Management Indicator Species Review

Public Wheeled Motorized Travel Management

Six Rivers National Forest
Mad River and Lower Trinity Ranger District

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Introduction

Under the National Forest Management Act (NFMA), the Forest Service is directed to "provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives." (P.L. 94-588, Sec 6 (g) (3) (B)). The 1982 regulations implementing NFMA require that "Fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area." (36 CFR 219.19) Management Indicator Species (MIS) is a concept used by the agency to serve as a barometer for species viability at the Forest level.

The Six Rivers National Forest Land and Resource Management Plan (LRMP) uses Management Indicator Species (MIS) to assess potential effects of management activities on the various habitats and habitat assemblages with which these species are associated. There are seven habitat assemblages containing 41 fish and wildlife species on the Forest (LRMP IV-97). Detailed descriptions of the Travel Management alternatives are found in the Travel Management Environmental Impact Statement.

For the analysis associated with this project, specific MIS were addressed based on their potential to occur within the Travel Management planning. Table 1 lists the MIS and assemblages occurring on the Six Rivers National Forest, and those known or thought to occur within the planning area based on habitat suitability, survey results, or incidental sighting records. Habitat suitability evaluations were made using the California Wildlife Habitat Relationships System, Version 8.0 software, developed by the California Department of Fish and Game and local GIS vegetative layers.

Table 1 – Management Indicator Species and Habitat Assemblages – Mad River and Lower Trinity Ranger Districts, Six Rivers NF

MIS Species and Habitat Assemblages	Suitable habitat occurs within the project area and may be directly and indirectly affected by project activities.	Habitat is in or adjacent to the project areas, but is not directly or indirectly affected by the project	Habitat is not in or adjacent to the project area and is not directly affected by the project
Individual Species			
Northern spotted owl	X		
Pileated woodpecker	X		
Black bear	X		
American marten	X		
Fisher	X		
Black-tailed deer	X		

MIS Species and Habitat Assemblages	Suitable habitat occurs within the project area and may be directly and indirectly affected by project activities.	Habitat is in or adjacent to the project areas, but is not directly or indirectly affected by the project	Habitat is not in or adjacent to the project area and is not directly affected by the project
Bog/Seep/Spring/Wet Meadow Assemblage			
Southern torrent salamander	X		
Marsh/ Lake/ Pond/ Assemblage			
Northern red-legged frog	X		
Western pond turtle	X		
Wood duck	X		
River/Stream/Creek Assemblage			
Cutthroat trout			X
Rainbow trout	X		
Steelhead / Summer Steelhead	X		
Tailed frog	X		
Common merganser	X		
Ruffed grouse	X		
Winter wren	X		
American dipper	X		
Yellow-breasted chat	X		
Tanoak/Madrone Assemblage			
Hammond's flycatcher	X		
Western tanager	X		
Black-headed grosbeak	X		

MIS Species and Habitat Assemblages	Suitable habitat occurs within the project area and may be directly and indirectly affected by project activities.	Habitat is in or adjacent to the project areas, but is not directly or indirectly affected by the project	Habitat is not in or adjacent to the project area and is not directly affected by the project
Snag Assemblage			
Flamulated owl	X		
Western screech owl	X		
Red-breasted sapsucker	X		
Downy woodpecker	X		
Hairy woodpecker	X		
White-headed woodpecker	X		
Vaux's swift	X		
Brown creeper	X		
Western bluebird	X		
Douglas squirrel	X		
Down Woody Debris Assemblage			
Arboreal salamander	X		
Clouded salamander			X
Blue grouse	X		
Dusky-footed wood rat	X		
Western fence lizard	X		
Black Oak/White Oak Assemblage			
Acorn woodpecker	X		
Scrub jay	X		
Lazuli bunting	X		
Western gray squirrel	X		

Description of Proposed Alternatives

Six Rivers National Forest intends to manage vehicular routes within 505,430 acre in the Mad River and Lower Trinity Ranger District. This section describes and compares the alternatives considered for the Travel Management project.

Alternative 1:
Under this alternative no unauthorized routes would be added to the NFTS, the public would not be restricted to NFTS roads and trails, and public motorized use of all unauthorized routes (1309 miles)

Alternative 2:
Under this alternative 56.86 miles of unauthorized routes would be added to the current NFTS and a permanent Forest order would be enacted which prohibits cross-country travel.

Alternative 3:
Under this alternative 64.72 miles of unauthorized routes would be added to the current NFTS and a permanent Forest order would be enacted which prohibits cross-country travel.

Alternative 4:
Under this alternative no unauthorized routes would be added to the NFTS, the public would be restricted to NFTS roads, trails and public motorized routes. A permanent Forest Order would be enacted which prohibits cross-country travel everywhere on the project area (Mad River and Lower Trinity Ranger Districts).

Analysis

A detail biological assessment and past, present, and reasonably foreseeable future actions affecting these Management Indicator Species are described in **Terrestrial Biota Section 3.7 of the Travel Management EIS** (Species and Environmental Consequences – General, respectively). The EIS summarizes the cumulative effects of past management activities, wildfires, timber harvest, fuels treatments, and other disturbances. Furthermore, methodology and assumptions are discussed in detail within Section 3.7. A list of **Assumptions Specific to Wildlife Analysis** is listed on the last page of this document.

Management Indicator Species

Terrestrial Impacts

Roads have impacts on wildlife and wildlife habitat that are disproportionate to the area of land they occupy. The Forest road system and human use of those roads has altered terrestrial species habitat and populations. Negative effects can include habitat loss and fragmentation; avoidance or road kill; poaching, and over harvest. Roads can also undermine ecological processes through fragmentation of wildlife populations, restrictions of wildlife movements, and the disruption of gene flow and metapopulation dynamics.

Roads and past timber harvest are major causes of forest habitat fragmentation on the Forest Habitat quality can be reduced by breaking up blocks of continuous habitat and increasing the amount of edge habitat, which is detrimental to species that require interior habitat conditions.

Natural populations of animal species are affected by the presence of roads by avoidance by some species and attractiveness to them by others. Roads and their adjacent environment qualify as a distinct habitat and can result in a change at the species, population, and landscape scales. Some species are associated with edges, including those that use roads as corridors to find food. Roads facilitate invasion by exotic species or of native species attracted to new habitat areas (i.e., nest parasites) that can disrupt the structure and function of the ecosystem.

Roads can also act as a barrier to terrestrial species movement. When populations of less mobile species (such as amphibians become subdivided, there is increased risk of local extinction of subpopulations, reduced potential for re-colonization after a local extinction, and a progressive loss of biodiversity.

In summary, most native terrestrial species located on the Forest are affected by road-associated factors that can degrade habitats or increased mortality. In landscapes with moderate to high road density, habitats are likely underused by many species that are negatively affected by road-associated factors.

On the other hand, the Forest road network can facilitate habitat protection and improvement projects. Habitat improvement projects that involve the use of equipment and/or personnel can be accomplished more safely, in less time, and with less expense provided there is adequate road access. Roads can help protect forest habitats by providing access for initial attack on wildfires, acting as fine lines, and providing safe deployment areas for fire fighting personnel. Population studies and long term research and monitoring projects are also facilitated by access to habitat areas.

Aquatic Impacts

Due to their limited distribution on the landscape and life history requirements, most species of aquatic wildlife are similarly affected by motorized travel. Although Gaines et al. (2003) described the effects of recreation routes on “riparian species”; the effects to aquatic species are very similar and can be categorized in much of the same way. Literature indicates that placement of routes in relation to habitat can affect aquatic species through mortality, disturbance, and habitat modification (Moyle and Randall 1996; Trombulek and Frissell 2000; USDA Forest Service 2000). Routes located in riparian areas could also affect species that move out of the water whether for dispersal or, in the case of western pond turtles, breeding on land (Trombulek). Routes that access larger streams and rivers could lead to added fishing pressure or collection (Gaines et al. 2003). Therefore, the effects of motorized travel on aquatic species may be categorized by human-caused mortality, changes in behavior (disturbance), and habitat modification.

Six Rivers NF Current Condition

Recreation use on Six Rivers NF is considered light to low. Use levels on routes which would be added to the NFTS under any action alternative are generally classified as either low (25-100 vehicles/week) or light (<25 vehicles/week) and varies seasonally.

Although it is not expected to increase at the same rate as areas within closer proximity of large metropolitan areas (see Recreation section Affected Environment); nevertheless, this process will result in greater likelihood and magnitude of human disturbance to wildlife overtime. Approximately twenty percent of the roads are below 3000 feet elevation and are potentially accessible all year long as they are below the winter snow level. Therefore, it is assumed that from October to May annually the majority of routes are inaccessible.

The project alternatives would contribute to these past and current conditions (Assumption 8) with added displacement from noise and human activity (Assumption 7), and fragmentation of habitat. Because Alternative 1 does not prohibit cross-country travel, there is a high degree of uncertainty about future route proliferation and associated cumulative impacts upon species. The action alternatives do not result in a loss of habitat (no route construction), but noise and traffic disturbance would influence habitat use and availability where individuals may be present. This influence, combined with fuels treatments and vegetation management, could affect this species and their habitat. In the future, trails may provide "connector routes" between existing NFTS routes and motorized access to historical dispersed camping opportunities, unauthorized motorized routes that are prohibited to motorized use may receive non-motorized use (hiking, mountain bicycling, equestrian). It is generally considered that non-motorized use would result in fewer disturbances to individuals. The extent and magnitude of non-motorized use is unknown. However, it is expected that over time, unauthorized routes that are prohibited to motorized use will eventually become revegetated and recover either through active or passive restoration means. Over the last 12 years, previous decisions have reduced the number of miles of open NFTS roads available for motor vehicle travel. These previous decisions have resulted in almost 170 miles of NFTS roads being closed or decommissioned.

Water quality and soil resources would be protected through routine maintenance and mitigations including; annual wet-weather use restrictions, waterbar placement, stream diversion correction, noxious weed removal, capping, and route definition (signage or physical barriers to restrict use to designated routes). All mitigation measures would be completed prior to use by the public. Implementation of these mitigation measures is expected to lower impacts to water resources while benefiting and protecting wildlife habitat. Manual treatments of invasive and noxious plant species will not likely effect wildlife species.

Mitigations to improve water quality and soil resources would benefit Riparian Reserves which are used as an indicator to assess impacts on aquatic biota, including reptiles and amphibians as well as terrestrial fauna dependant on aquatic ecosystems. Riparian Reserves maintain riparian-dependent aquatic and terrestrial processes around running and still waters, and function as corridors for movement of upland species.

Under Alternatives 2 and 3, cross-country travel would be prohibited. This, in conjunction with a clearly defined NFTS would clarify enforcement of existing Forest Plan direction and eliminate confusion regarding what constitutes cross-country travel. Because no physical actions (i.e., construction, decommissioning, or direct restoration) would occur outside the road prism in natural occurring habitats on this project, rather addition of **unauthorized or unclassified routes to the NFTS** for recreational wheeled motorized vehicle use, the mitigation measures proposed in this project therefore would have

minimal effect. The result of both alternatives would result in decreased (respectively) amounts of disturbance and minor habitat fragmentation within the project area.

MIS Individual Information

Northern Spotted Owl

(*Strix occidentalis caurina*)

A detail biological assessment and past, present, and reasonably foreseeable future actions affecting this Management Indicator Species are described in Terrestrial section of the Travel Management EIS (Species and Environmental Consequences – General, respectively). The EIS summarizes the cumulative effects of past management activities, wildfires, timber harvest, fuels treatments, and other disturbances.

The Forest Service has 24 years of data collection from the Northern Spotted Owl Willow Creek Demography Study which can provide analyses to compare reproductive success between disturbed and non-disturbed territories. Reproduction patterns appear to be associated with weather patterns. Years with El Nino and La Nina climatic events are associated with "bad" reproductive output were as years without such "catastrophic" events are associated with "good" reproductive output (Franklin et al, 2008). This demography study reported in September, 2009, that 94 territories were surveyed to protocol. The proportion of nesting pairs was above average (0.60) and the number of fledged young was the same as the 24 year average of 30 juveniles fledged per year.

Activity Centers

The Forest manages northern spotted owl activity centers (AC) that are areas delineated around spotted owl territorial pairs or territorial individuals. There are 215 AC within the project area. Suitable habitat is referred to as nesting and roosting (NR) habitat and foraging (F) habitat. Forty nine spotted owl activity centers contain route segments of unauthorized routes available to the public of which approximately 13 miles of segments (e.g., Alt 2 consists of 12 segments that total 2.76 miles) enter AC. Within AC, Alternative 2 and 3 would reduce the miles available to the public by > 75% once added to the NFTS. Both alternatives reduces travel within nesting and roosting habitat by approximately 91% which benefits habitat conditions within northern spotted owl activity centers.

