation to the amount of early and mid seral coniferous forest habitat available at the Sierra Nevada-wide scale.

Current Condition of the Habitat Factor(s) in the Project Area

The STF Motorized Travel Management project area boundary currently has 63,118 acres of early seral coniferous forest habitat and 411,697 acres of mid-seral coniferous forest habitat. Habitat is comprised of various age classes ranging from sparse seeding coniferous forest (1S) to pole size trees with dense canopy cover (3D) within the early seral habitat, and from small tree sizes with sparse cover (4S) to small tree sizes with dense cover (4D) in the mid-seral habitat type.

Direct and Indirect Effects to Habitat

Change in Class of Vehicles

Overall, the change in the class of vehicles would not likely have an effect to mountain quail habitat, since the change in class of vehicles on existing National Forest Transportation System (NFTS) roads will generally not affect or alter mountain quail habitat condition. In general, some smoothed surfaced roads may become rough surfaced roads through changed road maintenance. In addition, some existing motorized NFTS roads may receive changed maintenance resulting in higher vegetation density at the

road margins which would provide additional cover and/or foraging habitat. The resulting roadway condition would depend upon the amount and type of vegetation present and the amount of maintenance any given road receives.

Wet Weather Seasonal Restrictions

Alternatives 1, 4, and 5 would impose wet weather seasonal restrictions on all native surfaced roads and trails, where mountain quail habitat effectiveness would be benefited through the reduced disturbance and avoidance when motorized use on native surfaced roads and motorized trails that are seasonally restricted during the wet weather season. Alternatives 2 and 3 only impose wet seasonal weather restrictions where current Forest Orders are in place, therefore, the mountain quail habitat effectiveness would not be enhanced when native surfaced motorized roads and motorized trails are under wet weather seasonal restrictions.

Prohibition of Cross Country Travel

Under Alternative 2, cross country travel would not be prohibited, affecting 474,815 acres of early seral and mid seral coniferous forest habitats combined, potentially causing reduced habitat effectiveness through disturbance, avoidance, and abandonment for the mountain quail. For the action alternatives, cross country travel would be prohibited on 474,815 acres of early and mid seral coniferous forest acres, where disturbance, avoidance, abandonment would be reduced or eliminated.

Proposed Route Additions to NFTS

Tables 13 and 14 display the proportion of early and mid seral coniferous forest affected by the alternatives within a 200-meter zone of influence of motorized roads and trails. Based on the amount of early and mid seral coniferous forest habitat affected within a 200-meter zone of influence of motorized roads and trails, Alternative 2, no action, results in the greatest amount of both early seral (4,076 acres or 0.7% of Sierra Nevada-wide habitat) and mid seral (26,503 acres or 1% of Sierra Nevada-wide habitat) coniferous habitat affected. For the action alternatives, Alternative 4 results in the next greatest amount of both early and mid seral habitat affected by motorized trails added to the National Forest Transportation System (NFTS), which affects 1,495 acres (0.3% of Sierra Nevada-wide habitat) and 12,537 acres (0.5% of Sierra Nevada-wide habitat), respectively. The remaining action alternatives affect between 0 and 0.2% of early seral coniferous habitat and between 0.01% and 0.04% of mid seral coniferous habitat within the Sierra Nevada bioregion. For all the alternatives, the proportion of Sierra Nevada-wide early and mid seral habitat affected by motorized roads and trails results in a low risk to habitat security for mountain quail.

Table 13. Proportion of Mountain Quail Early Seral Coniferous Forest MIS habitat within a 200-meter “Zone of Influence” of Proposed Motorized Roads and Trails

Mountain Quail MIS Habitat	Total Habitat Acres ²	Alt 1	Alt 2 ¹	Alt 3	Alt 4	Alt 5
Acres Early Seral Coniferous Forest		1,328	4,076	0	1,495	314
Proportion of Sierra Nevada Habitat	546,000	0.2%	0.7%	0%	0.3%	0%

Mountain Quail MIS Habitat	Total Habitat Acres ²	Alt 1	Alt 2 ¹	Alt 3	Alt 4	Alt 5
Proportion of Stanislaus NF Habitat ²	63,118	2.1%	6.5%	0%	2.4%	0.5%

¹Alternative 1 includes existing routes unauthorized to motorized public use that would continue with the continuance of cross country travel.

²The Zone of Influence within 200 meters of motorized routes includes both NFS and non-NFS lands within the boundary of the Stanislaus NF due to the complex checkerboard pattern. The proportion of habitat affected likely over-represents the actual amount of habitat affected on NFS lands.

Table 14. Proportion of Mountain Quail Mid Seral Coniferous Forest MIS habitat within a 200-meter “Zone of Influence” of Proposed Routes

Mountain Quail MIS Habitat	Total Habitat Acres ²	Alt 1	Alt 2 ¹	Alt 3	Alt 4	Alt 5
Acres Mid Seral Coniferous		11,090	26,503	0	12,537	2,420
Proportion of Sierra Nevada Habitat	2,766,000	0.4%	1%	0%	0.5%	0.1%
Proportion of Stanislaus NF Habitat	411,697	2.7%	6.4%	0%	3%	0.6%

¹Alternative 1 includes existing routes unauthorized to motorized public use that would continue with the continuance of cross country travel.

²The Zone of Influence within 200 meters of motorized routes includes both NFS and non-NFS lands within the boundary of the Stanislaus NF due to the complex checkerboard pattern. The proportion of habitat affected likely over-represents the actual amount of habitat affected on NFS lands.

