

Biological Assessment/Evaluation  
Threatened, Endangered, Proposed and Forest Service Sensitive Species

**Lower Trinity & Mad River  
Travel Management**

Klamath Province  
Six Rivers National Forest  
Lower Trinity & Mad River Ranger Districts

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## **I. INTRODUCTION**

The purpose of this assessment/evaluation is to review and evaluate the proposed Forest Service action, **Lower Trinity & Mad River Travel Management project**, in sufficient detail to determine if the proposed action may affect any of the threatened, endangered, or Forest Service sensitive species listed below. This biological assessment/evaluation is prepared in accordance with legal requirements set forth under Section 7 of the Endangered Species Act (19 U. S. C. 1536 (c), 50 CFR 402), and standards established in Forest Service Manual direction (FSM 2672.42).

This BA/BE incorporates the information from the Forest-wide Reference Document (February 2008) for Biological Assessment/Evaluations. The Reference Document contains current management direction, species life history and habitat requirements information (on which effects of proposed projects are evaluated), and literature cited. The Reference Document is updated periodically as species status or other information changes.

### **List of Species Considered**

The following endangered, threatened, proposed, and Forest Service sensitive (TESP) wildlife species are addressed in this document. These species are known to or are suspected to occur in the project area. TESP plants and fish species are addressed in separate documents.

#### **Endangered**

none

#### **Threatened**

Northern spotted owl (*Strix occidentalis caurina*)

Marbled murrelet (*Brachyramphus marmoratus*)

#### **Critical Habitat**

Northern spotted owl

Marbled murrelet

#### **Forest Service Sensitive Species**

Bald eagle (*Haliaeetus leucocephalus*)

American peregrine falcon (*Falco peregrinus anatum*)

Northern goshawk (*Accipiter gentilis*)

Pacific fisher (*Martes pennanti pacifica*) - **also a Federal Candidate species**

American marten (*Martes americana*)

California wolverine (*Gulo gulo luteus*)

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

Southern torrent salamander (*Rhyacotriton variegatus*)

Northern red-legged frog (*Rana aurora aurora*)

Foothill yellow-legged frog (*Rana boylei*)

Western pond turtle (*Clemmys marmorata*)

## **II. CONSULTATION**

Endangered Species Act (ESA) The Endangered Species Act of 1973 (16 USC 1531 et seq.) requires that any action authorized by a federal agency not be likely to jeopardize the continued existence of a threatened or endangered (TE) species, or result in the destruction or adverse modification of habitat of such species that is determined to be critical. Section 7 of the ESA, as amended, requires the responsible federal agency to consult the USFWS and the National Marine Fisheries Service concerning TE species under their jurisdiction. It is Forest Service policy to analyze impacts to TE species to ensure management activities are not likely to jeopardize the continued existence of a TE species, or result in the destruction or adverse modification of habitat of such species that is determined to be critical. Forest Service Region 5 developed programmatic design criteria for route designation that would minimize impacts to wildlife while providing for motor vehicle use on NFS Lands. The Region received a letter of concurrence from U.S. Fish and Wildlife Services on the Motorized Travel Management Project Design Criteria (here after referred to as the Programmatic Design Criteria), on December 27, 2006. These criteria and Forest Plan Standard and Guidelines were used to identify routes included in the action alternatives.

All action alternatives are in compliance with the Programmatic Design Criteria and will result in a determination of 'No effect' or 'May Affect not likely to Adversely Affect' for the northern spotted owl and marbled murrelet (October 2006). The Programmatic Design Criteria did not address Critical Habitat for the northern spotted owl and marbled murrelet; therefore informal consultation was initiated with U.S. Fish and Wildlife Service (FWS) in October, 2009. 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). No physical actions (i.e., construction, decommissioning, or direct restoration) will occur outside the road prism. The FWS concurred that because the project will not remove or degrade primary constituent elements, the project will have "no effect" on northern spotted owl or marbled murrelet Critical Habitat.

## **III. CURRENT MANAGEMENT DIRECTION**

Bald Eagle

Management Direction

On July 9, 2007, the U. S. Fish and Wildlife Service published a Final Rule that removed (delisted) the bald eagle from the Federal List of Endangered and Threatened Wildlife in the lower 48 states. Official delisting of the bald eagle occurred 30 days from the date of the final rule. Bald eagles continue to receive federal protective status under statues of the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Upon delisting, the bald eagle was placed on the Regional Forester's list of Sensitive species.

The Bald and Golden Eagle Protection Act was originally passed in 1940 to protect bald eagles and was amended in 1962 to protect golden eagles as well, by prohibiting the take, possession, sale, purchase, barter, transport, export or import, of any bald or golden eagle, alive or dead, including any part, nest, or egg, unless allowed by permit (16 U.S.C 668(a), 50 CFR 22). "Take" includes pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb (16 U.S.C 668(a), 50 CFR 22.3). On July 5, 2007 the USFWS published a final rule which defined "disturb" to encompass effects to individual birds that are likely to result in an adverse biological impact.

"Disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding or sheltering behavior, or 3) nest abandonment,

by substantially interfering with normal breeding, feeding, or sheltering behavior.”

Management direction is contained in the Regional Guide and was incorporated into the Forest Plan land allocations and standards and guides. The Recovery Plan for the Pacific Bald Eagle (USDI 1986) forms the basis for the management direction and provides recovery goals adopted by the Regional Guide.

The Recovery Plan is based on a zone concept within which habitat and nest sites will be managed at high to moderate levels of habitat capability, as defined in the bald eagle Habitat Capability Model in the Forest Plan FEIS. Each territory is divided into three zones. The nest site protection zone contains the nest tree and habitat that directly influences nest site conditions. The primary disturbance zone surrounds the nest site protection zone, buffering nesting birds from disturbance. The feeding zone provides foraging habitat.

See the Six Rivers National Forest Land and Resource Management Plan (LRMP) and the Forest-wide Reference Document (February 2008).

#### **IV. DESCRIPTION OF THE PROPOSED ACTION**

##### **Background**

The Six Rivers NF currently manages and maintains approximately 1214 miles of National Forest Transportation System (NFTS) roads and 36 miles NFS motorized trails on the Lower Trinity and Mad River Districts. The Six Rivers National Forest NFTS was developed over many decades to meet a variety of needs including timber management, fuel treatment, access to private in-holdings, fire control, utility management, special uses management and recreation. Other roads were acquired with past land exchanges or acquisitions. Harvesting of special forest products such as greenery, firewood, mushrooms and plants are among the many opportunities afforded by the NFTS.

This proposal is just one project, among many, in the Six River NF's long-term goal of managing the transportation system. 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. Implementation of this proposal and the subsequent designation of motor vehicle routes through publication of the MVUM are only one step in the overall management of the Six Rivers NF NFTS.

##### **Location**

The project area includes all National Forest System lands on the Lower Trinity and Mad River Ranger Districts of the Six Rivers NF outside of Wilderness. **Map attached on last page of this document.**

##### **Description of the Alternatives**

This section describes the four types of actions and then each of the four alternatives considered in detail.

##### **Alternative 1 No Action:**

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)

<p><b>Alternative 2 Proposed Action:</b> Under this alternative 56 miles of unauthorized routes would be added to the current NFTS and a permanent Forest order would be enacted which prohibits cross-country travel.</p>
<p><b>Alternative 3 Recreation Action, <i>*preferred</i>:</b> Under this alternative 64 miles of unauthorized routes would be added to the current NFTS and a permanent Forest order would be enacted which prohibits cross-country travel.</p>
<p><b>Alternative 4 Prohibition of Cross-country Travel:</b> 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).</p>

\*The Draft EIS Alternative 2 was **identified as the preferred Alternative in DEIS**. All alternatives are addressed here.

Each action alternative is comprised of one or more of the following types of actions:

- **Prohibition of cross-country travel/** Forest Plan conformance with the Travel Management Rule: All of the action alternatives prohibit motor vehicle travel off designated NFTS roads and NFTS motorized trails by the public except as allowed by permit or other authorization. Prohibition of cross-country travel is included in order to address the need to regulate unmanaged motor vehicle use.
- **Additions to the NFTS motorized trails:** Alternatives 2 and 3 include the addition of unauthorized routes to the NFTS as motorized trails. Alternatives 2 and 3 include the co-location of motorized trails on existing NFTS closed roads for dual management. Vehicle class and, if appropriate, season of use for those proposed additions are identified. Additions are considered in order to respond to the need to provide motor vehicle access to dispersed recreation opportunities and to provide a diversity of motorized recreation opportunities. For purposes of this analysis, each proposed trail (or trail segment) is identified by a unique alpha/numeric reference for unauthorized routes and NFTS road number for co-location with closed roads. All trail additions have a proposed trail management objective. Considerations include vehicle class, recreational opportunity, and difficulty level, as identified for each proposed motorized trail. This information for each proposed trail is contained in the EIS Tables A-1a, A-1b, and A-2 of Appendix A. This action component responds to the need to provide a diversity of wheeled motorized recreation opportunities and access and minimize potential adverse resource effects.
- **Changes to NFTS roads and motorized trails:** The action alternatives include limited changes to vehicle class and/or season of use allowed on existing NFTS roads and motorized trails. Vehicle class indicates the type of vehicle (passenger car, motorcycle, all-terrain vehicle, etc) allowed to operate NFTS road or motorized trail. Changes in vehicle class from highway-legal only to include all vehicles (mixed use) on passenger car roads (Maintenance Level 3 and higher) requires a mixed-use analysis. Changes in vehicle class for trails are based on existing trail width and design features based on management objectives for each trail. Season of use indicates the time of year vehicles are allowed to operate on a trail. Changes to the NFTS season of use are considered where damage to soil or aquatic resources, harassment of wildlife, spread of Port Orford Cedar root disease may otherwise occur, and where a NFTS motorized trail is accessed by a NFTS road which is subject to seasonal

closure. Also included in this group of actions is the removal of motorized use from trails which are also designated for non-motorized use where either topography and route geometry are not compatible with motorized use and/or resource concerns cannot be mitigated with regular maintenance actions. This action component responds to the need to provide a diversity of wheeled motorized recreation opportunities and access and minimize potential adverse resource effects.

### **Alternative 1: No Action**

The No Action Alternative provides a baseline for comparing the other alternatives. Under the No Action Alternative, no changes would be made to the NFTS and there would be no prohibition of cross-country travel. Current management plans would continue to guide project area management. The Travel Management Rule would not be implemented, and no Motor Vehicle Use Map (MVUM) would be published. Unauthorized routes would continue to have no status or authorization as NFTS facilities.

- **Cross-Country Travel:** Public motor vehicle travel off designated NFTS roads and NFTS motorized trails would continue except as otherwise prohibited.
- **Additions to the NFTS motorized trails:** No roads or motorized trails would be added to the NFTS under this alternative.
- **Changes to the NFTS roads and motorized trails:** No changes to type of vehicle or season of use would be made to NFTS under this alternative.

### **Alternative 2: Proposed Action (Identified as the Preferred Alternative in DEIS)**

Alternative 2 is the Proposed Action as described in the Notice of Intent (NOI) published on December 19, 2008 (Volume 73, Number 245) and in the DEIS, Notice of Availability published in the Federal Register on June 5, 2009 (Federal Register Volume 74, Number 107) with minor corrections identified through public involvement and additional field work following publication of the DEIS. Alternative 2 includes the following actions:

- **Cross-Country Travel:** Public motor vehicle travel off designated NFTS roads and NFTS trails would be prohibited, except as allowed by permit or other authorization.
- **Additions to the NFTS motorized trails:** The Proposed Action would add a total of 60 miles as new NFTS motorized trails by vehicle class and season of use:
  - 33 miles of unauthorized routes would be added to the NFTS as motorized trails open to all trail class vehicles (high clearance);
  - 23 miles of unauthorized routes would be added to the NFTS as motorized trails open to wheeled vehicles 50-inches or less in width.
  - 3 miles of motorized trails open to wheeled vehicles 50-inches or less in width would be co-located on NFTS closed roads (Maintenance Level 1) for their dual management as motorized trail and closed road.
- **Changes to the NFTS roads and motorized trails:**
  - 2 ½ miles of NFTS road would change vehicle class from highway legal only to mixed use (highway legal and non-highway legal vehicles); and would change from being maintained for passenger cars (Maintenance Level 3) to being maintained for high clearance vehicles (Maintenance Level 2), as recommended in the Six Rivers National Forest Roads Analysis, February 2003.
  - 23 miles of NFTS road would change vehicle class from highway legal only to mixed use (highway legal and non-highway legal vehicles) with no change in maintenance level. Road segments are up to 3 miles long and provide connecting links between motorized trails and/or mixed use roads where alternate routes do not exist and/ are unfeasible.
  - 4 miles of NFTS motorized trail would change vehicle class from motorcycle only to wheeled vehicles 50-inches or less in width.
  - Remove 6 miles of motorized use from NFTS trails.

- 12 miles of motorized trail accessed from NFTS roads subject to seasonal closure would change season of use from “none designated” and “July 10 to Jan 30” to include a wet weather closure.

The following seasonal restrictions are proposed under Alternative 2 (the Proposed Action) in order to minimize species disturbance, prevent the spread of POC root disease, protect surface tread and minimize sediment mobilization, or a combination of the preceding. Seasonal use dates reflect POC, wet weather and combination closures specific to routes addressed in the alternative.

#### Alternative 2 - Seasonal Closures by Resource Concern

Resource	Reason for Restriction	Open Period- Season of Use
Port Orford Cedar (POC)	Prevent spread of POC root disease	June 1 – Oct 19
Wet Weather	Facility protection & minimize sediment mobilization or accessed over NFTS road subject to wet weather closure	June 1 – Oct 31
Combination	Wet Weather	July10-Oct31

#### Alternative 3 (Preferred Alternative)

Alternative 3 responds to the issue of access and motorized recreation opportunity. During scoping the Forest received suggestions for additional routes for inclusion in the NFTS and management of wet weather closures. Some unauthorized routes identified during Steps 1 and 3 of the Travel Management process but not included in the proposed action because of lower recreational value and/or higher resource concerns were identified as important to the public during scoping, and are added as motorized trails in this alternative, in addition to other actions proposed under Alternative 2. The season of use corresponding to wet weather restrictions was reviewed and found NFTS roads on the Mad River Ranger District which access the subject NFTS motorized trails are open from May 1 through November 15. The proposed season of use for NFTS motorized trails subject to wet weather closures was therefore expanded for consistency with the NFTS access roads.

- **Cross-Country Travel:** Public motor vehicle travel off designated NFTS roads and NFTS trails would be prohibited, except as allowed by permit or other authorization.
- **Additions to the NFTS motorized trails:** This expanded motorized recreation alternative would add a total of 66 miles as new NFTS motorized trails by vehicle class and season of use:
  - 35 miles of unauthorized routes would be added to the NFTS as motorized trails open to high clearance vehicles;
  - 23 miles of unauthorized routes would be added to the NFTS as motorized trails open to wheeled vehicles 50-inches or less in width.
  - 5 miles of unauthorized routes would be added to the NFTS as motorized trails open to motorcycles only.
  - 3 miles of motorized trails open to wheeled vehicles 50-inches or less in width would be co-located on NFTS closed roads (Maintenance Level 1) for their dual management as motorized trail and closed road.
  - 300 feet of motorized trails open to motorcycles only would be co-located on NFTS closed roads (Maintenance Level 1) for their dual management as motorized trail and closed road.
- **Changes to the NFTS roads and motorized trails:**

- 2 ½ miles of NFTS road would change vehicle class from highway legal only to mixed use (highway legal and non-highway legal vehicles); and would change from being maintained for passenger cars (Maintenance Level 3) to being maintained for high clearance vehicles (Maintenance Level 2).
- 23 miles of NFTS road would change vehicle class from highway legal only to mixed use but would still be maintained for passenger cars (Maintenance Level 3 and higher);
- 4 miles of NFTS motorized trail would change vehicle class from motorcycle to vehicles 50-inches or less in width.
- Remove 6 miles of motorized use from NFTS trails.
- 12 miles of motorized trail accessed from NFTS roads subject to seasonal closure would change season of use from “none designated” and “July 10 to Jan 30” to include a wet weather closure.

A complete listing of motorized trails to be added into the NFTS, including vehicle class, season of use, and route-specific mitigations can be found in the EIS Appendix A. The following seasonal restrictions are proposed under Alternative 3 Expanded Motorized Recreation. Seasonal use dates reflect POC, wet weather and combination closures specific to routes addressed in the alternative.

#### Alternative 3 - Seasonal Closures by Resource Concern

Resource	Reason for Restriction	Open Period – Season of Use
Port Orford Cedar (POC)	POC root disease	June 1 – Oct 19
Wet Weather	Facility protection & minimize sediment mobilization or accessed over NFTS road subject to wet weather closure	Lower Trinity Ranger District: June 1- Oct 31 Mad River Ranger District: May 1 – Nov 15
Combination	Wet Weather	July10-Nov 15

#### Alternative 4

Alternative 4 responds to the issues of non-motorized recreation experience and adverse effects to forest resources resulting from the addition of motorized trails by not adding any motorized trails to the NFTS. Alternative 4 responds to the need of prohibiting cross-country travel, and includes seasonal closures on NFTS motorized trails accessed by NFTS roads subject to wet weather closures. This alternative also provides a baseline for comparing the impacts of other alternatives since it both prohibits cross country travel and adds no additional routes.

- **Cross-Country Travel:** Public motor vehicle travel off designated NFTS roads and NFTS trails would be prohibited, except as allowed by permit or other authorization.
- **Additions to the NFTS motorized trails:** Neither inventoried unauthorized routes nor motorized trails co-located on closed NFTS roads are proposed for addition to the NFTS additions under this alternative.
- **Changes to the NFTS roads and motorized trails:** 12 miles of motorized trail accessed from NFTS roads subject to seasonal closure would change season of use from “none designated” and “July 10 to Jan 30” to include a wet weather closure.

#### Alternative 4 - Seasonal Closures by Resource Concern

Resource	Reason for Restriction	Open Period – Season of Use
Wet Weather	Accessed by NFTS roads with wet weather restriction	May 1 – Nov 15

A detailed description of the proposed action can be found in Chapter 2 of the EIS. Maps depicting the proposed action can be found on the Six Rivers NF web-site by selecting the Travel Management / Off-Highway Vehicle Route Designation link, and then LOWER TRINITY & MAD RIVER TRAVEL MANAGEMENT PROJECT@ [www.fs.fed.us/r5/sixrivers/projects/ohv](http://www.fs.fed.us/r5/sixrivers/projects/ohv)

### **Mitigation Measures**

The mitigation measures proposed for all resources, as identified in the EIS Appendix A (and discussed in Chapter 2), have been assessed for potential to impact terrestrial wildlife or their habitats. Routes where impacts could not be mitigated were eliminated from consideration. In the EIS, both Alternatives 2 and 3 had limited operating periods (LOP) proposed on specific routes to limit noise disturbance during the breeding season. These segments were selected based on the proximity of known or suspected nests within a ¼ mile of the proposed routes. Since that time, field visits were conducted to verify the need for LOPs. Factors used in this field assessment included topography, ambient noise levels (Assumption 3), vegetation type, association to ongoing studies and survey results (see Assumption 6 and 7), and other site-specific conditions (Assumption 8). The result of this reassessment was that no new limiting operating periods restricting seasonal access are necessary (this was disclosed as a potential outcome in the EIS). This does not pertain to wildlife restrictions on existing NFTS roads that have been considered in past management decisions.