Miles of NFTS & Northern Spotted Owl Nesting, Roosting, & Foraging within Activity Center

Alternative	Alt 1	Alt 2	Alt 3	Alt 4
Number of **Activity Centers** (215 within project area) within ¼ mile (104) by routes added to the NFTS	49	8	9	0
Miles of routes added to the NFTS (existing 124.04 miles) within **Disturbance Zone, ¼ mile** radius of activity center	13.4	2.76	2.80	0

Miles of routes in **Nesting and Roosting Habitat** within ¼ mile activity center added to the NFTS	4.18	0.33	0.37	0
Miles of routes in **Foraging Habitat** within ¼ mile activity center added to the NFTS	3.35	0.85	0.85	0

*Compared to the FEIS the numbers in the table are updated and based on 2010 route revision maps.

Late-Successional Reserve

The late-successional forest group is comprised of northern spotted owl, northern goshawk, American marten, marbled murrelet, and Pacific fisher. Late-Successional Reserves (LSR) perform an important role in maintaining biodiversity between other land allocations generally around clusters of 20 or more northern spotted owl pairs and Key Watersheds. Three large Late-Successional Reserves (#305, #306, and #307) occur within the project area and are displayed in the table below.

The table below displays the LSRs acres of nesting, roosting and foraging habitat for northern spotted owl. Base line data for each LSR is compiled and available in the Six Rivers National Forest-wide LSR Assessment: Version 1.0 (1999).

LSR & Adjoining Reserves within the Project Area

LSR & Adjoining Reserves	Six Rivers NF	
	Total Acres	**NRF Acres**
LSR305	59,000	41,000
Trinity Alps Wilderness	52,700	13,300
	111,900	54,300
LSR 306	48,600	30,500
SF Trinity River	3,000	1,900
	51,600	32,400
LSR 307	64,600	41,600
N. Fork Wilderness	8,200	4,900
NF Eel Wild River	1,800	900
	74,600	47,400
Grand Total	**238,100**	**134,100**

Small 100-acre LSR in the matrix between the large LSRs function as connectivity between the reserve areas and provide habitat for a variety of organisms associated with late-successional and generally represent the best NSO nesting and roosting habitat as close to a nest site or activity center as possible. There are eighty three 100-acre LSR that are scattered throughout the project area, located between the three LSR and neighboring Forests or BLM lands, in an effort to provide corridors and relatively short dispersal distances for late-succesional species.

LSRs have been designated across Six Rivers NF to ensure that late-successional vegetation is retained in stands large enough to provide functional habitat in a well distributed pattern across the landscape, To ensure that late-successional and old-growth vegetation is retained in stands large enough to provide functional habitat and in a well distributed pattern across the landscape, LSR have been designated across the Six Rivers and Shasta-Trinity National Forests boundary.

Late-Successional Reserves provide moderate to high quality habitat conditions for the late-successional forest group comprised of northern spotted owl, northern goshawk, American marten, marbled murrelet, and Pacific fisher. LSRs currently contain 443 existing NFTS roads and 88 miles of unauthorized routes available to the public. Within in LSR, Alternative 2 and 3 would reduce the miles available to the public by >75% less available routes added to the NFTS. Either alternative reduces travel within nesting and roosting habitat by approximately 94% which benefits habitat conditions for the late-successional forest group.

Miles of NFTS & Northern Spotted Owl Nesting, Roosting, & Foraging within Late-Successional Reserves

Alternative	Alt 1	Alt 2	Alt 3	Alt 4
Miles of routes added to the NFTS (existing 443) within **Late-Successional Reserves** (238,100 acres within project area)	**88**	**17.32**	**21.7**	**0**
Miles of routes in **Nesting and Roosting** Habitat within **LSR** added to the NFTS	**25.64**	**0.62**	**1.73**	**0**
Miles of routes in **Foraging Habitat** within **LSR** added to the NFTS	**20.08**	**0.05**	**2.81**	**0**

Northern Spotted Owl (NSO) is *one of three recognized subspecies of spotted owls. It is* a federally listed as threatened. The U.S. Fish and Wildlife Service have designated northern spotted owl Critical Habitat Units (CHU).

Miles of NFTS & Northern Spotted Owl Management Boundaries

Alternative	Alt 1	Alt 2	Alt 3	Alt 4
Miles of routes added to the NFTS (existing 1002 miles) within **Home Range 1.3 mile** radius of activity center	196	45	53	0
Number of **Activity Centers** (215 within project area) within ¼ mile (104) by routes added to the NFTS	49	8	9	0
Miles of routes added to the NFTS (existing 333) within **Nesting and Roosting Habitat** (180,663 acres within project area)	64	11.12	14.31	0
Miles of routes added to the NFTS (existing 334) within **Foraging Habitat** (123,595 acres within project area)	62.78	17.05	19.37	0
Miles of routes added to the NFTS (existing 425) within **Critical Habitat** (both 2008 and 1992) (178,957 acres within project area)	73	15	17	0

The U.S. Fish and Wildlife Service have designated northern spotted owl Critical Habitat Units (CHU) across its range. Although the 2008 Critical Habitat designation is the official designation of record, analysis of NSO critical habitat was accomplished

spatially using both the 1992 designation and the 2008 revised designation. The LT/MR Route Designation project will not remove or degrade primary constituent elements or adversely modify NSO Critical Habitat.

The Six Rivers NF Motorized Travel Management Project action alternatives would reduce effects currently within 8,606 acres of suitable habitat (late-seral coniferous) within northern spotted owl territories by restricting cross-country travel. Additionally, over time, passive vegetative recovery would occur along routes not added to the NFTS. Based on the low amount of habitat affected, the Six Rivers NF Motorized Travel Management Project will not alter late-seral coniferous suitable habitats.

Black Bear

(*Ursus americanus*)

A detail biological assessment and past, present, and reasonably foreseeable future actions affecting this Management Indicator Species are described in Terrestrial section of the Travel Management EIS (Species and Environmental Consequences – General, respectively). The EIS summarizes the cumulative effects of past management activities, wildfires, timber harvest, fuels treatments, and other disturbances.

There are currently 123,595 acres of black bear habitat on the National Forests system lands within the project area. The northern portion of California is continually noted by DFG as supporting the highest density of bears of any area within the western United States.

The California Department of Fish and Game (DFG) monitor black bear populations within northwestern California. Black bear is “S5- secure” (“demonstrably widespread, abundant, and secure”) in California (NatureServe 2006). California's black bear population has increased over the past 25 years. Sitton (1982) estimated the statewide bear population to be between 10,000 and 15,000 animals. Presently, the statewide black bear population within the 52,000 square miles of known range is conservatively estimated to be between 25,000 and 30,000 (DFG 2006). Previous and ongoing studies indicate that bear densities range from 1.0 to 2.5 bears per square mile in the North Coast/Cascade (50 % of the statewide population).

There are currently 304,258 acres of black bear habitat on the National Forests system lands within the project area. The northern portion of California is continually noted by DFG as supporting the highest density of bears of any area within the western United States.

The California Department of Fish and Game (DFG) monitor black bear populations within northwestern California. Black bear is “S5- secure” (“demonstrably widespread, abundant, and secure”) in California (NatureServe 2006). California's black bear population has increased over the past 25 years. Sitton (1982) estimated the statewide bear population to be between 10,000 and 15,000 animals. Presently, the statewide black bear population within the 52,000 square miles of known range is conservatively estimated to be between 25,000 and 30,000 (DFG 2006). Previous and ongoing studies indicate that bear densities range from 1.0 to 2.5 bears per square mile in the North Coast/Cascade (50 % of the statewide population).

The Six Rivers NF Motorized Travel Management Project action alternatives would reduce effects currently within 8,606 acres (200 foot buffer on 127 miles of existing

unauthorized routes) of black bear habitat available project-wide by restricting cross-country travel. Prohibiting cross-country travel would reduce habitat fragmentation, increased patch size, and reduce sedimentation in stream channels within the project area over the long-term. The project prohibits cross-country travel and the only ground disturbance would involve the installation of water bars and capping on some route segments on the existing travel way (already disturbed site). Additionally, over time, passive vegetative recovery would occur along routes not added to the NFTS. Based on the low amount of habitat affected, the Six Rivers NF Motorized Travel Management Project will not alter the existing trend in black bear habitats.

American Marten
(*Martes americana*)

A detail biological assessment and past, present, and reasonably foreseeable future actions affecting this Management Indicator Species are described in Terrestrial section of the Travel Management EIS (Species and Environmental Consequences – General, respectively). The EIS summarizes the cumulative effects of past management activities, wildfires, timber harvest, fuels treatments, and other disturbances.

Within the project area the range of the marten includes only the northern section of Lower Trinity Ranger District all of which is within LSR and equates to 13,165 acres of suitable habitat. There are 35,830 acres of marten habitat within the project area beyond its range. Of the 35,830 acres of marten habitat within the project area there are currently 86 miles of existing NFTS roads and 15 miles of unauthorized routes.

Marten observations are very uncommon but have been recorded in the project area since 1972. An extensive research project by the USFS Redwood Sciences Laboratory resulted in no detections in the Pilot Creek Track Plate Study that contains extensive mature and old-growth coniferous forests. The study area was located between two of the three LSRs in the project area; consequently the area has been extensively surveyed. This study not only incorporated the Pilot Creek drainage but also the southern portions of Grouse Creek and Board Camp drainages in an effort to capture a high elevation corridor between the two Ranger Districts. There are no known marten dens within the project area; however, dens are difficult to detect. Studies did confirm detections on Orleans Ranger District to the north. Although the project area is within the historic range of this species, based on reports and surveys, it is likely that individuals have become extirpated from the project area.

The home range of breeding marten in northern California is estimated to range between 1,400 and 2,100 acres. Large LSR in conjunction with adjoining wilderness areas, provide sufficient suitable habitat to support several reproductive units (male and two females).

Late-Successional Reserves currently contain 443 existing NFTS roads and 88 miles of unauthorized routes available to the public. Within in LSR, Alternative 2 and 3 would reduce the miles available to the public by >75% less available routes added to the NFTS. Either alternative reduces travel within nesting and roosting habitat by approximately 94% which benefits habitat conditions for the late-successional forest group.

The Six Rivers NF Motorized Travel Management Project action alternatives would reduce effects currently within 958 acres (200 foot buffer on 121 miles of existing unauthorized routes) of American marten habitat by restricting cross-country travel. Additionally, over time, passive vegetative recovery would occur along routes not added to the NFTS. This represents 2.7 percent of American marten habitat available project-wide. Based on the low amount of habitat affected, the Six Rivers NF Motorized Travel Management Project will not alter American marten habitats.

Pacific fisher
(*Martes pennanti*)

A detail biological assessment and past, present, and reasonably foreseeable future actions affecting this Management Indicator Species are described in Terrestrial section of the Travel Management EIS (Species and Environmental Consequences – General, respectively). The EIS summarizes the cumulative effects of past management activities, wildfires, timber harvest, fuels treatments, and other disturbances.

There are 133,277 acres of fisher habitat within the project area which currently contain 333 miles of existing NFTS roads. The range of the fisher extends across the project area. All three LSR within the project area have detected fisher.

Extensive research projects (some within the project area) throughout the 1990's were performed by the USFS Redwood Sciences Laboratory and are summarized here. In California, the fisher's range is restricted to two areas: the North Coast Range and the southern Sierra-Nevada. This is thought to be a result primarily of historic trapping and habitat loss. Fishers are widely distributed, and detections are common throughout the northern Coast Range and Klamath Mountains of California where detections appear to be consistent with previous reports of fisher distribution. Based on the review of agency wildlife observations, Schempf & White (1977 *in* Zielinski et al. 1995) concluded that fishers were "common and increasing" in the extreme northwestern counties of California. In northwestern California, fisher populations appear to be sustaining themselves while nearby populations decline.

Late-Successional Reserves currently contain 443 existing NFTS roads and 88 miles of unauthorized routes available to the public. Within in LSR, Alternative 2 and 3 would reduce the miles available to the public by >75% less available routes added to the NFTS. Either alternative reduces travel within nesting and roosting habitat by approximately 94% which benefits habitat conditions for the late-successional forest group.

The Six Rivers NF Motorized Travel Management Project action alternatives would reduce effects currently within 3,596 acres of Pacific fisher habitat.. Additionally, over time, passive vegetative recovery would occur along routes not added to the NFTS. Based on the low amount of habitat affected, the Six Rivers NF Motorized Travel Management Project will not alter late-seral coniferous suitable habitats. Based on the low amount of habitat affected, the Six Rivers NF Motorized Travel Management Project will not alter the existing trend in Pacific fisher habitats.

Black-tailed Deer
(*Odocoileus hemionus*)

A detail biological assessment and past, present, and reasonably foreseeable future actions affecting this Management Indicator Species are described in Terrestrial section of the Travel Management EIS (Species and Environmental Consequences – General, respectively). The EIS summarizes the cumulative effects of past management activities, wildfires, timber harvest, fuels treatments, and other disturbances.

Black-tailed deer is a Forest Service Management Indicator Species. The project area is within Californai Fish and Game Deer Management Zone B. Fifty-five thousand deer tags are available for the Deer Zone B of which approximately 30,000 to 35,000 sell. Second tags are more often filled on private lands. The greatest harvest California experienced occurred in the 1950's and 60's. However, to date Zones A and B continue to maintain the highest density of deer in the state of California (D. Lancaster, CDFG Biologist, personal communication).