Cumulative Effects to Habitat in the Analysis Area

The spatial boundary for analyzing cumulative effects to mountain quail includes mid and early seral coniferous forest habitat within the boundary of the STF. Past and current cumulative effects to mountain quail include current and historic grazing of mountain quail habitat; loss of mid and early conifer forest habitat through catastrophic wildfires; timber and fuels management where cover and forage has been reduced or removed; urban development and expansion within a checkerboard land ownership pattern; and recreational activities including hunting, camping, and general recreation activities including all forms of motorized use including 4 wheeled drive vehicles, ATVs, and motorcycles.

The STF currently has 35 active livestock grazing allotments including both cattle and sheep. Stanislaus LRMP standards and guidelines, as amended by the Sierra Nevada Forest Plan Amendment (USFS 2004), for grazing are generally reducing the amount of grazing impacts on rangelands.

Appendix B (STF Travel Management DEIS) provides a list and description of past, present, and reasonably foreseeable projects on National Forest System and private lands within the STF boundary. Some, but not all, of these activities will contribute to impacts to the mountain quail habitat within the STF boundary. Between 2000 and 2008, vegetation/fuels thinning treatments were implemented on approximately 25,000 acres to reduce the potential for catastrophic wildfire. These treatments may result in short-term reduction of cover, though it is expected that greater amounts of habitat would be protected over the long-term from catastrophic wildfire. Furthermore, thinning treatments increases early successional species that provide ground cover and forage for mountain quail. Between 2000 and 2008, approximately 37,000 acres burned on the STF, some of which have removed mountain quail habitat, but over time, a large percentage of the burned areas quickly become revegetated by early successional species, providing increased amounts of forage.

Currently, there is a high demand for recreational use on the STF due to its close proximity to urban centers. The STF provides a wide variety of recreational experiences including developed and dispersed camping, hiking, fishing, hunting, wildlife viewing, winter sports activities (downhill skiing, cross country skiing, snowmobiling), summer OHV use, and a variety of other non-motorized use (equestrian use and mountain biking). Recreational use on the STF has significantly increased compared to the past 20 to 30 years. Because of the proximity to urban areas and population growth, increased recreational use on the STF is expected to continue to increase in the future including camping, hiking, fishing, wildlife viewing, hunting, and OHV use. Generally, the increase in recreational use on the STF has the potential to cause an increase in negative interactions between humans and mountain quail. Future increase in recreational use on the STF is expected, and therefore, increased disturbance to mountain quail would be expected, particularly during the summer months.

Cumulative Effects Conclusion

Alternative 2 adds the greatest amount to existing cumulative impacts by affecting 6.5% of early seral coniferous forest habitat and 6.4% of mid seral coniferous forest, totaling 12.9% of early and mid coniferous forest habitat on the STF. Alternative 5 follows, by affecting 7% early seral and 3% mid seral coniferous forest habitats, from proposed route additions within a 200 meter zone of influence. The action alternatives affect between less than 6% of both early and mid seral coniferous forest habitat combined. Based on the small percentage of habitat affected by the project alternatives, the STF Motorized Travel Management Project will not alter the existing trend in early and mid seral coniferous forest habitat important for the mountain quail.

Alternatives 1, 4, and 5 would impose wet weather seasonal restrictions on all native surfaced roads and trails, where mountain quail habitat effectiveness would be benefited through the reduced disturbance and avoidance when motorized use on native surfaced routes that are seasonally restricted during the wet weather season. The change in the class of vehicles would not affect mountain quail habitat for all of the proposed alternatives. Finally, all the action alternatives would prohibit motorized cross country travel on 474,815 acres of early and mid seral coniferous forest habitat, where mountain quail habitat effectiveness would be enhanced through reduced disturbance and avoidance.

Summary of Mountain Quail Status and Trend at the Bioregional Scale

The STF 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 STF Motorized Travel Management Project must be informed by both habitat and distribution population monitoring data. The sections below summarize the habitat and distribution population status and trend data for the mountain quail. This information is drawn from the detailed information on habitat and population trends in the SNF Bioregional MIS Report (USDA Forest Service 2008), which is hereby incorporated by reference.

Habitat Status and Trend. There are currently 546,000 acres of early seral and 2,766,000 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. Within the last decade, the trend for early seral is

slightly decreasing (from 9% to 5% of the acres on National Forest System lands) and the trend for mid seral is slightly increasing (from 21% to 25% of the acres on National Forest System lands).

Population Status and Trend. The mountain quail has been monitored in the Sierra Nevada at various sample locations by hunter survey, modeling, and breeding bird survey protocols, including California Department of Fish and Game hunter survey, modeling, and hunting regulations assessment (CDFG 2004a, CDFG 2004b) and 1968 to present – BBS routes throughout the Sierra Nevada (Sauer et al. 2007). These data indicate that mountain quail continue to be present across the Sierra Nevada, and current data at the rangewide, California, and Sierra Nevada scales indicate that the distribution of mountain quail populations in the Sierra Nevada is stable.

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

Alternative 2 of the STF Motorized Travel Management Project would affect less than 2% of early and mid seral coniferous habitat combined across the Sierra Nevada bioregion. The action alternatives would affect less than 1% of early and mid seral coniferous habitat combined across the Sierra Nevada bioregion. All of the project alternatives result in a low percentage of total early and mid seral habitat affected by motorized routes. Based upon the low amount of habitat affected, the STF Motorized Travel Management Project will not alter the existing trend in early seral and mid seral coniferous habitats, nor will it lead to a change in the distribution of mountain quail across the Sierra Nevada bioregion.

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

Habitat/Species Relationship

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

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

Habitat Factor(s) for the Analysis: The habitat factor used in this analysis for the action alternatives was the amount of late seral open canopy coniferous forest habitat that fell within the 200-meter zone of influence of proposed motorized trail additions to the National Forest Transportation System (NFTS). For Alternative 2, no action, the amount of late seral open canopy coniferous forest habitat that fell within the 200-meter zone of influence of existing motorized trails un-authorized for motorized use was determined. Each alternative was compared to determine the proportion of habitat directly and indirectly affected in relation to the amount of late seral coniferous open canopy forest habitat available at the Sierra Nevada-wide scale.