The use of trails on National Forests for the operation of motor vehicles has the potential to affect hydrologic functions through the compaction of soils, interception of runoff; and detachment, transport, and deposition of sediment can have indirect effects on wildlife habitat by degradation of vegetation and clogging interstitial spaces. Erosion and sediment generated by the trail or road surface may be a concern to water quality if there is the potential for its delivery to a stream course (see hydrology section) but the mitigation measures are expected to reduce water quality concerns for foraging and breeding of some species as well as protect wildlife aquatic and riparian habitats and the food chain. Some routes would also be closed during the wet weather season to prevent rutting which exacerbates erosion.

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 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 aquatic and riparian habitats, corridors, and the food chain. Manual treatments of invasive and noxious plant species will not likely affect 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.

The proposed route additions avoid many more sensitive hydrologic areas as compared to Alternative 1. Mitigation measures are only included in Alternatives 2 and 3. Mitigation measures under Alternatives 2 and 3 would comply with all Standards and Guidelines and BMPs in the Forest Plan and Clean Water Act. A list of Standards and Guidelines and Best Management Practices that apply to this project are included in Appendix B of the EIS. Alternative 1 would not prohibit cross-country travel nor be in compliance with the Forest Plan and Clean Water Act. Alternative 4 is only using routes and trails that are already a part of the NFTS. Similar to Alternative 1, the existing routes that are not a part of the NFTS would not be mitigated in Alternative 4. Furthermore, routes that have existing erosion will take longer to passively recover than routes that do not have existing erosion (see Soil Resources 3.4).

Route capping was not proposed in the DEIS as a mitigation measure on routes that positively test for asbestos (for more specifics see 2.3 Mitigation Measures and 3.3 Geology). Better information since its

publication has identified this naturally occurring geological resource as a potential public concern because of the risk of exposure to air-borne asbestos fibers. Capping is not expected to occur outside the road prism and appropriately sized equipment will be used to implement the mitigation, so that route widening will not occur. Noise generating equipment necessary to the implementation of this mitigation will adhere to the above mentioned and bulleted design criteria resulting in a likely limiting operating period.

Direct and indirect effects of implementing mitigation measures in the short term (1 year) are limited. No new ground disturbance would occur as the routes already exist. The only ground disturbance would be the installation of water bars and capping. Work would occur on the existing travel way, which is already a disturbed site. No overstory vegetation will be removed or degraded during water bar construction. Work will be conducted using heavy equipment. Mitigation measures for projects (i.e., waterbars and capping) that generate noise disturbance above normal background levels “May affect but not likely to adversely affect” wildlife species with the following design criteria: use of mechanized equipment for projects (i.e., waterbars and capping) will be restricted within 500 feet:

- Potential noise generating activities (use of heavy equipment, chainsaws, etc), within 0.25 miles of suitable habitat (nesting and roosting) that will not remove or degrade suitable spotted owl habitat. Seasonal restriction required between February 1 and July 31, unless surveys determine the area is unsuitable, unoccupied, non-nesting, or provided informal consultation with USFWS is initiated.
- Potential noise generating activities (use of heavy equipment, chainsaws, etc), within 0.25 miles of suitable habitat that will not remove or degrade suitable marbled murrelet habitat. Seasonal restriction required between March 24 and September 15. (Disturbance projects starting after August 5th require consultation with USFWS.)

Hazard tree removal is a concern with respect to routine maintenance of routes. 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 met:

- 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.

### **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 (trail slope, topography, road substrate and condition, etc).
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.

4. In the long-term, habitat will be 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 in general. Where survey data are lacking, the habitat is assumed occupied for associated species.
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. It is assumed that individual animals are acclimated to some level of intermittent use within the project area.
8. 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.
9. 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. Acreage amounts of habitat affected for each species 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.

## **V. EXISTING ENVIRONMENT**

This section briefly describes the existing condition of the terrestrial biota and their habitat within the Mad River and Lower Trinity Ranger Districts. Refer to the EIS, Chapter 3.7 for a complete review of all analysis and methodology

### ***Northern spotted owl***

The tables below summarize current condition by alternative and are broken down by habitat status and management boundaries. Not all of the habitats within these boundaries are suitable for the northern spotted owl therefore the analysis will focus on existing suitable habitat.

### **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 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**

<b>Alternative</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>

Number of <b>Activity Centers</b> (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 <b>Disturbance Zone</b> , ¼ mile radius of activity center	13.4	2.76	2.80	0
Miles of routes in <b>Nesting and Roosting Habitat</b> within ¼ mile activity center added to the NFTS	4.18	0.33	0.37	0
Miles of routes in <b>Foraging Habitat</b> 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
<b>Grand Total</b>	<b>238,100</b>	<b>134,100</b>

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-successional 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**

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

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**

<b>Alternative</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
Miles of routes added to the NFTS (existing 1002 miles) within <b>Home Range 1.3 mile</b> radius of activity center	196	45	53	0
Number of <b>Activity Centers</b> (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 <b>Nesting and Roosting Habitat</b> (180,663 acres within project area)	64	11.12	14.31	0
Miles of routes added to the NFTS (existing 334) within <b>Foraging Habitat</b> (123,595 acres within project area)	62.78	17.05	19.37	0
Miles of routes added to the NFTS (existing 425) within <b>Critical Habitat</b> (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.

### ***Marbled murrelet***

Marbled murrelet (MAMU) is a late-successional forest associated species and federally listed as threatened. The U.S. Fish and Wildlife Service have designated marbled murrelet Critical Habitat Units (CHU).

There are 109,598 acres of marbled murrelet CHU within the project area which currently contain 204 miles of existing NFTS roads and 33 miles of unauthorized routes. The range of the marbled murrelet is delineated by distance from the coast. The primary zone, designated as Zone 1, occurs close to marine environments and extends approximately 25-33 miles east. Zone 2 extends approximately 40 – 47 miles from the western coast line. There is 47,923 acres of CHU within Zone 1.

The Forest manages marble murrelet suitable nesting habitat that is defined as late mature and old-growth coniferous forest or younger forests with remnant large trees with large enough limbs to provide nesting opportunities. Of the 97,506 acres of marble murrelet suitable nesting habitat within the project area, 49,412 acres are within Zone 1 and currently contain 170 miles of NFTS and 25 miles of unauthorized routes.

The entire Mad River District, portions of the Lower Trinity District and Orleans Ranger Districts, and portions of the Klamath National Forest and the Hoopa Valley Indian Reservation, are within the Marbled Murrelet Range and Distribution Study area (RDS). The RDS involved surveying Zone 2 on the Six Rivers and parts of the Klamath National Forest (south of the Klamath River). The project was completed in 2 phases, in 1992-1994, using the 1993 revised protocol (Ralph and Nelson 1993), and in 1995 and 1996 (Hunter et al., 1998) using the updated 1994 protocol (Ralph et al. 1994). No MAMU were detected. In this study, 2184 intensive surveys were conducted at 273 stations in the study area, focusing on late-mature and old growth tanoak forests. Climate in the area consists of hot, dry summers that are not moderated by coastal fog or frequent summer showers. The finding of the Range and Distribution Study was that this portion of the Forest (Zone 2) is outside of the range of the MAMU. The US Fish and Wildlife Service (USFWS) agreed with this conclusion (Technical Assistance letters #1-14-97-TA-9 and #1-14-1997-61.2).

Although critical habitat for the murrelets has been designated within the project area and low to high suitable habitat occurs surveys associated with Marbled Murrelet Range and Distribution Study as well as other survey efforts (including 2009 project level surveys) resulted in no murrelets detections of individuals or nests. Six Rivers NF is currently planning to revisit Zone 1 with surveys effort planned for 2010 and 2011 using advance radar equipment increasing the odds of detecting if species are present. The intent is to have a similar study such as those implemented in the early 1990's in effort to detect marbled murrelets within Zone 1

Project level surveys (for only a single season and, therefore, not to 1994 Pacific Seabird Group protocol) were implemented in 1992 by Lower Trinity Ranger District, in Grouse Creek Watershed (Zone 1). These surveys yielded no detections of marbled murrelets. The Forest performed a series of marbled murrelet surveys in 1995-1996 in the Inner North Coast Ranges, which includes both districts of the project area and the survey report concluded that Mad River Ranger District is not within the range of the marbled murrelet. Surveys were also implemented in 1995 to determine presence/absence; however, no marbled murrelets were detected (Hunter et al. 1998). In 1998 and 1999, intensive surveys were conducted within the project area during Phase II of the Marbled Murrelet Range and Distribution Study. Although in suitable nesting habitat the study yielded no detections of marbled murrelets within the project area or the entire study area. It is likely the distance from the coast line is too great (>25 miles) as nesting marbled murrelets do occur along the coast west of the project boundary. Due to the lack of

detections or known nest sites the effects analysis will not include number of sensitive sites for TES species (protected activity centers, nest sites, territories) within ¼ mile of an added.

Considering current conditions in the portion of Zone 1 within the project area (Lower Trinity Ranger District only), contains 49,412 acres of suitable marbled murrelet habitat. Habitat analysis was accomplished based on 170 miles of NFTS and 25 miles of unauthorized routes within Zone 1 suitable habitat. Current condition of unauthorized routes within suitable habitat that is within three distances (30 feet, 100 feet and 200 feet existing unauthorized routes is displayed in the table below. With respect to marbled murrelets the following emphasis areas are considered when evaluating buffer distances on routes. Site disturbance at 30 feet, includes risk factors such as displacement or avoidance behavior, disturbance and physiological stress responses. Site disturbance at 100 and 200 feet; include creation of movement barriers, connectivity or increased fragmentation, and pathways or vectors for competitors, predators or disease which affect survivorship.

#### **Marbled Murrelet Suitable Habitat Potentially Being Impacted by Existing Unauthorized Routes**

	<b>Habitat Within 30 Feet</b>		<b>Habitat Within 100 Feet</b>		<b>Habitat Within 200 Feet</b>	
	<b>Acres</b>	<b>% of Total</b>	<b>Acres</b>	<b>% of Total</b>	<b>Acres</b>	<b>% of Total</b>
<b>Suitable Habitat</b>	184	0.37	690	1.4%	1622	3.3%

Alternative 1 poses the highest risk for negative encounters between humans by allowing public motorized use on 194 miles within suitable habitat. Alternatives 2 and 3 would reduce the risk by approximately 10 percent relative to Alternative 1 and decreased fragmentation through passive restoration on unauthorized or unclassified routes not carried forwarded in the Alternatives. Under Alternative 4, the risk is reduced 12.7 percent respectively relative to Alternative 1.

#### **Forest Service Terrestrial Wildlife Sensitive Species**

##### ***American marten***

American marten is associated with late-seral closed canopy coniferous forest. Preferred habitat is characterized by multi-storied, multi-species, mid-high elevation (>3,000-feet), late seral coniferous forests with >40% canopy cover. Moderate and high quality habitats contain key habitat elements such as large snags and downed wood, which are important for denning and resting. Martens also require travel corridors comprised of closed canopy forests to move between quality habitat areas.

Within the project area the range of the marten occurs within LSR and equates to 13,165 acres of suitable habitat. There are 35,830 acres of marten habitat within the project area. The Six Rivers Forest Plan included additional standards and guidelines that provide greater benefits to late-successional forest related species that include habitat management areas for the American marten (page IV-57). . 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. There are no known marten dens within the project area.

Marten observations have not been recorded in the project area since 1972 and are unlikely to occur in the project area. However, it is difficult to visually discern between a fisher and a marten; therefore some observations of fisher are questionable. Confirmed detections within the last decade are known in Orleans and to the north. An extensive research project by the USFS Redwood Sciences Laboratory resulted in no detections in the Pilot Creek Track Plate Study. Pilot Creek has extensive stands of mature and old-growth coniferous forests located between two of the 3 LSRs. The Pilot Creek track plate 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.

While the redwood belt once supported these marten, previous field surveys in north coast counties (1989-1995) for fisher and marten detected no marten. The surveys summarized by Zielinski and Golightly (1996), used approximately 1250 track plate or camera stations from 115 locations, for more the 20,000 survey days. A recent study on the status of the Humboldt marten focused on replicating stations from 2000 and 2001 in 2008 and 2009 (in press Slauson et al. 2009). Results are currently in draft but a significant decline in detections was found. Cause is unknown and could not be determined if it is a natural influence or human-caused factor. Detections and habitat do appear to be correlated with rocky outcrop in serpentine soils where plant association is predominately huckleberry oak and Pacific rhododendron. The southernmost detection is Fish Lake on the Orleans Ranger District and east to Redwood State Park.

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); however LSR 306 and 307 within the project area have relatively small contiguous patches of mature and older true forest, and therefore may only support one or two reproductive units. Habitat loss and fragmentation as well as unsuitable low elevation hardwoods create unfavorable conditions for this species to persist. Motorized routes can impact martens in a number of ways including; collisions, displacement or avoidance, habitat loss or fragmentation, snag reduction, down log reduction, edge effects, movement barrier or filter and route for competitors.

### ***Pacific Fisher***

Pacific fisher is a Federal Candidate Species as well as a Forest Service Sensitive Species on Six Rivers NF. It is associated with late-seral closed canopy coniferous forest. 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 and dens are likely to occur within the project area, but like the American marten, dens are extremely difficult to detect.

Preferred habitat is characterized by mid-elevation, multi-storied mature and old-growth mixed conifer and deciduous-riparian habitats. These habitats have moderate to dense canopy closure (>50 percent), scattered patches with six to eight large snags per acre, and abundant accumulations of downed woody debris. Fishers use cavities in large trees, snags, logs, rock areas, brush piles, and concentrations of downed woody debris for denning and nesting. In the west, all natal and maternal dens were found in large diameter snags or logs. Hardwoods are also important because they provide mast crops that affect potential prey species of the fisher. Fishers use ridges and streamside areas covered by closed canopy forests when moving between quality habitat areas.

Extensive research projects (some within the project area) throughout the 1990's were performed by the USFS Redwood Sciences Laboratory. 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.

### ***Northern Goshawk***

Northern goshawk is a Forest Service Sensitive species on the Forest. It is associated with late-seral closed canopy coniferous forest. Habitat management guidelines within General Forest Management Areas (comprised of Matrix land and Adaptive Management Areas) for the northern goshawk provides

management direction for habitat connectivity, snag and down log retention and limiting operating periods at nest sites.

There are 11,325 acres of goshawk habitat within the project area that currently contain 27 miles of existing NFTS roads and 4 miles of unauthorized routes. The range of the northern goshawk extends across the project area. There are 25 known or suspected goshawk territories that occur within the project area, 3 of which occur in wilderness and 2 share borders on BLM land. Preferred habitat is characterized by a variety of forest types, forest ages, structural conditions, and successional stages, they typically nest in old-growth and mature coniferous and hardwood stands with high canopy closures and an open understory. Nests are usually located in the largest tree in the stand and on low gradient north-facing slopes or benches near water and small openings. Snags and dead-topped trees are important for observation and prey-plucking perches. Goshawks feed primarily on birds, but small mammals are also taken. Foraging habitat typically consists of open, unfragmented mature stands with small forest openings and meadows.

The LSRs and goshawk territories are expected to provide habitat and support reproductive pairs of goshawks. Northern goshawks probably were likely more common with the historical fire regime of more frequent, less intense fires which reduced understory vegetation creating habitat more conducive to foraging for goshawks.

Goshawk surveys and monitoring have been ongoing since the early 1980s. Surveys in 1994 indicate that many of the known nest territories on Six Rivers NF no longer appear to be occupied, possibly due to lack of fire management, creating dense understory forest. In 1994 and 1995, a Forest-wide goshawk survey and habitat-use study was initiated in selected areas of the Forest. The only confirmed sightings from that study were on the Lower Trinity Ranger District; two active goshawk sites were found. In 2001-2002 historical goshawk sites were revisited across the Mad River and Lower Trinity River Ranger Districts and habitat associations were evaluated. Project level surveys within the project area occurred in 2003 and 2008 and 2009, did result in nest detections. In the event a nest is detected and routes are within 0.25 miles of active nests a limiting operating period restricting use between March 1 and August 31, unless use of routes are determined to not affect the nest sites.

Within the project area high quality goshawk nesting habitat has been surveyed in at least the last 15 years.

### **Bald Eagle**

Presently, the Forest monitors four active bald eagle territories; several suspected territories, and a small wintering population within Forest boundaries. The Forest will provide habitat for four breeding pairs and two wintering areas, and manage these areas in compliance with Recovery Plan goals and objectives. The Forest has delineated over 28,146 acres (11,390 ha) of suitable nesting and wintering habitat within 6 bald eagle network territories. Management of these areas is in accordance with the Recovery Plan. The Forest recovery goal of 4 pairs and 2 wintering areas has already been met.

The bald eagle occurs widely in North America. The bald eagle winters throughout most of California at lakes, reservoirs, river systems, and some rangelands and coastal wetlands, and breeds mainly in the northern two-thirds of the state, mostly in mountainous habitats near reservoirs, lakes and rivers.

The Six Rivers NF supports four breeding territories and two wintering areas. There are two territories within the project area. These two territories are made up of nest protection zones, disturbance protection zones, foraging and winter zones and overall make up a combine total of 12,602 acres within the project area which currently contain 21 miles of existing NFTS roads and 3 miles of unauthorized routes. Much of the existing associated unauthorized routes are generally not accessible to wheeled motor vehicle traffic during the winter months due to snow and nest locations are remote enough that closures have not been warranted.

Generally, nests (typically nest in large greater than 36 inches in diameter) trees are located where they can overlook a large body of water, and bald eagles generally do most of their foraging in proximity to water. They primarily feed on fish but will also take waterfowl and carrion, especially in fall and winter. On the Six Rivers NF, they depend on the major river forks, but not directly on the minor tributaries. Factors that affect the availability of fish and waterfowl can also affect bald eagles. Numerous incidental detections occur near Ruth Lake, mainsteam Trinity River and South Fork Trinity River. The Ruth Lake nest is exposed to a light to moderate level of recreational activity and a low to light level of daily ambient noise levels from adjacent Level 4 road and year round community activities (boats, airplanes, construction). When the Ruth Lake nest is compared to the South Fork nest, disturbance is much less because disturbance is only from recreation uses which occurs mostly late in the breeding season and overall recreational use is light to low.

#### **Bald Eagle Territories Defined by Suitable Habitat by Zone**

<b>Nest Territory</b>	<b>Nest Site Protection Zone</b>	<b>Primary Disturbance Zone</b>	<b>Feeding Zone</b>	<b>Winter Roost Zone</b>
Ruth Lake	350 Acres	1,016 Acres	1,622 Acres	778 Acres
South Fork	780 Acres	2,041 Acres	5,420 Acres	594 Acres

Annual monitoring occurs to determine reproductive status of known nest territories. Both nest territories are subjected to human activity from river recreation during summer months; however, both territories successfully reproduce most every year.