The Six Rivers NF Motorized Travel Management Project action alternatives would reduce effects currently within 1,403 acres (200 foot buffer on 92 miles of existing unauthorized routes) of deer winter range habitat available project-wide by restricting cross-country travel. Prohibiting cross-country travel would reduce habitat fragmentation, increased patch size, and reduce sedimentation in stream channels within the project area over the long-term. The project prohibits cross-country travel and the only ground disturbance would involve the installation of water bars and capping on some route segments on the existing travel way (already disturbed site). Additionally, over time, passive vegetative recovery would occur along routes not added to the NFTS. Based on the low amount of habitat affected, the Six Rivers NF Motorized Travel Management Project will not alter the existing trend in deer habitats.

Pileated Woodpecker
(*Dryocopus pileatus*)

Snags provide pileated woodpeckers with nesting and roosting habitat, as well as escape cover, which allow them to avoid inclement weather. Snag and downed wood retention standards and guidelines would benefit this species by retaining primary habitat components. Pileated woodpeckers will probably increased based on future trends in vegetation and structure resulting in an increase in coniferous forest cover, an increase in snags, and an increase in white fire abundance and distribution.

The national population of pileated woodpeckers, as reported by the USGS Breeding Bird Survey data (1966-1999), is increasing at a rate of 1.4% per year; in California, pileated woodpeckers are increasing at a rate of 0.4% per year (Sauer et al. 1999). On the Six Rivers National Forest, the pileated woodpecker population is "largely stable with local variation in the amount of survey effort and detection across the forest" (PSW 2007).

There is no known nesting or roosting sites within the project area and no project-specific surveys for this species have occurred in the project area, but there have been several detections of the species in the area. The species has been seen and heard on the South Fork Mountain Breeding Bird Survey Route (CAL – 953) and was recorded an average of 1.33 times per survey since route initiation in 1994. Additionally, Friday Ridge Breeding Bird Survey Route detected this species every time the routes where surveyed; from 1994 to 2005 and from 1994 to 1996 at the Pilot Creek Breeding Bird Survey Route.

There are approximately 178,000 acres of suitable pileated woodpecker habitat on the Six Rivers National Forest, of which 19,300 acres are considered high quality. The Forest employs a management strategy primarily based on land use designations and allocations. This management strategy benefits wildlife through the retention of habitat. Specifically, the Late Successional Reserves and other congressionally and administratively withdrawn land allocations (91% of the Forest) provide the pileated woodpecker with large contiguous blocks of habitat and corridors of high quality habitat between the blocks (riparian reserves). Where management activities are authorized, all proposed activities adhere to LRMP Standards and Guidelines and the Pileated Woodpecker Habitat Capability Model, which provides protection measures to ensure the retention of suitable habitat.

The direct, indirect and cumulative effects and determination for this indicator species, pileated woodpecker, are the same as those discussed under the snag assemblage. Refer to the snag assemblage section.

There are 66,981 acres of NFTS roads and 16,207 acres of unauthorized routes within 200 foot buffers of routes available for public motorized use (existing system and added routes) in potential forested habitat for each alternative as a means to compare the potential for pileated woodpecker snag habitat. This would be reduced slightly under all action alternatives as the road-associated impacts described above would not occur along routes not added to the NFTS. Based on the low amount of habitat affected, the Six Rivers NF Motorized Travel Management Project will not alter the existing trend in pileated woodpecker habitats.

Bog/Seep/Spring/Wet Meadow Assemblage

Southern Torrent Salamander

(Rhyacotriton variegatus)

This species is found from near sea level to 4820 feet in elevation. Preferred habitat is described as cold, permanent seeps and small streams with a rocky substrate and areas are classified as hydrologically sensitive for other resources including fisheries and hydrology. Welsh and Lind (1996) found that this species is associated with cold, clear headwater to low-order streams with loose, coarse substrates in humid forest habitats with large conifers, abundant moss, and greater than 80% canopy cover. These conditions are mostly found within late seral stage forests. According to Welsh and Lind (1996) suitable habitat has the following characteristics: 1) conifer dominated forests associated with mature to old growth structural attributes; with 15-130 conifers per acre greater than 21 inches dbh, 72-100% canopy closure, and low numbers of cut stumps, low percent cover of grass, and high percent cover of moss; 2) seep or other shallow, slow flowing habitats with cold, clear water in first to third order streams; with 15-46% of the substrate in cobble, a mix of coarse substrates (cobble, pebble, and gravel), 3-47% substrate cementedness, and sand and fine organic particles present; and 3) water temperature from 43.7-59.0 ° F.

Southern torrent salamander habitat is limited by high temperatures, dry habitats and seeps and streams that flow subsurface on the Mad River Ranger District. The southern torrent salamander range map includes the Upper Mad River Watershed (CWHR, 1990), yet there are no documented sightings of this species on the District. On

the contrary, habitat is more ideal on Lower Trinity Ranger District in proximity to cold clear streams, seepages, or waterfalls. Southern torrent salamanders have been detected in or near Boise Creek, Brannan Creek, tributaries of Quinby Creek, also tributaries of Trinity River and on Brush Mountain and Indian Butte.

There are approximately 240 acres of bogs, seeps, springs or wet meadows that make up 0.05 % project area however this only occurs on Mad River Ranger District and no proposed routes occur within the 240 acres. To better evaluate the species habitat across both districts, GIS layers from perennial and intermittent stream networks (crenulated stream layer) where analyzed. Using the crenulated layer with a 150' to 300' (based on stream type) riparian buffer provides a conservative measure of impacts to aquatic habitat. The project area contains 81 miles of unauthorized routes, 188 stream crossings, and 68 acres of suitable habitat.

Current and increased road and route density throughout the project area can fragment habitat, reduces patch size, increase sedimentation, increase disturbance and contribute to direct mortality of this species.

All suitable habitats for southern torrent salamander are in protection buffers established as riparian reserves. Sediment production from vehicle use of native surfaced routes will likely continue and hydrologically sensitive areas will continue to be impacted. As part of the Aquatic Conservation Strategy, Riparian Reserve widths were designed to provide a high level of fish habitat and riparian as well as serve as travel and dispersal corridors for terrestrial animals and plants (FEMAT 1993).

Alternative 1, cross-country motorized travel would not be prohibited on unauthorized routs would result in the greatest potential for effects to habitat. Most forest visitors generally stay on existing routes. However, there will be no treatment or mechanism to deter the further proliferation of routes or use in hydrologically sensitive areas. In the short term (1 year), there would be little recovery, as the unauthorized routes would still be accessible. Long term recovery of hydrological sensitive areas would be unlikely as use would still not be prohibited. Vehicles accessing approximately 519 stream crossings would continue to cause direct and indirect impacts to areas where habitat conditions existed.

Alternative 2 and 3 have little difference between the two in terms of their effects to this species. Alternative 2 would prohibit motorized cross-country travel on 198 miles of unauthorized routes and any unmapped or newly created routes. Of the 198 miles included in the prohibition, about 47 miles (200) would not be added within riparian reserves, including approximately 472 stream crossings. This represents a reduction of 13 acres of stream habitat impacted. Alternative 3 would reduce the 47 miles to 40 miles within riparian areas and ads on additional route near a spring (JM722) with water quality mitigations. The direct and indirect effects of not adding these 198 miles (or 190) are not entirely beneficial to water resources and therefore the aquatic biota because no restorative treatments are included in these alternatives.

Alternative 4 reduces density the most and adds no new routes in riparian areas. Based on the proximity of the routes to potentially occupied habitat minor impacts could occur to individuals. Reducing road density across the project area will reduce fragmentation of habitat, increase patch size, reduce sediment in stream channels, and reduce disturbance and direct mortality.

The Six Rivers NF Motorized Travel Management Project may affect torrent salamander habitat and over time, this effect would be reduced slightly under all action alternatives as the road-associated impacts described above would not occur along routes not added to the NFTS. Based on the low amount of habitat affected, the Six Rivers NF Motorized Travel Management Project will not alter the existing trend torrent salamander habitats, nor lead to a change in the distribution of torrent salamander across the project area.

Marsh/Lake/Pond Assemblage

(Northern red-legged frog, western pond turtle and wood duck)

The species in this habitat assemblage were selected as a MIS under the Marsh/Lake/Pond Assemblage because of their habitat associations to aquatic and riparian habitats. Alt 2 and 3 would reduce road density across the project area will reduce fragmentation of habitat, increase patch size, reduce sedimentation in stream channels, and reduce disturbance and direct mortality. Alt 4 reduces density most and adds no new routes in riparian areas however, no mitigations would occur.

Northern Red-legged Frog

(*Rana aurora aurora*)

Northern red-legged frogs are associated with moist forests and riparian areas usually below 2876 ft. (850 m) in elevation. Red-legged frogs require cold water and dense riparian vegetation and are generally found near permanent bodies of quiet water with submerged vegetation for egg attachment including small ponds, pools along streams, springs, lakes, and marshes.

There is 1,238 acres of habitat making up 0.24 % of the project area however not all of this is suitable. The majority of this habitat is Ruth Lake and habitat exists on the perimeter along shallow shorelines. Although habitat exists within the project area for this species, the northern red-legged frogs are not known to occur in the planning area. The project area is within the most eastern edge of the species range. There are no records of this species in the Forest Wildlife Sighting Database. If this species were to occur in the planning area it would likely utilize perennial small ponds, pools, springs, lakes, and marsh habitats that contain cold water and emergent vegetation. The proposed project activities would not enter these habitats.

Western Pond Turtle

(*Clemmys marmorata marmorata*)

The western pond turtle is the only freshwater turtle native to the west coast of North America. It is primarily associated with aquatic and riparian habitats from sea level to about 4500 feet. On the Six Rivers National Forest, the western pond turtle is most commonly seen basking on the banks of mainstem rivers. During the spring and summer (the active season) turtles often concentrate in low gradient and low velocity sections of creeks and rivers, especially in sloughs, side channels, and backwater areas. They prefer rivers and creeks that have sunny banks, basking substrates and deep still water with underwater debris for escape cover.

Before the fall rains begin and water levels rise, western pond turtles migrate upslope from the rivers to over winter on the slopes above the high water zone. In spring, the turtles migrate back down slope toward the rivers. Female turtles migrate to alluvial nesting benches to lay eggs. Western pond turtles exhibit nest site fidelity, which means that once they reach sexual maturity, females return to the nesting bench they hatched from to lay their eggs. Nesting benches are usually located on flat benches on the banks of rivers in close proximity to rearing habitat (shallow water and riparian vegetation). Once the turtles arrive at the nesting benches they dig holes in the loose friable soil, lay their eggs in the holes and cover them up with the displaced soil.

When the juvenile turtles hatch, they are about the size of a quarter and are very susceptible to predation. Many migrate to the nearest rearing habitat. Rearing habitat consists of shallow edge water areas with minimal current and lush vegetation including ponds, springs and vernal pools. Lush vegetation provides cover, shade, basking opportunities and forage. The juvenile turtles may remain in the rearing habitat for several years until they are larger, stronger and less susceptible to predation. Once able, the turtles leave the rearing habitat and migrate to the mainstem rivers.

Western pond turtle hatchlings and juveniles have relatively specialized habitat requirements that are particularly susceptible to disturbance. The important habitat components of nesting and rearing habitat include flat benches, loose soil, shallow water and lush aquatic and riparian vegetation.

Western pond turtles are dietary generalists and highly opportunistic (Holland 1991a), and will consume almost anything that they are able to catch and overpower. The relatively slow pursuit of western pond turtles results in their diet being dominated by relatively slow-moving aquatic invertebrates (e.g., the larvae of many aquatic insects) and carrion, although aquatic vegetation may be eaten (Holland 1985a, Bury 1986, Baldwin and Stanford 1987), especially by females having recently laid eggs (D. Holland, pers. comm.). The movement ecology of *C. marmorata* is partly known for only very restricted circumstances. In a pond situation, movement away from water except to nest was rare (Rathbun et al. 1993). In a stream situation, turtles were highly variable in their movements. Some individuals would nest, aestivate, or overwinter only a few meters away from the watercourse, whereas others move considerable distances (e.g., 350 m) to overwinter (Rathbun et al. 1992, 1993). Turtles will move significant distances (at least 2 km) if the local aquatic habitat changes (e.g., disappears), and adult turtles can tolerate at least 7 days without water (D. Holland, pers. comm.), but dispersal abilities of juveniles and the re-colonization potential of western pond turtles following extirpation of a local population are unknown.

All Riparian Reserves within the project area were identified and the full interim Riparian Reserve buffer widths were used in a GIS analysis for determining potential impacts. In habitat suitable for WPT (routes adjacent to lower gradient streams) a total of 3.25 miles over the project area would be added. As part of the Aquatic Conservation Strategy, Riparian Reserve widths were designed to provide a high level of fish habitat and riparian as well as serve as travel and dispersal corridors for terrestrial animals and plants (FEMAT 1993).