Current Condition of the Habitat Factor(s) in the Project Area

The project area (STF boundary NFS and non NFS lands) currently has 23,739 acres of late seral open canopy coniferous forest habitat. This habitat is comprised of size classes 5S (medium/large trees with sparse canopy cover) and 5 (medium/large trees with open canopy cover).

Direct and Indirect Effects to Habitat

Change in Class of Vehicles

Overall, the change in the class of vehicles would not likely have an effect or alter the condition of late seral open canopy coniferous forest habitat for the sooty grouse. In general, some smoothed surfaced roads may become rough surfaced roads through changed road maintenance, but this will not likely result in a measurable change in the condition or amount of sooty grouse habitat at the forest-wide scale. In addition, some existing motorized NFTS roads may receive different maintenance resulting in higher vegetation density at the road margins which would provide additional cover and/or foraging habitat in localized areas. The resulting roadway condition would depend upon the amount and type of vegetation present and the amount of maintenance any given road receives.

Wet Weather Seasonal Restrictions

Alternatives 1, 4, and 5 would impose wet weather seasonal restrictions on all native surfaced roads and motorized trails, where sooty grouse habitat effectiveness would be benefited through the reduced disturbance and avoidance when motorized use on native surfaced roads and motorized trails that are seasonally restricted during the wet weather season. Alternatives 2 and 3 only impose wet weather seasonal restrictions where current Forest Orders are in place, therefore, sooty grouse habitat effectiveness would not be enhanced when native surfaced motorized roads and motorized trails are under wet weather seasonal restrictions.

Prohibition of Cross Country Travel

Under Alternative 2, cross country travel would continue, potentially affecting 23,739 acres of sooty grouse habitat within late seral open canopy coniferous forest, potentially causing disturbance and reducing sooty grouse habitat effectiveness. For the action alternatives, cross country travel would be prohibited on 23,739 acres, where disturbance, avoidance, and disruption would be reduced or eliminated.

Route Additions to the NFTS

Based on the analysis conducted, Alternative 2 affects the most amounts of late seral open canopy coniferous forest with a 200-meter zone of influence of existing motorized trails unauthorized for motorized use, which would continue under cross country travel. Alternative 2 affects 1,924 acres (2.6% of Sierra Nevada-wide habitat) (Table 15). Alternative 4 results in 853 acres (1.1%) of late seral open canopy coniferous forest affected by proposed motorized trail additions to the NFTS. Alternatives 1 and 5 affect 1% or less of Sierra Nevada-wide habitat. Alternative 3 would not add any routes to the NFTS and would not affect late seral open canopy coniferous forest habitat.

Table 15. Prohibition of Cross Country Travel and Proportion of Sooty (Blue) Grouse Late Seral Open Canopy Coniferous Forest MIS habitat within a 200-meter “Zone of Influence” of Proposed Route Additions

Sooty Grouse MIS Habitat		Alt 1	Alt 2 ¹	Alt 3	Alt 4	Alt 5
Prohibition of Cross Country Travel within Late Seral Open Canopy Coniferous Forest Sooty Grouse Habitat						
Acres of sooty grouse habitat where cross country travel is prohibited	23,739 acres	0	23,739	23,739	23,739	23,739
Acres sooty grouse habitat where cross country travel would not be prohibited	STF habitat acres	23,739	0	0	0	0
Proportion of Sooty (Blue) Grouse Late Seral Open Canopy Coniferous Forest MIS habitat within 200-meter “Zone of Influence” of Proposed Route Additions						
Acres Sooty Grouse Habitat - Late Seral Open Coniferous Forest		723	1924	0	853	98
Proportion of Sierra Nevada Habitat	75,000	1%	2.6%	0%	1.1%	0.1%
Proportion of Stanislaus NF Habitat ²	23,739	3%	8.1%	0%	3.6%	0.4%

¹ Alternative 1 includes existing routes unauthorized to motorized public use that would continue with the continuance of cross country travel.

² The Zone of Influence within 200 meters of motorized routes includes both NFS and non-NFS lands within the boundary of the Stanislaus NF due to the complex checkerboard pattern. The proportion of habitat affected likely over-represents the actual amount of habitat affected on NFS lands.

Cumulative Effects to Habitat in the Analysis Area

The spatial boundary for analyzing cumulative effects to sooty grouse includes all late seral open canopy coniferous forest habitats within the boundary of the STF. Past and current cumulative effects to sooty grouse include current and historic grazing of sooty grouse habitat; loss of habitat through catastrophic wildfires; timber and fuels management where cover and forage has been reduced or removed; urban development and expansion within a checkerboard land ownership pattern; and recreational activities including hunting, camping, and general recreation activities including all forms of motorized use including 4 wheeled drive vehicles, ATVs, and motorcycles.

The STF currently has 35 active livestock grazing allotments including both cattle and sheep. Stanislaus LRMP standards and guidelines, as amended by the Sierra Nevada Forest Plan Amendment (USFS 2004), for grazing are generally reducing the amount of grazing impacts on rangelands.

Appendix B (STF Travel Management DEIS) provides a list and description of past, present, and reasonably foreseeable projects on National Forest System and private lands within the STF boundary. Some, but not all, of these activities will contribute to impacts to the sooty grouse within the STF boundary. Between 2000 and 2008, vegetation/fuels thinning treatments were implemented on approximately 25,000 acres to reduce the potential for catastrophic wildfire. These treatments may not have adverse effects on habitat for sooty grouse because they would return closed canopy coniferous forests to more of an open structure and would reduce the risk of catastrophic wildfire over the long-term. Furthermore, many recent, current, and future vegetation and fuels reduction projects are also improving sooty grouse habitat within aspen habitats by removing conifers that have been allowed to unnaturally encroach due to historic fire suppression efforts. Between 2000 and 2008, approximately 37,000 acres burned on the STF, some of which have removed sooty grouse habitat, but over time, a large percentage of the burned areas quickly become revegetated, providing structural diversity over the long-term.