#### **American Peregrine Falcon**

The peregrine falcon was listed as a federally endangered species from 1970 through 1999. On August 25, 1999 the final rule was published to de-list the peregrine falcon and it was then identified by the Regional Forester as a Sensitive species on Forest.

Management direction on the Forest is based on a zone concept within which habitat and nest sites will be managed at high to moderate levels of habitat capability, as defined in the bald eagle Habitat Capability Model in the Forest Plan FEIS (Appendix B). Each territory is divided into three zones. The nest site protection zone contains the nest tree and habitat that directly influences nest site conditions. The primary disturbance zone surrounds the nest site protection zone, buffering nesting birds from disturbance. The feeding zone provides foraging habitat.

Peregrine falcon is also associated with late-successional closed canopy coniferous forest and much of that section applies to this species including the LSR. Management direction within the Forest Plan included additional standards and guidelines to address Special Habitat Management Areas (in addition to Late-Successional Reserves established in the FSEIS) for the American peregrine falcon (page IV-36). There are 238,100 acres of LSR within the project area.

In the Pacific states, suitable peregrine falcon habitat consists of high cliffs with ledges for nesting and perching. Ridge-top snags are also an important habitat component. Cliff nests, called eyries, are typically near a body of water with an adequate prey base. The diet of peregrine falcons consists almost entirely of birds. The peregrine falcon is grouped within the riparian associated wildlife group because their primary diet consists of waterfowl as prey.

The project contains 164,953 acres of peregrine falcon delineated territories that includes both historic and current nest zones. Current NFTS routes within nest protection zones have closures in place to eliminate disturbance during the nesting season, therefore routes within proximity to nest sites will not be further analyzed. All proposed action alternatives would maintain the current capability of designated territory zones.

Long term monitoring continues to occur to determine reproductive status of known territories. Nest

territories are subjected to human activity from river recreation, rock climbing and other outdoor recreating during summer months; however, territories success rate has been consistent most every year. For this species, disturbance through access and use of cliff nesting sites is the primary concern. Analysis will focus on how alternatives affect potential access to nest area and disturbance.

### ***California Wolverine***

This species generally inhabits higher elevation, timberline sites, but is known to travel through lower elevation coniferous forests. In the North Coast region, wolverines have been observed in Douglas fir, redwood, and mixed conifer habitats, and probably also use red fir, lodgepole, wet meadow, and montane riparian habitats. White and Barrett (1979) stated that wolverines are highly dependent upon mature conifer forests for survival in winter, and generally move down slope in winter into heavier timber where food is available.

Wolverines are generally considered a solitary species, with adults apparently associating only during the breeding season. The basic spatial pattern for wolverines is intrasexual territoriality, in which only the home ranges of opposite sexes overlap. Studies indicate home ranges in North America may vary from less than 24,704 acres to over 222,400 acres. Males have larger territories than females. Individuals may move great distances on a daily basis: 15-30 miles a day is not uncommon for males and some individuals have moved 60-70 miles in a single day. Except for females providing for offspring, or males seeking mates, movement is generally motivated by food (Ruggiero et al. 1994).

During the winter of 1993, the Six Rivers National Forest in conjunction with the California Department of Fish and Game and the University of California Berkeley conducted a cooperative wolverine study using a baited infrared camera system at 10 camera stations. No wolverines were detected. Since that time numerous camera stations have been used across the Forest, without detections. Surveys conducted, as part of the SRNF Forest Carnivore Study, did not detect wolverine on the Ranger Districts.

California wolverines are not known to occur in the project area or on either Ranger District. Wilderness areas adjacent to the project area contain large tracks of isolated timberlands this species is typically associated with, but much of the wilderness area is hot, dry, exposed and lacking montane meadows, limiting the suitability of the habitat. Given the known range of the species and the lack of large tracks of high elevation montane habitat it is doubtful that the California wolverine exists within the project area.

### ***Townsend's big-eared bat***

The Townsend's big-eared bat occurs in a variety of habitats and is strongly correlated with the availability of caves or cave-like roosting habitat associated with deciduous and coniferous forests. This is a colonial species with relatively restrictive roost requirements. The most significant roosts, which have the largest aggregations and are most critical to the survival of populations, are the winter hibernacula and the summer maternity roosts. This species does not roost in crevices but rather on exposed surfaces, often close to the entrance of the cave making them extremely vulnerable to disturbance. They will use caves, mines and abandoned buildings for maternity roosts and hibernacula, and have been known to use abandoned bridges and large tree cavities for day and night roosts. Colonies use multiple roosts, shifting as the season progresses and temperatures change.

The project area may contain suitable winter roost or summer maternity roost habitat for this species. The project area does contain large tree cavities that could be used as day and night roosts, but there are no historical records of Townsend's big-eared bats on the Mad River Ranger District, but are known to occur on Lower Trinity Ranger District. Bat surveys utilizing mist-netting techniques were conducted on the Mad River District in 2003 and 2004. Eight species of bat were captured. Townsend's big-eared bats were not detected. There are no known roost sites, no known mines and no caves within 500' of any routes.

## **Forest Service Aquatic Wildlife Sensitive Species**

This section briefly describes the existing condition of the aquatic biota and their habitat within the Mad River and Lower Trinity ranger districts which includes both fish and aquatic dependant wildlife including amphibians and a turtle. Refer to the EIS, Chapter 3.6 for a complete review of all aquatic biota analysis and methodology or fisheries as described in the Lower Trinity/ Mad River Ranger District Travel Management Biological Evaluation / Biological Assessment (Fish BE/BA; October 2009).

Given the species under consideration in this document, aquatic habitat for these species is being considered at three levels:

- Crenulated stream layer: This includes well over 1,100 miles of perennial, intermittent and ephemeral stream networks using a riparian buffer width (150 to 300' feet based on stream type) to incorporate habitat for aquatic species. It is more conservative measurement of impacts to aquatic habitat as it looks at all stream orders instead of simply using the blue line on topographic maps (see Water Quality Section).
- Fish Bearing Distribution: this includes anadromous habitat in addition to resident fish habitat that occurs above salmon habitat as well as fish habitat above Matthews Dam and reaches above anadromous habitat. This is approximately 370 miles of stream habitat (both intermittent and perennial stream habitat) and associated 300 foot riparian buffer (total of 600 feet).
- Anadromous Distribution: this represents all major streams and tributaries containing listed anadromous salmonids within the Forest boundary. This is approximately 171 miles of stream habitat and associated 300-foot riparian buffer (total of 600 feet). The anadromous distribution layer used is described in the October 2009 Fish BA/BE.

### ***Foothill Yellow-legged Frog***

The foothill yellow-legged frog is found in or near rocky streams or rivers in a variety of habitats. Populations may be found from sea level to as high as 6365 ft (1940 m). This species is most common in streams that have a rocky or gravelly substrate, but they may be found in other riparian habitats including moderately vegetated backwaters, isolated pools, and slow moving rivers with mud substrates (Nussbaum et al. 1983). Pebble/cobble river bars along both riffles and pools, with at least 20% shading, seems to be preferred habitat by sub-adults and adults. Breeding habitats occur in shallow, slow flowing water with at least some pebble and cobble substrate.

The yellow-legged frog usually breeds in the streams and pools they inhabit (Nussbaum et al. 1983). In California, breeding and egg-laying usually wait until the end of spring flooding, and may commence anytime from Mid-March to May, depending on local water conditions. The breeding season at any locality is usually two weeks. The eggs are laid in round, softball-sized clumps where they are attached to rocks or gravel in the margins of streams and pools. The eggs hatch in 5 days and the larvae are from 7.3 to 7.7 mm in total length. Metamorphosis takes 3 to 4 months (ibid).

Good water quality is an important habitat component because frogs spend a majority of their life cycle in water and absorb contaminants through their skin. Gravel and cobble substrates and lush aquatic and riparian vegetation provide cover and shade. When frightened, this species dives to the bottom and takes refuge among the camouflaging stones and vegetation. If any or all of these habitat components are disturbed by management activities, foothill yellow-legged frogs may be affected. Unlike most other ranid frogs in California, this species is rarely encountered (even on rainy nights) far from permanent water.

### ***Western Pond Turtle***

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. 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.

Western pond turtles are habitat generalists, occurring in a wide variety of permanent and intermittent aquatic habitats and by using terrestrial habitats extensively. Individual western pond turtles (usually males) may have large home ranges and may wander within a given watercourse for several kilometers on a regular basis (Holland 1994, Reese and Welsh 1997). In streams, Reese (1996) found that all turtles in the study used terrestrial habitats during the course of the year. Terrestrial habitats are needed for nesting, overwintering, and for seasonal uses. Western pond turtle nests have been found as far as 435 yards from the stream (Reese and Welsh 1997) in open sunny areas on hillslopes, generally with a south to southwest facing aspect. Nest sites typically occur in open areas dominated by grasses or herbaceous annuals on dry, well-drained soils with high clay/silt content and low (less than 15 degree) slope (Holland 1994). There is some indication that most nesting excursions occur at night (Rathbun et al. 2002).

Before the fall rains begin and water levels rise western pond turtles migrate upslope from the rivers to overwinter on the slopes above the high water zone. In spring, the turtles migrate back downslope toward the rivers. Female turtles migrate to alluvial nesting benches to lay eggs. Western pond turtles exhibit nest site fidelity, which means 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 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. Once able, the turtles leave the rearing habitat and migrate to the mainstem rivers.

### ***Red Legged Frog***

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.

### ***Southern Torrent Salamander***

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. 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 % cover of grass, and high % 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.

Adult southern torrent salamanders are active at night at air and water temperatures between 41 and 50° F (Jennings and Hayes 1994). This salamander is desiccation intolerant (ibid.). This species eats primarily amphipods, springtails, and insect larvae found in moist habitat (Jennings and Hayes 1994).

Courtship and mating occur throughout the active season (Nussbaum et al. 1983). Eggs may be laid at almost any time, although it appears that most are laid in May. Eggs are laid deep within narrow rock cracks with cold water flowing over them. Adults are not known to attend the nests. The combined embryonic and larval stages of this species are from 4 to 4.5 years (Jennings and Hayes 1994). Individuals may require six to seven or more years to reach sexual maturity (ibid.).

## **VI. EFFECTS**

### **Northern Spotted Owl**

#### **Affected Environment**

Standards and guidelines in the Forest Plan direct that impacts be mitigated where there is documented evidence of disturbance to the nest site from existing road or motorized trail use. The Forest has not directly monitored all spotted owl nest sites in proximity to roads or trails; however the 24- year NSO demography study that occurs within the project area has provided insight on the effects of road use on nesting NSO. This demography study serves as an assessment of the present and future status and management of spotted owl populations. In the absence of recent surveys, the relative risk of project alternatives resulting in disturbance to nesting spotted owls is evaluated by considering effects to activity centers and suitable habitat. All action alternatives would limit access and reduce miles of routes within activity centers as well as prohibit the proliferation of cross-country travel.

Gaines et al. (2003) reviewed studies on the northern spotted owl and determined that road and trail associated factors that were likely to affect spotted owls were collisions, disturbance at a specific site, physiological response, edge effects and snag reduction. Collisions with vehicles typically occur along well maintained roadways that allow high rates of travel. Routes proposed for designation within the project alternatives are native surfaced routes and steep and challenging terrain that allow much slower rates of travel. These types of routes would result in far fewer, if any collisions. Although there is a risk of spotted owl mortality from illegal shooting or collisions, the degree to which this is happening on Six Rivers NF is unknown due to lack of reporting, but is believed to be extremely rare.

**Disturbance at a Specific Site and Physiological Response:** The Forest Service considers activities greater than 0.25 mile from a spotted owl nest site to have little potential to affect spotted owl nesting. Delaney et al. (1999) found that Mexican spotted owls showed an alert response to chainsaws at distances less than 0.25 mile. Preliminary results on a northern spotted owl study in northern California indicated that spotted owls did not flush from nest or roost sites when motorcycles were greater than 105 meters away during the post-fledgling period (Delaney and Grubb 2001). In addition, Delaney and Grubb (2003) found that spotted owl responses to motorcycle noise depended upon an array of complex factors including, sound level and frequency distribution, stimulus distance, event duration, motorcycle type and condition, frequency of motorcycle events, number of motorcycles per group, trail slope, topography, road substrate and condition and microphone position relative to sound source. In general, motorcycle noise did not appear to affect reproductive success. However, this study is ongoing and the impacts of motorcycle noise are not conclusive at this point.

A study by Wasser et al. (1997) found that stress hormone levels were significantly higher in male northern spotted owls (but not females) when they were located <0.25 mile from a major logging road. It is not well understood how elevated stress hormones affect spotted owl populations. Chronic high levels of stress hormones (corticosterone) may have negative effects on reproduction or the physical condition of individual owls. On the other hand Forest Service road and route network facilitates population studies, long term research and monitoring projects facilitated by OHV transportation.

Locally, 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.

**Habitat Loss, Fragmentation Edge Effects and Snag Reduction:** Spotted owls may be affected by edge effects from roads when roads and trails fragment suitable habitat. Several studies suggest that California spotted owls are sensitive to changes in forest canopy closure and habitat fragmentation (Seamans 2005, Blakesley 2003) that could result from a network of roads. Roads and trails can result in a reduction in interior forest patch size which decreases the amount of habitat available and increases the distance between suitable interior forest patches for late-successional species such as the spotted owl.

Loss of snags is expected to have a negligible impact as hazard tree removal must meet Six Rivers NF Hazard Tree Removal guidelines (1999) on routes and trails. Hazard tree removal primarily occurs on road maintenance level 2, 3 and 4 which are outside the scope of this project.

This projects greatest potential of direct and indirect impacts to northern spotted owl habitat are the acreage of suitable habitat within three distances (30 feet, 100 feet and 200 feet of existing unauthorized routes results from Alternative 1. Current condition of unauthorized routes within nesting, roosting, and foraging habitat that is potentially being impacted within three distances (30 feet, 100 feet, and 200 feet) of existing unauthorized routes is displayed in the table below and based on project-wide totals equating to 180,663 acres of nesting and roosting habitat and 123,595 acres of foraging.

#### **Northern Spotted Owl Nesting, Roosting, and Foraging Habitat Potentially Being Impacted by Existing Unauthorized Routes (Alternative 1)**

	Habitat Within 30 Feet		Habitat Within 100 Feet		Habitat Within 200 Feet	
	Acres	% of Total	Acres	% of Total	Acres	% of Total
<b>Nesting &amp; Roosting</b>	530	0.3	1968	1.1%	4321	2.4
<b>Foraging</b>	524	0.4	1896	1.5	4285	3.5

These numbers, although low, overestimate the amount of habitat affected because the numbers are derived within GIS using buffers on all segments of routes without providing for topography, slope, and existing vegetation.

Gaines et al (2003) developed an index to assess habitat effectiveness for late-successional forest associated species designed to address wildlife and recreation interaction including seasonality. The habitat influence index is designed to address edge effects, snag and downed log reduction, and habitat loss and fragmentation resulting from road-associated factors. Using this index, habitat influence from roads is considered low if less than 30 percent of late successional habitats are within a 200 foot habitat influence buffer, moderate if 30 – 50 percent, and high if greater than 50 percent of habitats are within that zone. Based on this index, **all alternatives result in a low level of habitat influence and moderate habitat effectiveness** for the northern spotted owl

#### **Indirect and Direct Effects**

Based on the discussion above, direct and indirect effects to breeding spotted owls may be measured by the amount of noise disturbance and other trail and road associated factors within suitable habitat and within a ¼-mile radius circle of a spotted owl activity center.

Current and present habitat analysis includes fragmentation caused by existing system roads and unauthorized routes within the project area. The only new ground disturbance would be the installation of water bars and work would occur on the travel way, which is already a disturbed site. **Primary constituent elements within northern spotted owl Critical Habitat Units, activity centers and the project area would not be affected because action alternatives would not build new routes or remove or degrade suitable habitat or Critical Habitat.**

The table below presents the total mileage of routes which will be available for public motorized use of added routes in northern spotted owl habitat for each alternative. Suitable habitat is referred to as nesting and roosting (NR) habitat. The amount of potential foraging habitat (F) is combined to capture overall effected spotted owl habitat. Currently, 1,309 miles unauthorized routes occur of which 127 miles are in NRF habitat and open to the public. Alternative 2 and 3 would add 56 miles and 64 miles, respectively, of routes to the NFTS of which approximately half go through NRF. Ultimately, Alternative 2 and 3 would reduce travel within NRF by approximately a 75%.

#### **Miles of Route Available for Public Motorized Use in Nesting, Roosting, and Foraging Northern Spotted Owl Habitat**

<b>ALT 1</b>	<b>ALT 2</b>	<b>ALT 3</b>	<b>ALT 4</b>
127	28	33	0

Alternative 1 would allow travel on the greatest number of miles of unauthorized routes and increased fragmentation by the proliferation of cross-country travel within suitable northern spotted owl habitat will continue, potentially creating new unauthorized routes. Potential effects include increased possibility for collisions, disturbance, avoidance, and reduced habitat suitability. These potential impacts are reduced substantially in Alternatives 2 and 3 by the reduction of fragmentation. Under Alternative 4, no potential impacts would occur as no unauthorized routes would be added to the NFTS.

Analysis within NSO activity centers focused on a ¼ mile radius to determine miles of unauthorized routes that may impact the NSO. All routes considered in this project are less than 3 miles in length (most under 1 mile) and referred to as “segments” (e.g., Alt 2 consists of 12 segments that total 2.76 miles). Many of these segments contribute to recreation management by accomplishing combined use, mixed use and collocating trails on maintenance level 1 roads as well as completing reroutes or loops on existing roads, routes and trails. The table below depicts the combined total of these short distances as well as number of activity centers within ¼ mile potentially affected by the addition of segments to NFTS and totals within nesting, roosting and foraging habitat.

#### **Miles of Routes within Northern Spotted Owl Activity Centers within 1/4-mile of Added Routes Available for Public Use**

<b>Alternative</b>	<b>1<sup>1</sup></b>	<b>2</b>	<b>3</b>	<b>4</b>
Miles	13.4	2.76	2.80	0
Activity Center	49	8	8	0
Miles of routes in <b>Nesting and Roosting Habitat</b>	4.18	0.33	0.37	0
Miles of routes in <b>Foraging Habitat</b>	3.35	0.85	0.85	0

<sup>1</sup>Under Alternative 1, unauthorized routes would not be added to the NFTS, but would remain available for public motorized use.

As seen in the table above, 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.

Recreational use is reported currently as light to low. This use changes seasonally, such as increased use to some areas during the camping and hunting season. Where use corresponds with breeding season it is assumed that since these routes are existing and that species have acclimated over time. Miles of routes within activity centers allows a relative comparison of both the potential for vehicle noise to disturb nesting birds and humans to access the nest stand. The problem is likely most acute where routes lead to dispersed camping or non-motorized trails or areas that receive heavy foot traffic near active northern spotted owl nests. However, most disturbances of this nature have less impact because recreational use by foot is considered low to light within the project area during the most critical early portions of the breeding season and other activities such as hunting occurs after the fledging period. These factors result in a lower risk for disturbance. During the nest establishment period (March – April) activity centers at higher elevation are usually inaccessible due to snow-covered routes and they often remain inaccessible until June. This limits the potential for disturbance during the most critical nesting period.