Mitigations to improve water quality and soil resources would benefit this species habitat (Riparian Reserves) which are essential to this species life history. This species is

dependent on both aquatic and terrestrial processes around running and still waters, and function as corridors for movement of upland species.

Over the last 12 years, previous decisions have reduced the number of miles of open NFTS roads available for motor vehicle travel. These previous decisions have resulted in almost 170 miles of NFTS roads being closed or decommissioned which reduces the risk of road crossing dangers as well as potentially increasing nesting habitat (compacted soils with exposure). The beneficial effect of the action alternatives would reduce habitat fragmentation, increased patch size, and reduce sedimentation in stream channels within the project area over the long-term.

Analyses of effects indicate that habitats would not be impacted or nominally impacted or have beneficial effects by the action alternatives (2, 3 and 4) primarily because routes currently exist within habitats, incur light to low use, and would benefit from restriction on cross-country travel. Cross-country travel within Alternative 1 would continue to cause disturbance, habitat fragmentation, and resource damage.

Wood Duck

The wood duck is an uncommon yearlong resident, occurring mainly in Central Valley, and in Coast Ranges of central California. This species inhabits slow moving riverine habitats containing emergent vegetation and bordered by deciduous trees such as willows, cottonwoods, and oaks. Primary food sources include stems and leaves of aquatic plants, seeds of trees and shrubs, grasses, forbs, berries and invertebrates.

Within the planning area, wood duck habitat is severely limited by high temperatures and dry habitats. There are no records of this species in the Forest Wildlife Sighting Database however wood ducks have been sighted in small isolated back water pools along rivers and in private ponds. The Ruth Reservoir provides this species with a large contiguous block of suitable habitat and is known to occur.

The Six Rivers NF Motorized Travel Management Project may affect up to 1,238 acres (1,197 acres on Mad River and 40 Acres on Lower Trinity Ranger District) of Marsh/Lake/Pond assemblage habitat. This represents 0.24 percent of Marsh/Lake/Pond assemblage habitat available project-wide. These acres represent water bodies of which unauthorized routes may lead to creating disturbance to this assemblage. Migration of the herpetofauna would be affected by fragmentation as mentioned above. Over time, this would be reduced slightly under all action alternatives as the road-associated impacts described above would not occur along routes not added to the NFTS. Based on the low amount of habitat affected, the Six Rivers NF Motorized Travel Management Project will not alter the existing trend in Marsh/Lake/Pond assemblage habitats, nor lead to a change in the distribution of Marsh/Lake/Pond assemblage across the project area.

River/Stream/Creek Assemblage

(Tailed frog, common merganser, ruffed grouse, winter wren, American dipper, yellow-breasted chat, steelhead / summer steelhead, rainbow trout)

The species in this habitat assemblage were selected as a MIS under the River/Stream/Creek Assemblage because of their habitat associations to aquatic and riparian habitats. Alt 2 and 3 would reduce road density across the project area will

reduce fragmentation of habitat, increase patch size, reduce sedimentation in stream channels, and reduce disturbance and direct mortality. Alt 4 reduces density most and adds no new routes in riparian areas however, no mitigations would occur.

Steelhead/Rainbow Trout
(Oncorhynchus mykiss)

Steelhead exhibit a wide variety of life history strategies including both a resident life form and an ocean going life form (anadromy). In general, anadromous steelhead migrate to the sea after spending two years in fresh water and then spend two to three years in the ocean prior to returning to fresh water to spawn. Spawning ranges from December through April, with peak spawning in January in the larger basins and late February and March in the smaller coastal basins (Busby et al. 1996).Variation of this pattern is common. Some spawners survive and return to the ocean for one or more years between spawning migrations.

The Northern California distinct population segment is listed under the ESA and includes steelhead in California coastal river basins from Redwood Creek south to the Gualala River, inclusive. See the Fisheries BA for specifics regarding NC steelhead. Steelhead, both the anadromous and resident life forms are found throughout the project area. A total of 16 miles of unauthorized routes, distributed between sixteen watersheds are located within the riparian reserves adjacent to steelhead/resident trout habitat. A total of seventeen crossings exist within fish bearing streams. When routes cross or are adjacent to fish habitat, impacts are limited based on the channel conditions. Where boulders, cobbles and perennial flow occur, impacts would low. Some sediment may enter streams causing minor turbidity. Individuals may be impacted via crushing, disturbance, or insignificant chemical contamination. Only a very small proportion of their habitat is affected.

Common Merganser
(*Mergus merganser*)

The common merganser is a diving duck associated with aquatic and riparian habitats. This species is most commonly seen on ponds, lakes and large streams of the Coast, Klamath, Cascade, and Sierra Nevada Ranges. Components of suitable habitat include presence of clean, cold water, nesting cavities, abundant prey and lush riparian vegetation. This species nests and roosts in cavities in snags and stumps along stream banks. The primary prey base of the common merganser includes fish, fish eggs, aquatic invertebrates, amphibians, and small amounts of aquatic plants. Aquatic and riparian vegetation provides shade, cover and a suitable environment for prey species. If any or all of these important habitat components are disturbed by management activities, the common merganser may be affected.

The Ruth Reservoir provides this species with a large contiguous block of suitable habitat. This species is known to occur on Ruth Reservoir.

Ruffed Grouse
(Bonasa umbellus)

The ruffed grouse is an uncommon game bird associated with riparian and conifer forest habitats from northern Del Norte County to southern Humboldt County and

eastward to northern Trinity County. Components of suitable ruffed grouse habitat include presence of lush riparian vegetation, adjacent conifer stands and abundant forage and prey. Riparian vegetation provides food, shade, nesting habitat and cover. Adjacent conifer stands also provide cover. The ruffed grouse forages on leaves, twigs, buds, flowers, fruits and insects. If any or all of these habitat components are disturbed by management activities, ruffed grouse may be affected.

The ruffed grouse was selected as a MIS under the River/Stream/Creek Assemblage because of its associations to riparian habitats. As noted by CDFG, ruffed grouse populations within northern California remain consistently stable which is reflected in the stability of the hunter harvest bag limit regulations over the last 5-8 years. However, the species has not been recorded associated with the South Fork Mountain Breeding Bird Survey Route (CAL – 953) (Mad River RD) and no detections were recorded since route initiation in 1994.

The Forest Wildlife Sighting Record Database contains no records of this species within the planning area. Ruffed grouse was not detected during field visits to the project area between 2003 and 2006 but has been detected on the district. The elusive nature of the species, stability of hunter bag limits, range of the species and the location of the proposed project suggests that where suitable habitat exists within the project area, ruffed grouse may be present. Ruffed grouse was chosen as an MIS because of its' association with riparian habitats.

Winter Wren

(*Troglodytes troglodytes*)

The winter wren is a resident songbird associated with riparian and conifer forest habitats of the humid coastal belt from the Oregon border to northern San Luis Obispo County. Components of suitable winter wren habitat include presence of dense riparian vegetation near streams, natural recesses or cavities for nesting and abundant prey. This species prefers riparian habitats with downed woody debris and low tangled vegetation that provides shade, cover and abundant invertebrates to forage on. This species nests within existing cavities and within recesses associated with logs, stumps and root tangles. If any or all of these habitat components are disturbed by management activities, the winter wren may be affected.

The winter wren is known to occur within the planning area. This species has been recorded in association with the South Fork Mountain Breeding Bird Survey Route (CAL – 953) (Mad River RD) and detections have been recorded since route initiation in 1994. Specifically, the average detection rate associated with the South Fork Mountain BBS Route is .67 per route per annum. The trend statewide for the species associated with BBS routes during the 1994-2000 survey period displays a positive trend with an increase in detections by 1.8%. Friday Ridge Breeding Bird Survey Route detected this species every time the routes where surveyed; from 1994 to 2005 and from 1994 to 1996 at the Pilot Creek Breeding Bird Survey Route. Winter wren was chosen as an MIS because of its' association with riparian habitats.

American Dipper
(Cinclus mexicanus)

The American dipper is a uniquely water adapted bird associated with aquatic and riparian habitats throughout California. Locally, this species is most commonly seen on fast-flowing mountain streams and rivers in Trinity and Siskiyou counties. Components of suitable American dipper habitat include presence of clean, cold water, lush riparian vegetation, nesting cavities and abundant prey. Riparian vegetation provides food, shade, cover and nesting habitat. This species nests and roosts in sheltered cavities or crevices along stream banks. The primary prey base of the American dipper includes fish, aquatic invertebrates, amphibians, and snails. If any or all of these habitat components are disturbed, the American dipper may be affected.

On the Mad River Ranger District, this species is considered a rare resident most of the year. During the summer breeding season there is an increase in numbers observed. Lower Trinity Ranger District encompasses two major rivers and numerous tributaries that are known to support the dipper. American dipper was chosen as an MIS because of its' association with riparian habitats.

Yellow-breasted Chat
(Icteria virens)

The yellow-breasted chat is an uncommon summer resident and migrant in coastal California and the foothills of the Sierra Nevada. This species is associated with riparian thickets of willow, and other brushy tangles near watercourses. Suitable habitat for a yellow-breasted chat consists of dense and brushy understory in riparian woodlands along streams or rivers where they nest and forage. This species forages for spiders, insects and berries in shrubs and low trees. They build their nests 0.6 to 2.4m (2-8ft) above the ground, near a water source. Populations of the yellow-breasted chat have declined due to loss and degradation of habitat, and brood parasitism by brown-headed cowbirds. If any or all of these habitat components are disturbed by management activities, the yellow-breasted chat may be affected.

No systematic surveys for this species have been conducted within the project area. This species has been recorded in association with the Friday Ridge Breeding Bird Survey Route (CAL – 435) (Lower Trinity RD) and detections have been recorded since route initiation in 1994. The species has not been recorded associated with the Pilot Creek Breeding Bird Survey Route (CAL – 903) or South Fork Mountain Route (CAL – 953).

Tailed Frog
(Ascaphus trueii)

The tailed frog is a uniquely adapted species associated with aquatic and riparian habitats in northern California. Locally, this species is seen most commonly in and adjacent to cold, rocky, fast-flowing permanent mountain streams and rivers in humid forests. Components of suitable tailed frog habitat include clean, cold water, gravel and cobble substrates and lush riparian vegetation. Similar to the foothill yellow-legged frog, good water quality is an important habitat component because of the absorbent nature of frogs skin. Tailed frog tadpoles have adapted a unique ability to survive in a fast flowing stream environment by clinging to rocks with its large sucker like mouth, making the

presence of silt-free gravel and cobble habitat essential. Rocky substrates and lush aquatic and riparian vegetation provide cover and shade which contribute to cooler stream temperatures. Adults seek cover primarily under submerged rocks, logs and vegetation within the stream or under similar objects close to the stream. If any or all of these habitat components are disturbed by management activities, tailed frogs may be affected.

River, Steam and Creek Assemblage Direct, Indirect and Cumulative Effects

All suitable habitats for river, stream, and creek assemblage are in protection buffers established as riparian reserves. Sediment production from vehicle use of native surfaced routes will likely continue and hydrologically sensitive areas will continue to be impacted. As part of the Aquatic Conservation Strategy, Riparian Reserve widths were designed to provide a high level of fish habitat and riparian as well as serve as travel and dispersal corridors for terrestrial animals and plants (FEMAT 1993).

Most of the associated species occur within the project area, along the South Fork and Mainstem Trinity rivers and tributaries and Ruth Lake Reservoir and associated water ways. Such areas provide primary and secondary habitat for various life stages for some. The planning area contains approximately 1,238.11 acres of lentic habitat. To evaluate the species lotic habitat across both districts, GIS layers from mainstem rivers and larger tributaries (fish bearing stream layer) where analyzed. Using this layer with 300' (total of 600 foot) riparian buffer provides a conservative measure of impacts to aquatic and terrestrial habitat. The project area contains 12 miles of unauthorized routes, 17 stream crossings in fish habitat, and 51 acres of suitable habitat.

Current and increased road and route density throughout the project area can include direct crushing from tires during all life stages and routes within habitat can cause mortality, disturbance, and habitat modification. This action may affect turtles because they nest on land and can not quickly evade tires. Additionally, routes within riparian or leading to larger streams and rivers could lead to added turtle pressure or collection. Overall impacts may be limited in areas where road-use is low.

Alternative 1, cross-country motorized travel would not be prohibited on unauthorized routes would result in the greatest potential for effects to habitat. Most forest visitors generally stay on existing routes. However, there will be no treatment or mechanism to deter the further proliferation of routes or use in hydrologically sensitive areas. In the short term (1 year), there would be little recovery, as the unauthorized routes would still be accessible. Long term recovery of hydrological sensitive areas would be unlikely as use would still not be prohibited. Vehicles accessing approximately 519 stream crossings would continue to cause direct and indirect impacts to areas where habitat conditions existed.