Currently, there is a high demand for recreational use on the STF due to its close proximity to urban centers. The STF provides a wide variety of recreational experiences including developed and dispersed camping, hiking, fishing, hunting, wildlife viewing, winter sports activities (downhill skiing, cross country skiing, snowmobiling), summer OHV use, and a variety of other non-motorized use (equestrian use and mountain biking). Recreational use on the STF has significantly increased compared to the past 20 to 30 years. Because of the proximity to urban areas and population growth, increased recreational use on the STF is expected to continue to increase in the future including camping, hiking, fishing, wildlife viewing, hunting, and OHV use. Future increases in recreational use on the STF are expected, and therefore, increased disturbance, displacement, avoidance, or illegal poaching to sooty grouse could be expected, particularly during the summer months.

Cumulative Effects Conclusion

Alternative 2 poses the greatest cumulative effects to sooty grouse MIS late seral open canopy coniferous habitat on the STF where 8.1% of sooty grouse habitat would be affected within a 200-meter zone of influence of existing motorized trails un-authorized for motorized use. Alternatives 1 and 4 would cumulatively affect an additional 3% and 3.6%, respectively, of the STF late seral open canopy coniferous habitat. Alternative 3 does not directly or indirectly affect sooty grouse habitat, and therefore no cumulative impacts will be added under this alternative. The alternatives will not alter existing trend in late seral open canopy coniferous forest habitat.

The change in the class of vehicles will have no effect to sooty grouse habitat, since the change in class of vehicles on existing motorized routes will generally not alter sooty grouse habitat condition. Wet weather seasonal restrictions under Alternatives 1, 4, and 5 on all native surfaced roads and motorized trails would benefit sooty grouse habitat effectiveness through the reduced disturbance and avoidance when motorized use on native surfaced roads and motorized trails are seasonally restricted. Finally cross country travel would be prohibited on 23,739 acres of sooty grouse habitat with the implementation of the action alternatives where disturbance, avoidance, and abandonment by sooty grouse would be reduced or eliminated. Alternative 2 would have the greatest cumulative impact to sooty grouse habitats, where cross country travel would not be prohibited, affecting 23,739 acres of late seral open canopy coniferous forest habitat.

Summary of Sooty Grouse Status and Trend at the Bioregional Scale

The STF LRMP (as amended by the SNF MIS Amendment) requires bioregional-scale habitat and distribution population monitoring for the sooty grouse; hence, the late seral open canopy coniferous forest effects analysis for the STF Motorized Travel Management Project must be informed by both habitat and distribution population monitoring data. The sections below summarize the habitat and distribution population status and trend data for the sooty grouse. This information is drawn from the detailed information on habitat and population trends in the SNF Bioregional MIS Report (USDA Forest Service 2008), which is hereby incorporated by reference.

Habitat Status and Trend. There is currently 75,000 acres of late seral open canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, red fir, and eastside pine) habitat on National

Forest System lands in the Sierra Nevada. The trend is slightly decreasing (from 3% to 1% within the last decade on National Forest System lands).

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

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

Under Alternative 2, approximately 2.6% of late seral open canopy coniferous forest will be directly or indirectly affected across the bioregion. The action alternatives would impact 1.1% or less of sooty grouse habitat within the bioregion. Therefore, all of the project alternatives would result in a low risk to sooty grouse security habitat and the STF Motorized Travel Management Project action alternatives would not alter the existing trend in the habitat, nor will it 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, Sierran mixed conifer, white fir, and red fir) habitat in the Sierra Nevada. This habitat is comprised primarily of medium/large trees (equal to or greater than 24 inches dbh) with canopy closures above 40% within ponderosa pine, Sierran mixed conifer, white fir, and red fir coniferous forests, and multi-layered trees within ponderosa pine and Sierran mixed conifer forests. The California spotted owl is strongly associated with forests that have a complex multi-layered structure, large-diameter trees, and high canopy closure (CDFG 2005, USFWS 2006). It uses dense, multi-layered canopy cover for roost seclusion; roost selection appears to be related closely to thermoregulatory needs, and the species appears to be intolerant of high temperatures (CDFG 2005). Mature, multi-layered forest stands are required for breeding (Ibid). The mixed-conifer forest type is the predominant type used by spotted owls in the Sierra Nevada: about 80 percent of known sites are found in mixed-conifer forest, with 10 percent in red fir forest (USDA Forest Service 2001).

American Marten. The American marten was selected as an MIS for late seral closed canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, and red fir) habitat in the Sierra Nevada. This habitat is comprised primarily of medium/large trees (equal to or greater than 24 inches dbh) with canopy closures above 40% within ponderosa pine, Sierran mixed conifer, white fir, and red fir

coniferous forests, and multi-layered trees within ponderosa pine and Sierran mixed conifer forests. Martens prefer coniferous forest habitat with large diameter trees and snags, large down logs, moderate-to-high canopy closure, and an interspersed of riparian areas and meadows. Important habitat attributes are: vegetative diversity, with predominately mature forest; snags; dispersal cover; and large woody debris (Allen 1987). Key components for westside and eastside marten habitat can be found in the Sierra Nevada Forest Plan Amendment FEIS (USDA Forest Service 2001), Volume 3, Chapter 3, part 4.4, pages 20-21.