Originally in the DEIS, of the 8 activity centers within the project area, 5 were thought to need limiting operating periods on 7 segments under Alternative 2 and 3. This was to limit noise disturbance during the early breeding season (February 1 through July 9) when young are still in the nest. These segments were selected based on GIS analysis of known activity centers that occurred within a ¼ mile of routes. After the release of the DEIS, field visits were made to these segments to verify the GIS analysis and the site-specific potential for use of routes to disturb NSO. Factors used in this field assessment included topography, slope, ambient noise levels, vegetation type and other site-specific conditions. **The result of this reassessment was a conclusion that no limiting operating periods restricting seasonal access are necessary (this was disclosed as a potential outcome in the DEIS).** This does not pertain to wildlife restrictions on existing NFTS roads that have been considered in past management decisions.

Under Alternative 1, motor vehicle use would continue on the greatest mileage (25) of routes within 1/4 mile of nests. There is very little difference between Alternative 2 and 3 which would each add approximately 5 miles of unauthorized routes in activity centers to the NFTS. Under Alternative 4, no potential impacts would occur as no unauthorized routes would be added to the NFTS.

Measurement indicators which describe the differences between alternative for the types of potential effects (**disturbance at a specific site and physiological response, habitat loss, fragmentation and edge effects**). Throughout this section, direct and indirect effects focus on the **routes available for public motorized use in the alternatives**.

The Table below displays the acreage of nesting, roosting, and foraging northern spotted habitat which occurs within three distances from roads available for public motorized use under each alternative. Limited direct impacts to habitat are most likely to occur within the area immediately adjacent to the road prism (within 30 feet) if vehicles pull off the road to park or pass other vehicles. Localized areas of low growing native vegetation may be modified (e.g. crushed or uprooted). This could result in a minor reduction in habitat for small mammals which constitute the majority of prey items for northern spotted owl.

Habitat quality within 100 feet of a route may be indirectly impacted from altered drainage patterns associated with the route or decreased photosynthetic activity resulting from dust caused by vehicles traveling the route. Approximately 1,968 acres of nesting and roosting and 1896 acres of foraging habitat are within 100 feet of existing unauthorized routes which would continue to receive motorized use under

Alternative 1. The area potentially impacted in this fashion is reduced under in Alternatives 2 (783 acres) and Alternative 3 (945 acres).

Effects to habitat could extend up to 200 feet from a road prism. Large snags are an important habitat component for northern spotted owl. Trees posing a potential safety hazard along roads, routes and trails generally are felled and left as down woody debris. Hazard trees are typically snags that are within a tree-height distance from the road. The 2008 annual harvest of fuelwood by the public averaged approximately 700 cords on Lower Trinity Ranger District and 1,000 cords on Mad River Ranger District. Cutting of all standing snags (dead or green) is prohibited. Logs easily accessible by road and closest to roads tend to be removed more rapidly with firewood permits than those in areas with limited motor vehicle access. Holders of valid firewood permits are allowed to cut and remove downed logs in areas identified as “open” for firewood collection and restricted to the road prism within LSR. Miles within 200 foot buffers (below) include LSR therefore with respect to fire wood affects the estimated values would be approximately 65 percent less than shown in the table below.

**Acres of Suitable Northern Spotted Owl Habitat within Three Buffer Distance from Routes Available for Motorized Use (existing and added routes)**

<b>Alternative</b>	<b>1<sup>1</sup></b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>30 Foot Buffer</b>	1054 (0.34%)	224 (0.07%)	268 (0.09%)	0
<b>100 Foot Buffer</b>	3,864 (1.3%)	783 (0.25%)	945 (0.3%)	0
<b>200 Foot Buffer</b>	8,606 (2.83%)	1,818 (0.6%)	2,170 (0.7%)	0

<sup>1</sup> Under Alternative 1, unauthorized routes would not be added to the NFTS, but would remain available for public motorized use. Analysis assumes flat plane, thereby overestimating buffer area because slope, cut bank and other topographic features did not get excluded.

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 will not alter late-seral coniferous suitable habitats.

Outside of hunting season use on routes are estimated to be less than 25 vehicle trips per week (use level equals “light”) (R. McCray, Recreation Specialist, personal communication. 2009). It is expected that Northern spotted owls are exposed to a low to light level of recreational activity and light to moderate level of daily ambient noise levels from adjacent road maintenance level 2 and higher roads and year round community activities. 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). Spotted owl expert Dr. Alan Franklin (pers. comm. 2009) concurs with the assumption and said believes owls “are pretty oblivious to vehicular traffic at reasonably low levels.” It is assumed that individual animals are acclimated to some level of intermittent use within the project area.

Under alternative 1, approximately 180,663 acres (analysis assumes flat plane, thereby overestimating area because slope, cut bank and other topographic features did not get excluded) of nesting and roosting, and approximately 123,595 acres of foraging northern spotted owl habitat would not be protected from cross-country travel. Currently, 88 miles of existing NFTS miles are within LSR boundaries.

Analyses of effects indicate that habitats would not be impacted or have beneficial effects by the action alternatives 2, 3 and 4 primarily because routes not added to the system would revegetate over time, and cross-country travel would be prohibited. Alternative 2 Cross-country travel within Alternative 1 would continue to cause disturbance, habitat fragmentation, and resource damage.

## Cumulative Effects

Past effects to habitat for northern spotted owls include the effects of vegetation management (e.g. timber harvest, fuels treatments, etc.) and wildfire on the amount, distribution and quality of habitat. The impacts from past timber harvest have included habitat removal, degradation, and fragmentation, which affected not only nesting habitat, but also foraging and dispersal habitat.

Since 1995, specific mitigation measures and design features were implemented as part of projects to protect, enhance, and accelerate habitat quality. Therefore, vegetation management and fuels reduction practices are not expected to significantly decrease the quantity and quality of habitat due to the implementation of these practices. Current implementation of one project is included in this analysis; Mill Creek Roadside Fuels Reduction Project is approximately 780 acres. Future projects include, Trinity River Community Fuels Protection Project (approximately 760 acres) and Kelsey (approximately 4,700 acres) is currently in the planning phase and Beaverslide Timber Sale (5,400 acres) on the Mad River Ranger District and “may affect but not likely to adversely affect” determinations for threatened and sensitive species. Projects incorporate mitigation measures and design features created to protect or benefit species and their habitat. Projects may degrade habitat in the short-term, but post-project are expected to improve and, or protect habitat conditions in the long-term (accelerate and protect late-successional characteristics). The proposed routes within this project currently occur on the landscape and are already disturbed sites and reflect current habitat conditions. This project and reasonably foreseeable future actions will not remove suitable habitat for TES species. Reducing damage of unmanaged recreational activities would contribute to the desired future condition of habitat for the species considered in this document.

Current and present habitat analysis includes fragmentation caused by existing system roads and unauthorized routes within the project area. The only new ground disturbance would be the installation of water bars and work would occur on the travel way, which is already a disturbed site. **Primary constituent elements within northern spotted owl Critical Habitat Units, activity centers and the project area would not be affected because action alternatives would not build new routes or remove or degrade suitable habitat or Critical Habitat.** There are 425 miles of existing NFTS roads in designated northern spotted owl CHU (178,957 acres). Using the greatest buffer width of 200 feet the total amount of NFTS roads within CHU represents 12 percent. This amount is considered low using habitat influence from roads index (Gaines et al. 2003). There are 667 miles of NFTS roads in suitable northern spotted owl habitat, 196 miles of which occur within 1/4 miles of 50 activity centers.

The table below presents the total mileage of routes **including existing routes** which will be available for public motorized use in suitable habitat for each alternative as a means to compare the potential for human-owl encounters. Alternative 1 poses the highest risk for negative encounters between humans by allowing public motorized use on 792 miles within suitable habitat. Alternatives 2 and 3 would reduce the risk by approximately 12 percent relative to Alternative 1 and decreased fragmentation through passive restoration on unauthorized or unclassified routes not carried forward in the Alternatives. Under Alternative 4, the risk is reduced 16 percent respectively relative to Alternative 1.

### **Miles of Routes (existing system and added routes) for Public Motorized Use in Suitable Northern Spotted Owl Habitat**

	<b>ALT 1</b>	<b>ALT 2</b>	<b>ALT 3</b>	<b>ALT 4</b>
<b>Total</b>	792	694	699	667

The table below includes existing NFTS miles and unauthorized routes within ¼ miles of activity centers, displaying a larger number of miles within the range of influence. Of the 215 activity centers

within the project area 50 have NFTS. Alternative 1 would allow motor vehicle travel within ¼-mile of spotted owl nest to continue. Alternatives 2 and 3 would reduce the impacts on 42 activity centers and decrease fragmentation in the long-term within the territories affected.

**Total Miles of Routes (existing system and added routes) within 1/4-mile Radius Circle of Northern Spotted Owl Activity Centers and number of ACs Affected**

Alternative	1 <sup>1</sup>	2	3	4
Miles	149	129	130	124
ACs affected	49	42	42	49

<sup>1</sup>Under Alternative 1, unauthorized routes would not be added to the NFTS, but would remain available for public motorized use.

The total amount of northern spotted owl nesting, roosting and foraging habitat affected by “**both**” existing system and added routes (this represents cumulative effects unlike direct and indirect effects which is based on only added routes by alternative) available for motorized use is presented in the table below.

**Acres of Suitable Northern Spotted Owl Habitat within Three Buffer Distance from Routes (existing system and added routes)**

Alternative	1 <sup>2</sup>	2	3	4
30 Foot Buffer <sup>1</sup>	10,233 (3.4%)	9,403 (3.1%)	9,447 (3.1%)	11,463 (3.7%)
100 Foot Buffer <sup>1</sup>	36,088 (12%)	33,007 (11%)	33,169 (11%)	41,958 (14%)
200 Foot Buffer <sup>1</sup>	75,568 (25%)	68,780 (23%)	69,132 (23%)	86,820 (28%)

<sup>1</sup>Number in parenthesis indicates percent of total northern spotted owl habitat available in the project area. <sup>2</sup>Under Alternative 1, unauthorized routes would not be added to the NFTS, but would remain available for public motorized use. Analysis assumes flat plane, thereby overestimating buffer area because slope, cut bank and other topographic features did not get excluded.

Gaines et al (2003) developed an index to assess habitat effectiveness for late-successional forest associated species. The habitat influence index is designed to address edge effects, snag and downed log reduction, and habitat loss and fragmentation resulting from road-associated factors. Using this index, habitat influence from roads is considered low if less than 30 percent of late successional habitats are within a 200 foot habitat influence buffer, moderate if 30 – 50 percent, and high if greater than 50 percent of habitats are within that zone. Based on this index, **all alternatives result in a low level of habitat influence and moderate habitat effectiveness** for the northern spotted owl.

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. 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 with added displacement from noise and human activity, 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 this 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.

Vegetation management and wildland fire have the greatest potential to modify northern spotted owl suitable habitat. By decade back to 1960, the study area has averaged 35-51 fires per year, with a marked increase in burned average annual acreage since the 1980's. The most notable wildfire in the project area (since 1910) was the Megram Fire (1999), the majority of which occurred in wilderness and LSR. However, approximately 0.4 percent of northern spotted owl nesting and roosting habitat was affected.

Early vegetation management and fuels reduction practices likely reduced some high to moderate quality habitat. Since 1995, mitigation measures and design features were implemented to protect, enhance, and accelerate habitat quality. Therefore, vegetation management and fuels reduction practices are not expected to significantly decrease the quantity and quality of habitat due to the implementation of these practices. 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 as a proxy for the impacts of past actions.

Locally, results from the 24 years of data collection from the Northern Spotted Owl Willow Creek Demography Study 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. Results from these studies are included within specie sections and do not presume recreational use to adversely affect the continued existence of the 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.

Because Alternative 1 does not restrict vehicles to designated routes, there is a high degree of uncertainty about future route proliferation in owl habitat which may have disturbance and habitat effects beyond the effects of routes open to motorized use. Alternative 1 presents the greatest risk of contributing to adverse cumulative effects upon spotted owl habitat and populations because there would not be a prohibition on cross-country travel. Alternative 4 contributes the least to cumulative effects because cross-country travel would be prohibited, open route densities in spotted owl habitat are lowest, and no motorized routes would be designated. Alternatives 2 and 3 would result in progressively lower risk to spotted owls than Alternative 1 due to the reduced amount of motorized routes being added to the system. Considering the proportion of spotted owl habitat influenced by motorized routes and projections for future recreation uses and OHV activity, the alternatives may result in minor cumulative impacts when combined with other factors affecting spotted owl habitat.

### **USFWS Programmatic Route Designation Project Design**

Alternative 1 would not prohibit cross-country travel; therefore, this alternative would not prevent disturbance to nest sites during the breeding season and would not comply with the Programmatic Project Design Criteria restricting “staging areas are farther than ¼ mile from northern spotted owl nests. Or, staging areas within ¼ mile of occupied northern spotted owl nests are closed during the nesting season: February 1 through July 9”. All alternatives do not include staging areas and therefore, these action alternatives would be in compliance with the Programmatic Design Criteria for the marbled murrelet on Six Rivers National Forest.

### **Determination**

#### **Alternative 1**

Although this alternative could indirectly result in increased amounts of disturbance and habitat fragmentation within the project area, continued route proliferation would ultimately be limited by topography and vegetation. However, continued cross-country travel could increase road density, and reduce patch size. Current condition and some level of habituation is expected does not presume recreational use (light to low) to adversely affect the continued existence of the species. Therefore, it is my determination that this alternative “*may affect but not likely to adversely affect individuals*” for the northern spotted owl.

Because no physical actions (i.e., construction, decommissioning, or direct restoration) of routes would occur in this project, it is my determination that the project will have no effect on northern spotted owl Critical Habitat.

#### **Alternative 2 and 3**

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. Both alternatives would benefit from the decreased (from Alternative 1) amounts of disturbance and reduced habitat fragmentation, and increased patch size within the project area, over the long-term since cross-country travel would be prohibited. 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). These alternatives would not likely result in any impacts to northern spotted owl populations within the project area over the short or long-term and likely benefit habitat through passive restoration of routes not added to the system and by restricting cross-country travel. Therefore, it is my determination that both alternatives “*may affect but not likely to adversely affect and is expected to have a beneficial effect*” on the northern spotted owl.

Because no physical actions (i.e., construction, decommissioning, or direct restoration) would occur outside the road prism on this project, it is my determination that the project will have no effect on northern spotted owl Critical Habitat.

#### **Alternative 4**

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 spotted owls over the short-term. Since cross-country travel would be prohibited, disturbance would be decreased over the long-term and all unauthorized routes within activity centers and emphasis habitat (critical habitat, LSR) would slowly rehabilitate. The rehabilitation (reduce habitat fragmentation, increased patch size, and reduce sedimentation in stream channels) of these routes would result in minor improvements to northern spotted owl habitat over the long-term.

Therefore, it is my determination that this alternative “*may affect but will not adversely affect and is expected to have a beneficial effect*” on the northern spotted owl.

### Marbled Murrelet

#### Affected Environment

This project of designating existing unauthorized or unclassified routes and areas for recreational motorized vehicle use will not remove or degrade suitable habitat because no physical actions would occur outside the existing road prism. The product of this project would clearly define NFTS that would clarify enforcement of existing Forest Plan direction and eliminate confusion regarding what constitutes cross-country travel. Additionally, under any action alternative cumulative effects would decrease because passive restoration would occur in approximately 79 percent of suitable habitat as well as potential disturbance compared to Alternative 1. Current and present habitat analysis includes fragmentation caused by existing system roads and unauthorized routes within the project area. Primary constituent elements within marbled murrelet Critical Habitat Units would not be affected because action alternatives would not build new routes or remove or degrade suitable habitat in CHU.

#### Indirect and Direct Effects

Gaines et al (2003) developed an index to assess habitat effectiveness for late-successional forest associated species designed to address wildlife and recreation interaction including seasonality. The habitat influence index is designed to address edge effects, snag and downed log reduction, and habitat loss and fragmentation resulting from road-associated factors. Using this index, habitat influence from roads is considered low if less than 30 percent of late successional habitats are within a 200 foot habitat influence buffer, moderate if 30 – 50 percent of habitats are within that buffer, and high if greater than 50 percent of habitats are within that zone. Based on this index, **all alternatives result in a low level of habitat influence and moderate habitat effectiveness** for the marbled murrelet.

The tables below summarize the measurement indicators which describe the differences between alternatives for the analysis of direct and indirect effects. Through this section, direct and indirect effects, focuses on the routes available for public motorized use in the alternatives.

The table below presents the total mileage of routes which will be available for public motorized use of added routes in suitable habitat as well as Critical Habitat for each alternative. For the no action alternative (Alternative 1), this includes all existing unauthorized routes totaling 1,309 miles. For the action alternatives, it includes only those unauthorized routes added to the NFTS in each alternative, 56 total miles in Alt 2 and 64 total miles in Alt 3.

#### **Miles of Routes to be Added for Public Use in Suitable Habitat within ¼ mile of Routes for Marbled Murrelet**

<b>Alternatives</b>	<b>Alt 1</b>	<b>Alt 2</b>	<b>Alt 3</b>	<b>Alt 4</b>
Miles of routes added to the NFTS (existing 170) within <b>Suitable Habitat</b> (97,505 acres within project area)	24.7	5.51	5.57	0
Miles of routes added to the NFTS (existing 204) within <b>Critical Habitat</b> (109,598 acres within project area)	33.24	4.72	9.5	0

Number of <b>known nests</b> within the project area	0	0	0	0
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Alternative 1 would allow travel on the greatest mileage of unauthorized routes and continue to fragment habitat through the proliferation of new user created trails from cross-country travel within suitable habitat and Critical Habitat. Additional fragmentation could result in impacts to individual birds. All routes considered in this project are less than 3 miles in length (most under 1 mile) and referred to as “segments”. These potential impacts are reduced substantially in Alternatives 2 and 3 with restrictions on cross-country travel. Under Alternative 4, no potential impacts would occur as no unauthorized routes would be added to the NFTS.

To assess the proportion of species habitat that is affected by motorized routes added to the NFTS, analysis will focus on suitable habitat. Suitable marbled murrelet habitat was only shown for Zone 1 because Zone 2 is believed to be outside the range of this species. Therefore, the table below displays the acreage of suitable Zone 1 habitat which occurs within three distances from roads available for public motorized use under each alternative. Limited direct impacts to habitat are most likely to occur within the area immediately adjacent to the road prism (within 30 feet) if vehicles pull off the road to park or pass other vehicles. The effects within 30 feet are not well understood but could result in an increase of noise disturbance or litter attracting predators.