Alternative 2 and 3 have little difference between the two in terms of their effects to this species. Alternative 2 would prohibit motorized cross-country travel on 198 miles of unauthorized routes and any unmapped or newly created routes. Of the 198 miles included in the prohibition, about 47 miles (200) would not be added within riparian reserves, including approximately 472 stream crossings. This represents a reduction of 13 acres of stream habitat impacted. Alternative 3 would reduce the 47 miles to 40 miles within riparian areas and ads on additional route near a spring (JM722) with water quality mitigations. The direct and indirect effects of not adding these 198 miles (or 190) are not

entirely beneficial to water resources and therefore the aquatic biota because no restorative treatments are included in these alternatives. Alternative 2 and 3 would add only 1 crossing in fish habitat in the Upper Mad River, which is intermittent in this stretch.

Alternative 4 reduces density the most and adds no new routes in riparian areas. Based on the proximity of the routes to potentially occupied habitat minor impacts could occur to individuals. Reducing road density across the project area will reduce fragmentation of habitat, increase patch size, reduce sediment in stream channels, and reduce disturbance and direct mortality.

The Six Rivers NF Motorized Travel Management Project may affect river, stream, and creek assemblage and over time, this effect would be reduced slightly under all action alternatives as the road-associated impacts described above would not occur along routes not added to the NFTS. Based on the low amount of habitat affected, the Six Rivers NF Motorized Travel Management Project will not alter the existing trend, nor lead to a change in the distribution of river, stream, and creek assemblage and associated species across the project area.

Tan Oak/Madrone Assemblage

(Hammond's flycatcher, western tanager, black-headed grosbeak)

These species were selected as MIS under the Tan Oak / Madrone Assemblage because of their association with tan oak and madrone habitat characteristics. Hammond's flycatcher, western tanager and black-headed grosbeak are all known to occur within the project area.

Hammond's Flycatcher

(Empidonax hammondii)

The Hammond's flycatcher is a common summer resident in dense coniferous forests from 4000 to 8000 feet in the Cascade Range south to the Sierra Nevada Range. Nests occur primarily in mixed conifer and red fir as well as dense Jeffrey and ponderosa pine habitats. This species also breeds in Douglas-fir habitats in the mountains of the North Coast down to about 2000 feet. Nesting and roosting occurs most often in moist forest habitats with high canopy closure, and available singing and foraging perches.

Hammond's flycatcher is known to occur within the planning area. This species has been recorded associated with the South Fork Mountain Breeding Bird Survey Route (CAL – 953) with an average detection rate of 6.0 per route per annum (range 6-12/survey). This species was also detected during bird point-count surveys conducted in association with the Marbled Murrelet Range & Distribution (R&D) Study. No systematic surveys for this species have been conducted within the project area. Of the 56.86 miles proposed in Alternative 2 and 64.72 miles proposed in Alternative 3, approximately 50.57 miles and 53.98 miles, respectively, contain habitat for this species. These miles represents an overestimate because queries used are based on dominate habitat types of which this habitat is represented 4 to 10% of the time.

The range of the Hammond's flycatcher encompasses 21,092,594 acres of which 353,953 acres of the project area are within the range. Moderate to high quality habitat exists within the project area.

Western Tanager
(Piranga ludoviciana)

The western tanager is a common breeding resident from May through August in montane forests throughout the state, including coastal ranges, but usually avoiding the fog belt. Breeding frequently occurs in moderately open mature mixed conifer/hardwood stands. This species is primarily insectivorous but also forages on fruit and buds. Migrants in coastal California commonly drink water from seeps, springs, ponds, and streams.

Western tanager is known to occur within the planning area. This species has also been recorded associated with the South Fork Mountain Breeding Bird Survey Route (CAL – 953) with an average detection rate of 28.67 per route per annum (range 25-37/survey). It is also common and has been recorded, associated with the Orleans Breeding Bird Survey Route (CAL-167, Orleans RD not within the planning area but close proximity), with an average detection rate of 30.0 per route per annum. In addition, bird point-count surveys conducted in association with the Marbled Murrelet R&D detected western tanager at 12 stations, with 24 total detections within the planning area.

The range of the western tanager encompasses 40,884,033 acres and the entire project area is within the range. Moderate to high quality exists within the project area.

Black-headed Grosbeak
(Pheucticus melanocephalus)

The black-headed grosbeak is a common summer resident and transient. This species breeds throughout California, excluding higher mountains, from April into September. Breeds in open woodland habitats, often near water and areas where deciduous oaks are numerous. While nesting, feeds primarily on insects and spiders, but also forages on buds, berries, fruits and seeds. In coastal California, this species commonly drinks water from seeps, springs, ponds, and streams. California breeding populations migrate to wintering grounds in Mexico beginning in August and return from late March into May.

Black-headed grosbeak is known to occur within the planning area. This species has also been recorded associated with the South Fork Mountain Breeding Bird Survey Route (CAL – 953) with an average detection rate of 5.0 per route per annum (range 3-9/survey). It is also common and has been recorded, associated with the Orleans Breeding Bird Survey Route (CAL-167, Orleans RD not within the planning area but close proximity), with an average detection rate of 7.0 per route per annum. In addition, bird point-count surveys conducted in association with the Marbled Murrelet R&D detected black-headed grosbeak at 3 stations, with 9 total detections within the planning area.

The range of the black-headed grosbeak encompasses 68,566,738 acres and the entire project area is within the range. Moderate to high quality exists within the project area.

<u>Alternative 1:</u>
Tan Oak/Madrone Assemblage Direct and Indirect Effects
(Hammond's flycatcher, western tanager, black-headed grosbeak)

Alternative 1 poses the highest risk for negative encounters between humans and continued habitat fragmentation specifically because of unregulated cross-country travel. Tan oak and madrone assemblages are expected to make up 4 to 10 percent of the forest types throughout the unauthorized routes therefore associated species habitat would not be protected from proliferation of cross-country travel.

Tan Oak/Madrone Assemblage Cumulative Effects
(Hammond's flycatcher, western tanager, black-headed grosbeak)

Past, present, and reasonably foreseeable future actions affecting this assemblage are described in Terrestrial section of the Travel Management EIS (under Environmental Consequences – General). The EIS summarizes the cumulative effects of past management activities, wildfires, timber harvest, fuels treatments, and other disturbances.

Tan oak is a very small component of habitats within Mad River Ranger District but common on Lower Trinity Ranger District. Madrone, however, is well distributed across most watersheds, but does not occur as a primary vegetative series or sub series. Madrone is typically found as a component of the Douglas-fir/white oak, Douglas-fir/black oak, Douglas-fir/canyon live oak, white oak/Douglas-fir, black oak/Douglas-fir, and canyon live oak/Douglas-fir vegetative sub series. Madrone usually makes up 4-10 percent of the cover in these stands.

A total of 123,409 acres of tan oak and madrone habitat (110,921 acres on Lower Trinity RD and 12,488 acres on Mad River RD) would be affected by motorized routes in this alternative (unauthorized routes). This represents 24 percent of this assemblage in the project area. Alternative 1 poses the greatest risk of reducing habitat effectiveness as a result of disturbance and habitat fragmentation associated with cross-country motor vehicle use.

<u>Alternative 2 and 3:</u>

Tan Oak/Madrone Assemblage Direct and Indirect Effects
(Hammond's flycatcher, western tanager, black-headed grosbeak)

Both alternatives would result in decreased amounts of disturbance and minor habitat fragmentation within the project area, but would be limited over the long-term since cross-country travel would be prohibited. Since the associated species are not widespread throughout the project area, effects would be limited to a small percentage of suitable habitat, and cross-country travel would be prohibited, these effects would not likely result in any impacts to populations within the project area over the short or long-term.

Tan Oak/Madrone Assemblage Cumulative Effects
(Hammond's flycatcher, western tanager, black-headed grosbeak)

Between the two alternatives no more than 25 percent of the proposed routes would occur within tan oak and madrone habitats. Alternative 2 contains 13.9 miles and alternative 3 contains 16.7 miles that occur within Douglas-fir/white oak, Douglas-fir/black oak, Douglas-fir/canyon live oak, white oak/Douglas-fir, black oak/Douglas-fir, and canyon live oak/Douglas-fir vegetative sub series.

Alternatives 2 and 3 would result in progressively lower risk due to the amount of motorized routes being added to the system. Based on the low amount of habitat affected,

the Six Rivers NF Motorized Travel Management Project will not alter the existing trend of these associated species, nor lead to a change in the distribution within the project area.

Alternative 4:

Tan Oak/Madrone Assemblage

(Hammond's flycatcher, western tanager, black-headed grosbeak)

Since this alternative would not result in the addition of any routes to the NFTS, there would not be any direct or indirect effects to tan oak and madrone habitats over the short-term. Since cross-country travel would be prohibited, disturbance would be decreased over the long-term and all unauthorized routes within suitable habitat would slowly rehabilitate while likely increasing tan oak and madrone assemblages.

Snag Assemblage

(Flammulated Owl, Western Screech Owl, Red-breasted Sapsucker, Downy Woodpecker, Hairy Woodpecker, White-headed Woodpecker, Vaux's Swift, Brown Creeper, Western Bluebird, Douglas Squirrel)

These species were selected as MIS under the Snag Assemblage because of their association with snags and cavities. Not all cavity dependent species use snags in the same way, some are primary or secondary cavity nesters, tree species, location, and size can differ, just as range of species across the project area. Because of the large size of the project area (505,430 acres), the diverse landscapes and ecology and the fact that current condition is the proxy of analysis, it is reasonable to assume snags and down wood are likely to continue to occur across all miles of forested routes and occur within at least one associated species home range (all of which are not equal).

Forest stands are managed to provide a renewable supply of large snags and logs well distributed across the landscape in a manner that meets the needs of species and provides for the ecological function. Forest inventory analysis across the forest and within the planning area confirm that snag and log data collected in sample plots are abundance and available to these cavity dependent species. Additional management direction focuses on snag recruitment under several areas including; riparian reserves, within suitable northern spotted owl and marbled murrelet habitat, late-successional reserves and special habitat areas. Further protections of snags are explained under Assumption 11 which provides guidance of hazard tree removal. Unique standard and guidelines are modeled for flammulated owls, white-headed woodpecker, and black-backed woodpecker within matrix lands.

Snag requirements are developed for specific forest cover types, and these may be further broken down by geographic location. The intent is to tailor the requirements to those species that are actually expected to occur in an area, taking into account tree species, diameters, falling rates, and decay rates.

Gaines et al. (2003) identified snag reduction and edge effects as the only road and motorized trail associated factors potentially affecting the majority of cavity-dependent species. Available literature does not suggest that recreation road- and trail-associated disturbances present a problem for primary cavity excavators (Hamann et al. 1999).

Snag Reduction and Edge Effects: The road-associated factors include the negative edge effects of roads on primary cavity excavator (PCE) habitat and snag and down log reduction resulting from wood cutting and hazard tree safety practices along roads (Bull and Holthausen 1993, Hutto 1995). Hazard tree removal along roads will reduce future snags and down logs while wildland fire both creates and removed snags and down logs. Short term degradation may occur due to clearing of trail by brushing and occasional removal of trees posing a potential safety hazard ("hazard trees"). These trees are typically snags that are within a tree-height distance from the road. Fallen snags are left as down woody debris contributing to the recruitment of large down wood (see Assumption 11 in EIS). To determine the potential for modification of cavity-dependent species habitat, the acres of habitat within 200 feet of routes available for motorized use was calculated along sections of forested routes. Within the project area a total of 272 miles of unauthorized routes will be analyzed using a 200 foot buffer. Within Alternative 1 routes that occur in forested areas where included in the analysis to capture the potential of current and future snags.

Flammulated Owl
(Otus flammeolus)

Flammulated owls are an uncommon summer resident locally in a variety of coniferous habitats from ponderosa pine to red fir forests. The species breeds within the North Coast and Klamath Ranges, Sierra Nevada, and within suitable habitat in mountains in southern California. This species is found within montane regions from 6,000 to 10,000 feet in elevation. Flammulated owls roost close to the trunks of fir or pine trees, and may occasionally use cavities in trees or snags for cover. Males utilize territorial "song posts", which are mostly associated with mature, open stands of mixed ponderosa pine and Douglas fir. They prefer habitat types with low to intermediate canopy closure. High quality habitat is associated with old growth ponderosa pine forests, mixed with California black oak and Douglas fir combined with fairly open canopy. Flammulated owls are secondary cavity-nesters in snags or live trees, and use cavities created by primary cavity-nesters such as woodpeckers.

The average home range for two males in the Sierra Nevada was 40 hectares (100 acres) (Winter 1974). Breeding densities have varied from 3.2 to 5.2 males per 100 hectares (247 acres) (Marshall 1939, Winter 1974).

There are no formal surveys however this species along with long–eared owls and pygmy owls are incidentally detected during northern spotted owl surveys across the project area (including; Pilot Creek, Buck Mtn, Kelsey and Beaverslide Project areas).

Western Screech Owl
(*Otus kennicottii)*

The western screech owl is an uncommon to common, yearlong resident of open, pinyon juniper, Riparian, redwood, and mixed conifer habitats. The species occurs within the length of the state of California to 8,000 feet in elevation with the exception of the central and western portions of the Mojave Desert. Western screech owls are secondary cavity nesters and typically utilize abandoned woodpecker cavities for nesting as well as hollow trees, logs, and stumps. The species utilizes a variety of habitats from

coniferous to oak-woodland forest communities in combination with openings, meadows, and riparian areas.