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

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

Habitat Factor(s) for the Analysis: To assess the effects on late seral closed canopy coniferous forest habitat (California spotted owl, American marten, and northern flying squirrel) from action alternatives, the proportion of late seral closed canopy coniferous forest habitat that fell habitat within a 200-meter zone of influence of proposed motorized trail additions to the National Forest Transportation System (NFTS) was assessed. For Alternative 2, the proportion of late seral closed canopy coniferous forest that fell within a 200-meter influence of existing motorized trails un-authorized for motorized trails was determined.

Current Condition of the Habitat Factor(s) in the Project Area

Within the STF Travel Management Project area, there are currently 168,575 acres of late seral closed canopy coniferous forest habitat [CWHR ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR)], within tree size 5 (canopy closures M and D) and tree size 6 (multilayered).

Direct and Indirect Effects to Habitat

Change in Class of Vehicles

Overall, the change in the class of vehicles would not likely have an effect or alter the condition of late seral closed canopy coniferous forest habitat for the American marten, California spotted owl, or the northern flying squirrel. In general, some smoothed surfaced roads may become rough surfaced roads through changed road maintenance, but this will not likely result in a measurable change in the condition or amount of late seral closed canopy coniferous forest habitat at the forest-wide scale. In addition, some existing motorized NFTS roads may receive different maintenance resulting in higher vegetation density at the road margins from resulting vegetation growth, which would provide additional vegetation cover and/or foraging habitat in localized areas. The resulting roadway condition would depend upon the amount and type of vegetation present and the amount of maintenance any given road receives.

Wet Weather Seasonal Restrictions

Alternatives 1, 4, and 5 would impose wet weather seasonal restrictions on all native surfaced roads and motorized trails, where late seral closed canopy coniferous forest habitat effectiveness for the California spotted owl, American marten, and the northern flying squirrel would be benefited through the reduced disturbance and avoidance when motorized use on native surfaced roads and motorized trails are seasonally restricted during the wet weather season. Alternatives 2 and 3 only impose wet seasonal weather restrictions where current Forest Orders are in place, therefore, late seral close canopy habitat effectiveness would be only minimally enhanced when native surfaced motorized roads and motorized trails are under wet weather seasonal restrictions.

Prohibition of Cross Country Travel

Under Alternative 2, cross country travel would not be prohibited, potentially affecting 168,575 acres of late seral closed canopy coniferous forest habitat, potentially causing disturbance and habitat effectiveness for the American marten, California spotted owl, and the northern flying squirrel. For the action alternatives, cross country travel would be prohibited on 168,575 acres, where disturbance, avoidance, and abandonment would be reduced or eliminated.

Proposed Route Additions to the NFTS

Based on the analysis conducted, Alternative 2 directly and indirectly affects the greatest amount of late seral closed canopy coniferous forest with a 200-meter zone of influence of existing motorized trails unauthorized for motorized use, which would not be prohibited under cross country travel. Alternative 2 affects 15,335 acres (1.5% of Sierra Nevada-wide habitat) (Table 16), with the potential to disturb, cause avoidance, and abandonment of California spotted owl, American marten, and northern flying squirrel. Alternatives 1, 4, and 5 affect less than 1% of Sierra Nevada-wide late seral closed canopy habitat. Alternative 3 would not add any routes to the NFTS and would not affect late seral closed canopy coniferous forest habitat. The STF Motorized Travel Management Project will not result in a direct or indirect change in the amount of late seral closed canopy coniferous forest habitat affected by motorized roads and trails for all the alternatives. Habitat effectiveness for these species would be maintained at current levels.

Table 16. Prohibition of Cross Country Travel and Proportion of Late Seral Closed Canopy Coniferous Forest MIS habitat within a 200-meter “Zone of Influence” of Proposed Route Additions

Late Seral Closed Canopy Coniferous Forest MIS Habitat	Alt 1	Alt 2 ¹	Alt 3	Alt 4	Alt 5
Prohibition of Cross Country Travel within Stanislaus NF project area					
Acres of late seral closed canopy coniferous forest habitat where cross country travel is prohibited	0	168,575	168,575	168,575	168,575
Acres of late seral closed canopy coniferous forest habitat where cross country travel would not be prohibited	168,575	0	0	0	0
Proportion of Late Seral Closed Canopy Coniferous Forest MIS habitat within 200-meter “Zone of Influence” of Proposed Route Additions					

Late Seral Closed Canopy Coniferous Forest MIS Habitat		Alt 1	Alt 2 ¹	Alt 3	Alt 4	Alt 5
Acres Late Seral Closed Coniferous Forest ²		5,515	15,335	0	6,343	617
Proportion of Sierra Nevada Habitat	994,000	0.6%	1.5%	0%	0.6%	0.1%
Proportion of Stanislaus NF Habitat ²	168,575	3.3%	9.1%	0%	3.8%	0.4%

¹ Alternative 2 includes existing routes unauthorized to motorized public use that would continue with the continuance of cross country travel.

² The Zone of Influence within 200 meters of motorized routes includes both NFS and non-NFS lands within the boundary of the Stanislaus NF due to the complex checkerboard pattern. The proportion of habitat affected likely over-represents the actual amount of habitat affected on NFS lands.

Cumulative Effects to Habitat in the Analysis Area

The spatial boundary for analyzing cumulative effects to California spotted owl, American marten, and northern flying squirrel includes all late seral closed canopy coniferous forest habitats within the boundary of the STF. Past and current cumulative effects to late seral closed canopy coniferous forest habitat include loss of habitat through catastrophic wildfires; timber and fuels management where cover and forage has been reduced or removed; urban development and expansion within a checkerboard land ownership pattern; and recreational activities including hunting, camping, and general recreation activities including all forms of motorized use including 4 wheeled drive vehicles, ATVs, and motorcycles.