Habitat quality within 100 feet of a route may be indirectly impacted from altered drainage patterns associated with the route or decreased photosynthetic activity resulting from dust caused by vehicles traveling the route but is not expected to affect components of suitable habitat or primary constituent elements within critical habitat units. Approximately 690 acres of suitable habitat are within 100 feet of existing unauthorized routes which would continue to receive motorized use under Alternative 1. Effects to habitat could extend up to 200 feet from a road prism. The effects of this habitat component on marbled murrelet habitat are not well understood but would not remove or degrade suitable or critical habitat elements. The area potentially impacted in this fashion is reduced sequentially in Alternatives 2 and 3.

The tables below display the measurement indicators which describe the differences between alternative for the types of potential effects (**disturbance at a specific site and physiological response, habitat loss, fragmentation and edge effects**). Through this section, direct and indirect effects focus on the **routes available for public motorized use in the alternatives**.

#### **Acres of Suitable Marbled Murrelet Zone 1 Habitat within Three Buffer Distance from Routes added to NFTS**

<b>Alternative</b>	<b>1<sup>2</sup></b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>30 Foot Buffer<sup>1</sup></b>	184 (0.37%)	37 (0.07%)	38 (0.08%)	0
<b>100 Foot Buffer<sup>1</sup></b>	690 (1.40%)	128 (0.25%)	132 (0.27%)	0
<b>200 Foot Buffer<sup>1</sup></b>	1622 (3.3%)	329 (0.08%)	340 (0.69%)	0

<sup>1</sup>Number in parenthesis indicates percent of total suitable available in the project area. <sup>2</sup>Under Alternative 1, unauthorized routes would not be added to the NFTS, but would remain available for public motorized use. Analysis assumes flat plane, thereby overestimating buffer area because slope, cut bank and other topographic features did not get excluded.

The numbers in are relatively low in relation to available suitable habitat and may be an overestimate because the numbers are derived within GIS using buffers without providing for topography, slope, and existing vegetation.

If marbled murrelet suitable habitat became occupied, individuals would be exposed to a low to light level of recreational activity and light to moderate level of daily ambient noise levels.

Under alternative 1, approximately 49,412 acres (analysis assumes flat plane, thereby overestimating area because slope, cut bank and other topographic features did not get excluded.) of suitable marbled murrelet habitat within Zone 1 would not be protected from cross-country travel. 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 and continued use of all existing unauthorized routes.

### **Cumulative Effects**

The major effects to habitat for marbled murrelet at the present time involve the effects of vegetation management (e.g. timber harvest, fuels treatments, etc.) and wildfire on the amount, distribution and quality of habitat. The impacts from past timber harvest have included habitat removal, degradation, and fragmentation.

Current and present habitat analysis includes fragmentation caused by existing system roads and unauthorized routes within the project area. Primary constituent elements within marbled murrelet Critical Habitat Units would not be affected because action alternatives would not build new routes or remove or degrade suitable habitat in CHU. There are 170 miles of existing NFTS roads in suitable habitat. Using the greatest buffer width of 200 feet the total amount of NFTS roads within suitable habitat represents 20.8 percent.

The table below presents the total mileage of routes available for public motorized use (**existing system and added routes**) in suitable habitat for each alternative as a means to compare the potential for human-murrelet encounters. Alternative 1 poses the highest risk for negative encounters by humans by allowing public motorized use on 194 miles within suitable habitat. Alternatives 2 and 3 would reduce the risk by approximately 10 percent relative to Alternative 1 and decreased fragmentation through passive restoration on unauthorized or unclassified routes not carried forward in the Alternatives. Under Alternative 4, the risk is reduced 12.7 percent respectively relative to Alternative 1.

### **Miles of Route (existing system and added routes) for Public Motorized Use in Suitable Marbled Murrelet Zone 1 Habitat**

<b>ALT 1</b>	<b>ALT 2</b>	<b>ALT 3</b>	<b>ALT 4</b>
194.7	175.51	175.57	170

The total amount suitable habitat affected by “**both**” **existing system and added routes** (this represents cumulative effects unlike direct and indirect effects which is based on only added routes by alternative) available for motorized use within Zone 1 of Lower Trinity Ranger District is presented in the table below.

### **Acres of Suitable Marbled Murrelet Zone 1 Habitat within Three Buffer Distance from Routes (existing system and added routes)**

<b>Alternative</b>	<b>1<sup>2</sup></b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>30 Foot Buffer<sup>1</sup></b>	1,273 (2.58%)	1,126 (2.28%)	1,127 (2.28%)	1,089 (2.2%)
<b>100 Foot Buffer<sup>1</sup></b>	5,809 (11.76%)	5,247 (10.61 %)	5,251 (10.62%)	5,119 (10.35%)
<b>200 Foot Buffer<sup>1</sup></b>	11,938 (24.1%)	10,645 (21.54%)	10,656 (21.56%)	10,316 (20.87%)

<sup>1</sup>Number in parenthesis indicates percent of total marbled murrelet habitat available in the project area. <sup>2</sup>Under Alternative 1, unauthorized routes would not be added to the NFTS, but would remain available for public motorized use. Analysis assumes flat plane, thereby overestimating buffer area because slope, cut bank and other topographic features did not get excluded.

Gaines et al (2003) developed an index to assess habitat effectiveness for late-successional forest associated species designed to address wildlife and recreation interaction including seasonality. The habitat influence index is designed to address edge effects, snag and downed log reduction, and habitat loss and fragmentation resulting from road-associated factors. Using this index, habitat influence from roads is considered low if less than 30 percent of late successional habitats are within a 200 foot habitat influence buffer, moderate if 30 – 50 percent of habitats are within that buffer, and high if greater than 50 percent of habitats are within that zone. Based on this index, **all alternatives result in a low level of habitat influence and moderate habitat effectiveness** for the marbled murrelet.

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; nevertheless, this process will result in greater likelihood and magnitude of human disturbance to wildlife. 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 with added displacement from noise and human activity 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 this 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.

Since 1995, mitigation measures and design features were implemented to protect, enhance, and accelerate habitat quality. Therefore, vegetation management and fuels reduction practices are not expected to significantly decrease the quantity and quality of habitat due to the implementation of these practices. 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 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 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.

Although critical habitat for the murrelets has been designated within the project area and low to high suitable habitat occurs surveys associated with Marbled Murrelet Range and Distribution Study as well as other survey efforts (including 2009 project level surveys) resulted in no murrelets detections of individuals or nests. This project of designating existing unauthorized or unclassified routes and areas for recreational motorized vehicle use will not remove or degrade suitable habitat because no physical actions on the landscape will occur outside the existing road prism. The product of this project would clearly define NFTS that would clarify enforcement of existing Forest Plan direction and eliminate confusion

regarding what constitutes cross-country travel. Additionally, under any action alternative cumulative effects would decrease because passive restoration would occur in approximately 79 percent of suitable habitat as well as potential disturbance compared to Alternative 1.

Given the lack of detections of individuals implies a low concern over time. Habitat potentially affected combined with projections for future recreation uses and OHV activity, Alternative 1 may, over time, contribute to cumulative effects upon suitable habitat. Because Alternative 1 does not restrict vehicles to designated routes, there is a degree of uncertainty about future route proliferation in murrelet habitat which may have habitat effects beyond the effects of routes open to motorized use. Alternative 1 presents the greatest risk of contributing to adverse cumulative effects upon suitable habitat because there would not be a prohibition on cross-country travel. Alternative 4 contributes the least to cumulative effects because cross-country travel would be prohibited, open route densities in suitable habitat are lowest, and no motorized routes would be designated. Alternatives 2 and 3 would result in progressively lower risk to marbled murrelet due to the lower amount of motorized routes being added to the system. Considering the proportion of suitable habitat influenced by motorized routes and projections for future recreation uses and OHV activity, the alternatives may result in minor cumulative impacts when combined with other factors affecting habitat.

### **USFWS Programmatic Route Designation Design Criteria**

Alternative 1 would not prohibit cross-country travel; therefore, this alternative would not prevent disturbance to nest sites during the breeding season and would not comply with the Programmatic Design Criteria restricting “staging areas and routes are farther than ¼ mile from occupied marbled murrelet nest sites.” All alternatives do not include staging areas and therefore, these action alternatives would be in compliance with the Programmatic Design Criteria for the marbled murrelet on Six Rivers National Forest.

In the event that a marbled murrelet nest is detected, mitigation measures would be imposed according to Forest Plan Standard and Guidelines as well as the Programmatic Design Criteria for all routes that occur within ¼-mile of a nest as directed in the Motorized Travel Management Project Design Criteria’s for ‘*No effect*’ or ‘*May affect but not likely to adversely affect*’ determination (October 2006).

## **Determinations**

### **Alternative 1**

Although this alternative could indirectly result in increased amounts of disturbance and habitat fragmentation from continued route proliferation; this would be limited by topography and wilderness areas. Current condition does not presume recreational use (light to low) to adversely affect the continued existence of this species. Therefore, it is my determination that this alternative “*may affect but not likely to adversely affect*” the marbled murrelet.

Because no physical actions (i.e., construction, decommissioning, or direct restoration) would occur in this project, it is my determination that the project will have “*no effect*” on marbled murrelet Critical Habitat.

### **Alternative 2 and 3**

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. Both alternatives would benefit from the decreased (from Alternative 1) amounts of disturbance, minor habitat fragmentation, increased patch size, and reduce sedimentation in stream

channels within the project area, and would be limited over the long-term since cross-country travel would be prohibited. 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). Furthermore, the unlikelihood of marbled murrelets to occur within the project area reduces the risk of any impacts to individuals. Therefore, it is my determination that both alternatives “*may affect but not likely to adversely affect and is expected to have a beneficial effect*” the marbled murrelet.

Because no physical actions (i.e., construction, decommissioning, or direct restoration) would occur in this project, it is my determination that the project will have “*no effect*” on marbled murrelet Critical Habitat.

#### **Alternative 4**

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 marbled murrelets over the short-term. Since cross-country travel would be prohibited, disturbance would be decreased over the long-term and all unauthorized routes within emphasis habitat (critical habitat, LSR, Zones 1 or 2) would slowly rehabilitate. The rehabilitation of these routes would result in minor improvements to marbled murrelet habitat over the long-term.

Therefore, it is my determination that this alternative “*may affect but will not adversely affect and is expected to have a beneficial effect*” on the marbled murrelet or habitat including Critical Habitat.

### **Forest Service Terrestrial Wildlife Sensitive Species**

#### **American Marten**

#### **Affected Environment**

#### **Collisions**

Collisions with motor vehicles as a source of marten mortality have been documented in the literature. One instance of this occurring has been reported (2008 by RSL) on the Six Rivers NF, outside the project area on Orleans Ranger District and was likely a dispersing individual. Collisions are much less likely to occur along the slower-speed, native surface routes that are being evaluated for addition to the NFTS in this project.

#### **Displacement or Avoidance**

The use of motorized vehicles in marten habitat may result in disturbance to martens that are foraging or denning. Although Robitaille and Aubrey (2000) studying marten in an area of low road density and low traffic (primarily logging roads), found that marten use of habitat within 300 and 400 meters of roads was significantly less than habitat use 700 or 800 meters distance, Zielinski et al. (2008) found that marten spatial distribution, occurrence, and diurnal activity were not affected by OHV use in northern California. Therefore, it did not appear that within the study area OHV activity resulted in changes to the foraging behavior of martens. While there is little research disclosing the specific effects of disturbance to marten den sites, other forest carnivores have been shown to abandon the den site upon human disturbance (Copeland 1996). Wet meadows have been shown to be particularly important foraging areas for marten. Routes added to the NFTS near and through meadows may increase disturbance within the meadow, thereby reducing the meadows value as a foraging habitat for martens. Six Rivers NF roads, routes, and trails with light to low level of traffic should not limit marten movements and standards and guidelines for wet meadow systems would limit disturbance.

### Routes for Competitors

Marten have unique morphologies that allow them to occupy deep snow habitats where they have a competitive advantage over other carnivores, such as coyotes and bobcats. Routes driven during the winter months may allow entry affecting competition and direct mortality from predation. These effects are expected to be negligible because the routes considered for addition to the NFTS in suitable marten habitat are generally not accessible to wheeled motor vehicle traffic during the winter months. Use of roads during winter months by non-wheeled motorized vehicles is outside the scope of this analysis.

### Habitat Loss, Fragmentation and Edge Effects

Martens are believed to be sensitive to changes in overhead cover. Routes can fragment habitat by creating small corridors with no overhead cover. Several studies have found that marten are found in landscapes above 4,000 feet with less than 25% of the area composed of openings [citations]. A high level of coarse woody debris is believed to be an essential component of marten habitat as they provide cover and habitat for prey. Activities that remove large logs are likely to degrade marten habitat. Hazard tree removal along roads will reduce future snags and down logs while wildland fire both creates and removed snags and down logs. Motorized routes provide access to woodcutters, also reducing amounts of down wood within roadside corridors.

Current condition within marten habitat that is potentially being impacted within three distances (30 feet, 100 feet, and 200 feet) of existing unauthorized routes is displayed in the table below.

#### American Marten Habitat Potentially Being Impacted by Existing Unauthorized Routes

Habitat Within 30 Feet		Habitat Within 100 Feet		Habitat Within 200 Feet	
Acres	% of Total	Acres	% of Total	Acres	% of Total
121	0.03%	439	1.2%	958	2.7%

Gaines et al. (2003) developed an index to assess habitat effectiveness for late-successional forest associated species designed to address wildlife and recreation interaction including seasonality. The habitat influence index is designed to address edge effects, snag and downed log reduction, and habitat loss and fragmentation resulting from road-associated factors. Using this index, habitat influence from roads is considered **low if less than 30 percent** of late successional habitats are within a 200 foot habitat influence buffer, **moderate if 30 to 50 percent** of habitats are within that buffer, and high if greater than **50 percent** of habitats are within that zone. Based on this index, **all alternatives result in a low level of habitat influence and high habitat effectiveness** for marten.

### Direct and Indirect Effects

Based on the discussion above, current conditions and Assumption 8 and survey efforts within the project area and the Six Rivers NF, resulting in no detections or known den sites the effects analysis will not include; miles of motorized routes added to the NFTS within marten habitat; or: number of sensitive sites for TES species (protected activity centers, nest sites, territories) within ¼ mile of an added route. However, the proportion of habitat modification resulting from the maintenance of routes that include the removal of near ground vegetation and coarse woody material is discussed as the primary potential effect of adding routes to the NFTS.

#### Acres of Suitable American Marten Habitat within Three Buffer Distance from Routes to be Added for Motorized Use

Alternative	1 <sup>2</sup>	2	3	4
<b>30 Foot Buffer</b> <sup>1</sup>	121 (0.03%)	42 (0.12%)	48 (0.13%)	0 (0)

<b>100 Foot Buffer<sup>1</sup></b>	439 (1.2%)	147 (0.4%)	172 (0.48%)	0 (0)
<b>200 Foot Buffer<sup>1</sup></b>	958 (2.7%)	317 (0.9%)	380 (1.1%)	0 (0)

<sup>1</sup>Number in parenthesis indicates percent of total American marten habitat available in the project area. <sup>2</sup>Under Alternative 1, unauthorized routes would not be added to the NFTS, but would remain available for public motorized use.

These numbers, although low, are an overestimate because the numbers are derived within GIS using buffers on all segments of routes without providing for topography, slope, and existing vegetation.

The table above displays the acreage of suitable American marten habitat which occurs within three distances from roads proposed to be added to the NFTS under each action alternative. Minor direct impacts to habitat are most likely to occur within the area immediately adjacent to the road prism (within 30 feet) if vehicles pull off the road to park or pass other vehicles. Localized areas of low growing native vegetation may be modified (e.g. crushed or uprooted). This could result in a minor reduction in habitat for forest species which constitute prey items for American martens. At most, 0.03 percent of available American marten habitat could be affected in this manner; however, the actual amount would likely be much lower.

Habitat quality within 100 feet of a route may be indirectly impacted from altered drainage patterns associated with the route or decreased photosynthetic activity resulting from dust caused by vehicles traveling the route. Approximately 439 acres of suitable habitat are within 100 feet of existing unauthorized routes which would continue to receive motorized use under Alternative 1. The area potentially impacted in this fashion is reduced in Alternative 2 (147 acres), Alternative 3 (172 acres), and Alternative 4 (0 acres).

Effects to habitat could extend up to 200 feet from a road prism. Large snags and down woody debris are important habitat components for American marten. Trees posing a potential safety hazard (“hazard trees”) are generally felled and left as down woody debris but hazard tree removal requires adherence to Six Rivers NF Programmatic intended to minimize effects to habitat. These trees are typically snags that are within a tree-height distance from the road. Snags are expected to have a negligible impact as hazard tree removal must concur with the Programmatic on routes and trails. Downed logs provide habitat for marten prey and are utilized by American marten for cover or natal and maternal dens. The 2008 annual harvest of fuelwood by the public averaged approximately 700 cords on Lower Trinity Ranger District and 1,000 cords on Mad River Ranger District. Cutting of all standing snags (dead or green) is prohibited. Logs easily accessible by road and closest to roads (maintenance level 3 and 4) tend to be removed more rapidly with firewood permits than those in areas with limited motor vehicle access. Holders of valid firewood permits are allowed to cut and remove downed logs in areas identified as “open” for firewood collection and prohibited from LSR and Riparian Reserves. The majority of marten habitat in the project area is within an LSR, therefore effect to habitat from firewood collection would be limited. Habitat effects would be greatest under Alternative 1 with the proliferation of user-created routes from cross-country travel. These potential impacts are reduced in Alternatives 2 and 3. Under Alternative 4, no potential impacts would occur associated with adding routes to the NFTS.

Under Alternative 1, approximately 35,830 acres of suitable American marten habitat would not be protected from the proliferation of user-created routes from cross-country travel. 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. Under all action alternatives, a permanent Forest Order would prohibit motorize travel off the NFTS in all suitable American marten habitat

### **Cumulative Effects**

Major threats to American marten at the present time involve the effects of vegetation management (e.g. timber harvest, fuels treatments, etc.) and wildfire on the amount, distribution and quality of habitat. The impacts from past timber harvest have included habitat removal, degradation, and fragmentation,

which affected not only denning habitat, but also foraging and dispersal habitat. Past vegetation management and fuels reduction practices likely reduced high to moderate quality habitat.

Since 1995, mitigation measures and design features were implemented to protect, enhance, and accelerate habitat quality for the American marten. Therefore, vegetation management and fuels reduction practices are not expected to significantly decrease the quantity and quality of habitat due to the implementation of these practices. Projects may remove or degrade habitat in the short-term, but will remain suitable post-project and are expected to improve and, or protect habitat conditions in the long-term (accelerate and protect late-successional characteristics).

The Forest averages 64 fires that burn an average of 805 acres per year of which result in a light to moderate effect on the Forest environment. Low intensity, understory fire does not necessarily render habitat unsuitable, but may affect habitat components such as snags and down logs. The most notable wildfire in the project area (since 1987) was the Megram Wildfire (1999), the majority of which occurred in wilderness. Approximately 4 percent of American marten potential habitat was affected.