The average home range identified by Craighead and Craighead (1956) reported 1 to 1.3 square kilometers (0.4 to 0.5 per square mile) in winter and 1.8 to 5 per square kilometers (0.7 to 1.9 per square mile) in summer. Mean territory size in woodlands in Kansas was 0.3 hectares (0.7 acre) (Fitch 1947).

The Six Rivers NF Wildlife Sighting Record Database contains approximately 28 sighting records for the Mad River and 24 for the Lower Trinity Ranger Districts.

Red-breasted Sapsucker
(Sphyrapicus ruber)

The red-breasted sapsucker is an uncommon to fairly common, yearlong or summer resident in open wooded mountainous regions of California. Occurs from the Oregon border south in the coastal ranges and along the coast to Marin County, and along both the eastern and western slopes of the Cascade Range and Sierra Nevada south to Kern County. Like other sapsuckers and woodpeckers, the red-breasted sapsucker requires tree cavities for nesting and roosting. The species is an important cavity excavator, providing nest and roost cavities for a community of secondary cavity nesters. Snags and hardwood availability are habitat variables of special consideration for these sapsuckers. The species prefers nesting habitat within montane riparian habitats (aspen), montane hardwood-conifer, mixed conifer and red fir, especially near meadows, clearings, lakes, and slow moving streams.

The average territory size, as identified by Howell (1952) in Modoc County, California, ranges from a minimum of 45 meters (150 ft) around the nest up to 6.1 hectares (15 acres).

The Six Rivers NF Wildlife Sighting Record Database contains approximately 4 sighting records for the Mad River and 6 sighting records for the Lower Trinity Ranger Districts. The species has been recorded (2000-2006) associated with the South Fork Mountain Breeding Bird Survey Route (CAL – 953) with an average detection rate of 5.00 per route per annum (range 2-10). Friday Ridge Breeding Bird Survey Route detected this species every time the routes where surveyed; from 1994 to 2005 and from 1994 to 1996 at the Pilot Creek Breeding Bird Survey Route. In addition, bird point-count surveys conducted in association with the Marbled Murrelet R&D detected red-breasted sapsuckers at four stations, with five total detections.

Downy Woodpecker
(Picoides pubescens)

The downy woodpecker is a common, yearlong resident of riparian deciduous and associated hardwood and conifer habitats. Occurs throughout the state of California with the exception of the southern California desert regions and is typically found below 5900 feet in elevation. The species is closely associated with riparian softwoods and also utilizes hardwoods and conifers in close proximity to riparian habitats. The downy woodpecker exhibits a preference for aspen communities adjacent to riparian conifer/deciduous habitats.

The average territory size reported by Lawrence (1967) in Ontario reported breeding territories of 2.0 and 3.2 hectares (5 and 9 acres).

The Six Rivers NF Wildlife Sighting Record Database contains 1 sighting record for the Mad River Ranger District. The species has not been recorded on the Pilot Creek Breeding Bird Survey Route (CAL – 903) (Mad River RD) since route initiation in 1994 however it was detected every year surveyed from 1994 to 2005 at the Friday Ridge Breeding Bird Survey Route.

Hairy Woodpecker
(Picoides villosus)

The hairy woodpecker is a fairly common, permanent resident of mixed conifer and riparian deciduous habitats from sea level to 9,000 feet in elevation. The species occurs throughout the state of California, but scarce to absent in portion of coastal central California, Central Valley, Salinas Valley, Mojave, and the Great Basin. Specific habitat includes relatively open or patchy stands of conifers with adjacent riparian habitats and abundant snags. The hairy woodpecker is a primary cavity excavator and develops cavities within the interior of snags and or dead branches.

Low to moderate quality habitat exists within the project area. No surveys have been conducted for the hairy woodpecker within the project area. The Six Rivers NF Wildlife Sighting Record Database contains six sighting record for the Mad River and 10 sighting record for the Lower Trinity Ranger District. The species has been recorded associated with the South Fork Mountain Breeding Bird Survey Route (CAL – 903) (Lower Trinity RD) with an average detection of 4.33 per route per annum (range 1-9 per survey). The species has also been recorded annually associated with the Orleans Breeding Bird Survey Route (CAL-167) (Orleans RD); detections have been recorded since route initiation, and, specifically, the average detection rate is 1.0 per route per annum with an increasing Forest trend of 11 percent and population appears stable. In addition, bird point-count surveys conducted in association with the Marbled Murrelet R&D detected hairy woodpecker at five stations, with seven total detections.

White-headed Woodpecker
(Picoides albolarvatus)

The white-headed woodpecker is a common yearlong resident of montane coniferous forests up to lodgepole pine and red fir habitats. The woodpecker occurs in the Sierra Nevada, Cascade, Klamath, Transverse and Peninsular ranges, and Warner Mountains. Occasionally found at lower elevations along the north coast and interior areas. The species forages on live, mature conifers with deeply creviced and scaly bark, and also on snags and pine and fire cones. The white-headed woodpecker prefers semi-open areas with large mature trees providing 40-70% canopy closure. Cavities are excavated in large snags or stumps with a minimal diameter of two feet.

The Six Rivers NF Wildlife Sighting Record Database contains seven sighting records for the Mad River Ranger District. The species has been recorded associated with the South Fork Mountain Breeding Bird Survey Route (CAL – 953) with an average detection rate of 7.33 per route per annum (range 4-10/survey). Additionally, Friday Ridge Breeding Bird Survey Route detected this species every time the routes where surveyed; from 1994 to 2005 and from 1994 to 1996 at the Pilot Creek Breeding Bird Survey Route. This species was not detected during the bird point-count surveys conducted in association with the Marbled Murrelet R&D.

Vaux's Swift
(Chaetura vauxi)

Vaux's swifts are summer breeding residents of northern California. They breed fairly common in the Coast Ranges from Sonoma County in the North and very locally south to Santa Cruz County. The species prefers redwood and Douglas-fir habitats with nest sites in hollow trees and snags. They are fairly common migrants throughout most of the state in April and May, and August and September. Vaux's swifts occur in spring and summer, although not necessarily as breeders, on the Six Rivers National Forest. A wide variety of tree sizes and cover classes are used for reproduction, feeding, and cover. Because forest edges, meadows, burned areas and special features like streams, rivers, ponds, and lakes are used for foraging, habitat fragmentation would appear to have little effect on these swifts.

The average home range reported by Bull and Beckwith (1993) is identified a maximum of 5.4 kilometers from nests, however during the majority of the study radio-tagged swifts were recorded within 1.0 square kilometer (247 acres) of the nest.

The Six Rivers NF Wildlife Sighting Record Database contains one sighting record for the Mad River and three sighting record for the Lower Trinity Ranger District. The species has not been recorded associated with the Pilot Creek Breeding Bird Survey Route (CAL – 903) (Mad River RD) since route initiation in 1994.

Brown Creeper
(Certhia americana)

The brown creeper is a common to uncommon resident in montane habitats throughout the state of California, and in coastal conifer habitats south to San Luis Obispo County. This species is a rare transient in southern deserts on Channel Islands in fall and winter. The species prefers habitats containing dense, mature stands of conifers, but is also found in hardwood and hardwood–conifer habitats, especially in winter. Hardwoods and riparian deciduous trees are also used as a source of cover primarily during winter. Nests are typically constructed behind loose bark and rarely within cavities and are found usually within old-growth incense cedar, coastal redwood, pine, fir, or snags.

The average home range for the brown creeper identified by Bock and Lynch (1970) within the Sierra Nevada was 11 hectares (27 acres).

The Six Rivers NF Wildlife Sighting Record Database contains 5 sighting records for the Mad River and one sighting record for the Lower Trinity Ranger Districts. The species has been recorded associated with the South Fork Mountain Breeding Bird Survey Route (CAL – 953) with an average detection rate of 5.33 per route per annum (range 2-17/survey). Additionally, Friday Ridge Breeding Bird Survey Route detected this species every time the routes where surveyed; from 1994 to 2005 and from 1994 to 1996 at the Pilot Creek Breeding Bird Survey Route. In addition, bird point-count surveys conducted in association with the Marbled Murrelet R&D detected the brown creeper at 11 stations, with 31 total detections.

Western Bluebird
(Sialia mexicana)

The western bluebird is a fairly common-to-common yearlong resident throughout much of California, excluding the higher mountains and eastern deserts. The species breeds in open woodland of oaks, riparian deciduous trees or conifers with herbaceous understory. Optimal habitats include sparse to open canopied, mature, valley foothill and montane hardwood and hardwood-conifer communities. This species is uncommon in habitats exclusive of adjacent forest cover. The availability of snags frequently limits population density. The species typically nests within vacant woodpecker cavities in snags and stumps and will occasionally use nests of the cliff swallow.

The average territory size as reported by Wilson et. al. (1990) identified 10.2 territories per 40 hectares (10.2 territories per 100 acres) for the western bluebird.

The Six Rivers NF Wildlife Sighting Record Database includes four sighting records for the Mad River and one sighting record for the Lower Trinity Ranger District. The species has been recorded associated with the South Fork Mountain Breeding Bird Survey Route (CAL – 953) with an average detection rate of 3.0 per route per annum (range 1-6/survey). Addtionally, Friday Ridge Breeding Bird Survey Route detected this species every time the routes where surveyed; from 1994 to 2005 and from 1994 to 1996 at the Pilot Creek Breeding Bird Survey Route. No western bluebirds were detected during the bird point-count surveys conducted in association with the Marbled Murrelet R&D.

Douglas Squirrel
(Tamiasciurus douglasii)

The Douglas squirrel is a common, yearlong resident of conifer, hardwood conifer, and riparian habitats of the Sierra Nevada, Cascade, Klamath, North Coast, and Warner Ranges. The Douglas squirrel occurs in California from sea level to 11,000 feet in elevation. Douglas squirrels are omnivorous and eat primarily conifer seeds and fungi as well as occasionally arthropods, bird eggs and nestlings. Mature trees with substantial crown closure provide cover. The species generally avoids forested habitats with considerable shrub understory. Reproductive activity occurs within mature conifer stands and nests are usually located within vacant cavities within live green trees and snags. However, the Douglas squirrel is known to utilize rock cavities and nests of vegetative material located in the upper canopy.

Bird point-count surveys conducted in association with the Marbled Murrelet R&D detected Douglas squirrel at nine stations, with 14 total detections. In addition, extensive forest carnivore track plate and infrared camera surveys have occurred throughout the project area. Douglas squirrel were detected at 31 of 39 stations.

<u>Alternative 1:</u>
Snag Assemblage Direct and Indirect Effects
(Flammulated Owl, Western Screech Owl, Red-breasted Sapsucker, Downy Woodpecker, Hairy Woodpecker, White-headed Woodpecker, Vaux's Swift, Brown Creeper, Western Bluebird, Douglas Squirrel)

Habitat modification resulting from the maintenance of routes that include the removal of hazard trees appears to be the primary potential effect of adding routes to the NFTS. Effects to habitat could extend up to 200 feet from a road prism. Large snags and

dead and dying trees are important habitat components for many species. Trees posing a potential safety hazard ("hazard trees") are felled and left as down woody debris. These trees are typically snags that are within a tree-height distance from the road. Such snags are expected to have a negligible impact because removal will tier to Six Rivers NF Hazard Tree Removal Programmatic and Biological Assessment/Evaluation ensuring hazard tree removal on trails or road maintenance level 1 does not occur during breeding season for any TES species unless area does not occur within 0.25 miles of suitable habitat. This programmatic is in concurrence with US Fish and Wildlife Services (Case # 1-14-99-212) and Assumption 11 of EIS.

Cutting of fuelwood by the public is expected to have a negligible impact as cutting of all standing snags (dead or green) is prohibited. Use levels on routes which would be added to the NFTS under any action alternative are generally classified as either low (25-100 vehicles/week) or light (<25 vehicles/week) and varies greatly seasonally. Approximately **twenty percent of the roads are below 3000** feet elevation and are potentially accessible all year long as they are below the winter snow level. Therefore, it is assumed that from October to May annually the majority of routes are inaccessible.

Under Alternative 1, approximately 16,207 acres (likely an overestimate the amount of habitat affected because the numbers are derived within GIS without providing for topography, slope, and existing vegetation) may be affected primarily by trail maintenance and eliminating hazardous trees. Alternative 1 poses the greatest risk of reducing habitat effectiveness as a result of disturbance and minor habitat modification associated with cross-country motor vehicle use.

Snag Assemblage Cumulative Effects

(Flammulated Owl, Western Screech Owl, Red-breasted Sapsucker, Downy Woodpecker, Hairy Woodpecker, White-headed Woodpecker, Vaux's Swift, Brown Creeper, Western Bluebird, Douglas Squirrel)

Past, present, and reasonably foreseeable future actions affecting this assemblage are described in Terrestrial section of the Travel Management EIS (under Environmental Consequences – General). The EIS summarizes the cumulative effects of past management activities, wildfires, timber harvest, fuels treatments, and other disturbances.