Appendix B (STF Travel Management DEIS) provides a list and description of past, present, and reasonably foreseeable projects on National Forest System and private lands within the STF boundary. Some, but not all, of these activities will contribute to impacts to the late seral closed canopy coniferous forests within the STF boundary. Between 2000 and 2008, vegetation/fuels thinning treatments were implemented on approximately 25,000 acres to reduce the potential for catastrophic wildfire. These treatments would likely have some adverse effects on habitat for late seral closed canopy species; these effects may include, but are not limited to reductions of overhead cover and reductions of downed woody debris. Over the long-term these areas would be exposed to a decreased risk of catastrophic wildfire. Between 2000 and 2008, approximately 37,000 acres burned on the STF, some of which have removed late seral closed canopy habitats.

Currently, there is a high demand for recreational use on the STF due to its close proximity to urban centers. The STF provides a wide variety of recreational experiences including developed and dispersed camping, hiking, fishing, hunting, wildlife viewing, winter sports activities (downhill skiing, cross country skiing, snowmobiling), summer OHV use, and a variety of other non-motorized use (equestrian use and mountain biking). Recreational use on the STF has significantly increased compared to the past 20 to 30 years. Because of the proximity to urban areas and population growth, increased recreational use on the STF is expected to continue to increase in the future including camping, hiking, fishing, wildlife viewing, hunting, and OHV use. Future increases in recreational use on the STF are expected, and therefore, increased disturbance, displacement, and avoidance could be expected, particularly during the summer months.

Cumulative Effects Conclusion

Based on the analysis conducted, Alternative 2 directly, indirectly, and cumulatively affects the greatest amount of late seral closed canopy coniferous forest with a 200-meter zone of influence of existing motorized trails un-authorized for motorized use, which would continue without prohibiting cross country travel. Alternative 2 reduces habitat effectiveness by 9.1% on the STF, with the potential to disturb, cause avoidance, and abandonment of California spotted owl, American marten, and northern flying squirrel. Since Alternative 2 would not prohibit cross-country travel and route proliferation would continue to occur within the STF boundary, Alternative 2 could cause a downward trend in habitat effectiveness for these species.

Alternatives 1, 4, and 5 affect approximately 3.3%, 3.8%, and 0.4%, respectively, of late seral closed canopy coniferous forest habitat on the STF. Alternative 3 would not add any routes to the NFTS and would not affect late seral closed canopy coniferous forest habitats. The STF Motorized Travel Management Project action alternatives will not result in a direct or indirect change in the amount of late seral closed canopy coniferous forest habitat affected by motorized routes for all the alternatives. Therefore, habitat effectiveness for these species would be maintained at current levels.

For all the alternatives, the change in the class of vehicles would not directly, indirectly, or cumulatively affect late seral closed canopy coniferous forest habitats or their habitat effectiveness. Wet weather seasonal restrictions on all native surfaced roads and motorized trails under Alternatives 1, 4, and 5 would enhance late seral closed canopy coniferous forest habitat effectiveness for the California spotted owl, American marten, and the northern flying squirrel through the reduced disturbance, avoidance, and abandonment. Finally, the prohibition of motorized cross country travel on 168,575 acres of late seral habitats would benefit these species over time, thereby preventing the continued cumulative increase in motorized route proliferation in the future.

Summary of Status and Trend at the Bioregional Scale

California spotted owl, American marten and Northern flying squirrel. The STF 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, Sierran mixed conifer, white fir, and red fir) habitat effects analysis for the STNF Motorized Travel Management Project must be informed by both habitat and distribution population monitoring data. The sections below summarize the habitat and distribution population status and trend data. This information is drawn from the detailed information on habitat and population trends in the SNF Bioregional MIS Report (USDA Forest Service 2008), which is hereby incorporated by reference.

Habitat Status and Trend. There is currently 994,000 acres of late seral closed canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, and red fir) habitat on National Forest System lands in the Sierra Nevada. The trend is slightly increasing (from 7% to 9% within the last decade on National Forest System lands).

Population Status and Trend - California spotted owl. California spotted owl has been monitored in California and throughout the Sierra Nevada through general surveys, monitoring of nests and

territorial birds, and demography studies (Verner et al. 1992; USDA Forest Service 2001, 2004, 2006; USFWS 2006; Sierra Nevada Research Center 2007). Current data at the rangewide, California, and Sierra Nevada scales indicate that, although there may be localized declines in population trend [e.g., localized decreases in “lambda” (estimated annual rate of population change)], the distribution of California spotted owl populations in the Sierra Nevada is stable.

Population Status and Trend - American marten. American marten has been monitored throughout the Sierra Nevada as part of general surveys and studies from 1996-2002 (Zielinski et al. 2005). Since 2002, the American marten has been monitored on the Sierra Nevada forests as part of the Sierra Nevada Forest Plan Amendment (SNFPA) monitoring plan (USDA Forest Service 2005, 2006, 2007b). Current data at the range-wide, California, and Sierra Nevada scales indicate that, although marten appear to be distributed throughout their historic range, their distribution has become fragmented in the southern Cascades and northern Sierra Nevada, particularly in Plumas County. The distribution appears to be continuous across high-elevation forests from Placer County south through the southern end of the Sierra Nevada.

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

Relationship of Project-Level Habitat Impacts to Bioregional-Scale Trends

California spotted owl. Based on the small proportion of late seral closed canopy coniferous forest habitat that is directly, indirectly and cumulatively affected (0% to 3% of Sierra Nevada habitat) by the alternatives, the STF Motorized Travel Management Project will not alter existing trend in the habitat, nor will it lead to a change in the distribution of California spotted owl across the Sierra Nevada bioregion.