Current and present habitat analysis identifies fragmentation caused by existing system roads and unauthorized routes within the project area. Suitable habitat within marten territories and the project area would not be affected because this project would not build new routes or remove or degrade suitable habitat. There are 86 miles of NFTS roads and 15 miles unauthorized routes in suitable marten habitat. The table below presents the total mileage of routes which will be available for public motorized use (existing system and added routes) in suitable habitat for each alternative as a means to compare the potential for human-marten encounters. Alternative 1 poses the highest risk for negative encounters between humans by allowing public motorized use on 101 miles within suitable habitat. Alternatives 2 and 3 would allow motorized use on 91 and 92 miles of routes, respectively, reducing the risk by approximately 10 percent relative to Alternative 1 and decreased fragmentation through passive restoration on unauthorized routes not carried forwarded in the Alternatives. Under Alternative 4, the risk is reduced 15 percent respectively relative to Alternative 1.

The total amount marten habitat potentially affected by “**both**” existing system and added routes (this represents cumulative effects unlike direct and indirect effects which is based on only added routes by alternative) available for motorized use is presented in the table below.

**Acres of Suitable American Marten Habitat within Three Buffer Distances from All Routes Available for Motorized Use (existing system plus proposed additions) in Each Alternative**

Alternative	1 <sup>2</sup>	2	3	4
<b>30 Foot Buffer</b> <sup>1</sup>	623 (1.7%)	544 (1.5%)	550 (1.5%)	502 (1.4%)
<b>100 Foot Buffer</b>	2693 (7.5%)	2,401 (6.7%)	2,426 (6.8%)	2254 (6.3%)
<b>200 Foot Buffer</b>	5545 (15.5%)	4904 (13.7%)	4967 (13.9%)	4587 (12.8%)

<sup>1</sup>Number in parenthesis indicates percent of total American marten habitat available. <sup>2</sup>Under Alternative 1, unauthorized routes would not be added to the NFTS, but would remain available for public motorized use.

Gaines et al. (2003) developed an index to assess habitat effectiveness for late-successional forest associated species designed to address wildlife and recreation interaction including seasonality. The habitat influence index is designed to address edge effects, snag and downed log reduction, and habitat loss and fragmentation resulting from road-associated factors. Using this index, habitat influence from roads is considered **low if less than 30 percent** of late successional habitats are within a 200 foot habitat influence buffer, **moderate if 30 to 50 percent** of habitats are within that buffer, and high if greater than **50 percent** of habitats are within that zone. Based on this index, **all alternatives result in a low level of habitat influence and high habitat effectiveness** for marten.

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. 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.

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.

The project alternatives would contribute to these past and current conditions with added displacement from noise and human activity, 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 marten. 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 marten may be present. This influence, combined with fuels treatments and vegetation management, could affect marten 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 marten. 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.

American marten is a Forest Service Sensitive species on the Forest. There is the potential for disturbance to individual from use of the existing NFTS, particularly if use occurs during the early breeding season; however, this use is limited due to typical snow accumulations on these routes. Direct and indirect effects of the project alternatives, as described in the previous section, cumulatively contribute to each of the risk factors identified for marten. 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 marten. Alternative 4 would prohibit cross-country travel and would not add any routes to the NFTS, therefore the effects of this alternative would be beneficial. Alternatives 2 and 3 contribute to the continued use of roads. Alternatives 2 and 3 would result in progressively lower risk to martens due to the amount of motorized routes being added to the system. These alternatives do not result in a loss of habitat (no route construction), but may influence marten habitat.

## **Determinations**

### **Alternative 1**

Although this alternative would indirectly result in increased amounts of disturbance and habitat fragmentation within the project area, continued route proliferation would ultimately be limited by topography and wilderness areas. Indirect disturbance resulting from this alternative may impact individual American marten. Increased habitat fragmentation from route proliferation would likely result in impacts to individuals over both the short-term and long-term. American martens are not currently known to occur throughout the project area. Therefore, impacts would be minor, if any, and would not threaten the long-term viability of the species. Therefore, it is my determination that this alternative may

impact individuals, but will not cause a trend toward Federal listing or loss of viability for the American marten.

### **Alternative 2 and 3**

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. Both alternatives would result beneficially to decreased amounts of disturbance and by 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. Since American martens are not known to occur throughout the project area, effects would not likely result in any impacts to American marten populations.

Because no physical actions (i.e., construction, decommissioning, or direct restoration) would occur outside the road prism (already disturbed site) in natural occurring habitats on this project, rather addition of **unauthorized or unclassified routes to the NFTS** for recreational wheeled motorized vehicle use, it is my opinion that both alternatives may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability for the American marten.

### **Alternative 4**

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 American martens over the short-term. Since cross-country travel would be prohibited, disturbance would be decreased over the long-term and all unauthorized routes within all habitats including emphasis habitat (LSR, Habitat Management Areas) would slowly rehabilitate. The rehabilitation of these routes would result in minor improvements to American marten habitat over the long-term.

Therefore, it is my determination that this alternative may impact individuals and may have beneficial effects to their habitat, but is not likely to result in a trend toward Federal listing or loss of viability of the American marten.

## **Pacific Fisher**

### **Affected Environment**

#### **Collisions**

Roads can impact fisher in ways similar to the marten through direct mortality and habitat modification (see Marten section)

#### **Habitat Loss, Fragmentation and Edge Effects, Displacement or Avoidance**

Habitat loss and fragmentation of suitable fisher habitat by roads and development is thought to have played a significant role in both the loss of fishers and failure to recolonize for the central Sierra-Nevada population. High recreational use during the breeding season in suitable habitat may impact foraging and breeding activities. Roads may decrease prey and food availability for fisher due to prey population reductions from road kills and/or behavioral avoidance of roads. Occasional single lane forest roads with moderate levels of traffic should not limit fisher movement. Large logs with cavities provide rest and den sites for fisher. Motorized routes provide access to woodcutters, also reducing amounts of down wood within roadside corridors. Activities that remove large logs are likely to degrade fisher habitat. Hazard tree removal along roads will reduce future snags and down logs.

Recreational use within the fisher habitat in the project area is low during the breeding season (February through May) due to inaccessibility from snow and the recreation and hunting season occurs in

summer and fall. Fishers within the project area are elusive and believed to use landscapes with more contiguous, unfragmented forests and less human activity.

Standard and guidelines in the Six Rivers Forest Plan, provides management direction for habitat connectivity, snag and down log retention and limiting operating periods at den sites.

Current condition of unauthorized routes within fisher habitat within three distances (30 feet, 100 feet, and 200 feet) of existing unauthorized routes is displayed in the table below.

#### **Pacific Fisher Habitat Potentially Being Impacted by Existing Unauthorized Routes**

<b>Habitat Within 30 Feet</b>		<b>Habitat Within 100 Feet</b>		<b>Habitat Within 200 Feet</b>	
<b>Acres</b>	<b>% of Total</b>	<b>Acres</b>	<b>% of Total</b>	<b>Acres</b>	<b>% of Total</b>
418	0.31	1,572	1.2	3,596	2.7%

Of the 133,277 acres of fisher habitat within the project area 108,027 acres are within LSR. Therefore over 80 percent of the habitat is restricted from removal of down woody debris for fire wood and cutting of standing trees or snags.

#### **Direct and Indirect Effects**

Based on the discussion above, habitat modification resulting from the maintenance of routes that include the removal of snags and coarse woody material appears to be the primary potential effect of adding routes to the NFTS. Due to the lack of known den sites the effects analysis will not include Indicator 2: number of sensitive sites for TES species (protected activity centers, nest sites, territories) within ¼ mile of an added route (see Step 4: Effects Analysis). The potential to remove near ground vegetation and coarse woody material is discussed as the primary potential effect of adding routes to the NFTS and considered low based on the analysis below.

#### **Acres of Suitable Pacific Fisher Habitat within Three Buffer Distance from Routes Available for Motorized Use**

<b>Alternative</b>	<b>1<sup>2</sup></b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>30 Foot Buffer<sup>1</sup></b>	418 (0.31%)	69 (0.05%)	81 (0.06%)	0 (0)
<b>100 Foot Buffer</b>	1572 (1.2%)	273 (0.2%)	313 (0.23%)	0 (0)
<b>200 Foot Buffer</b>	3596 (2.7%)	626 (0.5%)	708 (0.53%)	0 (0)

<sup>1</sup>Number in parenthesis indicates percent of total Pacific fisher habitat available in the project area. <sup>2</sup>Under Alternative 1, unauthorized routes would not be added to the NFTS, but would remain available for public motorized use.

These numbers, although low, are an overestimate because the numbers are derived within GIS using buffers on all segments of routes without providing for topography, slope, and existing vegetation.

The table above displays the acreage of suitable Pacific fisher habitat which occurs within three distances from roads proposed to be added to the NFTS under each action alternative. Minor direct impacts to habitat are most likely to occur within the area immediately adjacent to the road prism (within 30 feet) if vehicles pull off the road to park or pass other vehicles. Localized areas of low growing native vegetation may be modified (e.g. crushed or uprooted). This could result in a minor reduction in habitat for forest species which constitute prey items for Pacific fishers. At most, 0.31 percent of available fisher habitat could be affected in this manner; however, the actual amount would likely be much lower.

Habitat quality within 100 feet of a route may be indirectly impacted from altered drainage patterns associated with the route or decreased photosynthetic activity resulting from dust caused by vehicles traveling the route. Approximately, 1.2% acres of suitable habitat are within 100 feet of existing unauthorized routes which would continue to receive motorized use under Alternative 1. The area

potentially impacted in this fashion is reduced in Alternative 2 (273 acres), Alternative 3 (313 acres), and Alternative 4 (0 acres).

Effects to habitat could extend up to 200 feet from a road prism. Large snags and down woody debris are important habitat components for fisher. Effects to denning habitat such as large snags is expected to be low considering this project incorporates existing trails and does not include new construction, additionally over time, effects at 200 feet would be reduced greatly under all action alternatives by passive vegetative recovery along routes not added to the NFTS. Furthermore, trees posing a potential safety hazard (“hazard trees”) are often removed along roads but hazard tree removal requires adherence to Six Rivers Hazard Tree Removal Guidelines (1999) intended to minimize effect to. These trees are typically snags that are within a tree-height distance from the road. Downed logs provide habitat for fisher prey and are utilized by fisher for cover or natal and maternal dens. Downed logs provide habitat for prey. The annual harvest of fuelwood by the public averages approximately 4,400 cords. Holders of valid Firewood Permits are allowed to cut and remove downed logs in areas identified as “open” for firewood collection but restrictions occur in LSR and riparian reserves. Cutting of standing snags (dead or green) is prohibited. Logs easily accessible by road and closest to roads tend to be removed more rapidly than those in areas with limited motor vehicle access. This habitat effect would be greatest under Alternative 1 with up to 3596 acres adjacent to routes being affected. These potential impacts are reduced under alternatives 2 (626 acres) and 3 (708 acres). Under Alternative 4, no potential impacts would occur associated with adding routes to the NFTS.

The Six Rivers NF Motorized Travel Management Project action alternatives would reduce effects currently within 3,596 acres of Pacific fisher habitat (200 foot buffer). 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.

Under Alternative 1, approximately 133,277 acres (analysis assumes flat plane, thereby overestimating area because slope, cut bank and other topographic features did not get excluded.) of suitable Pacific fisher habitat would not be protected by a permanent Forest Order prohibiting cross-country travel. 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. Under all action alternatives, a permanent Forest Order would prohibit motorized travel off the NFTS in all suitable fisher habitat.

### **Cumulative Effects**

In 2004, the USFWS determined that listing of the West Coast population of the fisher was warranted, and identified the following primary threats from activities on NFS lands: (1) loss and fragmentation of habitat due to timber harvest and hazardous fuels reduction; (2) increased predation resulting from canopy cover reductions; (3) mortality from vehicle collisions; and (4) increased human disturbance.

The impacts from past timber harvest have included habitat removal, degradation, and fragmentation, which affected not only denning habitat, but also foraging and dispersal habitat. Low intensity, understory fires do not necessarily render habitat unsuitable, but may affect habitat components such as snags and down logs.

Current and present habitat analysis includes fragmentation caused by existing system roads and unauthorized routes within the project area. There are 333 miles of NFTS roads and 57 miles of unauthorized routes in suitable fisher habitat. The table below presents the total mileage of routes available for public motorized use (**existing system and added routes**) in suitable habitat for each alternative as a means to compare the potential for human-fisher encounters. Alternative 1 poses the highest risk for negative encounters between humans by allowing public motorized use on 390 miles within suitable habitat. Alternatives 2 and 3 would allow motorized use on 344 and 345 miles of routes, respectively, reducing the risk by approximately 12 percent relative to Alternative 1 and decreased

fragmentation through passive restoration on unauthorized or unclassified routes not carried forwarded in the Alternatives. Under Alternative 4, the risk is reduced 15 percent respectively relative to Alternative 1.

#### Miles of Routes (existing system and added routes) for Public Motorized Use in Suitable Pacific Fisher Habitat

	ALT 1	ALT 2	ALT 3	ALT 4
<b>Total</b>	390	344	345	333

There are no known fisher den sites in the project area. In the event that a fisher den site is detected, mitigation measures would be imposed according to the Forest Plan on all routes that occur within ¼-mile of a den.

The total amount fisher habitat potentially affected by “**both**” existing system and added routes (this represents cumulative effects unlike direct and indirect effects which is based on only added routes by alternative) available for motorized use is presented in the table below.

#### Acres of Suitable Pacific Fisher Habitat within Three Buffer Distances from All Routes Available for Motorized Use (Existing System plus Proposed Additions) in Each Alternative

Alternative	1 <sup>2</sup>	2	3	4
<b>30 Foot Buffer</b> <sup>1</sup>	2,672 (2%)	2,323 (1.7%)	2,335 (1.7)	2,254 (1.7%)
<b>100 Foot Buffer</b>	10,210 (7.7%)	8911 (6.7%)	8,951 (6.7%)	8,638 (6.5%)
<b>200 Foot Buffer</b>	21,273 (16%)	18,303 (13.7%)	18,303 (13.7%)	17,677 (13.3%)

<sup>1</sup>Number in parenthesis indicates percent of total pacific fisher habitat available project-wide. <sup>2</sup>Under Alternative 1, unauthorized routes would not be added to the NFTS, but would remain available for public motorized use.

Gaines et al. (2003) developed an index to assess habitat effectiveness for late-successional forest associated species designed to address wildlife and recreation interaction including seasonality. The habitat influence index is designed to address edge effects, snag and downed log reduction, and habitat loss and fragmentation resulting from road-associated factors. Using this index, habitat influence from roads is considered **low if less than 30 percent** of late successional habitats are within a 200 foot habitat influence buffer, **moderate if 30 to 50 percent** of habitats are within that buffer, and high if greater than **50 percent** of habitats are within that zone. Based on this index, **all alternatives result in a low level of habitat influence and high habitat effectiveness** for Pacific fisher.

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. 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 and Assumption 8 with added displacement from noise and human activity, 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 this 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.

Pacific fisher is a Forest Service Sensitive species on the Forest. There is the potential for disturbance to individual from use of the existing NFTS, particularly if use occurs during the early breeding season. This use is limited due to typical snow accumulations on these routes. 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 rate of 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. 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.

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.

The project alternatives would contribute to these past and current conditions with added displacement from noise and human activity, 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 marten. 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 fisher may be present.

In addressing the effects of roads upon fisher, the USFWS concluded that, road-related effects on low density carnivores like fishers “are more severe than most other wildlife species due to their large home ranges, relatively low fecundity, and low natural population density.” Since routes proposed within the action alternatives are native surfaced routes that do not generally have high rates of travel, these road-related effects are expected to be minimal. The greatest influence upon fisher habitat occurs under Alternative 1 and progressively lower levels of impact occur under the action alternatives.

## **Determinations**

### **Alternative 1**

Although this alternative would result in increased amounts of disturbance and habitat fragmentation within the project area by not prohibiting cross country travel, continued route proliferation would ultimately be limited by topography and wilderness areas. Disturbance resulting from this alternative may result in adverse impacts to individual Pacific fisher. Increased habitat fragmentation from route proliferation would likely result in impacts to individuals over the short-term and long-term. Disturbance resulting from this alternative would likely result in adverse impacts to some individual fisher. Increased habitat fragmentation from route proliferation may result in impacts to individuals over the long-term. Although route proliferation may impact some individual fisher and their habitat over the long-term, restricted access by topography, snow, vegetation, and wilderness areas would result in significant amounts of unimpacted suitable habitat over the short and long-term.

Therefore, it is my determination that this alternative may impact individuals, but will not cause a trend toward Federal listing or loss of viability for the Pacific fisher.

### **Alternative 2 and 3**

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. Both alternatives would result in decreased amounts of disturbance, habitat fragmentation, increased patch size, and reduce sedimentation in stream channels within the project area since cross-country travel would be prohibited. Because no physical actions (i.e., construction, decommissioning, or direct restoration) would occur outside the road prism (already disturbed site) 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. Disturbance and habitat fragmentation resulting from these alternatives would be minor, and would not likely impact the individual's fitness. Therefore, it is my determination that both alternatives may impact individuals during the breeding season, but will not appreciatively diminish the recovery options for this species on the Six Rivers National Forest. The project will have long-term beneficial effects for the fisher through prohibition of cross-country travel.

### **Alternative 4**

Cross-country travel would be prohibited and there would not be any motorized routes added to the NFTS in this alternative. Prohibiting cross-country travel would reduce future disturbance to individual fisher and prevent further fragmentation of their habitat over the long-term.

Therefore, it is my determination that this alternative may impact individuals and may have beneficial effects to their habitat, but is not likely to result in a trend toward Federal listing or loss of viability of the Pacific fisher.

## **Northern Goshawk**

### **Affected Environment**

Collection, disturbance at a specific site, habitat loss or fragmentation and edge effects were described by Gaines et al. (2003) as being road and trail-associated factors that potentially affect the northern goshawk. These factors are described in more detail below:

#### **Collection**

Illegal harvest (shooting of an individual) and falconry take have been documented on other National Forests. There are no documented reports on the Six Rivers that were goshawks were harassed or shot in areas where human recreation was concentrated. There is minimal concern on the Forest that illegal harvest may pose a risk to local populations.

The potential for collection or other harvest of goshawks is likely to be higher with greater opportunity for human-animal encounters in areas with higher road density or concentrated recreational use. Miles of routes available for public motorized use within suitable goshawk habitat is used as a relative index to measure the potential for human-animal encounters. There are currently 4 miles of unauthorized routes within suitable habitat.

#### **Disturbance at a Specific Site**

Human disturbance has the potential to cause goshawk to abandon nesting during the nesting and post fledging period (February 15 through September 15). Goshawks initiate breeding when the ground is still

covered in snow and sometimes nests are located along roads and trails when they are not yet in use. Additionally, roads and trails provide flight access for goshawk. When the snow melts, these sites can potentially be areas of conflict as these roads and trails are used by people. However, vehicle traffic on roads more than 400 meters (0.25 miles) from nests did not elicit any discernable behavioral response from goshawks.