Fragmentation caused by existing system roads and unauthorized routes within the project area. There are 66,981 acres of NFTS roads and 16,207 acres of unauthorized routes equate to 200 foot buffers of existing routes in potential forested habitat for each alternative as a means to compare the potential for snag reduction and conversely down woody debris. Alternative 1 poses the highest risk. While all action alternatives relative to Alternative 1 would decrease fragmentation through passive restoration on unauthorized routes not carried forwarded in the alternatives providing the greatest benefit to cavity dependant species because routine route and trial maintenance would not continue removing hazard trees. The beneficial effect of the action alternatives would reduce habitat fragmentation, increased patch size, and reduce sedimentation in stream channels within the project area over the long-term.

Alternative 1 poses the greatest risk of reducing habitat effectiveness as a result of disturbance and habitat fragmentation associated with cross-country motor vehicle use.

Alternative 2 and 3:

Snag Assemblage Direct and Indirect Effects

(Flammulated Owl, Western Screech Owl, Red-breasted Sapsucker, Downy Woodpecker, Hairy Woodpecker, White-headed Woodpecker, Vaux's Swift, Brown Creeper, Western Bluebird, Douglas Squirrel)

Both alternatives would result in decreased amounts of disturbance and minor habitat fragmentation within the project area, but would be limited over the long-term since cross-country travel would be prohibited. Since the associated species are not widespread throughout the project area, effects would be limited to a small percentage of suitable habitat, and cross-country travel would be prohibited, these effects would not likely result in any impacts to populations within the project area over the short or long-term. The beneficial effect of the action alternatives would reduce habitat fragmentation, increased patch size, and reduce sedimentation in stream channels within the project area over the long-term. These potential impacts are reduced incrementally in alternatives 2 and 3.

Snag Assemblage Cumulative Effects

(Flammulated Owl, Western Screech Owl, Red-breasted Sapsucker, Downy Woodpecker, Hairy Woodpecker, White-headed Woodpecker, Vaux's Swift, Brown Creeper, Western Bluebird, Douglas Squirrel)

Alternatives 2 and 3 would reduce the habitat disturbance and decrease fragmentation through passive restoration on unauthorized routes not carried forwarded in the alternatives providing the greatest benefit to cavity dependant species because routine route and trial maintenance would not continue removing hazard trees which typically result in suitable habitat. Alternatives 2 and 3 would result in progressively lower risk due to the amount of motorized routes being added to the system. Based on the low amount of habitat affected, the Six Rivers NF Motorized Travel Management Project will not alter the existing trend of these associated species, nor lead to a change in the distribution within the project area.

Alternative 4:

Snag Assemblage

(Flammulated Owl, Western Screech Owl, Red-breasted Sapsucker, Downy Woodpecker, Hairy Woodpecker, White-headed Woodpecker, Vaux's Swift, Brown Creeper, Western Bluebird, Douglas Squirrel)

Since this alternative would not result in the addition of any routes to the NFTS, there would not be any direct or indirect effects on snag assemblage over the short-term. Hazardous snag removal would not likely continue because trail maintenance would cease. Since cross-country travel would be prohibited, disturbance would be decreased over the long-term and all unauthorized routes within suitable habitat would slowly rehabilitate. Under Alternative 4, no potential impacts would occur associated with adding routes to the NFTS.

Downed Woody Material Assemblage

(Arboreal salamander, clouded salamander, blue grouse, dusky-footed woodrat, western fence lizard)

These species were selected as MIS under the down woody material assemblage because of their association with downed logs and woody material that provides these species with moist refugia and abundant invertebrates to feed on. Forest stands are managed to retain down logs in forest patches to provide the microclimate that is appropriate for organisms that use this substrate. The species-specific sections below identify suitable habitat components for each of these species.

Within the project area, there are an abundance of both logs and snags available to these species. Snags serve as a source of down woody material in the future. Dead and dying trees as well as green trees naturally contribute to down woody debris. Snag and log data collected in sample plots indicate both snags and logs are well distributed across the landscape.

Arboreal Salamander
(Aneides lugubris)

The arboreal salamander is found in the Coast Ranges from northern Humboldt County south to Mexico border. This species is only found on the surface during moist periods, when it can be located without difficultly. The arboreal salamander occurs primarily in valley-foothill hardwood, valley-foothill hardwood-conifer, and mixed conifer habitats. However, it is also found within Douglas fir to redwood habitat types. Additionally, the species may be found in chaparral in southern California. Moisture requirements are usually met by fall, winter, and spring rainfall. During dry periods, this salamander retreats to moist natural or human made refuges including rodent burrows, seepages, rock fissures, mine shafts, caves, spring boxes, water tanks, and wells.

Arboreal salamander home range encompasses 24,092,594 acres of which 213,870 acres include the project area. Alternative 2 has 28.9 miles of routes within the range while alternative 3 has 30 miles. The species is elusive and not known to occur in the project area or on the Mad River Ranger District and not been detected in Lower Trinity Ranger District. The project area is mostly beyond the eastern edge of the species range.

Clouded Salamander
(Aneides ferreus)

The clouded salamander is found in the humid coastal forests of northern California from the Oregon border to central Mendocino County. Habitats utilized include Douglas fir, redwood, red fir, and valley-foothill riparian communities. This species is not commonly observed in dry periods, and probably aestivates during these periods. The species is usually found under logs and beneath the bark of snags or logs. They have also been recorded to utilize talus piles and moist rock crevices. The clouded salamander is most abundant in dense old-growth forest but also occur at the borders of clearings. Dry seasons are spent aestivating deep under logs and moist rock crevices.

Clouded salamander is not known to occur on the Mad River or Lower Trinity Ranger Districts. The planning area is outside the range of the species.

Blue Grouse
(Dendragapus obscurus)

The blue grouse is an uncommon to common permanent resident at middle to high elevations. The blue grouse occurs in open, medium to mature stands of fir, Douglas-fir, and other conifer habitats, interspersed with medium to large openings and available water. The grouse inhabits North Coast Ranges in northwestern California, and the Klamath, Sierra Nevada, and portions of the Warner, White, and Tehachapi Mountains. The blue grouse utilizes firs and other conifers with dense canopy closure for cover. The primary food items include conifer needles (especially fir and Douglas fir), fruits, flowers, seeds, insects, land snails, and spiders. The species primarily nests on the ground, usually associated with brushy areas adjacent to downed logs or under low tree branches or shrub cover.

The average home range for the blue grouse reported by Mussehl (1960) averaged 51 hectares (126 acres), and varied from 12.5 to 115 hectares (31 – 283 acres).

As noted by CDFG, blue grouse populations within northern California remain consistently stable which is reflected in the stability of the hunter harvest bag limit regulations over the last 5-8 years.

This species is known to occur within the planning area. The species has been recorded associated with the South Fork Mountain Breeding Bird Survey Route (CAL – 95) (Mad River RD) and detections were recorded since route initiation in 1994. Specifically, the average detection rate associated with the Pilot Creek BBS Route is 1.33 per route per annum. The species showed up every year at the Friday Ridge Breeding Bird Survey Route from 1994 to 2005. This species was also detected during mollusk surveys in the project area and considered somewhat common.

Dusky-footed Woodrat
(Neotoma fuscipes)

The dusky-footed woodrat is common in California. It is found throughout the Coast Ranges, and in the northern interior (central Siskiyou County, Modoc County, Lassen County, and Shasta County). The species is also widespread along the entire western slope of the Sierra Nevada, mostly below 7,000 feet. The dusky-footed woodrat is abundant in forest habitats of moderate canopy closure and moderate to dense understory. Food items include a variety of woody plants and fungi, flowers, grasses, and acorns. Nest sites are constructed of sticks, grasses and leaves at the base of trees, shrubs, or often at the base of hills.

Extensive forest carnivore track plate and infrared camera surveys have occurred throughout the project area. Dusky-footed woodrat were detected at 3 of 39 stations.

Western Fence Lizard
(Sceloporus occidentalis)

The western fence lizard is probably California's most common reptile. This adaptable lizard is found throughout California except in true desert, where it is restricted to riparian and high mountain locations. The species ranges in elevation from sea level to 10,000 feet. Western fence lizards utilize a variety of habitats from valley-hardwood, grasslands, coniferous, hardwood, and alpine communities. Cover includes tree trunks, woodpiles, wooden fences, rock piles, crevices, burrows, and accumulations of coarse woody debris. Eggs are usually laid within damp, friable, well-aerated soil, in pits dug by females.

The western fence lizard can be detected in many types of habitat including riparian and river banks. This species is common across the project area.

Downed Woody Material Assemblage Direct, Indirect and Cumulative Effects
(Arboreal salamander, clouded salamander, blue grouse, dusky-footed woodrat, western fence lizard)

The direct, indirect and cumulative effects to the species associated with the downed woody material habitat assemblage are the same as those discussed under the snag assemblage. Refer to the snag assemblage section above.

Black Oak/White Oak Assemblage

(Acorn woodpecker, scrub jay, lazuli bunting, western gray squirrel)

These species were selected as MIS under the Black Oak/White Oak Habitat Assemblage because of their association with oak woodland habitats. Black oak and white oak habitats are distributed across the planning area. The project area contains about 50,658 acres of black oak/white oak habitat. This equates to about 10 percent of the habitat in the project area. Acorn woodpecker, western scrub jay, lazuli bunting and western gray squirrel are all known to occur within the planning area.

Acorn Woodpecker
(Melanerpes formicivorus)

The acorn woodpecker is a common resident woodpecker associated almost exclusively with oak woodland habitats from western North America to northern South America. Components of suitable acorn woodpecker habitat include the presence of various aged oaks, snags, cavities, abundant forage and available water. Acorn woodpeckers excavate cavities in the soft decayed wood of live trees and snags where they nest and roost. They also drill holes in snags, dead limbs and the bark of living trees where they store acorns for winter. In addition to acorns, acorn woodpeckers also eat flying insects, sap, nuts, seeds and fruits. This species seeks water daily therefore optimal habitat would occur within 0.25 miles of available water.

The average territory size for the acorn woodpecker as reported by MacRoberts and MacRoberts (1976) varied in size from 8.7 to 22.2 acres in size. Swearingen (1977) reported average territory size in the coast range of California to be approximately 6 acres. This species range encompasses 48,332,829, all but 509 acres of the range is within the project area but all proposed routes are within. No surveys have been conducted for the acorn woodpecker within the project area. The acorn woodpecker is known to occur in suitable habitat within the planning area. This species has been detected in association with the South Fork Mountain Breeding Bird Survey Route (CA-953) (Mad River RD). The species has been recorded, associated with the Orleans Breeding Bird Survey Route (CAL-167) (Orleans RD); detections have been recorded since route initiation, and, specifically, the average detection rate is 1.00 per route per annum. Population appears stable.

Western Scrub Jay
(Aphelocoma californica californica)

The western scrub jay is a common resident jay associated with scrub and oak woodland habitats. This species occurs west of the Cascades and the Sierra Nevada's from Washington to Baja California. Components of suitable western scrub jay habitat include the presence of oaks, shrubs, grasses, abundant forage and available water. The western scrub jay is uniquely adapted to oak habitats and is probably one of the best avian oak dispersers in California. This species prefers early successional shrub/oak woodland habitats with dense undergrowth that provides shade, cover, nesting habitat and abundant forage and prey. The jay constructs its nest relatively low to the ground in a small tree or shrub. The nest is constructed of twigs and grasses lined with rootlets and other plant fibers. Western scrub jays are gregarious and have been known to steal acorns from acorn woodpecker caches. In addition to acorns, western scrub jays also eat nuts, seeds, fruits, insects, small invertebrates, bird eggs and young birds. This species seeks water regularly therefore optimal habitat would occur close to available water. Similar to the acorn woodpecker, declining oak woodland habitats is likely to negatively affect the long-term population dynamics of this species.

The average territory size as reported by Verbeek (1973) for the western scrub jay is approximately 7.5 acres in California. The species range includes 60,562,426 acres all of which are include the project area. No surveys have been conducted for the western scrub jay within the project area. The species has been recorded associated with the Pilot Creek Breeding Bird Survey Route (CAL – 903) (Mad River RD) and detections were recorded since route initiation in 1994. Specifically, the average detection rate associated with the Pilot Creek BBS Route is 0.33 per route per annum. The species has been recorded, associated with the Orleans Breeding Bird Survey Route (CAL-167) (Orleans RD); detections have been recorded since route initiation, and, specifically, the average detection rate is 2.00 per route per annum. The western scrub jay is known to occur within the project area and is considered common.

Lazuli Bunting
(Passerina amoena)

The lazuli bunting is a common songbird associated with scrub and oak woodland habitats throughout California. Components of suitable lazuli bunting habitat include the presence of oaks, shrubs and herbaceous vegetation, abundant forage and available water. This species prefers shrub/oak woodland habitats with dense undergrowth that provides shade, cover, nesting habitat and abundant forage and prey. The lazuli bunting constructs its nest in dense thickets of shrubs, vines, low trees and tall forbs, usually near water. This species typically eats insects and small seeds.