American marten. Based on the small proportion of late seral closed canopy coniferous forest habitat that is directly, indirectly and cumulatively affected (0% to 3% of Sierra Nevada habitat) by the alternatives within a 200-meter zone of influence of proposed motorized route additions, the STF Motorized Travel Management Project will not alter existing trend in the habitat, nor will it lead to a change in the distribution of American marten across the Sierra Nevada bioregion.

Northern flying squirrel. Based on the small proportion of late seral closed canopy coniferous forest habitat that is directly, indirectly, and cumulatively affected (0 to 3% of Sierra Nevada habitat) by project alternatives, the STF Motorized Travel Management Project will not alter existing trend in the habitat, nor will it lead to a change in the distribution of the northern flying squirrel across the Sierra Nevada bioregion.

References Cited

- Bland, J. D. 2002. Surveys of Mount Pinos Sooty grouse in Kern County, California, Spring 2002. Unpubl. report, Wildl. Mgmt. Div., Calif. Dept. Fish & Game, 1416 Ninth St., Sacramento, CA 95814.
- Bland, J.D. 1993. Forest grouse and mountain quail investigations: A final report for work completed during the summer of 1992. Unpubl. report, Wildl. Mgmt. Div., Calif. Dept. Fish & Game, 1416 Ninth St., Sacramento, CA.
- Bland, J.D. 1997. Biogeography and conservation of sooty grouse *Dendragapus obscurus* in California. *Wildlife Biology* 3(3/4):270.
- Bland, J.D. 2006. Features of the Forest Canopy at Sierra Sooty Grouse Courtship Sites, Summer 2006. CDFG Contract No. S0680003.
- Brown, C. 2008. Summary of Pacific Treefrog (*Pseudacris regilla*) Occupancy in the Sierra Nevada within the range of the Mountain Yellow-legged Frog (*Rana muscosa*). Sierra Nevada Amphibian Monitoring Program draft assessment, January 18, 2008.
- Burnett, R. D., and D. L. Humple. 2003. Songbird monitoring in the Lassen National Forest: Results from the 2002 field season with summaries of 6 years of data (1997-2002). PRBO Conservation Science Contribution Number 1069. 36pp.
- Burnett, R.D., D.L. Humple, T.Gardali, and M.Rogner. 2005. Avian monitoring in Lassen National Forest 2004 Annual Report. PRBO Conservation Science Contribution Number 1242. 96pp.
- CDFG (California Department of Fish and Game). 1998. An Assessment of Mule and Black-tailed Deer Habitats and Populations in California. Report to the Fish and Game Commission. February 1998. 57pp.
- CDFG (California Department of Fish and Game). 2004a. Resident Game Bird Hunting Final Environmental Document. August 5, 2004. State of California, The Resources Agency, Department of Fish and Game. 182 pp + appendices.
- CDFG (California Department of Fish and Game). 2004b. Report of the 2004 Game Take Hunter Survey. State of California, The Resources Agency, Department of Fish and Game. 20pp.
- CDFG (California Department of Fish and Game). 2005. California Department of Fish and Game and California Interagency Wildlife Task Group. California Wildlife Habitat Relationships (CWHR) version 8.1. personal computer program. Sacramento, California. On-Line version. <http://www.dfg.ca.gov/biogeodata/cwhr/cawildlife.asp>. (Accessed: January 3, 2008).
- CDFG (California Department of Fish and Game). 2007. Deer Hunting Final Environmental Document, April 10, 2007. State of California, The Resources Agency, Department of Fish and Game. 80pp + appendices.

- Connelly, J. W., M. A. Schroeder, and S. J. Stiver. 2004. Conservation Assessment of Greater Sage-grouse and Sagebrush Habitats. Western Association of Fish and Wildlife Agencies. Unpublished Report. Cheyenne, Wyoming.
- Connelly, J. W., S. T. Knick, M. A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines to manage sage grouse populations and their habitats. *Wildlife Society Bulletin* 28(4):967-985.
- CPIF (California Partners in Flight). 2002.
<http://www.prbo.org/calpif/htmldocs/mapdocs/conifer/2002/fospmap2002.html>
<http://www.prbo.org/calpif/htmldocs/mapdocs/conifer/2002/bbwomap2002.html>
- CPIF (California Partners in Flight). 2004.
<http://www.prbo.org/calpif/htmldocs/mapdocs/riparian/2004/ywarmap2004.htm>
- Frazier J.W., K.B. Roby, J.A. Boberg, K. Kenfield, J.B. Reiner, D.L. Azuma, J.L. Furnish, B.P. Staab, S.L. Grant. 2005. Stream Condition Inventory Technical Guide. USDA Forest Service, Pacific Southwest Region - Ecosystem Conservation Staff. Vallejo, CA. 111 pp.
- Hawkins, C.P. 2003. Development, evaluation, and application of a RIVPACS-type predictive model for assessing the biological condition of streams in Region 5 (California) national forests. Completion Report. Western center for Monitoring and Assessment of Fresh Water Ecosystems. Utah State University. Logan, Utah 23 pp.
- Heath, S.K., and G. Ballard. 2003. Bird species composition, phenology, nesting substrate, and productivity for the Owens Valley alluvial fan, Eastern Sierra Nevada, California 1998-2002. *Great Basin Birds* 6(1):18-35.
- Hughes, R.M. and D.P. Larsen. 1987. Ecoregions: an approach to surface water protection. *Journal of the Water Pollution Control Federation* 60:486-493.
- Hutto, R.L. 1995. Composition of bird communities following stand-replacement fires in Northern Rocky Mountain (U.S.A.) conifer forests. *Conservation Biology* 9(5):1041-1058.
- Hutto, R.L., and S.M. Gallo. 2006. The effects of postfire salvage logging on cavity-nesting birds. *The Condor* 108:817-831.
- Karr, J.R., K.D. Fausch, P.L. Angermeier, P.R. Yant, and I.J. Schlosser. 1986. Assessing biological integrity in running waters: a method and its rationale. Illinois Natural History Survey Special Publication 5, Champaign, IL.
- Kotliar, N.B., S.J. Hejl, R.L. Hutto, V.A. Saab, C.P. Melcher, and M.E. McFadzen. 2002. Effects of fire and post-fire salvage logging on avian communities in conifer-dominated forests of the western United States. *Studies in Avian Biology* No.25:49-64.
- Lake Tahoe Basin Management Unit. 2007. Lake Tahoe Basin Management Unit Multi Species Inventory and Monitoring: A Foundation for Comprehensive Biological Status and Trend Monitoring in the Lake Tahoe Basin. Draft Report.