Plumas National Forest is examining the effects of off highway vehicles (OHV) on juvenile northern goshawks from 2004-2006 (J. Dunk et al, ongoing). OHV users represent an important demographic of this and other multiple-use forests. This multi-phase study compared survival, space use, and frequency of movement of radio-tagged juvenile goshawks subjected to an OHV-use treatment areas and control areas where goshawks that were not subjected to OHV-use. Timing was focused on the period between fledging and dispersal, when juveniles on a territory remain relatively close to their nest. Preliminary results do not indicate a marked difference between juveniles in treatment and control territories. Conducting radio telemetry in geographically complex terrain combined with typical anthropogenic background sound levels at territories are factors that may have influenced the results.

To ascertain the potential for disturbance of goshawks standards and guidelines within the LRMP will be used for each alternative. In terms of the miles of routes available for public use within territories and the number of nests within 1/4-mile of routes available for public use will be analyzed.

#### **Habitat Loss, Fragmentation and Edge Effects:**

A network of roads and motorized trails can fragment goshawk habitat by reducing canopy closure and by reducing forest interior patch size. However, how habitat fragmentation from roads and trails affects goshawk habitat suitability is not well understood. Generally, the wider the road, the more it can fragment habitat. State and federal highways create the greatest habitat fragmentation due to the width of the road and associated edge effects. Native surface roads and trails probably do not pose as much risk of habitat fragmentation compared to smooth surfaced roads due to their narrow width relative to the natural tree spacing in late-seral forests.

Current condition of unauthorized routes within goshawk habitat within three distances (30 feet, 100 feet and 200 feet) of existing unauthorized routes is displayed in the table below.

#### **Northern Goshawk Habitat Potentially Being Impacted by Existing Unauthorized Routes**

<b>Habitat Within 30 Feet</b>		<b>Habitat Within 100 Feet</b>		<b>Habitat Within 200 Feet</b>	
<b>Acres</b>	<b>% of Total</b>	<b>Acres</b>	<b>% of Total</b>	<b>Acres</b>	<b>% of Total</b>
33	0.29%	120	1.05%	328	2.9%

#### **Direct and Indirect Effects**

The major threat to northern goshawks at the present time involves the effects of vegetation management (e.g., timber harvest, fuels treatments, etc.) and wildfire on the amount, distribution and quality of habitat.

The tables below display the measurement indicators which describe the differences between alternatives for the three types of potential effects identified above (collection, disturbance at a specific site, habitat modification). Throughout this section, direct and indirect effects focus on the routes available for public motorized use in the alternatives. For the no action alternative, this includes all existing unauthorized routes, even though those routes will not be added to the NFTS. For the action alternatives, it includes only those unauthorized routes added to the NFTS in that alternative.

#### **Miles of Route Available for Public Motorized Use in Suitable Northern Goshawk Habitat**

<b>ALT 1<sup>1</sup></b>	<b>ALT 2</b>	<b>ALT 3</b>	<b>ALT 4</b>
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3.33	0.63	0.85	0
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<sup>1</sup>Under Alternative 1, unauthorized routes would not be added to the NFTS, but would remain available for public motorized use.

Alternative 1 would allow travel on the greatest mileage of unauthorized routes within suitable northern goshawk habitat however these are segments less than 3 miles in length ((most under 1 mile) being analyzed, reducing the possibility of impacts to individual birds. Birds may be killed by collisions with vehicles, shot or collected for falconry. Each of these actions effectively reduces population size and removes potentially reproductive individuals. These potential impacts are reduced incrementally in Alternatives 2 and 3, respectively. Under Alternative 4, no potential impacts would occur as no unauthorized routes would be added to the NFTS.

#### **Miles of Route within Suitable Northern Goshawk Habitat and Number of Nests within 1/4 mile of Routes Available for Public Use**

<b>Alternative</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>Miles</b>	0.09	0.09	0.09	0
<b>Nests</b>	1	1	1	0

Under Alternative 1, unauthorized routes would not be added to the NFTS, but would remain available for public motorized use.

Potential disturbance from human recreational activities has impacts at the scale of individual territories located in areas that receive recreational use or at sub-regional scales, such as the hunting season, that receive an increase human recreational use. The problem appears most acute where active northern goshawks nests are located along non-motorized trails and in areas that receive heavy foot traffic. However, hunting season does not occur until the post-fledging period and recreational use by foot is considered low to light within the project area.

The table below displays the differences between alternatives for the two metrics that address potential for disturbance of northern goshawks during the nesting and post-fledging period. Miles of routes within territories allows a relative comparison of both the potential for vehicle noise to disturb nesting birds and humans to access the nest stand. Goshawks display a variety of responses to humans and vehicles. During the nest establishment period (March – April), repeated perturbations may cause individuals to abandon nest building. Once the female has begun incubating eggs, she is less likely to display any overt response when people or vehicles approach the nest. Observations of nests on the Forest suggest that both the male and female adults become more aggressive shortly after the young have hatched and will actively defend the nest by “dive bombing” approaching humans. This behavior results in an energetic cost to the adults and may also detract from their ability to tend to young or forage. However, vehicle traffic on roads more than 400 meters (0.25 miles) from nests did not elicit any discernable behavioral response from goshawks.

There is no difference between Alternatives 1, 2 and 3 as less than one percent of goshawk nesting territories could experience some minor level of disturbance from routes within 1/4-mile of nest locations. Goshawk nests do not necessarily remain in the same location over time. New nests may be built annually or once every several years. New nests are generally built in relatively close proximity to existing or deteriorating nests and are almost always located within the core nest stand. It is expected that the number of nests located within ¼ mile of routes will vary over time. To address the potential for future impacts to nesting goshawks, monitoring is identified as a mitigation measure.

### Acres of Suitable Northern Goshawk Habitat within Three Buffer Distance from Routes Available for Motorized Use

Alternative	1 <sup>2</sup>	2	3	4
<b>30 Foot Buffer<sup>1</sup></b>	33 (0.3%)	5 (0.04%)	10 (0.09%)	0
<b>100 Foot Buffer</b>	120 (1.05%)	17 (0.15%)	36 (0.3%)	0
<b>200 Foot Buffer</b>	328 (2.9%)	40 (0.35%)	74 (0.6%)	0

<sup>1</sup>Number in parenthesis indicates percent of total northern goshawk habitat available in the project area. <sup>2</sup>Under Alternative 1, unauthorized routes would not be added to the NFTS, but would remain available for public motorized use.

These numbers, although low, are an overestimate because the numbers are derived within GIS using buffers on all segments of routes without providing for topography, slope, and existing vegetation.

The Table above displays the acreage of suitable northern goshawk habitat which occurs within three distances from roads available for public motorized use under each alternative. Limited direct impacts to habitat are most likely to occur within the area immediately adjacent to the road prism (within 30 feet) if vehicles pull off the road to park or pass other vehicles. Localized areas of low growing native vegetation may be modified (e.g. crushed or uprooted). This could result in a minor reduction in habitat for forest birds and rodents which constitute the majority of prey items for northern goshawks. At most, 0.3 percent of available northern goshawk habitat could be affected in this manner; however the actual amount would likely be much lower.

Habitat quality within 100 feet of a route may be indirectly impacted from altered drainage patterns associated with the route or decreased photosynthetic activity resulting from dust caused by vehicles traveling the route. Approximately 120 acres of suitable habitat are within 100 feet of existing unauthorized routes which would continue to receive motorized use under Alternative 1. The area potentially impacted in this fashion is reduced sequentially in Alternatives 2 (17 acres) and 3 (36 acres).

Effects to habitat could extend up to 200 feet from a road prism. Large snags are an important habitat component for goshawks. Trees posing a potential safety hazard (“hazard trees”) along roads, routes and trails are generally felled and left as down woody debris but hazard tree removal requires adherence to Six Rivers Hazard Tree Removal Guidelines (1999) intended to not adversely affect habitat. These trees are typically snags that are within a tree-height distance from the road. The 2008 annual harvest of fuelwood by the public averaged approximately 700 cords on Lower Trinity Ranger District and 1,000 cords on Mad River Ranger District. Cutting of all standing snags (dead or green) is prohibited. Logs easily accessible by road and closest to roads tend to be removed more rapidly with firewood permits than those in areas with limited motor vehicle access. Holders of valid firewood permits are allowed to cut and remove downed logs in areas identified as “open” for firewood collection and prohibited from LSR and riparian reserves. Miles within 200 foot buffers (below) include LSR therefore with respect to fire wood effects the estimated values would be approximately 65 percent less than shown in the table below. This habitat effect would be greatest under Alternative 1 with up to 328 acres being affected. These potential impacts are reduced incrementally in alternatives 2 (40 acres) and 3 (74 acres). Under Alternative 4, no potential impacts would occur associated with adding routes to the NFTS.

#### Cumulative Effects

As stated previously, the major threats to northern goshawk at the present time involve the effects of vegetation management (e.g. timber harvest, fuels treatments, etc.) and wildfire on the amount, distribution and quality of habitat. The impacts from past timber harvest have included habitat removal, degradation, and fragmentation, which affected not only nesting habitat, but also foraging and dispersal habitat.

Current and present habitat analysis includes fragmentation caused by existing system roads and unauthorized routes within the project area. There are 27 miles of NFTS roads and 3.88 miles of

unauthorized routes in suitable northern goshawk habitat. The table below presents the total mileage of routes available for public motorized use (**existing system and added routes**) in suitable habitat for each alternative as a means to compare the potential for human-goshawk encounters. Alternative 1 poses the highest risk for negative encounters between humans by allowing public motorized use on 31 miles within suitable habitat. Alternatives 2 and 3 would allow motorized use on 28 and 28 miles of routes, respectively, reducing the risk by approximately 10 percent relative to Alternative 1 and decreased fragmentation through passive restoration on unauthorized or unclassified routes not carried forwarded in the Alternatives. Under Alternative 4, the risk is reduced 12 percent respectively relative to Alternative 1.

#### **Miles of Routes (existing system and added routes) for Public Motorized Use in Suitable Northern Goshawk Habitat**

	<b>ALT 1</b>	<b>ALT 2</b>	<b>ALT 3</b>	<b>ALT 4</b>
<b>Total</b>	31.37	28.12	28.34	27.49

Alternative 1, 2 and 3 would allow motor vehicle travel within ¼-mile of one known nests. Alternative 1 would allow motor vehicle travel within ¼ mile of nest trees to potentially increase by not prohibiting cross-county travel. All action alternatives would limit disturbance by prohibiting cross-country travel.

#### **Total Miles of Routes (existing system and added routes) within ¼ Mile Radius of Northern Goshawk Nests**

<b>Alternative</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>Miles</b>	0.09	0.09	0.09	0
<b>Nests<sup>1</sup></b>	1	1	1	0

Under Alternative 1, unauthorized routes would not be added to the NFTS, but would remain available for public motorized use.

The total amount northern goshawk habitat potentially affected by “**both**” **existing system and added routes** (this represents cumulative effects unlike direct and indirect effects which is based on only added routes by alternative) available for motorized use is presented in the table below.

#### **Acres of Suitable Northern Goshawk Habitat within Three Buffer Distance from Routes (existing system and added routes)**

<b>Alternative</b>	<b>1<sup>2</sup></b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>30 Foot Buffer<sup>1</sup></b>	210 (1.85%)	182 (1.6%)	187 (1.6%)	177 (1.5%)
<b>100 Foot Buffer</b>	802 (7.08%)	699 (6.1%)	718 (6.3%)	682 (6%)
<b>200 Foot Buffer</b>	1,754 (15.5%)	1,466 (12.9%)	1,500 (13%)	1426 (12.6%)

<sup>1</sup>Number in parenthesis indicates percent of total northern goshawk habitat available in the project area.

<sup>2</sup>Under Alternative 1, unauthorized routes would not be added to the NFTS, but would remain available for public motorized use. Analysis assumes flat plane, thereby overestimating buffer area because slope, cut bank and other topographic features did not get excluded.

Gaines et al (2003) developed an index to assess habitat effectiveness for late-successional forest associated species designed to address wildlife and recreation interaction including seasonality. The habitat influence index is designed to address edge effects, snag and downed log reduction, and habitat loss and fragmentation resulting from road-associated factors. Using this index, habitat influence from roads is considered low if less than 30 percent of late successional are within a 200 foot habitat influence buffer, moderate if 30 – 50 percent of habitats are within that buffer, and high if greater than 50 percent of

habitats are within that zone. Based on this index, all alternatives result in a low level of habitat influence and high habitat effectiveness for the northern goshawk.

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. 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 and Assumption 8 with added displacement from noise and human activity, 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 this 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.

Vegetation management and wildland fire have the greatest potential to modify northern goshawk habitat. Past vegetation management and fuels reduction practices likely reduced the amount high to moderate quality habitat. Since 1995, mitigation measures and design features were implemented to protect, enhance, and accelerate habitat quality. Therefore, vegetation management and fuels reduction practices are not expected to significantly decrease the quantity and quality of habitat due to the implementation of these practices.

Fuel reduction, prescribed burning and understory thinning projects increase habitat for goshawk. One project located in the analysis area is currently being implemented. Mill Creek Roadside Fuels Reduction Project is approximately 780 acres. Future projects include, Trinity River Community Fuels Protection Project (approximately 760 acres) and Kelsey (approximately 4,700 acres) is currently in the planning phase and Beaverslide Timber Sale (5,400 acres) on the Mad River Ranger District and “may affect but not likely to adversely affect” determinations for threatened and sensitive species. However, these projects incorporate mitigation measures and design features that will improve habitat for the goshawk. Grazing allotments occur throughout the project area and provide foraging habitat for the goshawk. Presently, there is a total of 62,723 acres (12 percent of the project area) of capable foraging units; however 21,753 acres (35 percent) are inactive or vacant. Meadows are becoming encroached upon by conifers due to lack of fire in to these systems therefore an unknown acreage of meadow enhancement projects will likely be planned to reduce encroachment over the next 20 years contributing to habitat improvements for the goshawk.

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.

Northern goshawk is a Forest Service Sensitive species on the Forest. There is the potential for disturbance to individual from use of the existing NFTS, particularly if use occurs during the early breeding season. This use is limited due to typical snow accumulations on these routes. Given the low proportion of nest sites and habitat potentially affected, and considering the projections for future recreation uses and OHV activity, Alternative 1 may, over time, contribute to cumulative effects upon goshawk populations. Because Alternative 1 does not restrict vehicles to designated routes, there is a high degree of uncertainty about future route proliferation in goshawk habitat which may have disturbance and habitat effects beyond the effects of routes open to motorized use. Alternative 1 presents the greatest risk of contributing to adverse cumulative effects upon goshawk habitat and populations because there would not be a prohibition on cross-country travel. Alternative 4 contributes the least to cumulative effects because cross-country travel would be prohibited, open route densities in goshawk habitat are lowest, and no motorized routes would be designated. Alternatives 2 and 3 would result in progressively lower risk to goshawk due to the amount of motorized routes being added to the system. Considering the proportion of goshawk habitat influenced by motorized routes and projections for future recreation uses and OHV activity, the alternatives may result in minor cumulative impacts when combined with other factors affecting goshawk habitat.

## **Determinations**

### **Alternative 1**

Although this alternative would indirectly result in increased amounts of disturbance and habitat fragmentation within the project area, continued route proliferation would ultimately be limited by topography and wilderness areas. Indirect disturbance resulting from this alternative may result in impacts to individuals over the short-term and long-term.

Therefore, it is my determination that this alternative may impact individuals, but will not cause a trend toward Federal listing or loss of viability for the northern goshawk.

### **Alternative 2 and 3**

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. Both alternatives would result beneficially to decreased amounts of disturbance while 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. Disturbance resulting from both alternatives would not likely result in adverse impacts to goshawks.

Because no physical actions (i.e., construction, decommissioning, or direct restoration) would occur outside the road prism (already disturbed site) in natural occurring habitats on this project, rather addition of **unauthorized or unclassified routes to the NFTS** for recreational wheeled motorized vehicle use, it is my opinion that both alternative may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability for the northern goshawk.

### **Alternative 4**

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 goshawks over the short-term. Since cross-country travel would be prohibited, disturbance would be decreased over the long-term and all unauthorized routes within territories and suitable habitat including emphasis habitat (Habitat Management Areas, LSR) would slowly rehabilitate. The rehabilitation of these routes would result in minor improvements to northern goshawk habitat over the long-term.

Therefore, it is my determination that this alternative may impact individuals and may have beneficial effects to their habitat, but is not likely to result in a trend toward Federal listing or loss of viability of the northern goshawk.

### **Bald Eagle**

#### **Affected Environment**

Gaines et al. (2003) identified the following road and motorized trail-associated factors as potentially affecting the bald eagle: poaching, disturbance at a specific site and displacement/avoidance. Bald eagle habitat modification is not a factor associated with motor vehicle use of roads. Large conifers in proximity to areas of open water are the primary elements that define high quality bald eagle habitat. Neither of these elements is affected by the low standard routes (i.e., equivalent of maintenance level 2 roads or motorized trails) considered in this document.

Wildlife species associated with riparian habitats such as the bald eagle are particularly vulnerable to the effects of recreation activities on their habitat because of the concentration of these activities in riparian areas. Riparian habitats occur in narrow, linear configurations that are often traversed by roads and trails. Because of the availability of open water, cover, and concentrated food sources, these habitats are used by wildlife disproportionately to their availability (Gaines et al 2003).

The Forest applies mitigation standards and guidelines to ensure that the distribution and number of riparian-associated species do not severely decline. Riparian reserves (RR) standards and guidelines are designed to maintain adequate numbers of large snags and green-tree replacements for future snags in appropriate forest types. Additionally, the Aquatic Conservation Strategy (ACS) ensures the quality of aquatic and riparian resources protection by providing for diverse, high quality fish habitat and maintaining riparian dependent resources (water, fish, wildlife, riparian-related aesthetics, and aquatic vegetation) and riparian communities.

#### **Poaching**

No instances of poaching have been documented on Six Rivers NF. All reports of poaching or harassing of bald eagles will be reported to appropriate law enforcement agencies. This activity is not considered a potential threat to local populations and will not be considered further in this analysis.

#### **Disturbance at a Specific Site and Displacement/Avoidance**

The bald eagle nesting period consists of five phases: courtship and nest building, egg laying, incubation and hatching, early nestling period, and late nestling period. Eagle sensitivity to humans varies among these five phases, with eagles being most sensitive to human disturbance during the courtship and nest building phase, when disturbance may result in nest abandonment and reproductive failure.

Reported responses of bald eagles to human activities have included spatial avoidance of human activity and reproductive failure. Nest site protection through seasonal area closures is one of the primary ways that the Six Rivers NF has implemented measures to avoid the potential for nest failures due to human disturbance.

To determine the potential for disturbance of bald eagles, the number of miles of routes available for motorized travel within half mile of bald eagle nests was calculated. Existing routes within suitable winter roosting areas are generally snow-covered during late-December through April when bald eagles are present, reducing the potential for disturbance during the courtship and early breeding period. There are no unauthorized routes within a half mile of nests therefore no closures are required during the breeding season.