The reported breeding density as reported by Archie and Hudson (1973) identified four males per 100 acres in Grant County, Oregon. Gaines (1974) identified 16 males per 100 acres of riparian habitats within California.

The species home range encompasses 70,552,194 acres all of which include the project area. The species has been recorded associated with the Pilot Creek Breeding Bird Survey Route (CAL – 903) (Mad River RD) and detections were recorded since route initiation in 1994. Specifically, the average detection rate associated with the Pilot Creek BBS Route is 8.0 per route per annum. The species has been recorded, associated with the Orleans Breeding Bird Survey Route (CAL-167) (Orleans RD); detections have

been recorded since route initiation, and, specifically, the average detection rate is 15.0 per route per annum. Population appears stable.

The lazuli bunting is known to occur within the project area and is considered a fairly common summer visitor and breeder.

Western Gray Squirrel
(Sciurus griseus)

The western gray squirrel is a locally common rodent associated with conifer and oak habitats. Components of suitable western gray squirrel habitat include the presence of mature oaks and conifers, snags, cavities, abundant forage and available water. This species uses mature trees for cover and requires cavities in trees and snags for nesting. Nests are lined with shredded bark, grass, moss and lichens. Acorns and mushrooms are vital components of their diet but they also consume pine nuts, forbs, grasses, and leaves.

The species home range encompasses 45,843,277 acres all of which include the project area. This species is considered common throughout the Forest as noted by personal observations. The project area contains suitable western gray squirrel habitat and considered common.

<u>Alternative 1:</u>
Black Oak / White Oak - Habitat Assemblage Direct and Indirect Effects
(Acorn woodpecker, scrub jay, lazuli bunting, western gray squirrel)

Alternative 1 poses the highest risk for negative encounters between humans and continued habitat fragmentation specifically because of unregulated cross-country travel. Black and white oak assemblages make up about 10% of the project area but unauthorized routes in associated species habitat would not be protected from proliferation of cross-country travel.

Black Oak / White Oak - Habitat Assemblage Cumulative Effects
(Acorn woodpecker, scrub jay, lazuli bunting, western gray squirrel)

Past, present, and reasonably foreseeable future actions affecting this assemblage are described in Terrestrial section of the Travel Management EIS (under Environmental Consequences – General). The EIS summarizes the cumulative effects of past management activities, wildfires, timber harvest, fuels treatments, and other disturbances.

Black and white oak habitat is more common within Mad River Ranger District (43,381) when compared to Lower Trinity Ranger District (7,277 acres). Black oak and white oak occur in white-fir/white oak, Douglas-fir/white oak, Douglas-fir/black oak, white oak/Douglas-fir, white oak/canyon line oak, black oak/Douglas-fir and gray pine/white oak vegetative sub series. A total of 50,658 acres of black and white oak habitat would be affected by motorized routes in this alternative (unauthorized routes). This represents 10 percent of this assemblage in the project area. Alternative 1 poses the greatest risk of reducing habitat effectiveness as a result of disturbance and habitat fragmentation associated with cross-country motor vehicle use.

Alternative 2 and 3:

Black Oak / White Oak - Habitat Assemblage Direct and Indirect Effects

(Acorn woodpecker, scrub jay, lazuli bunting, western gray squirrel)

Both alternatives would result in decreased amounts of disturbance and minor habitat fragmentation within the project area, but would be limited over the long-term since cross-country travel would be prohibited. Since the associated species are not widespread throughout the project area, effects would be limited to a small percentage of suitable habitat, and cross-country travel would be prohibited, these effects would not likely result in any impacts to populations within the project area over the short or long-term.

Black Oak / White Oak - Habitat Assemblage Cumulative Effects

(Acorn woodpecker, scrub jay, lazuli bunting, western gray squirrel)

Between the two alternatives no more than 5.6 percent of the proposed routes would occur within black and white oak habitats. Alternative 2 contains 9.8 miles and alternative 3 contains 6.2 miles

Alternatives 2 and 3 would result in progressively lower risk due to the amount of motorized routes being added to the system. Based on the low amount of habitat affected, the Six Rivers NF Motorized Travel Management Project will not alter the existing trend of these associated species, nor lead to a change in the distribution within the project area. The beneficial effect of the action alternatives would reduce habitat fragmentation, increased patch size, and reduce sedimentation in stream channels within the project area over the long-term.

Alternative 4:

Black Oak / White Oak - Habitat Assemblage

(Acorn woodpecker, scrub jay, lazuli bunting, western gray squirrel)

Since this alternative would not result in the addition of any routes to the NFTS, there would not be any direct or indirect effects to tan oak and madrone habitats over the short-term. Since cross-country travel would be prohibited, disturbance would be decreased over the long-term and all unauthorized routes within suitable habitat would slowly rehabilitate.

Forest-scale Habitat

The following table displays how much and/or the distribution of the available habitat on the Forest for each Management Indicator Species and/or Habitat Assemblage.

Individual Species	Available Habitat
Northern Spotted Owl	377,440 acres of Nesting / Roosting 260,390 acres of Foraging
Pileated Woodpecker	178,000 acres
Black Bear	543,000 acres
Pacific Fisher	242,375 acres
Black-tailed Deer	214,300 acres of key deer herd summer and winter range areas

Individual Species	Available Habitat
Seep / Spring - Habitat Assemblage	Well distributed across Forest – Managed under Riparian Reserves standards and guidelines
Marsh / Lake / Pond – Habitat Assemblage	Well distributed across Forest – Managed under Riparian Reserves standards and guidelines
River / Stream / Creek – Habitat Assemblage	Well distributed across Forest – Managed under Riparian Reserves standards and guidelines
Tan Oak / Madrone Habitat Assemblage	301,435 acres
Snag – Habitat Assemblage	Well distributed across Forest – Protected by Snag and Downed Log Requirements
Down Woody Material – Habitat Assemblage	Well distributed across Forest – Protected by Snag and Downed Log Requirements
Black Oak / White Oak - Habitat Assemblage	216,860 acres

The Six Rivers National Forest Land and Resource Management Plan (LRMP) uses Management Indicator Species (MIS) to assess potential effects of management activities on the various habitats and habitat assemblages with which these species are associated. There are seven habitat assemblages containing forty-one fish and wildlife species on the Forest (LRMP IV-97).

The LRMP does not require project level surveys are for MIS. NFMA requires maintaining populations of existing and desired non-native vertebrate species in the planning area (36 CFR 219.19) and the Forest meets this expectation through the management of habitat, not individual animals. Current conditions capture the residual effects of past human actions including unauthorized routes and natural events, regardless of which particular action or event contributed to those effects. Therefore, this analysis relies on current environmental conditions as a proxy for the impacts of past actions and current conditions.

The Six Rivers National Forest encompasses approximately 1,092,170 acres. Reserved land allocations comprise 91 percent of the Forest. Within the nine percent of the Forest designated as Matrix or Hayfork Adaptive Management Area, smaller reserves, such as 100-acre LSRs and Riparian Reserves, provide and maintain late-successional forest well distributed across the landscape. The Late-Successional Reserves and Riparian Reserves provide MIS with large contiguous blocks of habitat. In addition, all proposed management activities adhere to the LRMP standards and guidelines and species specific Habitat Capability Models.

There may be a small amount of MIS habitat lost as a result hazard tree removal, fuelwood collection, and fragmentation. However, potential impacts to MIS species would be minimized through the adherence of LRMP Standards and Guidelines for snags/down woody debris, riparian reserve buffers, limited ground disturbance, and programmatic.

Based on the amount of available habitat for each species and habitat assemblage on the Forest and the fact that a large majority of the habitat on the Forest is protected in reserves, these impacts are considered insignificant.

Analyses of **effects indicate that habitats would not be impacted or nominally impacted or have beneficial effects by the action alternatives (2, 3 and 4)** primarily because routes currently exist within habitats, incur light to low use, and would benefit from restriction of cross-country travel which would reduce habitat fragmentation, increased patch size, and reduce sedimentation in stream channels within the project area over the long-term. Cross-country travel within **Alternative 1 would continue to cause disturbance, habitat fragmentation, and resource damage**.

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Assumptions Specific to Wildlife Analysis

1. All vehicle types or classes result in the same amount of disturbance effect to wildlife.
2. Location of route is equal to disturbance effects from that route. All routes experiencing public motorized use are assumed to contribute the same level of disturbance.
3. Current ambient noise levels produced from roads designated as maintenance level 2 (open to OHVs) or higher road classification; private property; and other existing sources of noise, are considered background noise that account for some level of habituation to ambient noise levels by individual animals. Although many species avoid areas in proximity to roads or trails, locally roosting northern spotted owls are commonly found along logging roads including those with high use (L. Diller, Wildlife Biologist, personal communication. 2009). Personal communication (2009) by spotted owl expert Dr. Alan Franklin concurs with the assumption and said believes owls "are pretty oblivious to vehicular traffic at reasonably low levels." Therefore, it is assumed that individual animals are acclimated to some level of intermittent use within the project area.
4. Habitat is assumed impacted in the short-term. In the long-term, habitat will remain affected on routes added to the NFTS; but habitat will improve, at least to some degree, on routes not proposed for addition to the NFTS, by the prohibition of cross-country travel and subsequent passive restoration (under Alternatives 2-4). Passive restoration is expected to occur on routes not added to the NFTS as the impacted area naturally re-vegetates over time, depending on soil conditions, vegetation type and other site-specific conditions.
5. Without a prohibition on cross-country travel, route proliferation would continue to occur. Alternative 1 does not prohibit cross-country travel, therefore, route proliferation would likely continue to incrementally affect additional habitat and incrementally increase disturbance to wildlife. It is not possible to predict where this route proliferation would occur.
6. The focus of the analysis is on effects to suitable habitat as in general, where data are lacking in suitable habitat, the habitat is assumed occupied for associated species. Project-wide wildlife surveys have not been conducted; however, the analysis uses two long-term northern spotted owl (NSO) studies, the NSO Willow Creek Demography Study and the Pilot Creek Watershed Trail Use Strategy, as local data in the effects analysis. Both studies encompass large proportions of the project area.
7. Off highway vehicle use is a mode of transportation when surveying for the northern spotted owl and forest carnivores often during the breeding season. Although many species avoid areas in proximity to roads or trails, locally roosting northern spotted owls are commonly found along logging roads including those with high volume on Green Diamond property (L. Diller, Wildlife Biologist, personal communication. 2009). Furthermore, spotted owl expert A. Franklin concurs with the assumption and said believes the owls, "are pretty oblivious to vehicular traffic at reasonably low levels." Therefore, it is assumed that individual animals are acclimated to some level of intermittent use within the project area.
8. Current conditions capture the residual effects of past human actions and natural events, regardless of which particular action or event contributed to those effects. Therefore, this analysis relies on current environmental conditions which include all routes as a proxy for the impacts of past actions. Over the last 12 years, previous decisions have reduced the number of miles of open NFTS roads available for motor vehicle travel. These previous decisions have resulted in almost 170 miles of NFTS

roads being closed or decommissioned. Two long-term monitoring projects occur within the project area: Northern Spotted Owl Willow Creek Demography Study and the Pilot Creek Watershed Trail Use Strategy. Results from these studies are included within specie sections and do not presume recreational use to adversely affect the continued existence of the species.

9. Approximately twenty percent of the roads are below 3000 feet elevation and are potentially accessible all year long as they are below the winter snow level. Therefore, it is assumed that from October to May annually the majority of routes are inaccessible.

10. Hazard tree removal will tier to the Six Rivers NF Forest-wide Hazard Tree Removal BA/BE 2008. Hazard tree removal in general is necessary when designing, operating and maintaining a road, route or trail system open to the public. These requirements are expressed as standards for highway programs as indicated under FSM 1535.11 and described in 23 CFR 1204.4. A tree leaning onto a public traveled roadway, route, trail, or campground with the likelihood of falling is considered a hazard tree when one or more of the following are meet:
    a. The tree is showing signs of root failure or the soil supporting the tree is showing signs of movement and slope failure is probable or,
    b. The tree is dead or dying (within 1 year) and there is defect either in the bole or top which poses a hazard to the public.
    c. The tree is not dying within 1 year but there is a defect in the bole or top which poses a hazard to the public and the tree does not occur in suitable habitat for any listed species.

    Hazard tree removal is a concern with respect to routine maintenance of routes. This Forest-wide Hazard Tree Removal BA/BE (1993, revived 2008) is a programmatic coordinated between Six Rivers NF, in concurrence with US Fish and Wildlife Services (Case # 1-14-99-212) and provides design criteria that achieve a “No effect” or “May affect but not likely to adversely affect” determination.

11. Appendix A (of the FEIS) documents numeric value of miles added to the NFTS by alternative and is expected to have minor changes between the DEIS and FEIS. Minor increase or decrease in segments are negligible difference in quantitative effects and do not change the outcome of this analysis. Each species analysis is likely inflated due to the nature of GIS which assumes a flat plane, thereby overestimating buffer area because slope, cut bank and other topographic features did not get excluded.