- Mayer, K.E., and W.F. Laudenslayer, eds. 1988. A Guide to Wildlife Habitats of California. California Department of Forestry and Fire Protection, Sacramento, CA. 166pp.
- NatureServe. 2007. NatureServe Explorer: An online encyclopedia of life [web application]. Version 6.2. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer> (Accessed: January 2, 2008).
- Resh, V.H. and D.G. Price. 1984. Sequential sampling: a cost-effective approach for monitoring benthic macroinvertebrates in environmental impact assessments. *Environmental Management* 8:75-80.
- Resh, V.H. and D.M. Rosenberg. 1989. Spatial-temporal variability and the study of aquatic insects. *Canadian Entomologist* 121:941-963.
- Sauer, J. R., J. E. Hines, and J. Fallon. 2007. The North American Breeding Bird Survey, Results and Analysis 1966 - 2006. Version 10.13.2007. *USGS Patuxent Wildlife Research Center*, Laurel, MD.
- Siegel, R.B. and D.F. DeSante. 1999. Version 1.0. The draft avian conservation plan for the Sierra Nevada Bioregion: conservation priorities and strategies for safeguarding Sierra bird populations. Institute for Bird Populations report to California Partners in Flight. Available on-line: <http://www.prbo.org/calpif/htmldocs/sierra.html>.
- Siegel, R.B. and D.R. Kaschube. 2007. Landbird Monitoring Results from the Monitoring Avian Productivity and Survivorship (MAPS) Program in the Sierra Nevada. Final report in fulfillment of Forest Service Agreement No. 05-PA-11052007-141. The Institute for Bird Populations. February 13, 2007. 33pp.
- Sierra Nevada Research Center. 2007. Plumas Lassen Study 2006 Annual Report. USDA Forest Service, Pacific Southwest Research Station, Sierra Nevada Research Center, Davis, California. 182pp.
- Smucker, K.M., R.L. Hutto, B.M. Steele. 2005. Changes in bird abundance after wildfire: importance of fire severity and time since fire. *Ecological applications* 15(5):1535-1549.
- USDA Forest Service. 2001. Sierra Nevada Forest Plan Amendment Final Environmental Impact Statement. Forest Service, Pacific Southwest Region. January 2001.
- USDA Forest Service. 2004. Sierra Nevada Forest Plan Amendment Final Environmental Impact Statement. Forest Service, Pacific Southwest Region. 2004.
- USDA Forest Service. 2005. Sierra Nevada forest plan accomplishment monitoring report for 2004. USDA Forest Service, Pacific Southwest Region R5-MR-026. 8pp.
- USDA Forest Service. 2006. Sierra Nevada forest plan accomplishment monitoring report for 2005. USDA Forest Service, Pacific Southwest Region R5-MR-000. 12pp.
- USDA Forest Service. 2007a. Record of Decision, Sierra Nevada Forests Management Indicator Species Amendment. U.S. Forest Service, Pacific Southwest Region. December, 2007. 18pp.
- USDA Forest Service. 2007b. Sierra Nevada forest plan accomplishment monitoring report for 2006. USDA Forest Service, Pacific Southwest Region R5-MR-149. 12pp.

- USDA Forest Service. 2008. Sierra Nevada Forests Bioregional Management Indicator Species (MIS) Report: Life history and analysis of Management Indicator Species of the 10 Sierra Nevada National Forests: Eldorado, Inyo, Lassen, Modoc, Plumas, Sequoia, Sierra, Stanislaus, and Tahoe National Forests and the Lake Tahoe Basin Management Unit. Pacific Southwest Region, Vallejo, CA. January 2008.
- USDA Forest Service. 2008. Tahoe NF Motorized Travel Management Project DEIS.
- USFWS. 2005. Endangered and Threatened Wildlife and Plants; 12-month Finding for Petitions to List the Greater Sage-Grouse as Threatened or Endangered; Proposed Rule. Department of the Interior, Fish and Wildlife Service, 50 CFR Part 17. Federal Register: January 12, 2005, Volume 70, Number 8, pages 2244-2282.
- USFWS. 2006. Endangered and Threatened Wildlife and Plants; 12-month Finding for a Petition to List the California **Spotted Owl** (*Strix occidentalis occidentalis*) as Threatened or Endangered. Department of the Interior, Fish and Wildlife Service, 50 CFR Part 17. Federal Register: May 24, 2006, Volume 71, Number 100, pages 29886-29908.
- Verner, J., K.S. McKelvey, B.R. Noon, R.J. Gutierrez, G.I. Gould, Jr., and T.W. Beck., tech. coord. 1992. The California Spotted Owl: a technical assessment of its current status. Gen. Tech. Rep. PSW-GTR-133, US Forest Service, Albany, CA.
- Zielinski W.J., Kucera, T.E. (Eds). 1995. American Marten, Fisher, Lynx, and Wolverine: Survey Methods for their Detection. USDA Forest Service, Pacific Southwest Research Station, General Technology Report PSW-GTR-157.