### Direct and Indirect Effects

The response of bald eagles to human activities is variable. Individual bald eagles show different thresholds of tolerance for disturbance. Also, the distance at which a disturbance causes modified behavior is influenced by terrain, vegetation cover, line of sight, and prevailing winds. Forested habitats can mute noise generated by vehicles and screen the vehicle from sight. Based on the two known nests, the current mileage of existing unauthorized routes within bald eagle habitat is displayed in the table below.

#### **Miles of Added Route Available for Public Motorized Use in Bald Eagle Territories (total 12,602 acres)**

<b>ALT 1</b>	<b>ALT 2</b>	<b>ALT 3</b>	<b>ALT 4</b>
3.13	0.49	0.49	0

Based on the table above, accessibility and access to bald eagles is limited even within Alternative 1. Alternative 1, although very low (3.13 miles), would allow travel on the greatest mileage of unauthorized routes and continue disturbance by the proliferation of user-created routes from cross-country travel within bald eagle territories. Such disturbance may result in a greater possibility of impacts to individual birds. This potential impact is reduced equally in Alternatives 2 and 3. Under Alternative 4, no potential impacts would occur as no unauthorized routes would be added to the NFTS.

Of the 3.13 miles of unauthorized routes in Alternative 1, 2.33 miles are within the “nest protection zone” of which 0.3 miles are included in Alternative 2 and 3. These low numbers explain why the following table shows zero across all alternatives. The following table displays the miles of route that would be available for motor vehicle use within a half mile of known bald eagle nest by alternative.

#### **Miles of Unauthorized Route within a 1/2 Mile of Known Bald Eagle Nest**

<b>ALT 1</b>	<b>ALT 2</b>	<b>ALT 3</b>	<b>ALT 4</b>
0	0	0	0

There are no unauthorized routes within ½ mile of bald eagle nests; therefore the risk of disturbance is limited to the existing NFTS routes. Under all action alternatives, cross-country travel would prohibit future motorize travel off the NFTS in all habitat and within ½ mile of nests, which would eliminate the potential for disturbance at a specific site, cause displacement or avoidance.

### Cumulative Effects

The majority of past and present activities in the project area have impacted the bald eagles and their habitat. Disturbance such as recreation, vegetative and fuels management, livestock grazing, and wildfire have affected the availability and quality of habitat. Past and ongoing activities that have affected bald eagle habitat are chiefly associated with development of reservoirs, historic logging, and water transportation. Reservoir development created eagle foraging habitat at Ruth Lake. Conversely, the de-watering of portions of the mainstem Trinity River reduced available foraging habitat. Eagle nesting habitat tends to be in close proximity to rivers and lakes in stand of timber containing large, old trees. Bald eagles appear to be able to adapt to a certain amount of human disturbance and continue to successfully reproduce.

There are 21 miles of NFTS roads and 24 miles of unauthorized routes in bald eagle territories, none within ½ mile of a known nest. The table below presents the total mileage of routes available for public motorized use (**existing system and added routes**) in suitable habitat for each alternative as a means to compare the potential for human-eagle encounters. Alternative 1 poses the highest risk for negative

encounters between humans specifically because of unregulated cross-country travel. The difference in unauthorized miles between alternative 1 and action alternatives (3 miles) is not expected to be substantial because the two nests are well established and reproductively successful most years. It is unlikely that use will increase during the breeding season as both nesting zones are in remote areas that cater mostly to late summer recreation.

Total amount of eagle territory affected by “**both**” **existing system and added routes** (this represents cumulative effects unlike direct and indirect effects which is based on only added routes by alternative) available for motorized use is presented in the table below.

**Miles of Routes (existing NFTS and added routes) available for Public Motorized Use in Bald Eagle Territory**

	<b>ALT 1</b>	<b>ALT 2</b>	<b>ALT 3</b>	<b>ALT 4</b>
<b>Total</b>	24	21.49	21.49	21

Bald eagle is a Forest Service sensitive species on the Six Rivers NF. There is the potential for disturbance to individual from use of the existing NFTS, particularly if use occurs during the early breeding season or during the wintering season. This use is limited due to typical snow accumulations on these routes. There are no unauthorized routes within ½ mile of an existing nest and therefore the risk of cross-country travel is expected to be very low. That risk continues in Alternative 1 but is eliminated in Alternatives 2, 3 and 4. The negligible disturbance associated with the routes evaluated in all alternatives is not expected to affect bald eagle abundance or distribution and poses a very low risk of impacting bald eagle viability on the Forest.

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. 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.

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.

The project alternatives would contribute to these past and current conditions and Assumption 8 with added displacement from noise and human activity, 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 this 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.

### **Determinations**

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. Based upon the above analysis and because no physical actions (i.e., construction, decommissioning, or direct restoration) would occur outside the road prism (already disturbed site) in natural occurring habitats on this project, rather addition of **unauthorized or unclassified routes to the NFTS** for recreational wheeled motorized vehicle use, it is my determination that all alternative “may affect individuals but will not cause a trend towards federal listing or loss of viability” for the bald eagles and is expected to have a beneficial effect on habitat by reducing fragmentation and increasing patch size and decreasing resource damages including fisheries.

### **USFWS Programmatic Route Designation Design Criteria**

Alternative 1 would not prohibit cross-country travel; therefore, this alternative would not prevent disturbance to nest sites during the breeding season and would not comply with programmatic guidelines restricting riparian crossings and potential for resource damage to fisheries. All action alternatives do not include staging areas and would prohibit cross-country travel restricting routes within ½ mile of nest sites. No unauthorized routes with resource concerns (restrict fish passage) are included in any action alternative, therefore, these action alternatives would be in compliance with the Programmatic Design Criteria.

### **American Peregrine Falcon**

#### **Affected Environment**

Gaines et al. (2003) identified the following road and motorized trail-associated factors as potentially affecting the peregrine falcon: disturbance at a specific site and displacement and avoidance. Peregrine falcon habitat modification is not a factor associated with motor vehicle use of roads. Proximity to areas of open water is the primary elements that define high quality foraging habitat. Neither of these elements is affected by the low standard routes (i.e., equivalent of maintenance level 2 roads or motorized trails) therefore habitat will not be considered in this analysis.

Wildlife species associated with riparian habitats, such as falcons, are particularly vulnerable to the effects of recreation activities on their habitat because of the concentration of these activities in riparian areas. Riparian habitats occur in narrow, linear configurations that are often traversed by roads and trails. Because of the availability of open water, cover, and concentrated food sources, these habitats are used by wildlife disproportionately to their availability (Gaines et al 2003).

The Forest applies mitigation standards and guidelines to ensure that the distribution and number of riparian-associated species do not severely decline. Riparian reserves (RR) standards and guidelines are designed to maintain adequate numbers of large snags and green-tree replacements for future snags in appropriate forest types. Additionally, the Aquatic Conservation Strategy (ACS) ensures the quality of aquatic and riparian resources protection by providing for diverse, high quality fish habitat and maintaining riparian dependent resources (water, fish, wildlife, riparian-related aesthetics, and aquatic vegetation) and riparian communities.

#### **Displacement or Avoidance and Collection**

Illegal harvest (shooting of an individual) and falconry take have been documented on other National Forests. The potential for collection or other harvest of falcons is likely to be higher with greater opportunity for human-animal encounters in areas with higher road density or concentrated recreational use. There are no documented reports on the Forest where falcons were harassed or shot in areas where human recreation was concentrated. The collection and use of birds for falconry is regulated by the

California Department of Fish and Game and management considers both illegal and legal harvest. Nonetheless, collection has the potential to affect local individual territories if a particular site were to receive repeated visits and harvesting. Overall, at this time, there is minimal concern on the Forest that collection poses a risk to local populations.

Human disturbance has the potential to cause falcons to abandon nesting during the nesting and post fledging period (January 1 through August 31). Falcons initiate breeding when the ground is still covered in snow and roads and trails are generally not yet in use. When the snow melts, these sites can potentially be areas of conflict as these roads and trails are used by people.

To ascertain the potential for disturbance of falcons, each alternative is compared in terms of the miles of routes available for public use within territories and the number of nests within 1/4-mile of routes available for public use. There are currently approximately 85.4 miles of unauthorized routes within established territories. Existing closures are in place to protect breeding pairs therefore no further analysis will be done.

### **Direct and Indirect Effects**

The response of peregrine falcon to human activities is variable. Individuals show different thresholds of tolerance for disturbance. Also, the distance at which a disturbance causes modified behavior is influenced by terrain, vegetation cover, line of sight, and prevailing winds. Forested habitats can mute noise generated by vehicles and screen the vehicle from sight.

Most nests within the project areas are fairly remote and often inaccessible however a pair was observed displaying territorial behavior during 2008 fire suppression efforts when chainsaw crews and helicopters approached within ¼ mile of aerie. Fledglings successfully fledged that season in spite of a couple months of noise and air quality disturbance.

The table below depicts the combine total of short segments within peregrine falcon territory of unauthorized routes added to the NFTS.

### **Miles of Added Route Available for Public Motorized Use in Peregrine Falcon Territories (total 164,953 acres)**

<b>ALT 1</b>	<b>ALT 2</b>	<b>ALT 3</b>	<b>ALT 4</b>
85.43	24.02	27.69	0

Alternative 1 would allow travel on the greatest mileage of unauthorized routes and continue disturbance by the proliferation of user-created routes from unregulated cross-country travel within peregrine falcon territories. Such disturbance would result in a greater possibility of impacts to individual birds particularly during nesting season. This potential impact is reduced in Alternatives 2 and 3. Under Alternative 4, no potential impacts would occur as no unauthorized routes would be added to the NFTS.

The following table displays the miles of route that would be available for motor vehicle use within a half mile of known peregrine falcon by alternative.

### **Miles of Unauthorized Route within a 1/2 Mile of Known Peregrine Falcon Nest**

<b>ALT 1</b>	<b>ALT 2</b>	<b>ALT 3</b>	<b>ALT 4</b>
0	0	0	0

There are no unauthorized routes within ¼ mile of peregrine falcon nests that do not already have a closure in place; therefore the risk of disturbance is limited to the existing NFTS routes. Under all action alternatives, cross-country travel would prohibit future motorize travel off the NFTS in all habitat and

within ¼ mile of nests, which would eliminate the potential for disturbance at a specific site, cause displacement or avoidance.

### **Cumulative Effects**

The majority of past and present activities on the project area have had impacts on peregrine falcon or their habitat. Disturbance such as recreation, vegetative and fuels management, livestock grazing, and wildfire have affected the availability or quality of habitat. Past and ongoing activities that have affected the species would be associated with helicopter logging, wildfire suppression efforts and development of reservoirs and highway transportation systems. Reservoir development created foraging habitat at Ruth Lake. Conversely, the de-watering of portions of the mainstem Trinity River reduced available foraging habitat. Considering peregrine falcon nesting habitat are large rock outcrops and cliff faces it is likely that they are relatively unaltered relative to their historic condition. Falcons within the project area appear to be able to adapt to a certain amount of human disturbance and continue to successfully reproduce.

There are 280 miles of NFTS roads and 85 miles of unauthorized routes, none within ¼ mile of a known aerie. The table below presents the total mileage of routes available for public motorized use (**existing system and added routes**) in falcon territories for each alternative as a means to compare the potential for human-falcon encounters. Alternative 1 poses the highest risk for negative encounters between humans specifically because of unregulated cross-country travel. The difference in unauthorized miles between alternative 1 and action alternatives (3 miles) is not expected to be substantial because the two nests are well established and reproductively successful most years. It is unlikely that use will increase during the breeding season as both nesting zones are in remote areas that cater mostly to summer recreation.

Total amount of eagle territory affected by “**both**” **existing system and added routes** (this represents cumulative effects unlike direct and indirect effects which is based on only added routes by alternative) available for motorized use is presented in the table below.

### **Miles of Routes (existing system and added routes) for Public Motorized Use in Peregrine Falcon Territory**

	<b>ALT 1</b>	<b>ALT 2</b>	<b>ALT 3</b>	<b>ALT 4</b>
<b>Total</b>	365.43	304.02	307.69	280

Peregrine falcon is a Forest Service Sensitive species on the Forest. There is the potential for disturbance to individual from use of the existing NFTS, particularly if use occurs during the early breeding season. This use is limited due to typical snow accumulations on these routes. There are no unauthorized routes within ¼ mile of an existing nest and therefore the risk of cross-country travel is expected to be low. That risk continues in Alternative 1 but is eliminated in Alternatives 2, 3 and 4. The negligible disturbance associated with the routes evaluated in all alternatives is not expected to affect peregrine falcon abundance or distribution and poses a very low risk of impacting peregrine falcon viability on the Forest.

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. 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.

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.

The project alternatives would contribute to these past and current conditions with added displacement from noise and human activity 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 this 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.

### **Determinations**

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. Based upon the above analysis and because no physical actions (i.e., construction, decommissioning, or direct restoration) would occur outside the road prism (already disturbed site) in natural occurring habitats on this project, rather addition of **unauthorized or unclassified routes to the NFTS** for recreational wheeled motorized vehicle use, it is my determination that all alternatives may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability for the for the peregrine falcon.

### **California wolverine**

#### **Affected Environment**

The California wolverine is a scarce, solitary, secretive animal that uses mature conifer forests, wet meadows, and montane riparian habitats within large home ranges in Northern California. Wolverines are known to prefer areas of low human disturbance at higher elevations, and are generally sighted at elevations above 1600 feet. 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.

Forest carnivore surveys (track plates and cameras) have been conducted on large areas across the Districts, with no detections of wolverine. There are historical records of wolverine on the district; however, there have been no recent sightings. Given the known range of the species and the lack of large tracks of high elevation montane habitat it is doubtful that the California wolverine exists within the project area. The project area occurs in and within 500 ft of suitable wolverine habitat.

### **Townsend's big-eared bat**

### **Affected Environment**

The Townsend's big-eared bat occurs in a variety of habitats, and is strongly correlated with the availability of caves or cave-like roosting habitat. It has been found from sea level to 8700 ft. elevation and occurs in xeric to mesic habitats; although throughout much of its range it occurs in mesic habitats characterized by deciduous and coniferous forests. Because of this, it is difficult to define measurable habitat variables. The most limiting factor appears to be availability of suitable roost sites.

Townsend's big eared bats have never been recorded on the Mad River Ranger District but are known to occur on the Lower Trinity Ranger District. It is unlikely that suitable mines and caves occur within the project area. There are no known roost sites, no known mines and no caves within 500' of any routes and would not be affected by this project.

### **Forest Service Aquatic Wildlife Sensitive Species**

The aquatic dependant associated species includes western pond turtle, northern red-legged frog, foothill yellow-legged frog, and torrent salamander. 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.

The Forest applies mitigation standards and guidelines to ensure that the distribution and number of riparian-associated species do not severely decline. Riparian reserves (RR) standards and guidelines are designed to maintain adequate numbers of large snags and green-tree replacements for future snags in appropriate forest types. Additionally, the Aquatic Conservation Strategy (ACS) ensures the quality of aquatic and riparian resources protection by providing for diverse, high quality fish habitat and maintaining riparian dependent resources (water, fish, wildlife, riparian-related aesthetics, and aquatic vegetation) and riparian communities. Reptiles and amphibians with dual life phases dependant on aquatic systems are discussed within the EIS Aquatic Biota section.

### **Foothill Yellow-legged Frog**

#### **Affected Environment**

A total of approximately 53 miles of unauthorized routes, distributed between 27 watersheds are located within the riparian reserves. In addition 519 stream crossings occur based on the crenulated stream layer. The foothill yellow-legged frog is common across the Forest.

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.

### **Determinations**

Reducing 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. Based on the proximity of the routes to potentially occupied habitat, minor impacts could occur to individuals.

Impacts to FYLF from changes in NFTS due to trails on existing level 1 roads unlikely as three of the roads do not enter riparian areas and the other two roads enter headwater swales at a total of six locations. Motorized to non-motorized would be beneficial as crossing is in FYLF habitat. It is my opinion that both alternatives may impact individuals, but will not cause in a trend toward Federal listing or loss of viability for the foothill yellow-legged frog.

### **Western Pond Turtle**

#### **Affected Environment**

Within the project area a total of approximately 16 miles of unauthorized routes and 17 crossings are located within the riparian reserves along fish bearing streams. These 16 miles are spread across 14 watersheds. On the Forest, the western pond turtle is most commonly seen basking on the banks of main stem rivers. The fish bearing streams are made up of the mainstem rivers and larger tributaries where western pond turtles are found. Many of these fish bearing streams are found with little associated floodplains.

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.

### **Determinations**

Alt 2 and Alt 3 would impact 11 acres of riparian habitat adjacent to fish bearing streams over the project area, primarily in the upper Mad River and Van Duzen rivers. Alt 4 does not add routes in riparian areas to the NFTS, however, no mitigations would occur. Based on the proximity of the routes to potentially occupied habitat, minor impacts could occur to individuals.

Changes in NFTS do not affect western pond turtle. It is my opinion that both alternatives may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability for the western pond turtle.

### **Red Legged Frog**

#### **Affected Environment**

Within the project area 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 project 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 project 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.

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.

#### **Determinations**

Based on the proximity of the routes to potentially occupied habitat (currently identified as Ruth Reservoir), minor impacts could occur to individuals, however are unlikely to occur.

Changes in NFTS due to trails on existing level 1 roads unlikely as these roads cross only headwater swales. It is my opinion that both alternatives may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability for the red-legged frog.

### **Southern Torrent Salamander**

#### **Affected Environment**

Southern torrent salamander is not known to occur within the southern portion of the project (Mad River, Van Duzen, North Fork Eel River) as optimal habitat is severely limited by high temperatures and dry habitats. The southern torrent salamander is also known as the southern seep salamander. 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. The Forest is identified as having yearlong habitat.

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.

### Determinations

Reducing road density across the project area in Alt 2 and 3 will reduce fragmentation of habitat, increase patch size, reduce sedimentation in stream channels, and reduce disturbance and direct mortality. Alt 3 adds on additional route near a spring (JM722) with water quality mitigations. Alt 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.

Changes in NFTS due to trails on existing level 1 roads unlikely as these roads cross only headwater swales. Motorized to non-motorized would be beneficial as crossing is in southern torrent salamander habitat. It is my opinion that both alternatives may affect individuals, but is not likely to result in a trend toward Federal listing or loss of viability for the torrent salamander.

### VII. DETERMINATION

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 recreational use, and would benefit from restriction on cross-country travel, it is the determination of the wildlife biologist that this project **may affect but not likely to adversely affect the northern spotted owl and marbled murrelet.**

The project **will have no effect on NSO or MAMU CHU.**

The Pacific fisher is a federal candidate species (as well as a Forest Service Sensitive Species), currently being considered for listing under the ESA. Disturbance and habitat fragmentation resulting from these alternatives would be minor, and would not likely impact the individual's fitness. Therefore, it is my determination that both alternatives may impact individuals during the breeding season, but will not appreciatively diminish the recovery options for this species on the Six Rivers National Forest. The project will have long-term beneficial effects for the fisher through prohibition of cross-country travel.

The proposed action may impact individuals, but will not cause a trend towards Federal listing for any FSS species. The project will have long-term beneficial effects for FSS species.

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